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WATER, MIGRATION AND HUMAN SECURITY:
A COMPARATIVE STUDY OF CLIMATE DISPLACEMENT
IN MOZAMBIQUE AND DEVELOPMENT-INDUCED
RELOCATION IN CAMBODIA

Tesi di Laurea in Geography of Conflicts

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Sunto

Il cambiamento climatico e la realizzazione di grandi infrastrutture idriche sono oggi due dei principali fattori che determinano lo sfollamento di intere comunità, eppure la letteratura sulla migrazione climatica e quella sullo sfollamento indotto dallo sviluppo si sono finora sviluppate separatamente, con scarso dialogo reciproco. Questa tesi affronta tale separazione attraverso un confronto diretto tra due processi di sfollamento legati all'acqua: quello ricorrente causato da cicloni e siccità sulla costa mozambicana dell'Oceano Indiano, e quello prodotto dalla diga idroelettrica di Lower Sesan 2 nel nord-est della Cambogia.

Il Mozambico è stato colpito, in un solo decennio, da tre dei cicloni più gravi mai registrati nel bacino sud-occidentale dell'Oceano Indiano, in un contesto di povertà cronica aggravata, nella provincia settentrionale di Cabo Delgado, da un'insurrezione armata attiva dal 2017. La diga di Lower Sesan 2, realizzata con capitale prevalentemente cinese secondo un modello di costruzione, gestione e cessione all'operatore locale dopo un periodo concordato (c.d. Build-Operate-Transfer, BOT), ha sommerso le terre delle comunità indigene Bunong e Lao, popolazioni di lingua e cultura proprie stanziate da generazioni lungo i fiumi del nord-est cambogiano, e ha compromesso le attività di pesca e agricoltura da cui dipendono decine di migliaia di famiglie a valle.

L'esperienza professionale del candidato con un'organizzazione non governativa attiva in Mozambico nel periodo successivo al conflitto civile ha offerto un punto di osservazione diretto sul primo caso. La scelta del caso cambogiano risponde inoltre a una motivazione legata alla disponibilità di fonti: il bacino del Mekong è tra i contesti idropolitici più studiati, e la Cambogia offre, rispetto ad altri casi comparabili nella regione, una documentazione istituzionale e accademica sul reinsediamento indotto dallo sviluppo più ricca e accessibile.

Il confronto si inserisce inoltre in un dibattito più ampio nelle Relazioni Internazionali e negli Studi Strategici, che dagli anni Novanta discute se il concetto di sicurezza debba restare centrato sullo Stato o estendersi al benessere di individui e comunità. Lo sfollamento legato all'acqua è un banco di prova utile per questo dibattito: si colloca infatti all'incrocio tra cambiamento ambientale, migrazione forzata e governance delle infrastrutture, tre ambiti che raramente vengono analizzati insieme.

La tesi è organizzata attorno a una domanda di ricerca centrale: in che modo diverse forme di sfollamento legato all'acqua, di origine climatica e infrastrutturale, incidono sulla sicurezza umana in Mozambico e in Cambogia? E cosa rivelano questi due casi su quello che la tesi definisce Water-Migration-Security Nexus, il nesso tra acqua, migrazione e sicurezza? Cinque interrogativi più specifici articolano questa analisi: quali fattori scatenano lo sfollamento in ciascun contesto, come viene gestito istituzionalmente il reinsediamento, quale esperienza vivono concretamente le comunità coinvolte, quale ruolo giocano gli attori esterni, e quali implicazioni di policy emergono dal confronto.

Sul piano empirico, la tesi adotta un disegno di ricerca comparato fondato sul Most Different Systems Design (MDSD): un metodo che seleziona casi il più possibile diversi tra loro per verificare se, nonostante le differenze, producono esiti convergenti. Mozambico e Cambogia sono stati scelti per questo motivo: il primo è un Paese post-bellico, dipendente dagli aiuti internazionali, con un sistema politico formalmente competitivo; il secondo è uno Stato a partito dominante, in rapida industrializzazione, che finanzia le proprie infrastrutture tramite investimenti bilaterali. Se anche casi così diversi producono esiti simili, tale convergenza è un'evidenza più solida di un meccanismo strutturale rispetto a quanto emergerebbe dal confronto tra casi simili tra loro.

L'analisi si basa su fonti secondarie, documentazione istituzionale e di policy, e un'analisi spaziale realizzata con sistemi informativi geografici (Geographic Information System, GIS) su dati di sfollamento, rischio ambientale e infrastrutture. Il quadro analitico applicato a entrambi i casi è costituito dalle sette dimensioni della sicurezza umana elaborate dall'UNDP (Programma delle Nazioni Unite per lo Sviluppo) nel 1994; per il caso cambogiano, tale quadro è integrato dal modello dei Rischi da Impoverimento e Ricostruzione elaborato da Cernea (Impoverishment Risks and Reconstruction Model, IRR), che coglie in modo più specifico le dinamiche proprie dello sfollamento causato da progetti di sviluppo.

Il capitolo dedicato al Mozambico ricostruisce la dinamica dello sfollamento causato dai cicloni Idai, Kenneth e Freddy tra il 2019 e il 2023, e dalla siccità ricorrente nelle province meridionali, situando entrambi i fenomeni nel contesto di una povertà strutturale diffusa e, a Cabo Delgado, di un conflitto armato ancora in corso. Il capitolo dedicato alla Cambogia ricostruisce invece il processo istituzionale che ha portato, tra il 1999 e il 2018,

dallo studio di fattibilità iniziale della diga di Lower Sesan 2 alla sua entrata in funzione, ed esamina in dettaglio le modalità con cui è stato condotto il processo di consultazione delle comunità locali, insieme alle conseguenze ambientali e sociali del progetto.

Il confronto tra i due casi mostra una convergenza sostanziale nella gravità e nella struttura dell'insicurezza umana prodotta, un esito che la letteratura non avrebbe necessariamente lasciato prevedere, essendosi finora sviluppata separatamente per i due filoni di studio. In entrambi i contesti, a determinare la gravità dello sfollamento è soprattutto la vulnerabilità strutturale delle comunità coinvolte, cioè la povertà preesistente e la scarsa voce politica, più che il fattore scatenante in sé. In entrambi i casi esiste inoltre un'architettura formale di governance, prevista sulla carta, ma che nella pratica non viene attuata. La vulnerabilità di genere, infine, ricorre in entrambi i contesti, anche se attualmente le evidenze disponibili per documentarla differiscono sensibilmente tra i due casi.

I due casi divergono invece nettamente sulla tracciabilità della responsabilità. Lo sfollamento climatico in Mozambico nasce da un insieme di cause diffuso e in gran parte non attribuibile a un singolo responsabile: le dinamiche globali delle emissioni, il sottosviluppo cronico, l'insurrezione armata a Cabo Delgado. Lo sfollamento da sviluppo in Cambogia segue invece una catena di decisioni istituzionali ben documentata e ricostruibile con precisione, come illustrato nel capitolo dedicato. Questa tracciabilità, tuttavia, non si è tradotta in un'effettiva responsabilizzazione: lo Stato cambogiano, la società concessionaria, i suoi finanziatori cinesi e la Commissione del Fiume Mekong non hanno imposto il rispetto degli standard che essi stessi hanno dichiarato di accettare.

Da questa divergenza nasce il contributo originale della tesi: una matrice diagnostica (*Governance-Tractability Matrix*) che affianca alle sette dimensioni dell'UNDP, orientate alla gravità dell'insicurezza prodotta, due ulteriori criteri di analisi: la tracciabilità della responsabilità causale e istituzionale (*Traceability of Responsibility*), cioè quanto sia possibile individuare con certezza chi ha causato lo sfollamento, e l'effettiva riformabilità della risposta di governance esistente (*Institutional Tractability*), cioè quanto sia realisticamente possibile correggerla o migliorarla. Applicata ai tre sotto-casi esaminati nella tesi (lo sfollamento da disastro e quello da conflitto in Mozambico, e lo sfollamento da sviluppo in Cambogia), la matrice mostra che nessuno dei tre ricade nel quadrante più

favorevole, quello in cui la responsabilità è tracciabile e la risposta di governance è davvero riformabile: un risultato di per sé significativo, che la tesi propone come strumento utile per la ricerca futura sulla governance dello sfollamento legato all'acqua in altri contesti.

Due limiti della ricerca vengono dichiarati esplicitamente. Il programma di interviste semi-strutturate previsto dal disegno di ricerca originario non ha potuto essere completato nei tempi e con le risorse disponibili: la tesi stessa segnala che tali interviste avrebbero potuto offrire elementi di approfondimento su più fronti, tra cui quello relativo alla vulnerabilità di genere nel caso cambogiano, uno degli ambiti più direttamente toccati dalla loro assenza. Inoltre, trattandosi di un confronto tra due soli casi, il disegno di ricerca produce un'intuizione analitica plausibile, non una generalizzazione di validità statistica. Su queste basi, la tesi indica alcune possibili direzioni di ricerca futura: completare il programma di interviste originariamente previsto; estendere la matrice proposta ad altri casi di dispute idropolitiche transfrontaliere come la Grande Diga della Rinascita Etiope (Grand Ethiopian Renaissance Dam, GERD) sul Nilo o il Progetto dell'Anatolia Sud-Orientale (Güneydoğu Anadolu Projesi, GAP) sul Tigri-Eufrate; e verificare nel tempo, all'interno dello stesso Mozambico, se il miglioramento nella capacità di risposta istituzionale osservato tra il ciclone Idai (2019) e il ciclone Freddy (2023) si mantenga anche nelle stagioni cicloniche successive, distinguendo così un apprendimento duraturo da un miglioramento occasionale.

Abstract

Water is increasingly implicated in displacement, yet the literatures on climate-induced and development-induced mobility have developed largely in isolation from one another. This thesis addresses that separation through a Most Different Systems Design (MDSD) comparison of two water-related displacement processes: the recurrent cyclone- and drought-driven displacement affecting Mozambique's Indian Ocean coastline, and the development-induced resettlement produced by the Lower Sesan 2 hydropower dam in northeastern Cambodia. Although the two cases differ in almost every politically relevant respect, both are read through the UNDP's seven-dimension human security framework, complemented for the Cambodian case by Cernea's Impoverishment Risks and Reconstruction (IRR) model, which captures the specific mechanics of development-induced resettlement.

The analysis draws on secondary sources, policy and institutional documentation, and GIS-based spatial analysis of displacement, hazard and infrastructure data, structured around a single research question: how do different forms of water-related displacement affect human security in Mozambique and Cambodia, and what do these cases reveal about the Water-Migration-Security Nexus? The comparison finds that the two cases converge substantially in the severity and structure of the human insecurity produced, with pre-existing poverty and weak political voice functioning as the decisive precondition regardless of whether the proximate trigger is a cyclone or a dam. The cases diverge sharply, however, in the traceability of responsibility: Mozambique's climate displacement is shaped by a diffuse, largely unattributable causal field, while Cambodia's dam-induced displacement follows a documented, datable chain of institutional decisions that has nonetheless not translated into effective accountability.

Building on this divergence, the thesis proposes the Governance-Tractability Matrix, an original diagnostic extension of the human security framework that distinguishes the traceability of responsibility from the tractability of the governance response, in order to identify which insecurities are merely severe and which are also governable, with direct implications for the governments, international organisations and development financiers responsible for water-related displacement governance.

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List of Acronyms

- 3S: Sesan, Srepok and Sekong (River System)
- ACLED: Armed Conflict Location & Event Data (Project)
- ADB: Asian Development Bank
- AfDB: African Development Bank
- AWIRU: African Water Issues Research Unit
- BOT: Build-Operate-Transfer
- CCCM: Camp Coordination and Camp Management (Cluster)
- CCHR: Cambodian Centre for Human Rights
- CENOE: Centro de Operações de Emergência (Emergency Operation Centre, Mozambique)
- CERUM: Centro de Recursos Multiuso (District-Level Multi-Use Centre, Mozambique)
- CGIAR: Consultative Group for International Agricultural Research
- CIPS: Centre for International Political Studies
- CRP: Crisis Response Plan
- CSO: Civil Society Organisation
- DIDR: Development-Induced Displacement and Resettlement
- DTM: Displacement Tracking Matrix
- EIA: Environmental Impact Assessment
- EM-DAT: Emergency Events Database
- EVN: Electricity of Vietnam
- FAO: Food and Agriculture Organization
- FPIC: Free, Prior and Informed Consent
- GADM: Global Administrative Areas (Database)
- GAP: Southeastern Anatolia Project (Güneydoğu Anadolu Projesi, Türkiye)

GDW: Global Dam Watch

GERD: Grand Ethiopian Renaissance Dam

GFDRR: Global Facility for Disaster Reduction and Recovery

GIDD: Global Internal Displacement Database

GIS: Geographic Information System

GMS: Greater Mekong Subregion

GRID: Global Report on Internal Displacement

HH: Hydro-Hegemony (Framework)

HRW: Human Rights Watch

HSR: Human Security Report

IASC: Inter-Agency Standing Committee

ICEM: International Centre for Environmental Management

IDMC: Internal Displacement Monitoring Centre

IDP: Internally Displaced Person

IEA: International Energy Agency

IFRC: International Federation of Red Cross and Red Crescent Societies

ILO: International Labour Organization

INGC: Instituto Nacional de Gestão de Calamidades (predecessor of INGD, Mozambique)

INGD: Instituto Nacional de Gestão e Redução do Risco de Desastres (National Institute for Disaster Management and Risk Reduction, Mozambique)

IOM: International Organization for Migration

IPCC: Intergovernmental Panel on Climate Change

IRR: Impoverishment Risks and Reconstruction (Model)

ISS: Institute for Security Studies

IWT: Indus Waters Treaty

KOICA: Korea International Cooperation Agency

LNG: Liquefied Natural Gas

MDSD: Most Different Systems Design

MRC: Mekong River Commission

NAPA: National Adaptation Programme of Action

NASA: National Aeronautics and Space Administration

NGO: Non-Governmental Organisation

NHESS: Natural Hazards and Earth System Sciences (Journal)

NOAA: National Oceanic and Atmospheric Administration

OCHA: United Nations Office for the Coordination of Humanitarian Affairs

ODI: Overseas Development Institute

PDNA: Post-Disaster Needs Assessment

QGIS: Quantum Geographic Information System

SADC: Southern African Development Community

SADC DRM IMS: Southern African Development Community Disaster Risk Management Information and Monitoring System

SPI: Standardized Precipitation Index

UN-SPIDER: United Nations Platform for Space-based Information for Disaster Management and Emergency Response

UNDP: United Nations Development Programme

UNDRR: United Nations Office for Disaster Risk Reduction

UNFCCC: United Nations Framework Convention on Climate Change

UNGA: United Nations General Assembly

UNHCR: United Nations High Commissioner for Refugees

UNICEF: United Nations Children's Fund

UNSDG: United Nations Sustainable Development Group

USD: United States Dollar

WB: World Bank

WCD: World Commission on Dams

WHO: World Health Organization

WMO: World Meteorological Organization

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Finally, my thoughts go to the communities in Mozambique and Cambodia whose experiences this thesis attempts to document, and whose vulnerability deserves far more than a place in a case study.

Introduction

By the 2020s, water had become one of the most visible mediums through which environmental and developmental change is translated into human displacement. Cyclones, floods and droughts already account for a large share of the disasters that generate new internal displacement each year, and large hydropower dams remain, together with urban and mining projects, one of the principal sources of development-induced resettlement worldwide. These two pathways, one triggered by climatic hazard and one by planned infrastructure, are usually studied by separate scholarly communities, using separate vocabularies and separate normative frameworks, even though both ultimately confront affected populations with the same underlying experience: the loss of home, land and livelihood through a process the household itself did not choose and often could not resist.

This thesis grew out of a conviction that this disciplinary separation obscures more than it clarifies. Mozambique and Cambodia offer a particularly instructive pairing for testing that conviction. Mozambique's Indian Ocean coastline has, within a single decade, been struck by three cyclones among the most severe ever recorded in the South-West Indian Ocean basin, compounding a pre-existing condition of chronic poverty and, in its northern province of Cabo Delgado, an active armed insurgency. Cambodia's Lower Sesan 2 Dam, financed through Chinese state capital and built under a Build-Operate-Transfer (BOT) concession, submerged the ancestral land of Bunong and Lao communities in the country's northeast and disrupted fisheries on which tens of thousands of downstream households depend. The candidate's own prior field experience with an NGO operating in post-conflict Mozambique provided an additional practical vantage point on the first case, and reinforced the sense that the human security consequences of water-related displacement deserved closer comparative scrutiny than either the climate migration or the development-induced displacement literature, working alone, has so far provided.

The comparison also speaks directly to the discipline within which this thesis is situated. Security and International Relations scholarship has, since the 1990s, debated whether security should remain a state-centric concept or extend to the wellbeing of individuals and communities, a debate this thesis takes up directly in Chapter 1. Water-related displacement offers a demanding test of that debate, because it sits at the intersection of

environmental change, involuntary migration and the governance of large infrastructure, three fields that rarely inform one another systematically even though, as Chapter 1 shows in detail, each has generated substantial theoretical resources relevant to the others. Reading them together is not merely a matter of academic completeness: policy responses calibrated to only one of the three risk addressing the visible trigger of displacement, a cyclone or a dam, while missing the structural conditions of poverty, marginal political voice and weak governance capacity that this thesis argues are, in both cases, the more decisive determinant of the human security outcome.

The thesis is organised around a single guiding question: how do different forms of water-related displacement, climate-induced and development-induced, affect human security in Mozambique and Cambodia, and what do these cases reveal about the Water-Migration-Security Nexus? Five sub-questions unpack this guiding question, concerning the drivers of displacement in each context, the institutional management of displacement and resettlement, the lived experience of affected communities, the role of external actors, and the policy lessons the comparison can support. The full elaboration of this research design, together with the theoretical literature from which it is derived, is presented in Chapter 1.

Empirically, the thesis relies on a qualitative comparative case-study design grounded in a Most Different Systems Design logic, combining policy and document analysis, academic and grey literature, GIS-based spatial analysis of displacement, hazard and infrastructure data, and, where feasible, semi-structured expert interviews. As Chapter 4 makes explicit, the interview component of the original research design could not be completed within the resource and time constraints of the present thesis, a limitation that is acknowledged transparently at the point in the analysis where it is most consequential, the discussion of gendered vulnerability in the Cambodian case, rather than left implicit.

The remainder of the thesis proceeds in four chapters and a conclusion. Chapter 1 sets out the theoretical and conceptual framework, reviewing the climate displacement, development-induced displacement, hydropolitics and human security literatures, identifying the research gap this thesis addresses, and detailing the research design introduced above. Chapter 2 examines the Mozambican case, and Chapter 3 the Cambodian case, each applying the same human security framework to its own empirical

material. Chapter 4 brings the two cases into systematic comparison and proposes the Governance-Tractability Matrix, an original diagnostic tool distinguishing the traceability of responsibility for displacement-driven insecurity from the tractability of the governance response available to address it. The Conclusion draws together the comparative findings, situates them within the Water-Migration-Security Nexus literature, and sets out their implications for the national governments, international organisations and development financiers whose decisions shape the governance of water-related displacement.

Chapter 1

Theoretical and Conceptual Framework

1.1 The Water-Migration-Security Nexus

The relationship between water, migration, and security (known as Water-Migration-Security Nexus) has emerged as one of the most contested and analytically demanding convergence points in contemporary International Relations scholarship. Rather than representing a settled theoretical framework, the Water-Migration-Security Nexus is better understood as an interdisciplinary junction where three distinct bodies of literature intersect: environmental security, forced migration studies, and human security theory. Each strand carries its own epistemological assumptions, normative orientations, and disciplinary boundaries, and the task of integrating them is neither straightforward nor without analytical cost. Understanding how these literatures interact, reinforce, and at times contradict one another is therefore a necessary preliminary to developing a coherent analytical lens through which water-related displacement can be studied comparatively.

Recent attempts to integrate these strands under a single analytical umbrella have yielded important contributions on the structural relations between hydraulic infrastructure, mobility regimes, and asymmetric power (Zeitoun & Warner, 2006; Mirumachi, 2015; Warner et al., 2017), as well as on the way in which climate-related mobility is increasingly framed as a security concern in international policy discourse (Boas, 2015; McLeman & Gemenne, 2018; Sultana, 2022).

Early environmental security scholarship framed water scarcity primarily as a driver of interstate conflict, drawing on neo-Malthusian assumptions about resource competition that posited a relatively direct line from environmental degradation to political violence (Homer-Dixon, 1994). Within this tradition, migration was cast primarily as a destabilising force, a “threat multiplier” that transferred environmental pressures across borders and exacerbated social tensions within receiving societies. This conflict-centric framing exercised considerable influence over both academic and policy circles in the 1990s, shaping early debates about the securitisation of environmental issues. However,

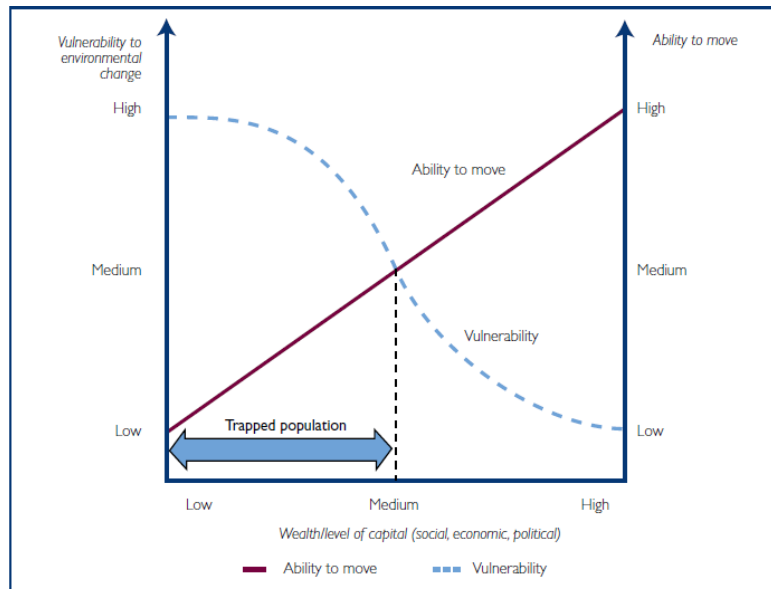
the analytical limitations of this approach became increasingly apparent as empirical research demonstrated that the causal chain between environmental stress and violent conflict was far more contingent and mediated by institutional, political, and social variables than the original models allowed.

A more nuanced account locates insecurity not in resource competition alone but in the erosion of the socioeconomic and institutional foundations upon which human well-being depends. Environmental degradation undermines livelihoods, disrupts food systems, and weakens community cohesion in ways that generate insecurity at the individual and community level, without necessarily producing interstate conflict (Barnett & Adger, 2007). This shift in focus from the state to the individual and community constitutes a foundational pivot for the human security paradigm and, by extension, for this thesis. It reframes the relationship between environmental change and insecurity as one of incremental, cumulative erosion rather than acute conflict, which is analytically more appropriate for understanding displacement processes that unfold over time and across multiple dimensions of wellbeing.

The migration dimension of the nexus has proved equally contested. The dominant policy assumption for much of the late twentieth century was that environmentally driven migration was inherently crisis-driven, producing undifferentiated flows of displaced persons who constituted burdens on receiving states and humanitarian systems. This assumption has been systematically challenged by scholarship that disaggregates the population immobility trap from voluntary mobility and from involuntary displacement, recognising that migration is a continuum of responses shaped by capability, social networks, governance structures, and individual livelihood strategies (Foresight, 2011; McLeman & Smit, 2006). Crucially, this body of work also demonstrated that the most vulnerable populations are often those least able to migrate, complicating simplistic narratives of environmentally induced mass movement and drawing attention to the structural conditions that constrain or enable mobility as an adaptive response¹.

¹ Numerous studies conducted across different countries have shown that migration is positively correlated with wealth and social capital, while vulnerability to environmental change is negatively correlated with wealth and social capital. See, among others, Black et al. (2013) on mobility outcomes following extreme events; Adger et al. (2015) on the unevenness of climate-driven mobility; Nawrotzki and DeWaard (2018) on the holding power of places; and Zickgraf (2019) on the conceptualisation of immobility in environmental migration scholarship.

Figure 1.1: Schematic representation of how the level of wealth/capital correlates with vulnerability to environmental change and at the same time determines the ability to move.



Source: *Foresight (2011)*.

Within the nexus, water occupies a structurally ambivalent position. It functions simultaneously as a life-sustaining resource whose scarcity or excess drives displacement, as a commodity whose hydraulic governance structures reflect and reproduce geopolitical power, and as a site of development intervention whose infrastructure projects produce involuntary relocation. The challenge for any thesis engaging this nexus is to resist the temptation to collapse these different registers into a single explanatory variable while maintaining sufficient analytical coherence to generate comparative insights. The Sections that follow examine each relevant strand of literature in turn, building toward a synthesis that identifies the research gap this thesis is positioned to address.

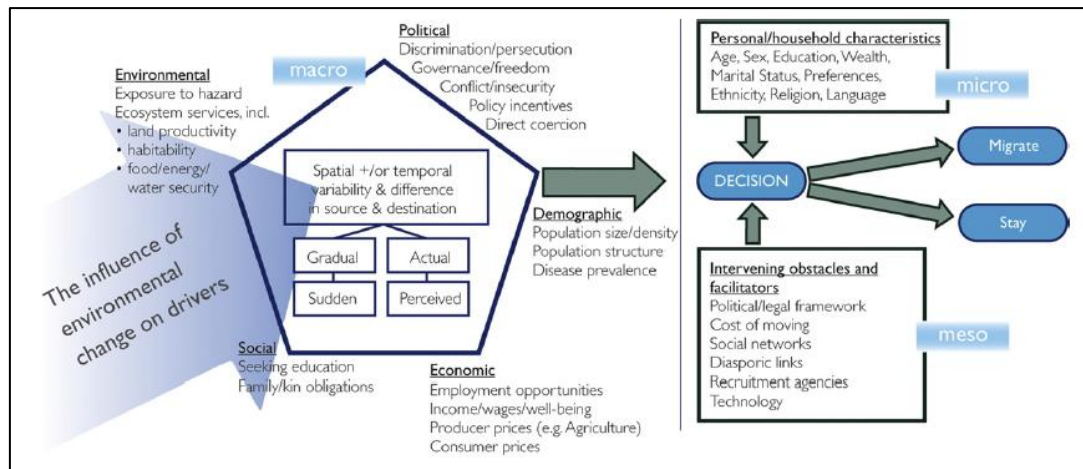
Those with less wealth or capital face a dual set of risks from future environmental changes: their low level of capital prevents them from moving from situations of increasing environmental threat; however, at the same time, this very lack of capital makes them even more vulnerable to environmental change. These populations are likely to remain “trapped” in places where they are vulnerable to environmental change (see Figure 1.1).

1.2 Climate-Induced Displacement: Frameworks and Debates

Few concepts in the migration literature have generated as much definitional controversy and normative disagreement as climate-induced or environmentally induced displacement. The debate has proceeded along two principal axes: the question of causation, concerning the degree to which environmental variables can be identified as primary drivers of population movement; and the question of agency, concerning the extent to which displaced populations exercise meaningful choice within their conditions of vulnerability. Together, these axes structure the theoretical landscape through which cases of disaster-driven displacement must be approached.

On the question of causation, a persistent tension exists between positions that emphasise the direct role of environmental change in driving migration and those that insist on the mediating importance of social, political, and economic structures. The case for a structurally mediated rather than environmentally deterministic account rests on a substantial body of empirical evidence demonstrating that climatic events rarely function as sole or primary causes of migration but interact with pre-existing vulnerabilities, governance failures, historical patterns of marginalisation, and economic inequality (Black, 2001; Gemenne, 2011). Population movements attributed to environmental causes are, under closer examination, typically overdetermined by multiple factors, including policy choices about land use, investment in protective infrastructure, social protection systems, and the distribution of assets within affected communities (Black et al., 2011).

Figure 1.2: A conceptual framework for the “drivers” of migration.



Source: Foresight (2011).

This structural critique does not deny the reality of environmental influence on migration but demands greater analytical precision regarding its mechanisms and scope. The quantitative projections that underpin much climate migration discourse have been subjected to sustained methodological critique, with scholars noting that widely cited estimates of tens or hundreds of millions of environmental migrants are artefacts of modelling assumptions that conflate correlation with causation, aggregate diverse forms of mobility under a single category, and fail to account for the possibility of in-situ adaptation (Gemenne, 2011). This epistemological caution is not merely academic: if climate displacement figures are systematically exaggerated, policy responses calibrated to those figures risk misallocating resources and mischaracterising the nature of the problem. Conversely, if climate displacement is under-documented because it is disaggregated across multiple overlapping causes, affected populations may fall through the cracks of international protection frameworks.

An adaptive framework for understanding climate mobility redefines migration not as a failure of adaptation but as an adaptive strategy in its own right, one employed by households and communities to diversify income, manage risk, and maintain livelihood systems under conditions of environmental stress (McLeman & Smit, 2006). This reframing has significant policy implications, shifting the emphasis from humanitarian response to mobility governance: enabling rather than preventing population movement

through legal channels, portability of social rights, and bilateral labour agreements. The protection-oriented dimension of this approach found institutional expression in efforts to elaborate frameworks for the specific vulnerabilities of those displaced across borders by disasters and climate change, recognising that existing refugee law provided inadequate legal coverage for persons who do not meet the definition of refugee under the 1951 Convention or other regional instruments, but who are nonetheless compelled to move by circumstances beyond their control (Nansen Initiative, 2015). The normative argument advanced in this context is that the absence of legal status compounds the material vulnerabilities already imposed by displacement, producing a double exposure that formal recognition frameworks could help to mitigate.

An additional dimension of the climate mobility debate concerns temporality, a variable that is particularly significant for Mozambique, one of the case studies of this work. Short-term disaster displacement, produced by acute extreme weather events such as cyclones, floods, and storm surges, is analytically distinct from the slow-onset processes of sea-level rise, drought, soil salinisation, and coastal erosion that progressively erode livelihoods over years or decades. Policy discourse has tended to collapse this distinction in ways that generate politically expedient but analytically imprecise categories of climate refugees (Bettini, 2017). The conflation matters not only academically but normatively, because different temporal patterns of displacement generate qualitatively different vulnerabilities and therefore require different protective responses. Populations displaced by sudden-onset disasters face acute humanitarian needs in the immediate term but may in principle return to their places of origin once conditions allow. Those experiencing slow-onset environmental change face a progressive erosion of the conditions for sustainable livelihoods that may preclude any meaningful return, yet whose displacement is less visible and less legible within humanitarian response frameworks calibrated to acute crises.

The relationship between repeated disaster displacement and cumulative vulnerability further complicates the picture. In contexts where extreme weather events are increasing in frequency and intensity, each displacement episode may leave affected populations with fewer assets, weaker social networks, and reduced institutional support with which to recover, generating a downward spiral of impoverishment that mirrors in important respects the dynamics identified in the development-induced displacement literature.

1.3 Development-Induced Displacement and Resettlement

The literature on Development-Induced Displacement and Resettlement (DIDR) constitutes a markedly different intellectual tradition from climate migration scholarship. Whereas the latter emerged primarily from geography, demography, and environmental studies, DIDR scholarship has been shaped principally by development economics, social anthropology, and political sociology. Despite these disciplinary differences, the two bodies of work converge on fundamental questions of vulnerability, agency, and the relationship between displacement and insecurity, and examining their points of contact is essential for the comparative project this thesis undertakes.

The analytical foundation of DIDR scholarship was established through the elaboration of the Impoverishment Risks and Reconstruction (IRR) model, which identified eight empirically grounded risks that routinely accompany development-induced displacement: landlessness, joblessness, homelessness, marginalisation, food insecurity, increased morbidity and mortality, loss of access to common property resources, and social disarticulation (Cernea, 1997; 2000). The model's analytical power lies in its specificity and its empirical grounding across a wide range of cases drawn from dam construction, urban renewal, infrastructure development, and conservation-driven displacement globally. By naming discrete, observable risks rather than treating displacement as an undifferentiated harm, the framework creates a diagnostic instrument that can be applied comparably across cases and used to evaluate the adequacy of resettlement planning. Importantly, the reconstruction dimension of the model does not simply document harm but specifies the conditions under which resettlement can, at least in principle, support livelihood restoration and the reconstitution of social life. This prescriptive ambition made the model influential in shaping World Bank (WB) involuntary resettlement safeguards and in providing civil society organisations (CSOs) with a normative baseline for monitoring compliance by governments and developers (Cernea, 2003).

Table 1.1: *The IRR Model: Diagnostic Risks and Reconstruction Strategies.*

Impoverishment Risk	Reconstruction Strategy	<i>Application</i>
Landlessness	From landlessness to land-based resettlement	<i>Reconstitution of the primary productive foundation</i>
Joblessness	From unemployment to re-employment	<i>Restoration of wage labor and income-generating opportunities</i>
Homelessness	From homelessness to house improvement	<i>Transition from shelter loss to enhanced housing conditions</i>
Marginalisation	From marginalisation to social inclusion	<i>Prevention of socio-economic status decline and loss of prestige</i>
Food Insecurity	From food insecurity to self-sufficiency	<i>Ensuring caloric intake and nutritional stability</i>
Morbidity and Mortality	From morbidity to improved health care	<i>Mitigation of displacement-induced health risks and stress</i>
Loss of Common Property	From loss to restoration of community assets	<i>Re-establishing access to shared resources (forests, water, etc.)</i>
Social Disarticulation	From fragmentation to community reconstruction	<i>Rebuilding social networks, kinship ties, and local organizations</i>

Source: *Author's elaboration based on Cernea's IRR model (1997; 2000).*

Critics of the IRR model have questioned whether its prescriptive elements have ever been translated into large-scale meaningful practice. Long-term studies of resettled populations across Asia, Africa, and Latin America suggest that the conditions necessary

for successful livelihood reconstruction, including adequate replacement land, compensation at replacement cost, access to markets and social services, and genuine community participation in planning, are the exception rather than the rule in practice (Scudder, 2005). The gap between the normative standards articulated in resettlement policy and the outcomes experienced by displaced communities reflects not simply technical planning failures but deeper structural and political dynamics. Development agencies and state authorities retain strong incentives to minimise resettlement costs and to define project benefits in aggregate terms that systematically obscure the distributional consequences of displacement for specific communities.

A political economy perspective pushes the critique further by situating displacement not as an unfortunate side effect of development but as a constitutive feature of capital-intensive infrastructure development that reflects and reproduces structural power asymmetries between development agencies, states, corporations, and affected communities (Oliver-Smith, 2010). Under this framing, the question shifts from how to mitigate the adverse effects of necessarily occurring displacement to who has the authority to approve displacement, whose interests it serves, and whose conception of development prevails. This political dimension is particularly salient in the Mekong Basin context, the second case study of this work. Here dam construction decisions are made by a complex architecture of state authorities, international development banks, bilateral lenders, and private investors, while the populations most directly affected by the flooding of watersheds and downstream hydrological change are overwhelmingly rural, Indigenous, politically marginalised, and systematically excluded from decision-making processes.

The rights dimension of DIDR has been progressively elaborated through a series of international instruments that intersect with but remain analytically distinct from the mainstream displacement literature. The principle of free, prior and informed consent (FPIC) as a prerequisite for decisions affecting the lands and resources of Indigenous and tribal peoples was established as a matter of international labour and human rights law in the context of broader indigenous rights frameworks (ILO, 1989; UNGA, 2007).

The UN Declaration on the Rights of Indigenous Peoples extended this principle to the right not to be relocated without free, prior and informed consent and to just and fair

compensation for any dispossession that occurs. These instruments create a normative framework against which resettlement processes in the Mekong Basin can be critically assessed, particularly given documented patterns in Cambodia and the wider region in which FPIC provisions are either formally absent from domestic legal frameworks or observed only in procedural form without substantive community influence over project decisions (Middleton et al., 2009).

The intersection between DIDR scholarship and Indigenous rights frameworks raises important questions about differential vulnerability to displacement. Not all displaced populations experience the same intensity of impoverishment risks, and the specific character of Indigenous communities' relationships to land, common property resources, and place-based cultural identity means that the losses generated by forced relocation may be qualitatively different from those experienced by non-Indigenous populations facing otherwise similar material circumstances. The loss of access to ancestral lands, sacred sites, and customary resource governance systems represents a form of cultural and spiritual dispossession that the IRR model captures only partially under the category of social disarticulation. A fuller account requires integrating the cultural dimensions of displacement with the material ones, recognising that livelihood and identity are often inseparably intertwined in ways that mainstream development economics tends to render invisible.

1.4 Hydropolitics and Hydraulic Hegemony

The concept of hydraulic hegemony occupies an important though undertheorised position within the broader literature on water governance and geopolitics. The structural tendency for upstream states with greater technical and financial capacity to impose infrastructure decisions on downstream neighbours, generating asymmetric interdependence and constraining the policy options of less powerful riparian states, has been documented across a range of international river basins (Turton & Henwood, 2002). The concept is particularly analytically productive in contexts where significant power differentials between riparian states are combined with weak or absent supranational governance frameworks.

The most influential systematisation of these dynamics is the Framework of Hydro-Hegemony (HH) developed by Zeitoun and Warner (2006), who define hydro-hegemony as hegemony at the river basin level, achieved through water resource control strategies (resource capture, integration, and containment) that are executed through tactics ranging from coercive pressure and treaty design to the construction of “*authoritative knowledge*”. The framework challenges the dominant narrative of cooperative transboundary water governance by emphasising that the absence of overt water conflict does not indicate equitable interaction but, more often, the consolidation of asymmetric power. A decade later, Warner et al. (2017) revisited the framework to recognise its limits and integrate insights from counter-hegemony and multi-scalar political economy, while Zeitoun and Mirumachi (2008) and Mirumachi (2015) developed the related concept of conflict-cooperation coexistence, showing how cooperation and contestation typically operate simultaneously rather than as opposed states. This evolved framework provides the conceptual scaffolding for analysing how upstream developmental projects redistribute water-related benefits and costs across politically asymmetric basins, regardless of whether the resulting interaction is formally classified as conflictual or cooperative.

The empirical reach of hydro-hegemony as an analytical category extends well beyond Southeast Asia, and a brief consideration of comparable basins is useful to clarify what is structural and what is context-specific in the Mekong case discussed in Chapter 3. In the Nile Basin, Egypt has historically exercised hydro-hegemony through colonial-era water-sharing treaties (1929 and 1959) that allocated nearly the entirety of the river’s flow to downstream states while excluding upstream riparians from any veto-equivalent prerogatives. The unilateral construction of the Grand Ethiopian Renaissance Dam (GERD) since 2011, financed predominantly through domestic resources rather than international lenders, has been interpreted in the literature as a counter-hegemonic move that shifts the regional balance and exposes the colonial origins of the existing legal regime (Cascão & Nicol, 2016; Salman, 2016). In the Tigris-Euphrates basin, Türkiye’s Southeastern Anatolia Project (GAP), comprising twenty-two dams and nineteen hydroelectric plants, has enabled Ankara to control approximately 45% of the basin’s water resources, generating recurrent tensions with downstream Syria and Iraq and illustrating how upstream infrastructure functions as a tool of strategic leverage rather than a neutral developmental instrument (Warner, 2008; Kibaroglu, 2019).

In South Asia, the Brahmaputra and Indus basins exhibit nested hydro-hegemonies in which India occupies an upstream position vis-à-vis Pakistan under the Indus Waters Treaty (IWT) regime while remaining downstream of an increasingly assertive China, whose dam construction on the Yarlung Tsangpo, in the absence of any binding transboundary agreement, raises questions analogous to those posed by Chinese upstream infrastructure on the Lancang-Mekong (Ho, 2017; Biba, 2018). Across these cases, three structural features recur: the combination of significant material asymmetries between riparian states, the weakness or absence of binding multilateral institutions, and the use of dam construction as both a developmental project and a geopolitical statement. These commonalities provide the comparative reference points against which the Mekong configuration is analysed in Chapter 3.

A particularly significant strand of contemporary hydropolitical scholarship concerns the way in which the financing modality of large hydraulic infrastructure projects shapes the governance of their social and environmental consequences. Since the World Commission on Dams (WCD, 2000) report and the subsequent reform of multilateral safeguard policies, projects financed through institutions such as the World Bank (WB) and the Asian Development Bank (ADB) have been required to adhere to a relatively codified architecture of involuntary resettlement, environmental impact assessment, and consultation with affected populations. The increasing role of bilateral lenders, particularly those associated with state-led infrastructure diplomacy programmes, has progressively eroded this multilateral baseline (Hensengerth, 2018; Yeophantong, 2020). Bilateral financing arrangements typically operate through framework agreements between sovereign states that minimise the role of supranational safeguard regimes and reduce the leverage of international civil society over project design. The result is a fragmented governance architecture in which the standards applied to resettlement planning, the channels available for grievance redress, and the degree of accountability owed to affected communities vary systematically with the financing modality of the project rather than with the magnitude of its social and environmental impacts.

The hydropolitical literature also draws attention to the multi-scalar character of water-related displacement. In any politically asymmetric basin, communities may be displaced by the physical inundation of reservoir areas associated with domestically constructed or domestically licensed dams, but they may simultaneously experience livelihood erosion

attributable to upstream hydrological changes produced by infrastructure projects in adjacent jurisdictions over which the host state has minimal leverage. These two processes of displacement operate through different mechanisms, involve different responsible actors, and require different forms of redress, yet they converge on the same populations and produce cumulative rather than additive effects on human security. The DIDR literature, which focuses primarily on the bilateral relationship between a specific development authority and a specific affected community, is insufficiently attentive to this multi-scalar dimension. Integrating hydropolitical analysis into the DIDR framework therefore constitutes a substantive theoretical contribution, one that this thesis is positioned to make through its focus on Cambodia.

An additional dimension of hydraulic hegemony concerns the politics of knowledge about water. The technical data on river flows, sediment budgets, and ecological impacts that are necessary for informed assessment of dam effects are produced and controlled primarily by state actors and development organisations with vested interests in particular infrastructure decisions. Communities whose livelihoods are directly affected by hydrological change frequently possess in-depth, locally rooted knowledge of changing conditions, including altered fish populations, reduced agricultural productivity during flood recessions, and riverbank erosion. However, this knowledge is systematically marginalised in formal decision-making processes, which privilege quantitative modelling and economic cost-benefit analysis. The epistemological politics of water knowledge thus reinforces the structural exclusion of affected populations from decisions that determine their material circumstances, compounding the political economy critique offered by displacement scholars and creating additional grounds for questioning the adequacy of existing governance frameworks.

1.5 Human Security as an Analytical Lens

The concept of human security, as articulated in the foundational documents of the post-Cold War period, represented a paradigmatic challenge to the state-centric orthodoxy that had dominated security studies throughout the twentieth century (UNDP, 1994). By relocating the primary referent object of security from the state to the individual, and by insisting that threats to human wellbeing across economic, food, health, environmental,

personal, community, and political dimensions constituted legitimate security concerns regardless of whether they involved interstate violence, the human security framework fundamentally reoriented the conceptual vocabulary of the discipline. This reorientation was not without controversy, and the subsequent scholarly debate about the analytical status and operational utility of human security has been extensive and at times acrimonious.

Table 1.2: *The Seven Dimensions of Human Security (UNDP, 1994).*

Dimension of Security	<i>Main Threats and Focus</i>
Economic Security	<i>Persistent poverty, unemployment, and lack of a basic income</i>
Food Security	<i>Physical and economic access to food; hunger and famine</i>
Health Security	<i>Infectious diseases, malnutrition, and lack of access to healthcare</i>
Environmental Security	<i>Environmental degradation, resource depletion, and natural disasters</i>
Personal Security	<i>Physical violence, crime, domestic abuse, and terrorism</i>
Community Security	<i>Loss of traditional culture and ethnic/communal conflict</i>
Political Security	<i>Human rights violations and state-sponsored oppression</i>

Source: *Author's elaboration based on the UNDP Human Security Report (1994).*

The most systematic critique of human security as an analytical category has focused on its definitional breadth. The argument holds that if virtually any threat to individual welfare qualifies as a security threat, the concept loses its distinctive purchase and becomes synonymous with human development or human wellbeing in general, thereby depriving it of any analytical specificity (Paris, 2001). Indeed, if the concept is indefinitely expansive, it becomes impossible to prioritise among competing threats, to allocate resources rationally, or to develop coherent policies calibrated to its requirements.

The response to this critique within the literature has taken two main forms. The first is to accept a narrower definition of human security focused specifically on freedom from violence and physical harm, as the Human Security Report (HSR) tradition has done. The second is to defend the multidimensional conception on the grounds that its integrative character, its insistence on the interdependence of different dimensions of wellbeing, is precisely what makes it analytically appropriate for complex, multi-causal phenomena in which economic, environmental, political, and personal insecurities reinforce one another rather than operating independently (Tadjbakhsh & Chenoy, 2007).

For the purposes of this thesis, the multidimensional conception of human security is adopted not as a causal theory but as an evaluative lens that enables systematic and comparable assessment of displacement outcomes across the Mozambique and Cambodia cases. Its multidimensional character is analytically productive in this context because water-related displacement rarely threatens only one dimension of individual or community wellbeing. The loss of land and housing generates economic and food insecurity simultaneously; the disruption of community ties and social networks undermines personal security and psychological wellbeing; the inadequacy of resettlement sites in terms of access to clean water and sanitation generates health insecurity; and the marginalisation of displaced populations from decision-making processes represents a threat to political security. These dimensions are structurally linked in ways that make holistic evaluation more analytically accurate than sector-by-sector assessment.

The complementarity between the human security framework and Cernea's impoverishment risks model is notable and analytically productive. The eight risks identified in the IRR model map onto the seven UNDP dimensions of human security with considerable precision, although these correlations often function as cross-cutting dynamics rather than isolated categories. Specifically, landlessness and joblessness (IRR) correspond to economic security (UNDP); food insecurity (IRR) aligns with food security (UNDP); increased morbidity and mortality (IRR) to health security (UNDP); homelessness (IRR) to personal security (UNDP); loss of common property resources (IRR) to environmental and community security (UNDP); social disarticulation (IRR) to community security (UNDP); and the marginalisation (IRR) produced by displacement from political processes to political security (UNDP) (UNDP, 1994; Cernea, 1997). This correspondence suggests that the two frameworks are not competing alternatives but complementary diagnostic instruments that can be used in combination to provide both a granular account of specific impoverishment mechanisms and a holistic assessment of displacement's overall impact on human security outcomes.

Table 1.3: *Theoretical Complementarity: IRR Risks and UNDP Human Security Dimensions.*

IRR Model Risks	Human Security Dimensions	<i>Analytical focus of the correspondence</i>
Landlessness & Joblessness	Economic & Food Security	<i>Loss of productive assets, income-generating capacity, and wage-based livelihoods</i>
Food Insecurity	Food Security	<i>Decreased physical and economic access to adequate nutrition</i>
Increased Morbidity & Mortality	Health Security	<i>Exposure to displacement-induced health risks and lack of medical access</i>
Homelessness	Personal Security	<i>Physical vulnerability and loss of the protective domestic environment</i>
Loss of Common Property	Environmental & Community Security	<i>Depletion of shared ecosystems and erosion of traditional safety nets</i>
Social Disarticulation	Community Security	<i>Fragmentation of kinship ties, social capital, and local networks</i>
Marginalisation	Political Security	<i>Exclusion from decision-making processes and loss of socio-political agency</i>

Source: *Author's elaboration based on Cernea (1997; 2000) and UNDP (1994).*

A further theoretical consideration concerns the relationship between human security and political agency. The human security literature, particularly in its policy-oriented manifestations, has sometimes been criticised for presenting displaced and marginalised populations primarily as objects of protection rather than as political actors with claims, strategies, and capacities for resistance. This depoliticising tendency is in tension with the political economy critique advanced by Oliver-Smith (2010) and others, which insists on

the structural sources of vulnerability and the role of power relations in producing and perpetuating displacement. A critical application of the human security framework must therefore attend not only to the dimensions of insecurity experienced by displaced populations but also to the political and institutional conditions that produce those insecurities and that constrain or enable the exercise of agency in response to them. In the comparative context of this thesis, this means examining what human security outcomes displacement produces, and through what mechanisms and under what governance conditions these consequences are generated.

1.6 Research Gaps and Contribution

The preceding review reveals that the literatures on climate-induced displacement, development-induced displacement, hydropolitics, and human security have largely developed in parallel rather than in sustained “conversation” with one another. Each has generated significant theoretical insights within its own domain, but the boundaries between them remain porous and underexplored. Climate migration scholarship has focused predominantly on causal attribution and the measurement of mobility, often at the expense of granular analysis of what displacement actually does to the human security of affected populations over time. DIDR literature has produced sophisticated frameworks for understanding impoverishment risks but has generally focused on formal resettlement processes in bilateral relationships between development authorities and communities, overlooking the geopolitical contexts that enable or constrain those processes and the multi-scalar character of hydraulic displacement. The hydropolitics literature captures the structural power dynamics of water governance with considerable analytical depth but has rarely integrated displacement and human security outcomes into its analysis in a systematic way. Human security scholarship, for its part, has remained predominantly normative and policy-oriented, engaging only selectively with the specific empirical literatures on displacement mechanisms.

Several specific gaps emerge from this review that the existing literature has not adequately addressed. First, the question of whether different forms of water-related displacement, specifically the distinction between climate-induced disaster displacement and development-induced hydraulic displacement, produce qualitatively different or

structurally similar patterns of human insecurity has not been systematically examined in a comparative analytical framework. The assumption implicit in much of the literature is that form matters: that development-induced displacement is characterised by the particular political economy of infrastructure development, while climate displacement is characterised by its environmental drivers and its status as a humanitarian emergency. Whether this distinction is borne out in the actual impoverishment outcomes experienced by displaced populations, or whether the mechanisms of vulnerability convergence across these categories, is an empirical question that comparative analysis is uniquely equipped to address.

Second, the geographic distribution of displacement scholarship is notably uneven. A substantial proportion of DIDR research concerns large infrastructure projects in South and Southeast Asia, but the integration of these findings with hydropolitical analysis of basin-level governance, and with human security frameworks, has been limited. Similarly, climate displacement scholarship focused on sub-Saharan Africa has grown considerably, but the theoretical implications of recurrent disaster displacement for human security frameworks calibrated primarily to slow-onset environmental change have not been fully developed. Cross-regional comparative analysis that moves between these geographic concentrations of scholarship can generate theoretical insights that region-specific studies cannot produce in isolation.

Third, the relationship between the governance context of displacement and the human security outcomes it produces has been undertheorised. It is intuitively plausible that displacement occurring in contexts characterised by strong legal frameworks, democratic accountability, and robust civil society will produce different outcomes from displacement occurring in contexts characterised by authoritarian governance, weak rule of law, and restricted civic space. However, the mechanisms through which governance context shapes impoverishment trajectories and the specific dimensions of human security most sensitive to governance variation remain insufficiently explored.

The comparison of Mozambique and Cambodia addresses these gaps through a Most Different Systems Design (MDSD) (Anckar, 2008; Przeworski & Teune, 1970) that holds the independent variable, water-related displacement, relatively constant across cases that differ significantly along other theoretically relevant dimensions. Mozambique presents

a case of recurrent disaster-driven climate displacement in a post-conflict, aid-dependent state characterised by high levels of structural vulnerability, limited adaptive capacity, and significant dependence on international humanitarian systems. The repeated experience of cyclone-induced displacement along its Indian Ocean coastline enables examination of how cumulative disaster exposure intersects with pre-existing poverty and governance weakness to shape human security outcomes over time. Cambodia presents a case of development-induced displacement in a politically authoritarian context characterised by rapid infrastructure development, significant Chinese investment in hydraulic projects, weak domestic legal protections for land and resettlement rights, and particular vulnerabilities among Indigenous and riverine communities dependent on the Mekong ecosystem for their livelihoods.

The methodological logic of Most Different Systems Design is to identify patterns that are common across maximally different cases, on the grounds that convergent findings across cases that differ in virtually every other relevant respect are more likely to reflect genuine causal mechanisms than findings from cases that share multiple background characteristics (Przeworski & Teune, 1970). If both cases, despite their radical differences in political context, regional geography, displacement mechanism, and governance architecture, produce convergent patterns of human security impoverishment across similar dimensions, this convergence constitutes *prima facie* evidence that water-related displacement generates structural vulnerabilities that are relatively invariant to contextual variation. Conversely, significant divergences in outcomes across the two cases can be attributed to the contextual variables that differ between them, including governance quality, external humanitarian support, legal frameworks for resettlement, and the political economy of the displacement-producing processes.

By employing human security as the evaluative framework and integrating the IRR model's diagnostic specificity with the broader analytical scope of the climate mobility literature and the structural insights of hydropolitical analysis, this thesis aims to produce comparative insights that neither case, examined in isolation, could generate. The contribution is therefore both empirical and theoretical: empirical in that it documents displacement-driven human security outcomes in two understudied contexts, and theoretical in that it uses that documentation to interrogate and refine the conceptual frameworks through which water-related displacement is understood in the existing

literature. The analysis that follows is consequently not a simple description of two displacement episodes but a theoretically grounded comparative inquiry into the relationship between water, displacement, and human security across different political and environmental contexts.

1.7 Research Question, Methodology, and Structure

The conceptual scaffolding developed in the preceding Sections defines the analytical horizon within which this thesis operates. The present Section translates that horizon into an operational research design, articulating the central research question and its sub-questions, specifying the methodological choices through which the empirical material is collected and interpreted, and outlining the architecture of the Chapters that follow.

Research Question and Sub-Questions

The thesis is organised around a single guiding question: how do different forms of water-related displacement (climate-induced and development-induced) affect human security in Mozambique and Cambodia, and what do these cases reveal about the Water-Migration-Security Nexus?

This question is unpacked through five analytically distinct sub-questions. First, what are the key environmental, infrastructural, and governance drivers of displacement in each context? Second, how do national and international institutions manage displacement and resettlement processes? Third, in what ways do affected communities experience and adapt to human insecurity and livelihood disruption? Fourth, what role do external actors (humanitarian organisations, development banks, and foreign investors) play in shaping displacement outcomes? Fifth, what policy lessons can be drawn from the comparison to improve resilience, protection, and human security outcomes? The first three sub-questions are primarily descriptive and case-internal; the fourth introduces the structural and geopolitical dimension that motivates the comparative design; and the fifth aggregates the comparative findings into normative implications.

Methodological Strategy

The research adopts a qualitative comparative case-study design grounded in the Most Different Systems Design (MDSD) logic introduced in Section 1.6. The analytical

strategy combines four complementary sources of evidence. The first is policy and document analysis: the systematic examination of legal frameworks, institutional reports, project documentation, and grey literature produced by national authorities (e.g., Mozambique's INGD; Cambodia's Ministry of Water Resources and Meteorology), international organisations (e.g., UNHCR, IOM, FAO, UNDP, IDMC), regional bodies (e.g., Mekong River Commission), and international financial institutions (e.g., World Bank, ADB, AfDB). This material provides the institutional backbone of the analysis and enables identification of governance gaps, formal commitments, and implementation deficits. The second source is academic and think-tank literature, which contextualises the empirical material within ongoing scholarly debates and provides comparative reference points beyond the two case studies.

The third component is the use of open spatial and quantitative datasets through Geographic Information System (GIS) techniques. Datasets such as IDMC's Global Report on Internal Displacement (GRID), NASA Earthdata, EM-DAT (Emergency Events Database), ACLED (Armed Conflict Location & Event Data), ReliefWeb, and Global Dam Watch (GDW) enable the spatial visualisation of displacement patterns, the overlay of climatic hazard exposure with socio-economic vulnerability indicators, and the geolocation of hydraulic infrastructure relative to affected communities. For the Mozambican case, hydrological and meteorological data from national authorities and international hydroclimate datasets support the reconstruction of disaster timelines and the spatial extent of displacement following major events such as Cyclones Idai (2019), Kenneth (2019), and Freddy (2023). For the Cambodian case, comparable spatial analysis is mainly applied to the Lower Sesan 2 dam reservoir area and to the downstream stretches of the Mekong-Tonle Sap system, drawing on hydrological data from the Mekong River Commission where available. GIS analysis is used here as a descriptive and contextual tool rather than as the basis for quantitative causal inference; its role is to make spatial patterns of vulnerability and exposure legible and to substantiate qualitative arguments with verifiable empirical referents.

The fourth component, central to the qualitative ambition of the project, is the conduct of semi-structured expert interviews. Given the resource constraints under which the research is being undertaken and the logistical complexity of organising fieldwork in the two countries, the interview programme is designed primarily as a remote exercise. The

intended interviewee pool comprises three categories of informants: (i) practitioners working for international organisations (IOs) and non-governmental organisations (NGOs) active in the two contexts; (ii) researchers and academics affiliated with universities and research institutes engaged with the two case studies; and (iii) former colleagues and contacts from the candidate's previous professional engagement in Mozambique with a NGO, who provide both substantive insight and access to networks of community-level informants. Interviews are conducted via secure video-conferencing platforms in English, French, or Portuguese depending on the informant's preference, are audio-recorded with informed consent, and are subsequently transcribed and thematically coded. The selection of informants follows a purposive logic oriented toward analytical relevance rather than statistical representativeness, and the resulting material is triangulated against documentary sources to mitigate the bias inherent in any single source.

The remote-interview design is not a substitute for fieldwork but a methodologically defensible alternative that enables systematic engagement with the analytical questions outlined above without overstating the empirical reach of the research. Should opportunities for short field visits emerge during the writing of the case-study Chapters, particularly through institutional partnerships or collaborative research arrangements, the research design has been deliberately structured to absorb such fieldwork as a complementary rather than constitutive component.

Two methodological caveats deserve explicit acknowledgement. First, remote interviewing has well-documented limitations relative to in-person fieldwork: it constrains the possibility of observing material conditions of displacement directly, limits access to community-level informants who lack stable internet connectivity, and may filter the testimony obtained through the perspectives of relatively well-resourced practitioners and researchers. These limitations are mitigated, but not eliminated, through triangulation with documentary sources and through the deliberate inclusion of community-level voices via mediated access through trusted intermediaries. Second, comparative case-study research grounded in MDSD logic generates analytical insight rather than statistical generalisation; the findings are intended to refine theoretical understanding of the Water-Migration-Security Nexus and to identify mechanisms that warrant further investigation, not to support claims of universal applicability.

Structure of the Thesis

The remainder of the thesis develops the argument across in three additional chapters and a conclusion. Chapter 2 reconstructs the Mozambican case, situating recurrent climate-induced displacement within the country's geographic and socio-political context, examining the dynamics of cyclone-driven and slow-onset displacement, assessing the institutional response of national authorities and international actors, and evaluating the implications of these dynamics for the seven dimensions of human security identified in the UNDP framework. Chapter 3 develops the Cambodian case along structurally analogous lines, but with a focus on development-induced displacement linked to hydropower expansion in the Mekong Basin, the role of bilateral Chinese finance in shaping resettlement governance, and the differential vulnerabilities of indigenous and downstream communities. Chapter 4 brings the two cases into systematic comparison, examining the predictability and temporality of displacement, the role of the state, the patterns of governance failure, and the mechanisms through which water-related displacement generates human insecurity across structurally different contexts. The Conclusion synthesises the comparative findings, articulates their implications for the Water-Migration-Security Nexus literature, and advances policy recommendations addressed to national governments, international organisations, and development financiers concerned with displacement protection, climate adaptation, and the responsible governance of large hydraulic infrastructure.

Chapter 2

Mozambique: Climate Displacement and Human Security

2.1 Geographic and Socio-Political Context

Mozambique's exposure to water-related hazards is rooted in a physical geography that combines an extraordinarily long coastline with a dense network of transboundary river systems. The country's shoreline stretches for more than 2,500 kilometres along the Indian Ocean, from the Rovuma River in the north, which forms the border with Tanzania, to Ponta de Ouro in the south (Power Shift Africa, 2026; CountryReports, n.d.). This coastline is fed by several major river basins, including the Zambezi, Limpopo, Save, Incomati, and Rovuma, most of which originate in neighbouring countries and descend toward the Indian Ocean through Mozambican territory before reaching the sea. The Zambezi, Africa's fourth longest river, bisects the country and has historically sustained fertile floodplains and productive coastal fisheries, while also channelling upstream rainfall and snowmelt-driven discharge toward densely settled lowland areas (Power Shift Africa, 2026).

Figure 2.1: Political map of Mozambique showing coastline, major river systems, provincial boundaries, provincial capitals, and administrative centres, for reference to the areas discussed throughout this Chapter.



Source: United Nations Geospatial (2020). Map No. 3706 Rev. 7. United Nations.

Average climatic conditions in Mozambique vary considerably along this north-south and coast-interior gradient. National average annual rainfall is approximately 1,000 mm,

ranging from over 1,800 mm near the Zambezi delta and along the central coast around Beira to less than 300 mm in the semi-arid lowlands of the southern interior (World Bank, 2022). Mean annual temperatures range between approximately 22.6°C in the highland province of Manica and 28.1°C in the low-lying Zambezi valley province of Tete, with a distinct rainy season from November to April and a dry season from May to October (World Bank, 2022; Weather and Climate, n.d.). This climatic gradient corresponds closely to the exposure gradient described above: the wettest, most cyclone-exposed provinces along the central coast contrast with the drier, drought-prone south discussed further in Section 2.2.4.

This hydrological configuration produces a structural paradox that recurs throughout the water-migration-security literature reviewed in Chapter 1: the same river systems and coastal plains that underpin agricultural livelihoods and urban settlement also constitute the country's principal channels of hazard exposure. More than 60 % of Mozambique's population lives in low-lying coastal areas or river valleys, including the southern provinces of Maputo and Gaza, the central provinces of Sofala and Zambezia, and the northern provinces of Nampula and Cabo Delgado (Power Shift Africa, 2026). These same zones host the country's major ports, agricultural hubs, and urban centres, meaning that exposure to flooding, cyclone landfall, and coastal erosion is not a peripheral risk affecting marginal populations but a condition of the country's core economic geography.

The relationship between anthropogenic climate change and cyclone activity in the South-West Indian Ocean basin is more nuanced than a straightforward increase in frequency. High-resolution regional climate modelling projects a decrease in the overall number of cyclones making landfall over southern Africa as global temperatures rise, with 2°C of warming identified as a critical threshold beyond which this downward trend levels off (Muthige et al., 2018). At the same time, a long historical record from the Mascarene Islands spanning the 17th century to 2007 indicates an increasing trend in landfalling cyclones since the mid-20th century that cannot be fully explained by natural climate variability alone (Kaniewski et al., 2022). The scientific consensus therefore points not to more frequent cyclones overall, but to fewer, more intense storms, a pattern consistent with the trajectory of Idai, Kenneth, and Freddy examined in Section 2.2, each of which registered among the highest wind speeds or longest durations on record for the basin.

Mozambique's location along the southwest Indian Ocean places it directly within the formation and landfall corridor of tropical cyclones moving westward toward the African mainland (Power Shift Africa, 2026). The central provinces, particularly Sofala and Zambezia, sit at a point of double exposure: they are simultaneously vulnerable to cyclone-driven storm surge along the coast and to riverine flooding generated by upstream rainfall in the Zambezi and Pungwe basins (FAO, 2016; IEA, 2025). The interaction between these two hazard pathways, coastal and fluvial, helps explain why single cyclone events in Mozambique tend to generate flooding that persists and spreads well beyond the immediate impact zone of the storm itself, a dynamic that recurred in each of the three cyclones examined in Section 2.2.

Beyond physical exposure, Mozambique's vulnerability to water-related displacement is structurally compounded by conditions of chronic poverty and institutional fragility. The country ranks among the poorest in the world, with poverty rates close to 75 % in 2020, concentrated disproportionately in rural areas in the north of the country (IEA, 2025). Such poverty translates directly into vulnerability in the sense developed in the Foresight (2011) framework discussed in Chapter 1: limited household assets reduce the capacity to invest in resilient housing, to maintain buffer stocks against crop failure, or to undertake pre-emptive migration, while simultaneously increasing exposure to the destructive effects of hazards once they occur. Mozambique's ranking near the bottom of the UNDP Human Development Index, combined with very high illiteracy rates and short life expectancy in earlier national assessments, reflects an accumulation of structural disadvantage that long pre-dates the current cycle of intensifying cyclones and droughts (UNDP, n.d.).

A second, more recent layer of fragility concerns the armed insurgency that has affected Cabo Delgado province since October 2017. The conflict's origins lie in a combination of long-standing economic marginalisation, religious radicalisation, and contested access to natural resource wealth (Stevano & Pérez Niño, 2021; African Arguments, 2023). Cabo Delgado has historically been treated as a periphery within Mozambique's own political economy, an area of high poverty and limited state presence despite hosting some of the country's most valuable natural assets, including Africa's largest natural gas reserves and globally significant ruby deposits (The New Humanitarian, 2024). The discovery of offshore gas in the early 2010s, and the subsequent development of multi-billion-dollar

liquefied natural gas (LNG) projects led by TotalEnergies and ExxonMobil on the Afungi peninsula near Palma, sharpened rather than resolved these tensions: large-scale extraction proceeded alongside continued exclusion of local Muslim Mwani and Makua communities from meaningful economic benefit (The New Humanitarian, 2024; Stevano & Pérez Niño, 2021).

What began in October 2017 as a small insurgent movement, locally referred to as Ahlu Sunna Wal Jamaa or “al-Shabaab” (unrelated to the Somali organisation of the same name), evolved by 2019 into an Islamic State-affiliated insurgency capable of seizing towns, including the port of Mocímboa da Praia, and by March 2021 of attacking Palma itself, forcing TotalEnergies to suspend its LNG project under force majeure (African Arguments, 2023). Field-based survey research conducted by the Institute for Security Studies (ISS) found that nearly half of respondents in Cabo Delgado attributed the escalation of the conflict directly to the discovery and poor governance of natural resources, ahead of factors such as the availability of illicit arms or elite greed (ISS Africa, 2022). This finding lends empirical support to a “*resource curse*” (Auty, 1993; Sachs & Warner, 2001) reading of the insurgency, in which extractive wealth intensifies, rather than alleviates, the very grievances of marginalisation from which the movement initially drew its recruits.

By the time of writing, the insurgency had killed several thousand people and displaced close to half of Cabo Delgado's roughly 2.3 million inhabitants at various points since 2017 (Arena, 2026; ISS Africa, 2022). The security response has involved a complex multilateral architecture, with Rwandan forces deployed bilaterally from mid-2021 and a separate mission under the Southern African Development Community (SADC) tasked with stabilising the wider province (African Arguments, 2023). This layered governance arrangement, combining national, bilateral, and regional security actors, is itself significant for the analysis developed later in this thesis, since the international management of conflict displacement in Cabo Delgado has followed an institutional logic markedly different from the disaster-response architecture built around INGD (Instituto Nacional de Gestão e Redução do Risco de Desastres) for cyclone and flood displacement (see Section 2.3).

Critically, conflict and climate hazard in Cabo Delgado are not separate, parallel sources of insecurity but operate as a compounding system. Cyclone Kenneth made landfall in Cabo Delgado in April 2019, only weeks after the conflict had already begun displacing rural populations, flattening villages and destroying livelihoods in a province whose population was simultaneously fleeing armed violence (ODI, 2022). More recently, cyclones Chido and Dikeledi struck the province's north in December 2024 and January 2025 respectively, adding further displacement on top of populations already displaced, in some cases repeatedly, by insurgent violence (UNHCR, 2025). This empirical overlap between climate-related and conflict-related displacement in a single province provides one of the clearest illustrations available anywhere of the conceptual claims advanced in Chapter 1 regarding the entanglement of environmental and security drivers of human mobility, and is examined in further analytical depth in Section 2.2 and 2.4.

2.2 Dynamics of Climate-Induced Displacement

2.2.1 Cyclone Idai (2019)

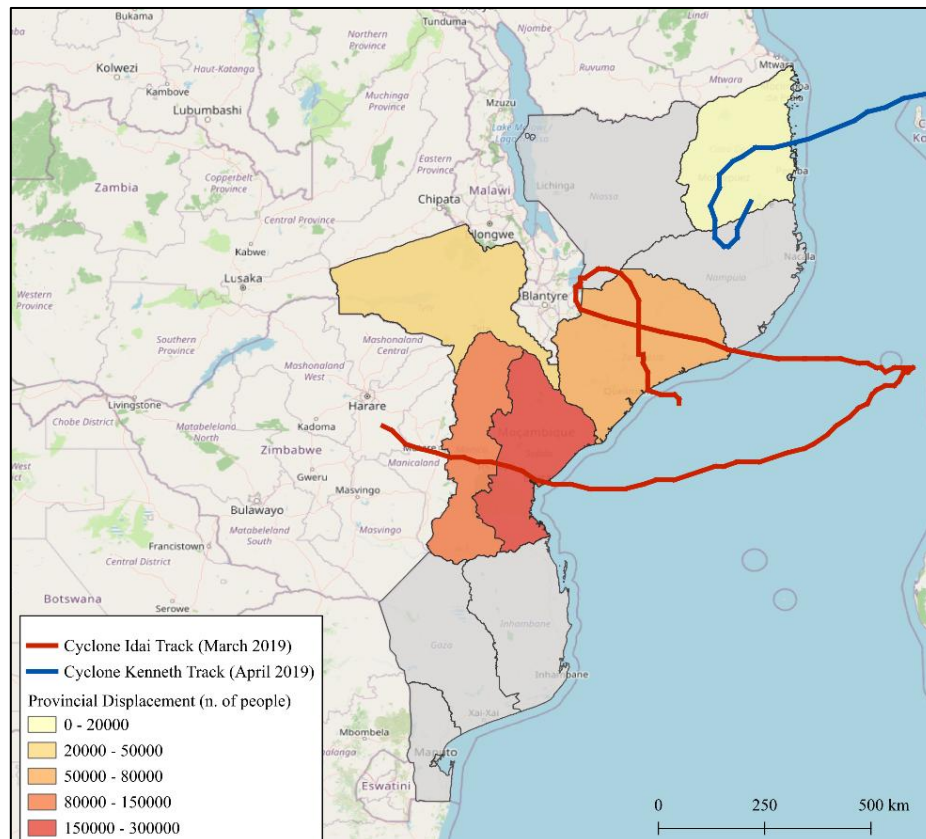
Tropical Cyclone Idai made landfall near the port city of Beira, in Sofala province, on the night of 14 March 2019, as a Category 4-equivalent storm with sustained winds of between 175 and 195 kilometres per hour (ReliefWeb, 2019; Mester et al., 2023). The storm brought rainfall exceeding 200 mm in 24 hours across the affected provinces, with satellite-derived estimates indicating localised totals in excess of 600 mm over central Mozambique (UNDP, 2019). An estimated 3,000 km² of land was flooded, and the cyclone resulted in over 600 confirmed deaths in Mozambique, with some sources suggesting the toll may exceed 1,000 once missing persons are accounted for (UNDP, 2019).

Beira, home to more than 500,000 people, sustained a storm surge of up to 4.4 metres, while torrential rainfall produced extensive inland flooding across Sofala, Manica, Zambezia, and Tete provinces (Mester et al., 2023). Idai has since been described as one of the deadliest tropical cyclones ever recorded in the South-West Indian Ocean basin, with a death toll exceeding 600 in Mozambique alone and more than 1.5 million people affected across the four provinces (UNDP, 2019; ReliefWeb, 2019).

The scale of displacement attributed to Idai varies depending on the data source and the methodology applied, a methodological tension that is itself analytically significant and is discussed further below. Early humanitarian assessments by the Government of Mozambique and OCHA (Office for the Coordination of Humanitarian Affairs) estimated that 400,000 people had been displaced by the end of April 2019, of whom approximately 161,000 were sheltering in 164 temporary accommodation centres across the affected provinces (UNDP, 2019; ReliefWeb, 2019). IDMC's later, validated estimate for the Global Internal Displacement Database (GIDD) places new displacement from Idai at approximately 478,000 individuals (Mester et al., 2023), while a separate IFRC-commissioned emergency appeal report recorded displacement among roughly 19,660 households, or 95,388 people, with 81 % of the displaced population concentrated in Sofala and Manica provinces alone (IFRC, 2022). Eight months after the disaster, nearly 92,500 people remained displaced across 71 resettlement sites in central and northern Mozambique, illustrating that displacement from rapid-onset hazards in Mozambique frequently extends well past the acute emergency phase into a protracted recovery period measured in months rather than weeks (ReliefWeb, 2019).

This divergence between displacement estimates is not a matter of incidental data noise but reflects a structural challenge already identified by Gemenne (2011) and discussed in Chapter 1: differing institutional methodologies (household-based surveys, shelter occupancy counts, satellite-derived exposure modelling) capture overlapping but non-identical populations, and produce figures that vary by a factor of four or five depending on the source consulted. A peer-reviewed attribution study published in *Natural Hazards and Earth System Sciences* (NHESS) used a combination of a two-dimensional hydrodynamical storm-surge model and flood-depth estimation from remote sensing imagery to estimate that anthropogenic climate change increased the population exposed to flooding from Idai by between 12,600 and 14,900 people, corresponding to roughly 2.7 to 3.2 % of total displacement attributable to the event (Mester et al., 2023). This is among the first studies anywhere to quantify, rather than merely assert, the marginal contribution of climate change to a specific displacement event, and it provides an empirically grounded counterpoint to the kind of unattributed mega-figures that Gemenne (2011) cautioned against.

Figure 2.2: IBTrACS (International Best Track Archive for Climate Stewardship) tracks of Cyclones Idai (March 2019) and Kenneth (April 2019) overlaid on Mozambique's provincial administrative boundaries, with combined displacement figures by province (IDMC, 2019). Displacement in Sofala, Manica, Zambézia, and Tete is attributable to Idai; displacement in Cabo Delgado is attributable to Kenneth.



Source: Author's elaboration in QGIS (data from NOAA IBTrACS v04r01 and IDMC Global Internal Displacement Database).

The secondary effects of Idai illustrate how a rapid-onset hazard interacts with weak baseline service infrastructure to generate compounding insecurity. An estimated 715,000 hectares of cultivated land were flooded (UNDP, 2019), directly undermining food security for already displaced populations and for host communities receiving them. The destruction of water and sanitation infrastructure produced a major public health crisis: more than 6,700 confirmed cholera cases were registered in the aftermath of the cyclone, concentrated heavily in Beira city, alongside thousands of cases of acute watery diarrhoea (IFRC, 2022). Gender-differentiated impacts were also pronounced. Female-headed

households faced a disproportionate recovery burden, combining loss of income-generating assets with continued caregiving responsibilities, in a country where pre-disaster indicators already showed high rates of female illiteracy, early marriage, and incomplete primary education for girls (IFRC, 2022). The cyclone is also reported to have aggravated risks of gender-based violence linked to the exploitation of acute poverty and increased exposure within displacement sites (IFRC, 2022), a pattern that recurs, in different form, in the discussion of drought-related displacement below.

2.2.2 Cyclone Kenneth (2019)

Six weeks after Idai, on 25 April 2019, Tropical Cyclone Kenneth made landfall between the districts of Macomia and Mocímboa da Praia in Cabo Delgado province, with sustained winds of 215-231 km/h, making it the strongest tropical cyclone ever recorded to make landfall on the African continent (UNDP, 2019; Mawren et al., 2020). Its occurrence within the same cyclone season as Idai marked, according to the Government of Mozambique, the first time in the country's recorded history that two severe storms had struck in a single season (UNICEF, 2019; IFRC, 2022). The cyclone produced extreme localised rainfall exceeding 600 mm near Pemba, including 255 mm within a single 24-hour period, and resulted in 45 confirmed deaths in Mozambique and an estimated USD 100 million in damage (Mawren et al., 2020).

Kenneth's landfall coincided with the end of the rainy season, when river levels in Cabo Delgado and neighbouring Nampula province were already elevated, substantially increasing the risk and extent of subsequent river flooding (UNDP, 2019). Approximately 200,000 people were affected in northern Mozambique, and early displacement estimates from IDMC put new displacement at approximately 18,000 people (UNDP, 2019; IFRC, 2022), though this figure, drawn from rapid early assessments, is considerably lower than subsequent humanitarian caseload figures and should be read as a preliminary lower bound rather than a final estimate. Nearly 1.3 million children across the areas affected by both Idai and Kenneth combined were assessed to be in urgent need of humanitarian assistance spanning healthcare, nutrition, protection, education, and water and sanitation services (UNICEF, 2019).

Kenneth's significance for this thesis extends beyond its meteorological severity. Its landfall directly in Cabo Delgado, less than two years after the start of the armed

insurgency described in Section 2.1, constitutes the first clear instance in the period under review of a rapid-onset climate hazard striking a province already experiencing conflict-induced displacement (ODI, 2022). Communities that had already been displaced from their places of origin by insurgent violence were among those whose temporary shelters and host communities were further disrupted by Kenneth, a layering of vulnerabilities that humanitarian actors operating in the province have since identified as a recurring and intensifying pattern (ODI, 2022; Refugees International, 2024).

2.2.3 Tropical Storm Freddy (2023)

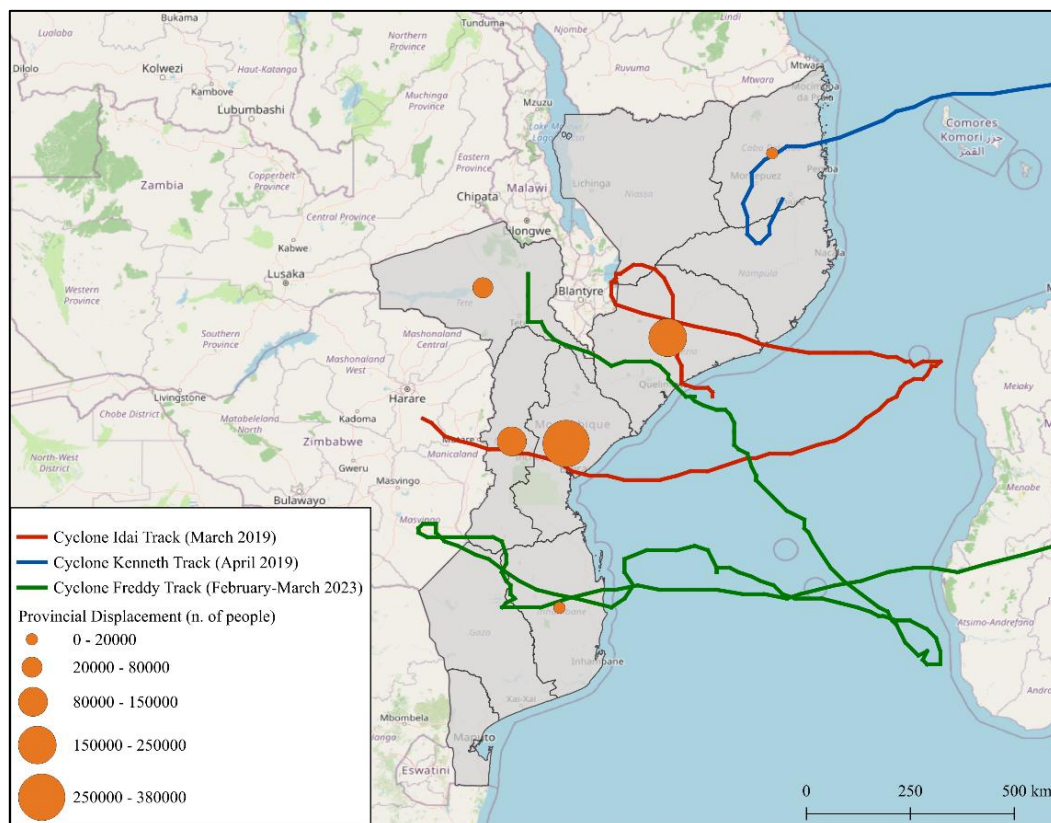
Tropical Storm Freddy was the longest-lasting tropical cyclone ever recorded, and it struck Mozambique twice: first as it crossed from Madagascar in late February 2023, and again, after re-strengthening over the Mozambique Channel, in mid-March 2023 (UNHCR, 2025). Freddy's second Mozambican landfall brought maximum sustained winds of 148 km/h with gusts up to 213 km/h, and rainfall exceeding 600 mm in the worst-affected areas, with some stations recording over 1,000 mm across a four-day period, among the heaviest rainfall totals ever recorded in the region (OCHA, 2023; UNDRR, 2024b). Combining both landfalls, the storm is associated with over 180 confirmed deaths in Mozambique (WMO, 2024).

Freddy's two landfalls together affected eight provinces, an exceptionally wide geographic footprint compared with the more spatially concentrated impacts of Idai and Kenneth. Mozambique's INGD estimated that the first and second landfalls combined affected 1,187,265 individuals across Inhambane, Gaza, Zambezia, Sofala, Tete, Niassa, and Manica provinces, while the second landfall alone, concentrated in Zambezia, Sofala, and Tete, directly affected 886,487 people (IOM DTM, n.d.). UNHCR's global estimate places total displacement attributable to Freddy at 184,000 people, with 1.1 million people assessed to be in need of humanitarian assistance (UNHCR, 2025).

IOM's Displacement Tracking Matrix (DTM) mobility tracking assessments, conducted at district and locality level through key-informant interviews and group discussions, recorded weekly population movements throughout the Freddy response, providing a granular, site-level complement to the aggregate INGD figures (IOM DTM, n.d.). This combination of national rapid assessment figures with IOM's more disaggregated mobility tracking data offers the most complete picture available of any of the three

cyclone events and constitutes the primary dataset for the provincial-level displacement mapping exercise developed below.

Figure 2.3: *IBTrACS tracks of Cyclones Idai (March 2019), Kenneth (April 2019), and Freddy (February-March 2023) overlaid on Mozambique's provincial administrative boundaries. Proportional circles indicate combined displacement figures by province across all three events (IDMC, 2019, 2023). Circle size is proportional to total number of internally displaced persons: Sofala (375,000), Zambézia (245,000), and Manica (143,000) register the highest cumulative displacement. Freddy's double landfall trajectory reflects its status as the longest-lasting tropical cyclone on record.*



Source: *Author's elaboration in QGIS (data from NOAA IBTrACS v04r01 and IDMC Global Internal Displacement Database).*

Freddy's relevance to the wider argument of this Chapter lies in its scale and its timing. Striking nearly four years after Idai and Kenneth, it demonstrates that the intensified

cyclone seasons of 2019 were not an anomalous cluster but part of a continuing trend of increasing frequency and severity, consistent with IPCC (Intergovernmental Panel on Climate Change) projections of intensifying tropical cyclone activity under continued warming (Mester et al., 2023). It also struck a province, Cabo Delgado notwithstanding given Freddy's more southerly and central track, that had by 2023 already absorbed years of insurgency-driven displacement elsewhere in the country, reinforcing the cumulative, rather than episodic, character of water-related insecurity in Mozambique.

2.2.4 Slow-Onset Processes: Drought, Coastal Erosion, and Seasonal Flooding

Alongside the rapid-onset cyclone events examined above, Mozambique experiences a parallel and analytically distinct pattern of slow-onset environmental stress, principally drought, coastal erosion, and seasonal riverine flooding, that produces displacement through cumulative livelihood erosion rather than a single triggering event.

Meteorological drought is conventionally identified using the Standardized Precipitation Index (SPI), with an SPI value of -1 or below marking the onset of drought conditions (McKee et al., 1993); in the Southern African context specifically, a rainfall total below 70% of the long-term normal sustained over two consecutive years has been used as a regional threshold for classifying severe drought (Bruwer, 1993). Applying these standards, southern Mozambique registered eight recorded drought events between 1980 and 2023, according to EM-DAT (see Figure 2.4 below), including the severe 2015-2016 episode linked to a strong El Niño event. Despite this recurrent exposure, Mozambique's aggregate water resources remain comparatively abundant at the national scale, with renewable freshwater availability estimated at approximately 7,317 m³ per capita per year, above the threshold conventionally used to define water stress (Winrock International, n.d.). This national abundance, however, obscures acute inequalities in access: only around 27% of the population lacked access to at least a basic drinking water source as of 2022 according to WHO/UNICEF Joint Monitoring Programme data, a considerable improvement on earlier decades but still leaving millions reliant on unimproved or unsafe sources, with rural and southern populations disproportionately affected (World Bank, 2023). The apparent paradox of high aggregate water availability alongside high rates of water insecurity is explained by the country's markedly uneven

distribution of rainfall and river discharge described in Section 2.1, and by chronic underinvestment in water supply infrastructure, particularly in the drought-prone south.

This distinction maps directly onto the conceptual framework developed in Chapter 1 (Section 1.2), where the literature on forced versus voluntary migration draws a sharp methodological line between rapid-onset disasters, which produce identifiable, datable displacement events, and slow-onset processes, whose displacement effects are diffuse, harder to attribute, and frequently mediated by household-level decisions about labour migration rather than emergency evacuation.

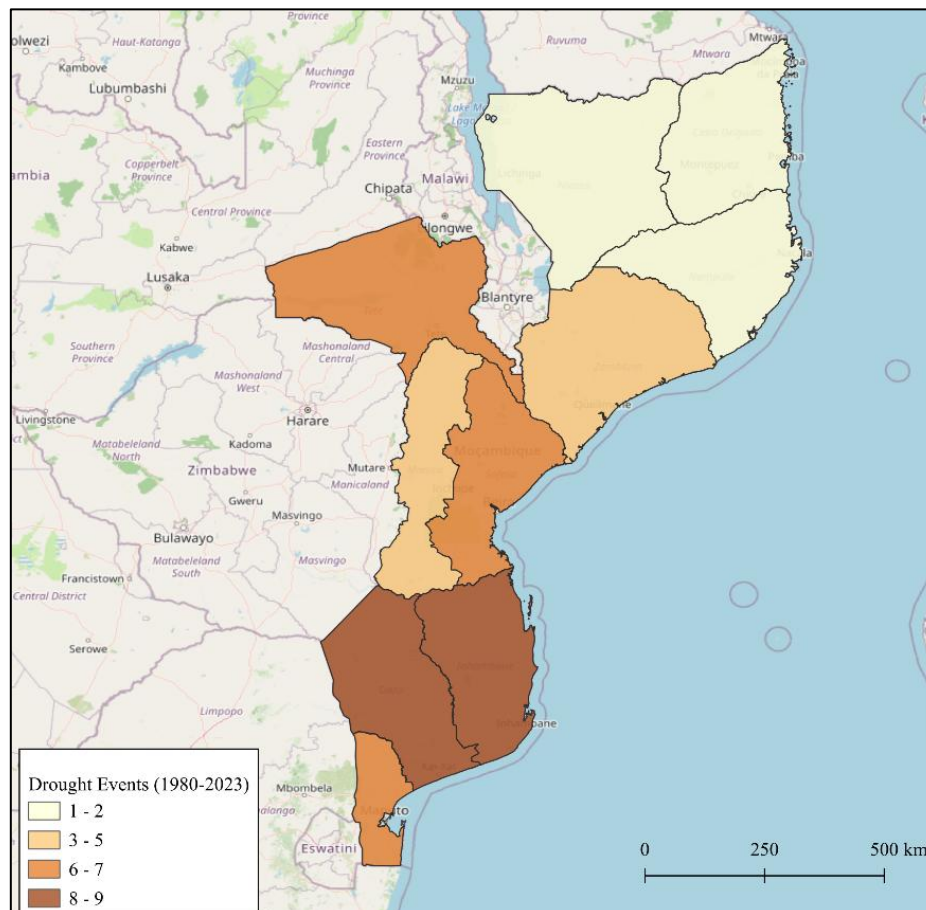
Southern Mozambique, and particularly the Limpopo River Valley in Gaza province, has experienced recurrent and severe drought, most notably during the 2002-2003 and 2015-2016 (El Niño-driven) episodes. Research on household coping strategies in this region found that smallholder farmers became increasingly locked into precarious, low-return informal trade and casual labour activities as drought intensified, a pattern of “*adverse incorporation*” into market relations that secured short-term survival at the cost of long-term resilience (Eriksen & Silva, 2009). A more recent peer-reviewed study of drought and male labour out-migration in rural Gaza province found that the relationship between drought exposure and out-migration is non-linear: while drought generally raises the probability of male labour migration, repeated droughts can also exhaust the pool of households able to send a migrant, since the most mobile household members may have already left following earlier drought episodes (Yoo & Agadjanian, 2024). This finding lends empirical support to the “*trapped populations*” thesis discussed in Chapter 1 (Foresight, 2011), in which the same lack of capital that constrains in-situ adaptation also constrains the capacity to migrate.

The 2016 drought in southern Mozambique, linked to a strong El Niño event, produced acute gendered effects that have been documented through rapid qualitative assessment. Women's daily water collection burden increased to between 10 and 12 hours, girls were increasingly withdrawn from other activities to assist with water collection, and male out-migration toward urban centres and South Africa intensified, leaving women and grandmothers with expanded household responsibility (CARE, 2016). The same assessment documented evidence of child marriage being used as a drought coping mechanism and noted an increase in marital conflict linked to resource scarcity (CARE,

2016). These dynamics echo, in a slow-onset register, the gender-differentiated vulnerabilities already noted in relation to Cyclone Idai, suggesting that gendered exposure to climate-related insecurity in Mozambique is not contingent on hazard type but is a structural feature of the wider socio-economic context described in Section 2.1.

Coastal erosion constitutes a third slow-onset pathway, concentrated particularly in Sofala and Zambezia provinces, both of which combine high physical exposure (low-lying coastal lowlands, extensive mangrove systems) with high population density (Cabral et al., 2017). Unlike drought, coastal erosion in Mozambique has not yet generated displacement at a scale comparable to cyclone events or drought-driven out-migration, but its long-term trajectory, compounded by sea-level rise and the loss of protective mangrove cover, positions it as a slow-accumulating risk factor whose interaction with the recurrent cyclone exposure described above merits continued monitoring rather than treatment as a separate, lesser hazard.

Figure 2.4: *Frequency of drought events by province in Mozambique (1980-2023), based on EM-DAT disaster records (n=14 events)². Colour graduation indicates number of recorded drought occurrences per province. Southern provinces (Gaza, Inhambane, Maputo) and central provinces (Sofala, Tete, Manica) register the highest exposure.*



Source: Author's elaboration in QGIS (data from EM-DAT International Disaster Database).

2.3 Governance and Humanitarian Response

2.3.1 National Actors: *INGD and the Disaster Management Framework*

Mozambique's principal disaster management institution, established in 1999 as the Instituto Nacional de Gestão de Calamidades (INGC) and subsequently restructured and renamed the Instituto Nacional de Gestão e Redução do Risco de Desastres (INGD),

² Pre-2000 data subject to reporting biases (EM-DAT).

operates under the Ministry of State Administration and is mandated to coordinate disaster prevention, mitigation, emergency response, and post-disaster reconstruction at national, provincial, district, and community levels (UN-SPIDER, n.d.; Devex, n.d.). Institutionally, INGD's operational architecture is organised around three regional Emergency Operation Centres, known as CENOE, located in Vilankulos (cyclones and droughts), Caia (floods), and Nacala (cyclones), alongside four district-level multi-use centres (CERUM) specialising in drought-prone arid and semi-arid zones (UN-SPIDER, n.d.). This regional distribution reflects a reasonably accurate institutional mapping of Mozambique's principal hazard geography as described in Section 2.1, though, as discussed below, the system's capacity to respond to compound and overlapping crises has been tested most severely in Cabo Delgado.

The legal and policy architecture underpinning INGD's mandate has evolved substantially since the institute's creation. Mozambique's National Disaster Risk Reduction Master Plan, approved in October 2017, constitutes the current guiding instrument for disaster risk management interventions nationally, complemented by Law No. 10/2020 and Decree No. 47/2018 on Basic Social Protection (UNDP, 2025; GFDRR, 2021). The country's National Adaptation Programme of Action (NAPA), developed under the UNFCCC (United Nations Framework Convention on Climate Change) process, places particular emphasis on strengthening early warning systems, alongside adaptation measures across the agricultural, fisheries, energy, environmental, and water sectors, with explicit attention to coastal zones and erosion control (UNDP, n.d.). A \$75 million World Bank-financed Disaster Risk Management and Resilience Program has further supported the operationalisation and capitalisation of a national disaster fund, strengthened early warning capacities, and increased the resilience of public buildings (GFDRR, 2021).

Notwithstanding this institutional density on paper, independent assessments commissioned through the SADC Disaster Risk Management Information and Monitoring System have identified persistent gaps in the timeliness of early warning information reaching district and community levels, a shortcoming that GFDRR-supported analytical work explicitly flagged in the wake of Cyclone Idai (GFDRR, 2021; SADC DRM IMS, n.d.). More recent capacity-building initiatives, including a 2025

UNDP-KOICA-INGD³ programme to train 175 provincial and district focal points across Cabo Delgado, Nampula, Niassa, Sofala, and Manica, explicitly integrate disaster risk reduction with conflict sensitivity and social cohesion training, reflecting growing institutional recognition that climate and conflict displacement in Mozambique can no longer be addressed through entirely separate response tracks (UNDP, 2025).

The resettlement process following Idai illustrates both the operational capacity and the participatory limitations of INGD's disaster response model. Within two to three months of the cyclone, INGD, in consultation with district authorities, established 66 resettlement sites, relocating an estimated 88,000 individuals from high-risk coastal and riverine areas to inland rural land, in several cases as far as 60 kilometres from Beira (Jacobs & Almeida, 2021). Field-based interviews conducted with resettled households and displaced residents who remained in high-risk areas of Beira found that INGD's proactivity in pre-identifying resettlement sites was not matched by adequate communication or participation: many resettlers reported receiving minimal information about site location or conditions prior to relocation, were not consulted on their preferred destination, and in some cases were unaware that resettlement was voluntary rather than mandatory (Jacobs & Almeida, 2021). This gap between institutional proactivity and community participation left several resettlement sites without adequate basic services, education, or livelihood opportunities at the time of relocation, prompting some resettled households to return informally to high-risk areas in Beira rather than remain in under-serviced rural sites, a pattern that illustrates the limits of relocation-based risk reduction when implemented without sustained investment in the destination areas (Jacobs & Almeida, 2021).

2.3.2 International Response: The Cluster System, IOM, and Coordination Architecture

International humanitarian engagement in Mozambique is structured through the United Nations cluster system, first formally adopted by the Humanitarian Country Team in response to the 2007 Zambezi floods and Cyclone Favio, modelled on Inter-Agency

³ The United Nations Development Programme (UNDP), in partnership with the Government of Mozambique, the National Institute for Disaster Management and Risk Reduction (INGD), and with funding from the Korea International Cooperation Agency (KOICA), has launched nationwide training courses in 2025 to strengthen disaster resilience, climate change adaptation, and social cohesion across Mozambique.

Standing Committee (IASC) contingency planning guidelines (PreventionWeb, 2008). Within this architecture, IOM (International Organization for Migration) has held a particularly central operational role since its accession to the UN system as a related agency in 2016: IOM leads the Camp Coordination and Camp Management (CCCM) Cluster nationally, leads the Shelter and Non-Food Items Cluster in Northern Mozambique, and co-leads the Solutions Working Group together with UNHCR and UNDP under the overall leadership of the UN Resident Coordinator (IOM CRP, 2025; IOM CRP, 2026).

The operational scale of this coordination architecture during the 2019 cyclone response was considerable. Following Idai and Kenneth, the Humanitarian Response Plan requested over USD 397 million to support 2 million of the 2.5 million people assessed to need life-saving assistance, of which IOM's own portion amounted to USD 33.7 million directed at shelter, health, CCCM, and protection programming for more than 877,000 cyclone-affected individuals (IOM, 2019). The CCCM approach was rolled out across 52 of 76 established resettlement sites, while FAO (Food and Agriculture Organization) and IOM jointly distributed seeds and agricultural tools to more than 50,000 individuals across nearly 50 resettlement sites established after Idai, explicitly designed to support household-level food security recovery on land allocated by the Government of Mozambique for displaced families (IOM, 2019; IOM, 2020).

IOM's Displacement Tracking Matrix (DTM) functions as the principal data infrastructure underpinning this coordination effort, providing continuously updated, site-level information on population movements and humanitarian needs across both disaster-affected and conflict-affected provinces (IOM CRP, 2020). The DTM's methodological approach, combining key-informant interviews with periodic Multi-Sectoral Location Assessments, generates the granular, geographically disaggregated data that, as noted in Section 2.2, is most directly usable for the GIS-based displacement mapping exercise central to this Chapter.

By 2025, IOM's Crisis Response Plan recorded 609,243 internally displaced persons and 701,462 returnees nationally, with 70 % of IDPs (Internally Displaced Persons) concentrated in Cabo Delgado province, while three further tropical cyclones (Chido, Dikeledi, and Jude) struck the north of the country between December 2024 and March

2025, affecting more than one million additional people and compounding an already protracted displacement crisis (IOM CRP, 2026). This figure illustrates starkly that, six years after Idai and Kenneth, Mozambique's humanitarian caseload has not contracted but has instead become structurally embedded, sustained jointly by recurrent climate hazards and a still-active insurgency.

2.3.3 Strains on the Coordination Model: Funding Volatility and the 2025 “Humanitarian Reset”

The institutional architecture described above has come under acute strain from external funding volatility, a development of direct relevance to the governance analysis developed in this thesis. In 2025, more than 60 (later expanding to 119) Mozambican civil society organisations wrote to senior UN officials expressing concern over the potential “de-prioritisation” of Mozambique under the IASC-led Humanitarian Reset process, warning that such a decision could entail the phasing out of the Humanitarian Coordinator role, the dissolution of the cluster coordination system itself, and the termination of the humanitarian appeal mechanism (The New Humanitarian, 2025). Humanitarian coordination specialists noted that Mozambique was being considered for “accelerated transition” toward development-oriented architecture alongside a small number of other crisis contexts, a shift from humanitarian to development modalities not unprecedented in itself, but unusual in being pursued simultaneously across several contexts under significant funding pressure (The New Humanitarian, 2025).

This episode is analytically significant for two reasons. First, it demonstrates the structural dependency of Mozambique's entire disaster and conflict displacement response architecture, examined throughout this Section, on a system of international humanitarian financing that is itself subject to abrupt policy shifts originating far outside the country and largely outside the control of either the Government of Mozambique or INGD. Second, the Mozambican civil society response, explicitly framing the lack of consultation as a violation of accountability and participation principles that the Reset process claims to uphold, illustrates a recurring tension in the governance of displacement examined more broadly in Chapter 4: the gap between the procedural commitments of international humanitarian governance and the substantive influence that affected states

and communities are able to exercise over decisions that directly shape their own protection.

2.3.4 Community-Based Adaptation and Resilience Mechanisms

Alongside the formal institutional architecture of INGD and the UN cluster system, community-level adaptation mechanisms constitute an important, if less visible, layer of Mozambique's response to recurrent water-related hazards. Evidence from drought-affected communities in Gaza and other southern provinces points to informal savings and credit groups, locally adapted water management practices, and diversification toward drought-tolerant crop varieties as recurring household and community-level coping strategies (CARE, 2016).

Community-based early warning systems constitute a second, increasingly documented layer of local adaptive capacity. Local disaster risk management committees, trained and equipped through partnerships between INGD, the Mozambique Red Cross, and international donors, function as the last-mile link between national meteorological forecasting and household-level protective action, translating technical cyclone warnings into locally understood risk communication and evacuation guidance (UNDRR, 2024a). The value of this local layer was explicitly demonstrated during Cyclone Freddy in 2023: in Chinde district, Zambezia province, a member of the local disaster committee reported that prior training allowed the community to interpret the warning correctly and evacuate in time, in marked contrast to the far less prepared response that had characterised Idai four years earlier (PreventionWeb, 2023). This trajectory, from a 2019 response reliant almost entirely on external actors to a 2023 response substantially strengthened by trained community-level structures, indicates a genuine, if partial, institutional learning process operating below the level of INGD's national architecture.

Where formal humanitarian access has been delayed or obstructed, informal community and civil society networks have also functioned as a first-response mechanism. Following Idai, humanitarian organisations reported that isolated communities in Zambezia province remained cut off from any formal assistance for over a month, reachable only by a combined journey of car, boat, and motorbike; local partner organisations were, in several documented cases, the first responders able to reach these communities and provide emergency water treatment, ahead of the arrival of larger international actors (Oxfam,

2019). This pattern illustrates that the formal cluster architecture examined in Section 2.3.2, however well-resourced, is structurally dependent on damaged transport infrastructure and therefore systematically slower to reach the most isolated rural populations than smaller, locally embedded organisations with pre-existing community relationships.

A third and more ambivalent form of community-level adaptation concerns the informal absorption of displaced populations by host communities outside the boundaries of formally designated resettlement sites, a pattern documented extensively in Cabo Delgado, where research by the Overseas Development Institute (ODI) found that the majority of internally displaced persons live informally alongside host community members rather than within managed camps (ODI, 2022). This informal absorption carries a double-edged significance for human security, examined further in Section 2.4. On one hand, it reflects forms of social solidarity and adaptive capacity that formal humanitarian planning frequently underestimates. On the other, it generates new sources of tension: ODI's assessments in Cabo Delgado documented host communities sliding further into poverty as a direct consequence of resource-sharing with displaced populations, increasing competition over land, water, and natural resources already under pressure from climate degradation, and contributing to friction between displaced and host populations (IOM CRP, 2024; ODI, 2022).

Taken together, these three mechanisms, early warning committees, informal first-responder networks, and host-community absorption, indicate that community-based adaptation in Mozambique is neither a marginal supplement to formal governance nor a fully autonomous alternative to it, but an increasingly load-bearing component of the overall disaster response system whose own capacity is being stretched by the scale, frequency, and protraction of the displacement events examined throughout this Chapter.

2.4 Implications for Human Security

The UNDP's 1994 Human Development Report identifies seven constitutive dimensions of human security: economic, food, health, environmental, personal, community, and political security (UNDP, 1994; Paris, 2001). This Section applies that framework systematically to the Mozambican case examined above, in order to demonstrate,

concretely, the analytical value of the human security lens introduced in Chapter 1 and to prepare the ground for the comparative analysis developed in Chapter 4.

2.4.1 Food, Economic, and Environmental Security

Food security constitutes the most consistently and severely affected dimension across every hazard examined in this chapter. Cyclone Idai alone damaged approximately 800,000 hectares of crops, while the combined impact of Idai and Kenneth left 1.65 million people severely food insecure, nearly double the food-insecure population recorded in 2018 (IOM, 2019). This impact operates through a clear causal chain: storm surge and flooding destroy standing crops and stored harvests, displaced households lose access to their own *machambas* (smallholder plots), and host communities absorbing displaced populations face additional strain on already limited food resources, a dynamic that FAO and IOM's joint seed-and-tools distribution programme was explicitly designed to address by enabling displaced households to resume small-scale cultivation on newly allocated land (IOM, 2019; IOM, 2020). In the slow-onset register, drought-driven food insecurity in Gaza and other southern provinces follows a different but equally direct pathway, in which repeated harvest failure forces households into the same kind of “*adverse incorporation*” into informal markets documented by Eriksen and Silva (2009), trading long-term resilience for short-term subsistence.

Economic security in Mozambique is best understood not as a dimension separable from food security but as its structural precondition. The destruction of housing, productive assets, and livelihoods documented across all three cyclone events compounds a baseline economic vulnerability already defined by poverty rates close to 75 % and an economy in which subsistence agriculture remains the dominant livelihood strategy for the majority of the rural population (IEA, 2025). The loss of housing alone accounts for a disproportionate share of multidimensional poverty impacts following Idai, since several of the standard multidimensional poverty indicators relate directly to housing condition, while the simultaneous loss of household goods and productive assets imposes a financial burden whose monetary value frequently exceeds the cost of rebuilding the home itself (UNDP, 2019).

Environmental security, in the UNDP framework's sense of protection from environmental pollution and depletion, manifests in Mozambique principally through the

compounding interaction between hazard exposure and ecological degradation. The progressive loss of protective mangrove cover along the Sofala and Zambezia coastlines both results from, and accelerates, the coastal erosion processes discussed in Section 2.2, reducing the natural buffering capacity that might otherwise mitigate future storm surge impacts (Cabral et al., 2017).

The areas most exposed to this ecological degradation share specific environmental characteristics that heighten their vulnerability. The low-lying coastal plains of Sofala and Zambezia sit at or near sea level, are intersected by extensive estuarine systems at the mouths of the Pungwe, Buzi, and Zambezi rivers, and historically supported continuous mangrove forest belts that buffered the coastline against storm surge and tidal erosion; satellite-based assessments indicate that Mozambique has lost a substantial share of this mangrove cover in recent decades to a combination of charcoal production, agricultural conversion, and unregulated coastal development (Cabral et al., 2017). This creates a feedback dynamic in which each successive cyclone season degrades the very ecological systems that provide partial protection against the next.

2.4.2 Health, Personal, and Community Security

Health security risks following rapid-onset hazards in Mozambique are dominated by waterborne disease outbreaks linked to the destruction of water and sanitation infrastructure. The cholera outbreak following Idai, with more than 6,700 confirmed cases concentrated in Beira, exemplifies a recurring pattern in which the immediate physical impact of a cyclone is compounded within days or weeks by a secondary public health emergency operating through contaminated water supplies (IFRC, 2022). Personal security, meanwhile, is most acutely compromised in Cabo Delgado, where the population faces a genuinely compound threat profile: physical violence from an active insurgency, including documented killings, abductions, and sexual violence against women and girls, layered directly on top of storm-related physical risk from recurrent cyclones (Arena, 2026; UNHCR, 2025).

Gender-based violence represents a cross-cutting personal security risk that recurs across both rapid-onset and slow-onset hazard types examined in this chapter, rather than being specific to either. Following Idai, gender-based violence risks were reported to intensify within displacement sites and through the exploitation of acute household poverty (IFRC,

2022). In the slow-onset drought context of southern Mozambique, women's extended water-collection burdens of up to 12 hours daily increased exposure to violence during these journeys, while child marriage emerged as a documented drought coping mechanism (CARE, 2016; UNSDG, 2022). This consistency across hazard type strongly suggests that gendered insecurity in Mozambique is a structural feature of the underlying socio-economic context rather than an incidental consequence of any single category of water-related shock, a conclusion directly relevant to the comparative analysis of gendered vulnerability that will be developed in Chapter 4.

Community security, defined in the human security literature as the survival of traditional cultures and the physical security of community groups (Paris, 2001), is most visibly threatened in Cabo Delgado, where mass displacement, in some cases repeated multiple times for the same households, has fractured community structures built around specific places, religious institutions, and economic networks. The phenomenon of informal absorption into host communities discussed in Section 2.3, while reflecting genuine solidarity, simultaneously represents a weakening of community cohesion in both displaced and hosting populations, as host community members are themselves driven further into poverty by resource-sharing under conditions of pre-existing scarcity (ODI, 2022).

2.4.3 Political Security and the Limits of Protection

Political security, understood as freedom from political oppression and the enjoyment of civil and political rights (UNDP, 1994), is the dimension most clearly differentiated between the climate-displacement and conflict-displacement contexts examined in this Chapter, and for that reason offers an important point of contrast for the comparative analysis in Chapter 4. Populations displaced by cyclones face limited direct political security risk from the hazard itself, although the protracted nature of displacement, evidenced by the nearly 92,500 people still displaced eight months after Idai, can itself generate forms of political marginalisation as resettled populations lose access to local representation and services tied to their place of origin (ReliefWeb, 2019).

In Cabo Delgado, by contrast, political security risk is direct and severe: civilians face violence not only from insurgent forces but, according to multiple sources, also from state security forces themselves, including reported killings of fishermen and other civilians

by Mozambican naval and ground forces operating in the conflict zone, alongside a broader pattern in which the counter-terrorism response has occasionally extended into the suppression of protest and civil society activity more broadly (ACLED, 2026; UNHCR, 2025). The involvement of foreign private security contractors, Rwandan Defence Forces, and a SADC regional mission further complicates accountability for protection failures, since responsibility for civilian harm is distributed across multiple national and international actors operating under different legal and command frameworks. This diffusion of accountability across humanitarian, military, and extractive-industry actors, the latter epitomised by the unresolved 2021 “*container massacre*” allegations against Mozambican forces operating in coordination with TotalEnergies' security perimeter, for which a criminal complaint was lodged in France in late 2025, illustrates a governance gap that recurs, in different form, in the Cambodian case examined in Chapter 3 (ACLED, 2026).

2.4.4 Synthesis: A Compound Human Security Crisis

Read together, the seven dimensions surveyed above do not point to a series of discrete sectoral problems but to a single, compound human security crisis in which climate hazard, chronic poverty, and armed conflict interact multiplicatively rather than additively, particularly in Cabo Delgado. A population already displaced by insurgent violence and absorbed informally into an already-poor host community is simultaneously more food insecure, more exposed to disease outbreak following the next cyclone, more vulnerable to gender-based violence, and less able to access whatever political or legal protection mechanisms exist, precisely because displacement has already stripped away the community networks, economic assets, and locational ties through which such protection would ordinarily be accessed. This compounding dynamic, empirically demonstrated through the Mozambican case in this Chapter, provides the principal evidentiary basis on which the comparative argument of Chapter 4 will be built, and is revisited directly in the discussion of the Water-Migration-Security Nexus in Section 4.4.

Chapter 3

Cambodia: Development Displacement and the Politics of Compensation

3.1 Context: Hydropower, the Mekong, and Chinese Investment

The Cambodian case study shifts the analytical register established in Chapter 2 from a climate-driven to a development-driven pathway of water-related displacement. Where Mozambique's exposure to hazard is rooted in the physical geography of its coastline and river basins, Cambodia's exposure to displacement is rooted in a deliberate development trajectory: the harnessing of the Mekong River system for hydropower generation within the framework of the Greater Mekong Subregion (GMS), an economic cooperation area established in 1992 under the auspices of the Asian Development Bank (ADB) to bind China's Yunnan and Guangxi provinces, Myanmar, Laos, Thailand, Cambodia and Vietnam into a single regional power market (Hensengerth, 2017). The ADB frames the GMS as a natural economic area bound together by the Mekong, but this framing obscures the extent to which hydropower development in the basin has been a source of contestation rather than integration, generating what Chapter 1 identified as a structurally ambivalent relationship between water as a developmental asset and water as a driver of vulnerability. As the following Sections show, the GMS's own promotional discourse of regional integration sits uneasily alongside a record of localised resistance that recurs across almost every major hydropower scheme in the sub-region, from Thailand's Pak Mun Dam to Laos's Nam Theun 2 and, as this Chapter documents in detail, Cambodia's Lower Sesan 2.

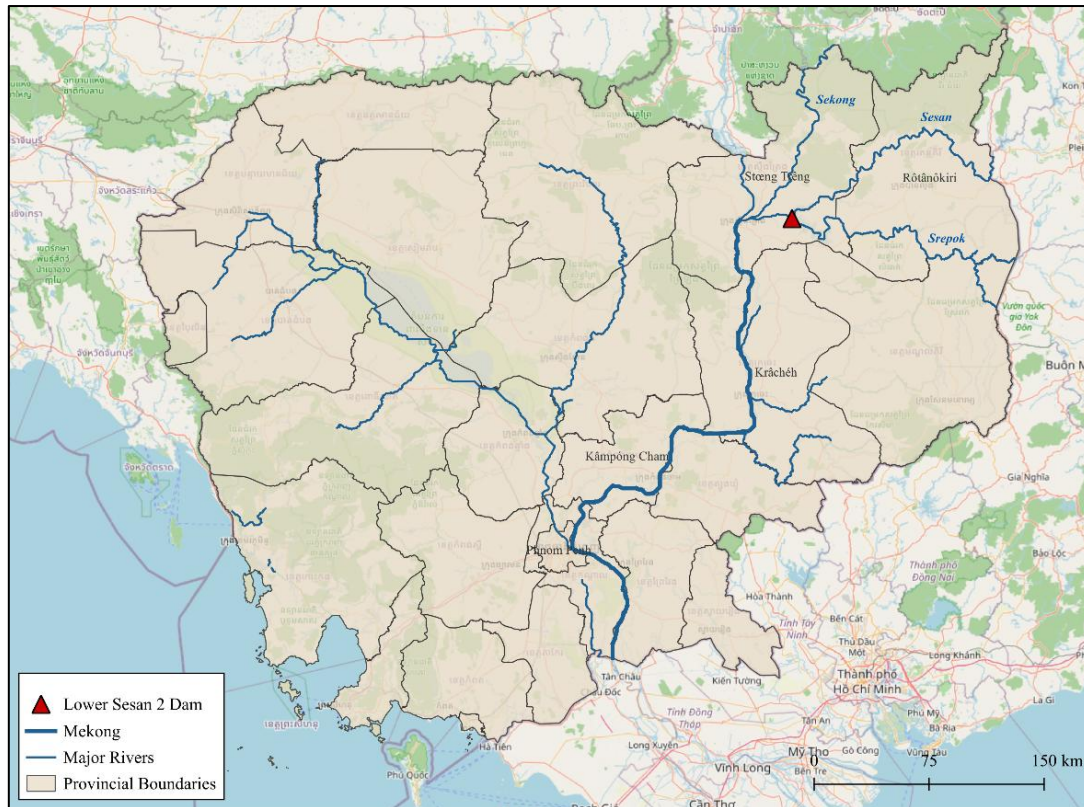
3.1.1 The Greater Mekong Subregion and the 3S River System

The immediate geographic focus of this Chapter is the 3S River System, formed by the confluence of the Sesan, Srepok and Sekong rivers in northeastern Cambodia before their combined waters join the Mekong mainstream near Stung Treng town. Although the 3S System comprises only around 10% of the Mekong watershed area, it contributes roughly

23% of total Mekong discharge, it accounts for a disproportionate 42% share of the basin's fish species and has historically supported the livelihoods of tens of thousands of riverine and indigenous households (Hensengerth, 2017). This asymmetry between hydrological weight and ecological value is analytically significant: it means that the 3S System has functioned as a preferred site for hydropower expansion precisely because its tributary status places it outside the mainstream-focused consultative procedures of the Mekong River Commission (MRC), discussed in Section 3.3, while its biodiversity value ensures that the human security consequences of damming it are disproportionately severe relative to the electricity generated. By the mid-2010s at least forty-two dams were at various stages of planning, construction or operation across the 3S System, largely without coordinated regional oversight (Hensengerth, 2017).

The 3S System's hydrology follows a pronounced monsoonal cycle, with wet-season flows (May to October) far exceeding dry-season minima. At Ban Kamphun, a gauging station near the Sesan-Srepok confluence close to the Lower Sesan 2 site itself, average monthly discharge ranges from a dry-season low of 292 cubic metres per second in April to a wet-season peak of 4,155 cubic metres per second in August, a fourteen-fold seasonal variation that underlies both the system's hydropower potential and its ecological sensitivity to flow regulation (Räsänen et al., 2013). The basin sustains nearly 3.5 million people across its Cambodian, Lao and Vietnamese portions, whose livelihoods depend substantially on the seasonal flood pulse this discharge regime produces (Trang et al., 2017).

Figure 3.1: *Administrative map of Cambodia showing the provinces referenced throughout this Chapter (Stung Treng, Ratanakiri, Kratie, Kampong Cham, and Phnom Penh Capital), the 3S River System (Sesan, Srepok and Sekong), and the location of the Lower Sesan 2 Dam at the Sesan-Srepok confluence (13°55'N, 106°26'E).*



Source: *Author's elaboration in QGIS. Administrative boundaries from GADM v4.1; river network from HydroRIVERS v1.0 (Asia region, filtered to major watercourses, Strahler stream order ≤ 4); dam location plotted from coordinates reported in Hensengerth (2017).*

3.1.2 The Yali Falls Precedent

This pattern of tributary development was not new when Lower Sesan 2 was approved. In 1996 Vietnam's state utility, Electricity of Vietnam (EVN), completed the Yali Falls Dam upstream on the Sesan River, inside Vietnamese territory. Cambodian communities downstream, none of whom, nor the Cambodian government itself, had been consulted during the project's planning, subsequently experienced unpredictable flooding, loss of rice production, livestock and fishing income, and damage to boats and fishing gear; in total, an estimated 55,000 villagers from sixteen ethnic communities across Ratanakiri

and Stung Treng provinces were affected, with no compensation or mitigation provided by EVN (Hensengerth, 2017). Yali Falls therefore did more than establish a hydrological precedent; it established a governance precedent, teaching riparian communities in the 3S basin that upstream infrastructure decisions taken outside Cambodia's borders, or by actors insulated from Cambodian law, could inflict severe and uncompensated harm. When Lower Sesan 2 was proposed a decade later, this history shaped local expectations from the outset and explains much of the deep-seated distrust documented in Sections 3.2 and 3.3.

3.1.3 Cambodia's Energy Strategy and the Build-Operate-Transfer Model

Cambodia's own national energy strategy has, since the early 2010s, prioritised hydropower and coal as the two pillars of an electrification programme intended to reduce reliance on costly imported diesel generation and cross-border electricity purchases, and to support the government's stated ambition of reaching upper-middle-income status by 2030 (Hensengerth, 2017). Because Cambodia lacked the domestic technical and financial capacity to build large dams independently, hydropower projects have almost universally been structured as build-operate-transfer (BOT) concessions, in which a private project company finances, constructs and operates the dam for a fixed concession period, typically several decades, before transferring ownership to the state. Under this model the project company, rather than a multilateral development bank or a government ministry, assumes direct responsibility for commissioning the environmental impact assessment (EIA) and for designing and implementing resettlement, a structural feature that proves central to the governance problems examined in Section 3.3. Unlike the export-oriented hydropower strategies of Laos, which channels the great majority of its dam output to Thailand and Vietnam, the Cambodian government insisted that a substantial share of Lower Sesan 2's output be retained for domestic use, supplying Stung Treng, Kampong Cham and Kratie provinces as well as Phnom Penh, while the state itself absorbed considerable financial risk by guaranteeing electricity purchase prices to the plant owner (Hensengerth, 2017).

This positioning of Cambodia within the GMS power grid reflects a wider regional division of labour engineered through ADB planning documents. The ADB's own 2010 update of the GMS Regional Master Plan identifies China's southern provinces, Thailand

and Vietnam as the region's principal power importers, together projected to account for 96% of GMS power demand by 2025, while Cambodia, Laos and Myanmar are cast primarily as energy exporters, their hydropower resources valued above all for their cost-effectiveness and lower carbon intensity relative to thermal generation (ADB, 2010, in Hensengerth, 2017). Within this schema, a project such as Lower Sesan 2, which retains a meaningful share of its output for Cambodian domestic consumption, represents a partial departure from the pure export model followed by many Laotian dams, yet it remains embedded in the same underlying logic: national electrification targets and regional power trade objectives are treated as sufficient justification for infrastructure whose most severe costs are borne locally, by populations whose own energy needs are incidental to the project's design rationale rather than central to it.

3.1.4 The Lower Sesan 2 Project: Timeline, Ownership and Financing

The Lower Sesan 2 Dam, located on the Sesan River approximately 1.5 kilometres upstream of its confluence with the Srepok in Sesan District, Stung Treng Province (13°55'N, 106°26'E), is the largest hydropower project built under this model to date and the object of this Chapter's empirical analysis. First envisaged in a 1999 ADB-funded feasibility study, which at the time judged the project financially marginal and environmentally risky, Lower Sesan 2 was revived a decade later as regional demand for electricity grew. The environmental impact assessment was completed by Key Consultants Cambodia in October 2008, and the project was formally approved by Cambodia's Council of Ministers in November 2012. Clearing of the reservoir area began in March 2013, the resettlement and compensation plan was published in January 2014, and construction began the following month. The reservoir gates were closed in September 2017 and the dam was officially inaugurated in December 2018, submerging an area eventually reported at about 75 square kilometres, with a total reservoir capacity of approximately 2.72 billion cubic metres (The People's Map of Global China, 2021; Hensengerth, 2017).

The ownership structure of the project illustrates the wider geopolitical dynamics introduced in Chapter 1. Lower Sesan 2 was originally conceived as a joint venture between EVN's international investment arm and Cambodia's Royal Group, but EVN progressively withdrew as a majority partner; in November 2012, Hydrolancang

International Energy, a subsidiary of the Chinese state-owned China Huaneng Group, signed an agreement with Royal Group for a substantial capital injection into the project. The resulting joint venture, Hydropower Lower Sesan 2 Company, is majority-owned by Royal Group and Hydrolancang, who together hold 90% of the equity, with EVN International Joint Stock Company retaining the remaining ten per cent (Hensengerth, 2017). Roughly thirty per cent of the USD 781 million project cost was met from the developers' own capital, with the remaining seventy per cent financed through loans from Chinese state banks, including the Industrial and Commercial Bank of China, the Bank of China, the China Development Bank and the Export-Import Bank of China. The concession runs for forty-five years, including a five-year construction period, and obliges the operating company to train Cambodian personnel so that domestic expertise can eventually replace foreign technical staff, though the same concession agreement leaves environmental mitigation and resettlement responsibilities in the hands of the same commercial operator rather than an independent authority.

With an installed capacity of 400 megawatts, Lower Sesan 2 exemplifies the pattern, already identified in Chapter 1 with reference to the Nile and Tigris-Euphrates basins, whereby externally financed hydraulic infrastructure reconfigures the relative power of state and non-state actors over a shared river system, in this case embedding Chinese state capital directly into the material fabric of Cambodia's water governance. Chinese companies are, in fact, responsible for the majority of Cambodia's large dams, hold substantial stakes in Myanmar's hydropower sector, and are contracted to build a significant share of the eleven dams proposed for the Mekong mainstream itself, including both dams planned on Cambodian territory at Sambor and Stung Treng (Hensengerth, 2017). The land cover change resulting from the reservoir's construction is examined in detail, with accompanying satellite imagery, in Section 3.4.4.

3.1.5 Competing Waterscapes: Regionalism, Identity and Water

The GMS's own promotional literature describes the Mekong Basin as a single natural region, drawn together by a shared river and, by implication, a shared developmental destiny. Some scholars on regionalism have long challenged this framing, arguing that regions are socially constructed rather than naturally given, and that river basins in particular are historically produced waterscapes reflecting specific and often contested

political and social relationships rather than a neutral hydrological unit (Sneddon & Fox, 2006; Molle et al., 2009). Applied to the 3S System, this critique means that the ADB's basin-scale framing of the GMS, and the associated presentation of hydropower as a self-evidently regional good, tends to erase the specific attachments that riverine and indigenous communities hold toward particular stretches of river, forest and floodplain, attachments explored in detail in Section 3.4. Water in the Lower Sesan 2 area thus carries at least two competing meanings simultaneously: for the ADB, national governments and Chinese financiers, the Sesan is a source of exportable and domestically consumable electricity; for the Bunong and Lao communities of Kbal Romeas and Srae Kor, the same river is inseparable from subsistence, ancestral memory and spiritual practice. This clash of competing waterscapes, rather than a straightforward technical dispute over compensation, is what gives the Lower Sesan 2 conflict its particular intensity and explains why resistance persisted well beyond the point at which financial negotiations might otherwise have settled the matter.

Section 3.2 now turns from this development context to the displacement it produced.

3.2 Patterns of Displacement and Resettlement

3.2.1 The Scale of Displacement: Applying the Impoverishment Risks and Reconstruction Model

The displacement generated by Lower Sesan 2 corresponds closely to the analytical categories developed in Cernea's Impoverishment Risks and Reconstruction (IRR) model discussed in Chapter 1, which identifies landlessness, joblessness, homelessness, marginalisation, food insecurity, increased morbidity and mortality, loss of access to common property and services, and social disarticulation as the principal risks facing populations displaced by development projects (Cernea, 1997). The Lower Sesan 2 case illustrates each of these risks with unusual clarity, precisely because the project's own EIA quantified the scale of displacement in advance: 4,785 villagers from 1,059 households across seven villages in four communes were designated for resettlement to six purpose-built resettlement sites (Hensengerth, 2017). This Section examines how each of the model's constituent risks materialised on the ground, before turning to the substantially larger population affected downstream. The reservoir area directly

submerged the villages of Kbal Romeas, home to the indigenous Bunong (Pu Nong) community, and Srae Kor, inhabited primarily by ethnic Lao households, together with smaller settlements including Khsach Thmey (mapped in Figure 3.3, Section 3.4.4).

3.2.2 Landlessness, Joblessness and Homelessness

Landlessness, the first and in Cernea's framework the most consequential of the impoverishment risks, was addressed on paper through the allocation of five hectares of farmland per resettled household, but the reconstruction of a land-based livelihood proved far more difficult than the compensation formula implied. Cernea's broader comparative research on resettlement schemes finds that allocated replacement land is frequently of markedly lower fertility than the land it replaces, and that resettlers are routinely expected to shift toward cash crops for markets that were never properly identified in project planning (Cernea, 1997); both patterns recur at Lower Sesan 2, where resettled households at sites such as New Kbal Romeas describe soil quality markedly inferior to the alluvial land they farmed along the Sesan and Srepok rivers.

Joblessness followed a trajectory that Cernea's model predicts occurs with a delay rather than immediately: construction-phase employment on the dam itself temporarily absorbed a share of the displaced workforce, but this employment was neither intended nor structured to be sustainable, and living standards among resettled households were expected, and in practice observed, to decline once the reservoir was impounded and construction jobs ended (Cernea, 1997). Homelessness, meanwhile, operated on two registers simultaneously. In the narrow material sense, the 797 houses the developer committed to constructing were, according to villager testimony collected after relocation, structurally inferior to the homes resettlers had built for themselves in the flooded villages, prompting some families to sell livestock in order to finance repairs or additions (HRW, 2021). In the broader cultural sense theorised by students of place attachment, homelessness also describes the loss of what Cernea, drawing on this literature, calls a group's cultural space: the alienation produced when a community's home is not merely a structure but the site of accumulated social and spiritual meaning (Cernea, 1997). This second register connects directly to the cultural and community security concerns examined in Section 3.4.

3.2.3 Consultation, Compensation and the Split at Kbal Romeas

Compensation and resettlement planning proved deeply contested from the outset, illustrating the marginalisation risk in the IRR model, whereby displaced groups lose not only assets but also relative social and political standing. An initial public consultation held in February 2008 recorded 85% disagreement with the project among attendees, while a second consultation held only two months later, organised by a different consulting firm, recorded 94% agreement, a reversal that independent researchers have treated as symptomatic of a consultation process designed to manufacture consent rather than to elicit it (Ham et al., 2013, in Hensengerth, 2017). Subsequent field research found that the large majority of local people in fact disagreed with the compensation and relocation terms, and that a significant share of affected villagers did not speak or understand Khmer well, a linguistic barrier that impeded meaningful engagement with both local and national authorities and with the dam's developers throughout the consultation process (Ham et al., 2013, in Hensengerth, 2017).

The Cambodian Centre for Human Rights (CCHR, 2015) documented that the compensation and resettlement offer ultimately produced a three-way split within the Kbal Romeas community: one group accepted resettlement outright, a second conditioned acceptance on a new EIA and prior receipt of the promised compensation, and a third rejected relocation entirely. As of mid-2017, a residual group of approximately fifty-two households from Old Kbal Romeas remained on customary land near the flooded village, having refused the official resettlement offer despite sustained pressure from police, military and local authorities to move; a smaller number, reported at around fifteen people, were still present within the reservoir area itself in the weeks before the gates were closed (Hensengerth, 2017).

The compensation package finalised by the Cambodian government in 2013 committed the project company to constructing 797 houses of specified dimensions, providing five hectares of farmland per resettled household, and building shared public infrastructure including roads, a commune office, a police station, a pagoda, a health centre, a kindergarten, a primary school, a lower secondary school, wells, public gardens, a sports complex and irrigation facilities, at a stated cost of nearly USD 39 million within a total resettlement and environmental management budget of USD 127 million out of the

project's overall USD 781 million cost (Grimsditch, 2012, in Hensengerth, 2017). In formal terms, this package is considerably more comprehensive than compensation regimes documented in comparable Mekong hydropower projects. At Laos's Nam Theun 2 Dam, for instance, resettled villagers were promised house gardens, irrigated rice plots, exclusive ten-year fishing rights on the new reservoir, and access to 10,000 hectares of community production forest; within a few years, however, the promised forest area had been reduced by at least 40% and was further threatened by illegal logging, the reservoir's initial water quality proved too poor to sustain a productive fishery, and independent monitors concluded that resettled villagers' living standards were likely to decline once the reservoir was flooded, notwithstanding an initial boost from project-related jobs (Molle et al., 2009). This comparison matters because Nam Theun 2, unlike Lower Sesan 2, was financed and supervised by the World Bank and the Asian Development Bank under internationally negotiated safeguard standards; that even a project with multilateral oversight struggled to deliver on its livelihood restoration commitments suggests that the accountability gap identified in Section 3.3 for Lower Sesan 2, which lacked any comparable external safeguard framework, is likely to produce outcomes at least as unfavourable, and probably worse, for the resettled population.

3.2.4 Post-Resettlement Conditions, Construction-Phase Impacts, and Health

Field reports collected after the Lower Sesan 2 reservoir filled in 2018 bear this out. Resettlement sites such as New Kbal Romeas, built along National Road 78 roughly two kilometres from the reservoir, are described by residents as hotter and more humid than the riverside villages they replaced, with lack of potable water identified as a persistent concern; at least one settlement's wells, supplied by the developer, tested with elevated levels of biological contamination. Because the new sites are set back from the river, resettlers lost the immediate access to water that had previously structured daily domestic and productive life, and access to fishing in the reservoir itself required passing through other resettlement villages, effectively restricting a resource to which communities believed they retained customary rights. Within roughly two years of relocation, some families reported selling part or all their allocated five hectares of farmland to cover immediate subsistence needs, a pattern Cernea's model identifies as an early warning sign of unmitigated landlessness and joblessness compounding into deeper poverty. Other households, unable to adapt to the new environment, abandoned the resettlement sites

altogether to seek work elsewhere, leaving a visible share of the newly built housing stock vacant and deteriorating, while tensions reportedly developed between households that had resettled and relatives who remained near the flooded villages, an instance of the social disarticulation that Cernea's model identifies as one of the least visible but most corrosive of the impoverishment risks, since it dissolves the kinship networks and mutual-aid arrangements on which rural livelihoods typically depend (Cernea, 1997).

The population directly resettled from the reservoir footprint is itself only the most visible layer of a broader construction-phase impact that Cernea's model, and much of the DIDR literature more generally, treats as analytically distinct from reservoir-based displacement proper. Clearing of the 30,000-hectare reservoir area, which began in March 2013, a full year before the resettlement and compensation plan was even published, entailed the loss of trees, gardens and standing crops for households who were never formally counted among the 1,059 resettled families, since their land fell within the construction footprint rather than the final reservoir boundary. Comparable Mekong projects illustrate how significant this construction-phase category can be: at Nam Theun 2 in Laos, more than ten thousand people were affected by the construction of transmission lines, access roads and project facilities alone, over and above the roughly 6,200 people formally resettled from the reservoir area itself, with households in districts near the power station and downstream channel identified as the most severely affected (Molle et al., 2009). No equivalent independent accounting of construction-phase impacts exists for Lower Sesan 2, a gap that itself illustrates the weaker documentation standards that follow from the absence of the multilateral oversight discussed in Section 3.3.

The IRR model's morbidity and mortality risk, while less extensively documented for Lower Sesan 2 than the livelihood risks discussed above, is well established in comparative resettlement research and offers a further basis for concern that field studies specific to Kbal Romeas and Srae Kor have yet to fully investigate. Cernea's comparative review of resettlement outcomes finds that reservoir impoundment is frequently accompanied by elevated morbidity from waterborne disease and by fatal accidents linked to unfamiliar water bodies: at Indonesia's Saguling Dam, more than a hundred people drowned in the reservoir's first fourteen months of operation due to inadequate warning and precautionary measures, while ten further drownings were recorded at the nearby Cirata reservoir within its first ten months (Cernea, 1997). Scudder's parallel body of

resettlement research, spanning more than fifty years of fieldwork across multiple continents, similarly finds that the psychological and physiological stress of involuntary relocation falls unevenly across a displaced population, with older residents and women disproportionately affected, and describes involuntary resettlement more broadly as a source of multidimensional stress that researchers themselves, however experienced, risk underestimating unless reminded repeatedly by the people who must actually live through it (Scudder, 2005). Applied to Lower Sesan 2, this literature suggests that the reported difficulty resettled households have had adapting to hotter, more humid conditions at sites such as New Kbal Romeas, and the reported abandonment of housing by families unable to cope with the new environment, are consistent with a broader and well-documented pattern of resettlement-induced stress rather than an isolated or anomalous local response.

Anthony Oliver-Smith's critique of development-induced displacement offers a useful diagnostic lens for why these outcomes recur across so many projects, including Lower Sesan 2, despite compensation frameworks that appear reasonably generous on paper. Oliver-Smith identifies five recurring fallacies that allow project sponsors to treat displacement as adequately addressed when it is not: the assumption that compensation payments discharge all moral and economic obligations to the displaced; the assumption that adherence to formal project plans and policies is sufficient regardless of outcomes; the tendency to attribute continued impoverishment to the displaced population's own failure to seize new opportunities; the assumption that responsibility ends with the completion of construction or of the resettlement action plan; and the diffusion of responsibility across designers, financiers and governments such that no single actor is held accountable (Oliver-Smith, 2009). Each fallacy finds a direct counterpart in the Lower Sesan 2 record: the USD 127 million compensation budget was repeatedly cited by officials as evidence that obligations to affected communities had been met, even as post-resettlement field reports documented infertile land and contaminated water; the commune chief of Phluk, responding to villager petitions in 2014, characterised compensation already paid as sufficient without addressing the specific grievance concerning ancestral burial grounds; and responsibility for the deteriorating conditions in resettlement sites has been diffused across the project company, the Ministry of Mines and Energy and provincial authorities, none of which has been held individually accountable for the shortfall between promised and delivered outcomes.

Table 3.1: *Cernea's (1997) Impoverishment Risks and Reconstruction (IRR) model applied to the Lower Sesan 2 case, summarising the evidence discussed in Sections 3.2.2 - 3.2.4.*

IRR Model Risks	<i>Evidence at Lower Sesan 2</i>
Landlessness	<i>Five hectares of replacement farmland per household, but of markedly lower fertility than the flooded alluvial land; some households sold part or all of their plots within two years of relocation.</i>
Joblessness	<i>Construction-phase employment temporarily absorbed part of the displaced workforce; no sustainable livelihood mechanism follows the end of construction.</i>
Homelessness	<i>Developer-built houses reported structurally inferior to self-built originals; deeper loss of “cultural space” through the severing of ties to spirit forests and ancestral sites.</i>
Marginalisation	<i>Consultation process reversed from majority disagreement to majority agreement within two months; Khmer-language barrier excluded many villagers from effective negotiation.</i>
Food Insecurity	<i>Projected 9.3% Mekong-wide fall in fish biomass; reservoir fisheries fail, in comparable cases, to replace the volume and value of wild migratory catch.</i>
Increased Morbidity and Mortality	<i>Biological contamination reported in developer-supplied wells; comparable reservoirs (Saguling, Cirata) recorded over a hundred drownings in their first year of operation.</i>
Loss of Access to Common Property	<i>Fishing in the reservoir requires passing through other resettlement villages; loss of forest products previously gathered around the flooded villages.</i>

IRR Model Risks	<i>Evidence at Lower Sesan 2</i>
Social Disarticulation	<i>Reported tensions between resettled households and holdout relatives; abandonment of resettlement housing by families unable to adapt, dissolving pre-existing mutual-aid networks.</i>

Source: Author's elaboration based on Cernea (1997) for the IRR model categories; empirical evidence from Hensengerth (2017), Ham et al. (2013), Cronin & Hamlin (2010), Baran et al. (2011), and Scudder (2005).

3.2.5 Downstream Secondary Displacement: The Collapse of Sesan Fisheries

Beyond the population directly resettled from the reservoir footprint, the dam produced a substantially larger population of secondarily displaced and livelihood-affected households downstream, illustrating a feature of DIDR that distinguishes it from the climate displacement examined in Chapter 2: the population formally counted as “displaced” in project documentation is only a fraction of the population whose livelihood security is materially degraded by the same infrastructure. Prior to construction, between thirty and fifty thousand people were estimated to depend on riverine resources along the Sesan River in Cambodia alone, sustained by forty-one migratory fish species that together accounted for around sixty per cent of the local catch (Baran et al., 2011, in Hensengerth, 2017). Hydrological and fisheries modelling commissioned after the dam's approval projected that Lower Sesan 2 alone would cause a 9.3% reduction in fish biomass across the entire Mekong Basin, a disproportionate impact relative to the dam's modest four-hundred-megawatt contribution to regional power supply, reflecting the exceptional biodiversity value of the 3S System relative to its share of total basin discharge (Cronin & Hamlin, 2010). A 2008 Mekong River Commission (MRC) technical panel concluded bluntly that no existing fish-passage technology could maintain migration for the large number and diversity of fish species found in the Mekong system, meaning that mainstream mitigation measures used elsewhere in the world, such as fish ladders, are simply not transferable to the Sesan (Cronin & Hamlin, 2010). Proponents of reservoir fisheries as a substitute for lost migratory catch point to cases such as Laos's Nam Ngum reservoir, where fish yields initially rose through the early 1980s; but

productivity at Nam Ngum has declined consistently since then, and increased fishing effort now sustains overall catch volumes only by targeting smaller, less valuable species, while the larger migratory fish that previously dominated the catch have all but disappeared (Cronin & Hamlin, 2010). This precedent suggests that reservoir fisheries at Lower Sesan 2 are unlikely to replace, in either volume or nutritional and economic value, the wild-caught migratory fisheries the dam has displaced.

This project-specific finding sits within a much larger cumulative threshold established by the MRC's own basin-wide assessment, which projected that the combined effect of all planned hydropower development across the Lower Mekong Basin would reduce total fishery biomass by 35 to 40% by 2020 and by 40 to 80% by 2040 relative to a no-dam baseline (MRC, 2018). Lower Sesan 2's projected 9.3% contribution to this basin-wide decline is therefore not an isolated impact but one increment within a trajectory the basin's own transboundary institution has itself identified as carrying a serious risk of acute food insecurity for fishing-dependent communities in Cambodia and Laos.

3.3 Governance, Aid, and International Oversight

3.3.1 The Accountability Gap: BOT Financing versus Multilateral Safeguards

The governance architecture surrounding Lower Sesan 2 differs in a structurally important way from the multilateral safeguard frameworks that, however imperfectly, governed earlier Mekong hydropower projects. Laos's Nam Theun 2, discussed in Section 3.2 for its comparably ambitious but ultimately unmet livelihood restoration commitments, received financing and oversight from the World Bank and the Asian Development Bank, whose boards approved loans and guarantees worth a combined USD 377 million in 2005 after extensive negotiation over environmental and social safeguards (Molle et al., 2009). This multilateral involvement created, at minimum, a formal channel for independent monitoring: an international Panel of Experts issued periodic public reports on the project's compliance with its own resettlement and livelihood commitments, and these reports, while frequently critical, at least generated a documented record against which the developer's claims could be tested. Because Lower Sesan 2 was instead financed through Chinese state banks and equity from a Cambodian-Chinese joint venture, it fell entirely outside the safeguard policies of the World Bank and the ADB,

and no comparable independent panel was ever established. Under Cambodia's BOT framework, the project company itself was responsible for commissioning the 2008 environmental impact assessment (EIA) and for designing the resettlement and compensation plan later approved by the Council of Ministers, collapsing the distinction between project proponent and safeguard authority that multilateral frameworks are designed, however imperfectly, to preserve.

The absence of multilateral safeguards at Lower Sesan 2 is particularly striking set against the standards articulated by the World Commission on Dams (WCD), whose 2000 report *Dams and Development*, produced with the participation of resettlement specialists including Thayer Scudder, remains the most authoritative independent assessment of large dam impacts worldwide (WCD, 2000). Reflecting on the cumulative weight of decades of resettlement research, Scudder concluded that the evidence that the construction of large dams has impoverished the majority of those resettled is overwhelming, and that global estimates of physical displacement caused by dam construction, ranging from forty to eighty million people, likely understate the true figure once construction-phase and downstream secondary displacement are properly counted (Scudder, 2005). The WCD's recommended framework called for participatory options assessment prior to project approval, free and informed consent from affected indigenous peoples, and negotiated compensation packages agreed before construction begins rather than imposed afterward. None of these elements can be said to have been substantially met in the Lower Sesan 2 case: options assessment was confined to a single, contested EIA; the resettlement and compensation plan was published only after construction had already begun; and, as documented in Section 3.2, consent was neither freely given by the affected Bunong and Lao communities nor treated by the Cambodian government as a precondition for proceeding.

3.3.2 The Mekong River Commission and the Tributary Loophole

The Mekong River Commission (MRC), the principal transboundary institution established by the 1995 Mekong Agreement between Cambodia, Laos, Thailand and Vietnam, played no formal role in the approval of Lower Sesan 2. The MRC's Procedures for Notification, Prior Consultation and Agreement apply specifically to projects proposed on the Mekong mainstream; Lower Sesan 2, located on a tributary, fell entirely

within Cambodia's national jurisdiction and required no notification to, still less agreement from, the other basin states (Dore & Lazarus, 2009). This jurisdictional gap reflects a structural weakness built into the 1995 Agreement itself, which was deliberately weakened during negotiation, largely to accommodate the preferences of Thailand and other member states, to preserve national sovereignty over tributary development and lacks the legal force to compel compliance with its own procedures even on the mainstream (Molle et al., 2009). The consequence, as Sneddon and Fox observe, is that successful inter-state “cooperation” through the MRC can coexist with, and even mask, significant ecological degradation and resource loss for the local populations who depend on the basin's tributaries, since the Commission's mandate was never designed to reach the cumulative impact of dozens of individually approved tributary projects (Sneddon & Fox, 2006, in Molle et al., 2009).

This institutional weakness is compounded by the MRC's position relative to China. China, together with Myanmar, has never joined the Commission as a full member, and has historically declined to share substantive information about its own cascade of mainstream dams in Yunnan Province beyond limited flood-season water-level data from two monitoring stations (Cronin & Hamlin, 2010). Even among the four member states, the MRC's independence has been repeatedly questioned: its secretariat depends heavily on donor funding, its leadership is drawn on a rotating basis from national governments with direct interests in hydropower expansion, and observers have warned that a weak or politically constrained Secretary-General could further erode the Commission's already limited capacity to act as an independent basin-wide authority (Cronin & Hamlin, 2010). The MRC's absence from the Lower Sesan 2 approval process, formally correct under the terms of the 1995 Agreement, is therefore also illustrative of a deeper governance deficit: the institution nominally responsible for the sustainable management of the Mekong Basin has neither the mandate nor, in practice, the political independence to address the cumulative hydrological transformation of a sub-basin as ecologically significant as the 3S System. This illustrates, in concrete institutional terms, the hydro-hegemony dynamics theorised by Zeitoun and Warner (2006) and discussed in Chapter 1: authority over the 3S System's transformation rests overwhelmingly with national governments and their financing partners rather than with any basin-wide governance body, a pattern that recalls, on a smaller scale, the asymmetries documented for the Nile and the Tigris-Euphrates.

3.3.3 A Contested Environmental Impact Assessment

Within Cambodia's own regulatory process, the credibility of the environmental impact assessment (EIA) itself was repeatedly called into question. As noted in Section 3.2.3, the reversal between the two consecutive public consultations held in early 2008, one recording overwhelming disagreement and the other, held only two months later by a different consulting firm, recording overwhelming agreement, has never been satisfactorily explained, and independent field research conducted around the same period found continued local opposition to the compensation and relocation terms on offer, directly contradicting the impression created by the second, more favourable consultation result (Hensengerth, 2017). A third meeting, convened jointly in Stung Treng and attended by community representatives, NGOs, local government, private-sector actors and officials from the Ministry of Environment and the then Ministry of Industry, Mines and Energy, did little to resolve this discrepancy. In 2017, in response to sustained criticism, the Cambodian government established a Committee for Solving the Impacts of the Lower Sesan 2 Dam. Reports subsequently emerged that the project had in fact been redesigned mid-construction, including a reduction in dam height and the installation of radial gates intended to improve sediment passage. These design changes were never subjected to a new, publicly disclosed environmental impact assessment, despite repeated calls from international civil society organisations for one (Hensengerth, 2017).

3.3.4 Civil Society Resistance and State Response

In the near-total absence of effective multilateral oversight, accountability pressure on the project came almost entirely from civil society. Baird's field research on the political dynamics surrounding the dam found that international and national NGOs, rather than acting as neutral facilitators between villagers and the state, frequently became embedded within local political culture in ways that shaped which grievances were amplified and which were not, complicating any straightforward narrative of external civil society organisations simply representing villager interests against the state (Baird, 2016).

The Sesan, Srepok and Sekong Rivers Protection Network, together with international organisations including International Rivers and the Cambodian Centre for Human Rights (CCHR), documented consultation failures, compensation disputes and instances of

intimidation directed at villagers who refused resettlement offers. Reported tactics used to induce relocation included the closure of schools and health centres in the villages still occupied by holdout households, without the provision of replacement services in situ, and the relocation of village and commune administrative functions to the resettlement sites, a strategy one NGO director interviewed after the reservoir filled characterised as deliberately “*cutting off social connections*” to compel movement rather than relying on force alone (Hensengerth, 2017). Villagers themselves also reported more direct forms of pressure, including police and military presence around the households that remained near Old Kbal Romeas.

Resistance took cultural and spiritual as well as political forms. In March 2015, villagers from the Lao and Bunong communities performed a ceremony invoking the river's guardian spirit, Neakta Kraham Kor, asking it to protect them and to curse the officials and investors associated with the dam; the villagers subsequently constructed effigies representing the Minister of Mines and Energy, the company owner, and officials from Hydrolancang and the local authorities, and ritually “killed” them by burning the effigies, a form of symbolic resistance that provincial authorities publicly condemned as a violation of the investor's rights (Hensengerth, 2017). The dispute also had measurable electoral consequences: in the 2012 commune council elections, Srae Kor Commune, previously controlled by the ruling Cambodian People's Party, returned a majority for the opposition Sam Rainsy Party, a shift widely attributed to local dissatisfaction with the way national and local party structures had promoted the dam project over community objections (Hensengerth, 2017).

3.3.5 International Standards and Benefit-Sharing Failures

Measured against the specific consultation standard set out in ILO Convention No. 169, the Lower Sesan 2 process falls short in ways that go beyond the general question of consent addressed in Section 3.4. Article 6 of the Convention requires that consultations with indigenous and tribal peoples be undertaken in good faith and in a form appropriate to the circumstances, with the explicit objective of achieving agreement or consent, and the ILO's own supervisory bodies have clarified that a one-way information session, in which affected communities are informed of a decision without any real opportunity to influence it, does not satisfy this requirement (ILO, 1989, Article 6; ILO, n.d.). The

consultation reversal discussed in Section 3.2.3 is difficult to reconcile with a good-faith process aimed at achieving genuine agreement; if anything, it suggests a search for a consultation outcome that could be used to justify a decision already effectively taken. Article 7 of the same Convention further requires that governments ensure impact studies assessing the social, spiritual, cultural and environmental consequences of planned development activities are carried out in cooperation with the peoples concerned, and that the results of such studies be treated as a fundamental criterion for whether and how the activity proceeds (ILO, 1989, Article 7.3). The absence of any acknowledgement of ancestral burial grounds in the compensation documents prepared for Srae Kor Commune indicates that this requirement, too, was not met in substance, whatever formal consultations were held.

Assessments of the benefit-sharing arrangements attached to Lower Sesan 2 reinforce this picture of weak accountability. A study of benefit-sharing mechanisms at Lower Sesan 2 and the smaller Kamchay hydropower project found that such mechanisms, where they exist at all on paper, are rudimentary in design and poorly implemented in practice, and that national development objectives consistently override the interests of local livelihoods in the allocation of project benefits (Men et al., 2014). More broadly, research on the limits of social protection frameworks for indigenous peoples affected by Mekong hydropower has concluded that even where formal safeguards for indigenous land rights exist in principle, they are seldom implemented in practice, with the consequence that indigenous land is effectively commodified and cultural survival placed at risk regardless of the legal instruments nominally protecting it (Cooke et al., 2017). This finding connects directly to the international legal standards examined in Section 3.4, and to the gap between those standards and the process actually followed for Lower Sesan 2's indigenous and ethnic minority communities.

3.4 Human Security Dimensions

Applying the seven-dimension human security framework introduced in Chapter 1, drawing on Paris (2001) and Tadjbakhsh and Chenoy (2007), to the Lower Sesan 2 case reveals a pattern of insecurity that is more concentrated in space, more identifiable in its causal chain, and more contested in its attribution of responsibility than the diffuse

climate-driven insecurity documented in Mozambique, while nonetheless sharing with it a common structural root in the erosion of the socioeconomic foundations of wellbeing that Chapter 1 identified as the analytical core of the water-migration-security nexus.

3.4.1 Food and Livelihood Security

Food and livelihood security constitutes the most immediately measurable dimension. The projected 9.3% basin-wide reduction in fish biomass, combined with the loss of the migratory fish species that supplied the majority of protein intake for tens of thousands of Sesan River households, directly threatens a food system with no readily available substitute; as discussed in Section 3.2.5, reservoir fisheries promoted by developers as a mitigation measure have consistently failed, in comparable Mekong projects, to replace the yield, value and species diversity of wild migratory catch (Cronin & Hamlin, 2010). For the resettled population, the lower fertility of compensation farmland compounds this loss, converting a population with diversified access to fishing, forest products and rice cultivation into one dependent on a single, degraded agricultural asset, a transformation Cernea's model would classify as a compounding of the food insecurity and loss-of-common-property risks (Cernea, 1997). Downstream, the loss of fisheries access also removes what had functioned, prior to the dam, as a buffer against seasonal food shortages, since river-based protein sources historically allowed households to diversify away from dependence on a single rice harvest.

3.4.2 Cultural and Community Security

Cultural and community security is the dimension in which the Cambodian case diverges most sharply from the Mozambican one, and for that reason offers the comparative leverage that the Most Different Systems Design approach outlined in Chapter 1 is intended to generate. Survey research conducted in the Lower Sesan 2 area found that 88% of upstream villagers identified the flooding of Buddhist temples, ancestral burial grounds and the forest sites associated with guardian spirits, referred to locally as *neakta* and *areak*, as a primary source of anticipated harm from relocation, independent of any purely economic loss (Ham et al., 2015). Villagers reported that these spirits, believed to protect the community from illness, to bring happiness and good fortune, and to safeguard people travelling on the river, would themselves be affected by flooding, and that appropriate spiritual rituals, including the relocation or abandonment of ancestral

graveyards, would have to be performed regardless of whether a household accepted or rejected the resettlement offer (Ham et al., 2015). Because Cambodian compensation frameworks, in common with DIDR compensation regimes more broadly, monetise only assets that can be assigned an economic value, spiritual and cultural losses of this kind remained structurally uncompensated: compensation documents drafted for Srae Kor Commune, for example, made no mention whatsoever of the ancestral burial grounds that the reservoir would destroy, a gap that became one of the central grievances raised by villagers petitioning the Ministry of Mines and Energy, the Ministry of Environment, the Ministry of Finance and the Chinese embassy in February 2014 (Hensengerth, 2017).

This gap is consistent with what Oliver-Smith identifies as the psycho-socio-cultural dimension of displacement, in which the pre-displacement fabric of meaning, belonging and ancestral connection to place cannot be restored through cash payment or replacement housing alone. Oliver-Smith argues that the relative success of post-displacement cultural recovery must be judged by different criteria than economic recovery, centred on how well a transformed routine culture answers the primary questions confronting displaced people: who are we, where are we, and how do we relate to one another (Oliver-Smith, 2009). Applied to Kbal Romeas and Srae Kor, this framework helps explain why some households who had already accepted financial compensation and relocated nonetheless continued to demand that the spirit forests be restored at the new sites, indicating that even where the economic terms of displacement were formally accepted, the cultural and spiritual terms remained unresolved (Hensengerth, 2017).

3.4.3 Personal and Political Security

Personal and political security concerns centre on the documented use of administrative pressure and intimidation to induce relocation, including the withdrawal of schools, health services and local governance functions from villages whose residents had not yet agreed to move, alongside reports of police and military pressure directed at the holdout population remaining near Old Kbal Romeas. Under the terms of the International Labour Organization's Indigenous and Tribal Peoples Convention (No. 169), relocation of indigenous peoples from lands they occupy is permitted only as an exceptional measure and only with their free and informed consent; where such consent cannot be obtained, relocation may proceed only through appropriate procedures established by national law

that provide for the effective representation of the peoples concerned, and those relocated retain a right to return to their traditional lands should the grounds for relocation cease to exist (ILO, 1989, Articles 16.1-16.3). The United Nations Declaration on the Rights of Indigenous Peoples goes further, stipulating that indigenous peoples shall not be forcibly removed from their lands and that no relocation may take place without free, prior and informed consent and agreement on just and fair compensation, with the option of return where possible (UNGA, 2007, Article 10). The documented pattern at Lower Sesan 2, comprising a contested consultation record, the progressive withdrawal of public services from villages that had not yet consented to relocate, and continued police and military presence around holdout households, indicates a substantial gap between these international standards and the process actually followed for the Bunong community at Kbal Romeas and the Lao community at Srae Kor.

These personal and political security concerns are not evenly distributed within the affected population. Comparative resettlement research documents systematic gender discrimination embedded within compensation criteria across multiple DIDR contexts: in the Indian state of Orissa, for instance, entitlement to land compensation for unmarried individuals was set at age eighteen for men but age thirty for women, a formal asymmetry that Cernea identifies as part of a wider pattern in which tribal and indigenous women bear a disproportionate share of displacement's impoverishment risks (Cernea, 1997). While field research specific to gendered outcomes at Lower Sesan 2 remains limited in the sources available for this Chapter, the compensation structure adopted there, which allocated farmland and housing per household rather than per individual, creates conditions under which control over resettlement assets is likely to have followed pre-existing household hierarchies, potentially compounding the marginalisation of women within resettled Bunong and Lao families. This is an area this thesis is not able to resolve directly, and is flagged as a limitation of the comparative design in Chapter 4.

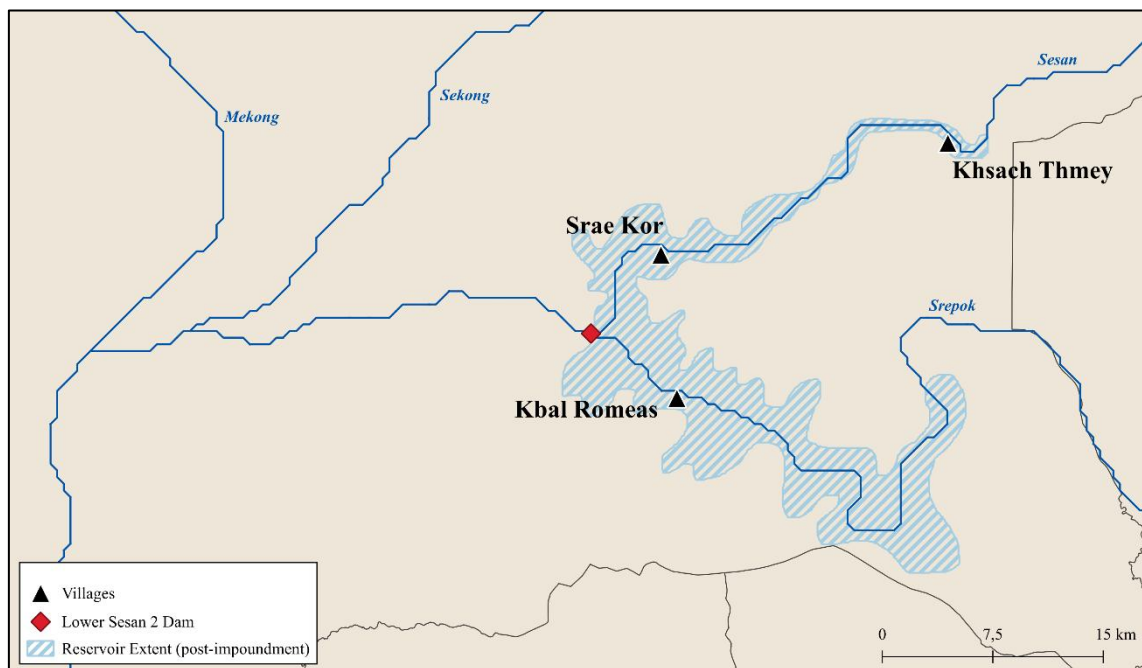
3.4.4 Environmental Security

Environmental security, finally, concerns both the immediate footprint of the reservoir, which according to the project's own EIA would destroy some 30,000 hectares of forest adjoining the Srepok and Sesan rivers and eliminate 24% of Sesan District's total agricultural land, and the cumulative downstream effects of altered sediment and flow

regimes on the 3S System's connection to the Tonle Sap and the Mekong Delta. Because the 3S System contributes a disproportionate share of Mekong fish biodiversity relative to its share of basin discharge, localised environmental degradation in this sub-basin carries consequences that extend well beyond Cambodia's borders, affecting fish migration routes, flood-pulse dynamics on the Tonle Sap, and, further downstream, the sediment loads on which the agricultural productivity of the Vietnamese Mekong Delta depends. The land cover change resulting from the reservoir's construction is visible in Figure 3.2, which compares satellite imagery of the site before construction and following impoundment.

The forest lost was typical of the wider Sesan basin, comprising semi-evergreen and mixed deciduous forest along the riverbanks grading into deciduous dipterocarp forest further from the water, habitat recognised for supporting one of the last significant riverine bird communities in the region, including a resident population of the Black-bellied Tern (*Sterna acuticauda*) that upstream hydropower-driven flow changes have pushed to the verge of extinction (Key Biodiversity Areas, 2012).

Figure 3.3: Location of the villages of Kbal Romeas, Srae Kor, and Khsach Thmey relative to the Lower Sesan 2 reservoir, showing the extent of the reservoir along the Sesan and Srepok arms following impoundment.



Source: Author's elaboration in QGIS. Administrative boundaries from GADM v4.1; river network from HydroRIVERS v1.0 (Asia region, filtered to major watercourses, Strahler stream order ≤ 4); dam location plotted from coordinates reported in Hensengerth (2017); village locations identified by official place name and cross-referenced against visible settlement patterns in satellite and OpenStreetMap imagery; reservoir extent digitised by the author with reference to OpenStreetMap basemap data and the satellite imagery underlying Figure 3.2.

Long-term fish monitoring data substantiate the severity of this connectivity loss in concrete terms. Comparing river basins with differing dam density between 2007 and 2014, monthly fish species richness declined from 60 to 42 species in the Sesan Basin and from 29 to 25 species in the Srepok Basin as upstream dam construction intensified, while the still largely free-flowing Sekong Basin saw richness increase over the same period, a contrast that isolates hydropower development, rather than broader regional environmental change, as the primary driver of biodiversity loss (Sor et al., 2023). Lower Sesan 2 itself has been identified as blocking approximately 18,701 kilometres of upstream river habitat previously accessible to migratory fish, definitively severing the Sesan and Srepok Basins from the Mekong mainstream (Sor et al., 2023). Among the species affected is the Critically Endangered seven-striped barb (*Probarbus jullieni*), identified as a key indicator species of the Srepok Basin's ecological health prior to fragmentation, illustrating that the environmental costs of the dam extend to internationally recognised conservation priorities and not only to commercially harvested food fish.

3.4.5 Synthesis: A Concentrated but Unenforced Human Security Crisis

Read together, the four dimensions examined in this Section show that human insecurity at Lower Sesan 2 is neither a side effect of an otherwise successful development project nor a temporary transitional cost, as the “*clock stops with construction*” fallacy identified by Oliver-Smith (2009) would suggest, but a structural outcome of the way the project was financed, assessed and governed. The identifiable chain of commercial and governmental decisions behind Lower Sesan 2, running from the ADB's 1999 feasibility study through the Council of Ministers' 2012 approval to the specific compensation figures negotiated in 2013, makes responsibility easier to trace in principle than in the diffuse, largely unattributable causal chain of climate displacement documented for Mozambique in Chapter 2. Yet, as this Chapter has shown, a traceable chain of responsibility has not, in practice, translated into effective accountability, since no institution, whether the Cambodian state, the project company, the Chinese financiers, or the Mekong River Commission, has been positioned or willing to enforce compliance with the standards each nominally accepts.

This divergence between the climate-induced and development-induced cases, one in which responsibility is diffuse but the harm is at least broadly acknowledged as an object of international humanitarian concern, the other in which responsibility is concentrated but accountability mechanisms are largely absent, forms the analytical starting point for the comparative synthesis developed in Chapter 4.

Chapter 4

Comparative Analysis: Convergent Vulnerabilities, Divergent Accountabilities

4.1 Comparing Drivers: Climate-Induced and Development-Induced Displacement

Chapters 2 and 3 have each, in isolation, applied the seven-dimension of the human security framework to a single case of water-related displacement. This Chapter brings the two cases into the systematic comparison anticipated in Section 1.7, examining first the drivers of displacement themselves before turning, in Sections 4.2 and 4.3, to the patterns of vulnerability and governance failure that either converge or diverge across the two contexts. The comparative literature on environmental and development-induced displacement has, as Chapter 1 noted, been developed largely in parallel, with only limited cross-fertilisation between the two research traditions (Wilmsen & Webber, 2015). Reading Mozambique and Cambodia together against a shared analytical grid is one way of testing whether this parallel development reflects a genuine substantive difference between the two forms of displacement or merely a disciplinary and institutional separation between the literatures that study them.

4.1.1 Predictability and Temporality

The Mozambican and Cambodian cases appear, at first glance, to sit at opposite ends of a predictability spectrum. Cyclone Idai struck Beira on a single night in March 2019, and Cyclone Kenneth followed six weeks later, the first instance in Mozambique's recorded history of two severe storms in one season (Section 2.2.2); neither event was predictable in its precise timing or track, even though the cyclone season itself is an annual and well-understood feature of the country's climate. Lower Sesan 2, by contrast, was knowable in advance to a degree that no cyclone could ever be: first assessed in a 1999 feasibility study, approved by the Council of Ministers in November 2012, and inaugurated in December 2018, the project unfolded across a documented, datable sequence stretching

almost two decades (Hensengerth, 2017; Section 3.1.4). In this narrow sense, development-induced displacement is maximally predictable, while climate-induced displacement is maximally unpredictable, precisely the distinction the literature reviewed in Chapter 1 tends to assume.

This apparent contrast collapses, however, once predictability is disaggregated from agency. The nineteen-year gestation of Lower Sesan 2 did not translate into meaningful anticipatory control for the Bunong and Lao households who would eventually be displaced: the consultation process that might have converted institutional foreknowledge into community preparedness instead produced the manufactured reversal documented in Section 3.2.3, in which recorded disagreement of 85% collapsed into recorded agreement of 94% within two months (Hensengerth, 2017). Predictability at the level of the state and its financiers, in other words, did not correspond to predictability, or to any greater capacity for informed anticipation, at the level of the displaced population itself.

A third temporality, largely absent from the binary climate/development framing, is visible within Mozambique alone. The slow-onset drought pattern documented in Section 2.2.4, with eight recorded events between 1980 and 2023 concentrated in Gaza and other southern provinces, produced displacement and adaptive out-migration through cumulative livelihood erosion rather than through either a single dateable shock or a two-decade infrastructural timeline. Read together, the three cases (rapid and unscheduled cyclone displacement, slow and unscheduled drought-driven mobility, and slow but fully scheduled dam displacement) suggest that temporality is better understood as a continuum defined by two independent variables, the speed of onset and the degree of institutional foreknowledge, than as a simple dichotomy mapped onto the climate/development distinction itself.

The slow-onset register also connects the temporality question to the adaptive-migration literature discussed in Section 1.2. McLeman and Smit's (2006) reframing of migration as an adaptive strategy rather than a failure of adaptation applies naturally to drought-driven out-migration in Gaza province, where households respond to cumulative rainfall deficit through labour migration long before any displacement in the humanitarian sense occurs. No equivalent adaptive-migration pathway exists for Lower Sesan 2, since the reservoir's footprint simply removes the option of staying in place regardless of household

strategy; drought displacement is, in this specific sense, negotiable in a way that reservoir displacement structurally cannot be, a distinction that reinforces rather than undermines the three-part temporal typology proposed above.

4.1.2 Agency and the Displacement Decision

The Foresight (2011) continuum between voluntary and involuntary mobility, introduced in Section 1.1, offers a useful lens for comparing how agency was compromised in each case, since in neither Mozambique nor Cambodia does displacement correspond cleanly to either pole of that continuum. Following Idai, INGD's proactive identification of 66 resettlement sites and relocation of an estimated 88,000 people was formally voluntary, yet field-based interviews found that many resettlers were unaware that relocation was voluntary rather than mandatory, and received minimal information about site conditions before moving (Jacobs & Almeida, 2021; Section 2.3.1). Agency was compromised here through an information gap embedded within a nominally voluntary process, rather than through any explicit coercive instrument.

In Cambodia, by contrast, the applicable international standards, ILO Convention No. 169 (ILO, 1989) and the UN Declaration on the Rights of Indigenous Peoples (UNGA, 2007), formally require free, prior and informed consent before the relocation of indigenous communities (Section 3.4.3). Yet the documented record at Lower Sesan 2, comprising the contested 2008 consultation reversal, the withdrawal of schools and health services from villages that had not yet agreed to move, and continued police and military presence around the roughly fifty-two households that remained at Old Kbal Romeas into 2017 (Hensengerth, 2017), indicates that consent was actively engineered rather than freely given (Section 3.3.4). Agency was compromised here through the deliberate application of administrative and physical pressure against a formally consent-based legal architecture.

The comparison therefore reveals a divergence not in whether agency was compromised, since it was substantially eroded in both cases, but in the mechanism through which this occurred. Mozambique's case illustrates how a formally voluntary, comparatively low-coercion system can nonetheless produce involuntary outcomes through asymmetric information; Cambodia's case illustrates how a formally rights-protective, high-legal-standard system can be actively circumvented through targeted pressure once a decision

has already been made. Neither pattern is captured by treating “voluntary” and “involuntary” displacement as a straightforward binary keyed to whether the trigger is a hazard or a project.

Cernea's (1997) Impoverishment Risks and Reconstruction model, applied to Lower Sesan 2 in Section 3.2, identifies marginalisation, the loss of relative social and political standing rather than of assets alone, as a distinct risk running alongside the more visible losses of land and housing. Read against the Foresight (2011) capital-based vulnerability model invoked above, marginalisation and low capital function as close analogues: both describe a population whose limited standing, whether measured in wealth or in political voice, constrains its ability to shape the terms of its own displacement. The Khmer-language barrier documented among Kbal Romeas and Srekor villagers is, on this reading, not merely an incidental communication problem but a concrete mechanism through which marginalisation, in Cernea's sense, is produced and sustained throughout the consultation process.

4.1.3 The Role of the State: Protective, Complicit, or Absent

Mozambique's state architecture, examined in Section 2.3, is best described as bifurcated according to the specific hazard register in play rather than as uniformly protective or uniformly absent. Toward cyclone and drought displacement, the state, through INGD's disaster management framework, the 2017 National Disaster Risk Reduction Master Plan, and growing community-level early warning capacity demonstrated during Cyclone Freddy in 2023, functions in a broadly protective role, however constrained by resource limitations and by the funding volatility exposed by the 2025 Humanitarian Reset process (Section 2.3.3). Toward the conflict-driven displacement in Cabo Delgado, however, the same state apparatus becomes, at least in part, a source of the personal security threat it is nominally meant to address, given documented reports of civilian harm attributed to Mozambican naval and ground forces, including the unresolved 2021 “*container massacre*” allegations (Section 2.4.3).

Cambodia's state does not display this bifurcation, because there is no exogenous hazard against which the state's response can be measured separately from its role in producing the displacement itself. The Council of Ministers' approval of Lower Sesan 2 in November 2012, the guarantee of electricity purchase prices to the plant owner, and the

subsequent use of administrative and security pressure against holdout households (Section 3.1.3; Section 3.3.4) together identify the state not as a responder to an external shock but as the principal architect of the displacement process from inception to implementation. Where Mozambique's state oscillates between protection and complicity depending on which threat is under consideration, Cambodia's state is continuously and directly implicated in the single threat under consideration throughout this Chapter's analysis.

This asymmetry in the state's role connects directly to the hydro-hegemony framework introduced in Section 1.1. Zeitoun and Warner (2006) theorise transboundary water conflicts as struggles in which power asymmetries between riparian states determine control over shared resources; Lower Sesan 2, although a domestic Cambodian project, reproduces the same underlying logic at a different scale, since the Cambodian state's willingness to guarantee electricity prices and absorb financial risk on behalf of Chinese-financed capital effectively subordinates the interests of the Bunong and Lao communities to a bilateral hydraulic relationship in which they have no seat at the table. Mozambique's state, whatever its shortcomings, never occupies this facilitating role toward a comparable external capital interest in relation to cyclone displacement, since no comparable hydraulic asset is being developed at the expense of the displaced population; the closest analogue lies instead in Cabo Delgado's gas and mineral extraction economy, where a similar pattern of state facilitation of external capital, again to the detriment of local security, recurs in a different resource sector entirely (Section 2.1).

4.2 Common Patterns: Structural Vulnerability, Governance Gaps, and Exposure

If Section 4.1 has shown that the two cases diverge in the drivers and mechanics of displacement itself, the present Section turns to a set of patterns that recur across both cases despite that divergence. Three convergent patterns stand out from the evidence assembled in Chapters 2 and 3: a shared structural precondition of vulnerability that predates the specific trigger, a shared gap between formal governance architecture and its implementation, and a shared, cross-cutting pattern of gendered insecurity. Each is examined in turn below.

4.2.1 Structural Vulnerability as a Shared Precondition

The Most Different Systems Design (MDSD) introduced in Section 1.6 rests on the premise that convergent outcomes across maximally dissimilar cases constitute stronger evidence of a genuine causal mechanism than convergence across similar cases (Anckar, 2008; Przeworski & Teune, 1970). Mozambique and Cambodia differ in almost every politically relevant respect, one a post-conflict, aid-dependent, formally competitive electoral state, the other a one-party-dominant, rapidly industrialising, BOT-financed development state, yet both cases display the same structural precondition for displacement-driven human insecurity: a population whose poverty, marginal political voice, and dependence on a narrow natural-resource base predates and outlasts the specific triggering event. Mozambique's poverty rate of close to 75% and its concentration of exposure in precisely the coastal and riverine zones that also host the bulk of the population (Section 2.1) function analogously to the Bunong and Lao communities' dependence on riverine and forest resources, combined with a documented Khmer-language barrier that impeded meaningful negotiation with Cambodian authorities throughout the consultation process (Section 3.2.3).

This convergence supports a conclusion that neither case alone could establish with the same confidence: structural vulnerability, rather than the specific water-related trigger, appears to function as the necessary precondition without which neither cyclone nor dam produces the scale of human insecurity documented in Chapters 2 and 3. A wealthier, more politically enfranchised population exposed to the same cyclone or the same reservoir would, on the logic of the Foresight (2011) framework discussed in Section 1.1, be expected to exhibit greater adaptive capacity and correspondingly lower displacement-driven insecurity, regardless of whether the trigger were climatic or infrastructural. A partial illustration of this logic is visible even within the Mekong basin itself: Laos's Nam Theun 2 project, financed and supervised through an independent Panel of Experts absent from the Lower Sesan 2 process, produced comparatively more transparent resettlement outcomes, even though its own record remains imperfect (Molle et al., 2009; Section 4.3.2).

The mechanism through which structural vulnerability translates into displacement-driven insecurity also shows a striking cross-case parallel. Drought-affected households

in southern Mozambique, as Section 2.2.4 documented, become increasingly locked into precarious, low-return informal trade as repeated harvest failure erodes their asset base, a pattern of “*adverse incorporation*” into market relations that secures short-term survival at the cost of long-term resilience (Eriksen & Silva, 2009). Resettled households at Lower Sesan 2 are pushed through a structurally similar process by a different route: compensation farmland of markedly lower fertility than the alluvial land it replaces forces a shift toward cash-crop production for markets that were never properly identified in project planning (Section 3.2.2). In both cases, a population that previously relied on diversified, locally adapted livelihood strategies is compelled into a narrower, more precarious, and more market-dependent mode of subsistence, regardless of whether the compelling force was a rainfall deficit or a reservoir.

4.2.2 Failures of Early Warning, Consultation, and Compensation

Both cases exhibit a further convergent pattern: an elaborate formal governance architecture whose principal failure lies in implementation rather than in institutional design. Mozambique's early warning and disaster management framework is, on paper, reasonably comprehensive, encompassing INGD's regional emergency centres, a National Disaster Risk Reduction Master Plan, and a \$75 million World Bank-financed resilience programme (Section 2.3.1), yet independent assessments identified persistent gaps in the timeliness with which warnings reached district and community levels in the years following Idai (GFDRR, 2021). Cambodia's consultation framework is, on paper, similarly comprehensive, requiring an environmental impact assessment and structured public consultation before project approval, yet the process that actually occurred in early 2008 produced a documented reversal from overwhelming disagreement to overwhelming agreement within two months, a pattern independent researchers have read as evidence of a process designed to manufacture consent rather than to elicit it (Section 3.3.3).

The trajectory of institutional learning in Mozambique offers a partial counterpoint that has no clear analogue in Cambodia. The markedly more effective community-level response to Cyclone Freddy in 2023, in which trained disaster committees in Chinde district correctly interpreted warnings and evacuated in time (PreventionWeb, 2023), contrasts with the largely externally dependent response to Idai four years earlier (Section

2.3.4), suggesting that Mozambique's governance gap, while real, is neither static nor entirely resistant to correction. Cambodia's consultation and compensation framework, by contrast, shows no comparable evidence of having improved between the 2008 consultation reversal and the 2017 establishment of a government committee to address the dam's impacts, which itself produced no publicly disclosed reassessment of the redesigned project (Section 3.3.3). This asymmetry in institutional learning, rather than the initial governance gap itself, may be the more analytically significant divergence between the two cases.

A further point of convergence concerns who is entrusted with assessing the risk in the first place. INGD's disaster response, for all its documented limitations, at least separates the institution warning of a hazard from any commercial interest in how the population responds to that warning. Cambodia's regulatory process affords no equivalent separation: because the project company itself commissioned the 2008 environmental impact assessment and designed the resettlement plan later approved by the Council of Ministers (Section 3.3.1), the same actor whose financial interest lay in a favourable outcome was also responsible for producing the evidence on which that outcome was judged. Mozambique's governance gap is therefore principally one of reach and resourcing, extending warnings to the last mile; Cambodia's is principally one of independence, ensuring that whoever assesses risk has no stake in minimising it. Both gaps produce the same downstream effect, information failing to protect the population it is meant to serve, but they call for different institutional remedies, a distinction developed further in Section 4.5.3.

4.2.3 Gendered Vulnerability Across Contexts

Chapter 2 documented a consistent gendered pattern across both rapid-onset and slow-onset hazards in Mozambique: extended water-collection burdens of ten to twelve hours during the 2016 drought, the use of child marriage as a coping mechanism, and intensified risk of gender-based violence following Idai (Section 2.4.2). Chapter 3 could not establish an equivalent empirical record specific to Lower Sesan 2, since the available sources do not report field research disaggregated by gender for this particular project (Section 3.4.3). The comparative evidence available instead comes from Cernea's (1997) broader review of resettlement schemes, which documents a formal asymmetry in compensation

eligibility in the Indian state of Orissa, where unmarried men qualified for land compensation at age eighteen but unmarried women only at age thirty, and from the observation that Lower Sesan 2's compensation package allocated farmland and housing per household rather than per individual, a structure likely to reinforce rather than disrupt pre-existing intra-household hierarchies (Section 3.4.3).

This asymmetry in the evidentiary base is itself worth stating plainly rather than obscuring. The original research design outlined in Section 1.7 anticipated that semi-structured interviews with humanitarian sector personnel in Mozambique, and with international organisation contacts engaged in Cambodia, would allow gendered outcomes to be probed directly in both cases. Time and resource constraints meant that this interview programme could not be completed within the scope of the present thesis, and the gendered analysis developed here for Cambodia therefore rests on comparative inference from Cernea's broader dataset rather than on case-specific evidence of the kind available for Mozambique. This limitation is revisited in Section 4.5.4 and is not, for that reason, treated here as settled; what can be concluded with reasonable confidence is that gendered vulnerability is structurally present in both contexts, even where the specific evidentiary base available to document it differs sharply in depth.

Broader research on indigenous land rights in Mekong hydropower contexts lends indirect support to this reading. Cooke et al. (2017) find that even where formal safeguards for indigenous land exist on paper, they are seldom implemented in a way that protects women's standing specifically, since land titling and compensation processes tend to follow, rather than correct, pre-existing household and customary hierarchies. Applied to Lower Sesan 2, this suggests that the household-based compensation structure documented in Section 3.4.3 is unlikely to be a gender-neutral design choice so much as a default that reproduces whatever distribution of intra-household authority existed before displacement, a mechanism structurally comparable to the way Mozambican women absorbed the bulk of the additional water-collection and caregiving burden generated by drought and cyclone alike, without any corresponding increase in their formal decision-making standing within the household or the community.

4.3 Divergences: Agency, External Actors, and Accountability

Where Section 4.2 has traced what the two cases share, the present Section turns to where they part company most decisively: the traceability of responsibility for the harms documented in Chapters 2 and 3, the architecture of external actors surrounding each case, and the specific role played in Cambodia by Chinese hydraulic finance as a structural feature of the wider international political economy of water.

4.3.1 Diffuse Versus Concentrated Responsibility

The clearest divergence between the two cases concerns the traceability of causal and political responsibility. Attribution science has made real progress in disaggregating the climatic contribution to specific displacement events, most notably the finding that anthropogenic climate change increased the population exposed to flooding from Idai by only 12,600 to 14,900 people, or roughly 2.7% to 3.2% of total displacement attributable to the cyclone (Mester et al., 2023; Section 2.2.1), yet this figure coexists with a much larger causal field comprising chronic poverty, an active insurgency, and decades of underinvestment in coastal infrastructure, none of which can be attributed to any single identifiable decision-maker.

Lower Sesan 2, by contrast, offers a documented, datable chain of specific institutional decisions: the 1999 ADB feasibility study, the 2008 environmental impact assessment commissioned by the project company itself, the Council of Ministers' November 2012 approval, and the compensation figures negotiated and published in January 2014 (Hensengerth, 2017; Section 3.1.4). Each link in this chain corresponds to an identifiable institution capable, in principle, of being held accountable for the outcomes documented in Chapter 3.

Yet, as the synthesis in Section 3.4.5 already anticipated, a traceable chain of decisions has not, in Cambodia's case, produced effective accountability. No institution, not the Cambodian state, the project company, the Chinese financiers, or the Mekong River Commission, has been positioned or willing to enforce compliance with the standards each nominally accepts. Concentrated responsibility, in other words, is a necessary condition for accountability but plainly not a sufficient one, a distinction the diagnostic framework developed in Section 4.5 attempts to capture more systematically than the traceability question alone can convey.

Oliver-Smith's (2009) diagnosis of the fallacies that allow project sponsors to treat displacement as adequately addressed offers a direct explanation for why traceability has not converted into accountability at Lower Sesan 2. His account of the diffusion of responsibility across designers, financiers and governments, such that no single actor can be isolated for censure, describes with some precision the situation documented in Section 3.2.4, in which the project company, the Ministry of Mines and Energy, and provincial authorities each retain a plausible claim that responsibility for unresolved grievances lies principally with the others. The Cambodian case therefore illustrates a subtler failure mode than the diffuse causation problem affecting Mozambique: responsibility is not diffuse in the sense of being spread across untraceable global processes, but diffuse in the sense of being spread across several perfectly identifiable institutions, none of which bears it alone, and each of which can therefore decline to bear it at all.

4.3.2 External Actors: The Humanitarian System and the Development Finance Architecture

Mozambique's displacement crisis operates within an external actor architecture defined by its multilateral density: the UN cluster system adopted after the 2007 Zambezi floods, IOM's central operational role since 2016, and a Humanitarian Response Plan that requested over USD 397 million following Idai and Kenneth (IOM, 2019; Section 2.3.2). This architecture is, however, exposed to a form of vulnerability entirely external to Mozambique's own governance choices, illustrated starkly by the 2025 Humanitarian Reset process, in which more than 119 Mozambican civil society organisations (CSOs) warned that international funding decisions taken with limited local consultation could dissolve the very coordination system on which the country's response depends (Section 2.3.3).

Cambodia's external actor architecture is defined by the opposite condition: near-total absence of multilateral involvement. Lower Sesan 2's financing structure, in which Chinese state banks supplied 70% of the USD 781 million project cost outside the safeguard frameworks that govern World Bank or ADB-financed projects (Hensengerth, 2017), placed the entire resettlement and compensation process in the hands of the project company itself, with no equivalent to the independent Panel of Experts that monitored (however imperfectly) the comparably ambitious Nam Theun 2 project in neighbouring

Laos (Molle et al., 2009; Section 3.3.1). The Mekong River Commission's absence from the approval process, a consequence of Lower Sesan 2's location on a tributary rather than the Mekong mainstream, compounds this gap at the regional level (Dore & Lazarus, 2009; Section 3.3.2).

The two cases thus arrive at a structurally similar governance vacuum by opposite routes. Mozambique suffers from an over-dependence on a multilateral humanitarian architecture that is itself increasingly precarious; Cambodia suffers from the deliberate structuring of project finance to avoid multilateral architecture altogether. Neither excess of dependency nor absence of oversight, on this reading, reliably protects the populations whose human security is at stake, a finding with direct implications for the policy discussion developed in Section 4.5.3.

This asymmetry in external architecture is mirrored in the data infrastructure available to track the affected population itself. IOM's Displacement Tracking Matrix (DTM), discussed in Section 2.3.2, generates continuously updated, site-level data on Mozambique's displaced population. This same dataset feeds directly into the humanitarian coordination system, and it is also the underlying source for the provincial displacement figures mapped in Figure 2.3: the GIS-based spatial analysis developed in Chapter 2 was possible only because a continuously maintained, geolocated tracking infrastructure already existed to draw on. No comparable, continuously updated tracking system exists for the population affected by Lower Sesan 2, whether directly resettled or secondarily displaced through fisheries collapse; the closest available figures, the 4,785 resettled villagers and the thirty to fifty thousand people estimated to depend on Sesan River resources before construction, are one-off estimates generated at specific moments rather than an ongoing monitoring system (Section 3.2.1; Section 3.2.5). The absence of any Cambodian equivalent to the DTM is not a minor data gap but a further manifestation of the governance vacuum examined throughout this Section: a population whose situation is not continuously monitored is, almost by definition, a population whose deterioration or recovery cannot be tracked closely enough to trigger a policy response.

4.3.3 Chinese Hydraulic Investment as a Structural Variable Beyond Cambodia

The Cambodian case carries a geopolitical significance that extends beyond the specifics of the Lower Sesan 2 project, and it is this significance that gives the comparison its

clearest connection to the Security and International Relations framing announced in the thesis's opening Chapter. Chinese state banks and Hydrolancang International Energy, a subsidiary of China Huaneng Group, do not merely finance a single Cambodian dam: Chinese companies are responsible for the majority of Cambodia's large dams, hold substantial stakes in Myanmar's hydropower sector, and are contracted to build a significant share of the mainstream dams proposed elsewhere on the Mekong, including both projects planned on Cambodian territory at Sambor and Stung Treng (Hensengerth, 2017; Section 3.1.4).

This pattern is not confined to Southeast Asia. Research on the accountability politics surrounding Chinese-financed hydropower more broadly has documented a recurring structural feature: Chinese state capital tends to be extended bilaterally, project by project, rather than through the multilateral safeguard architecture that, however imperfectly, governs World Bank- or ADB-financed infrastructure (Yeophantong, 2020). Ghana's Chinese-financed Bui Dam illustrates the same pattern of bilateral financing operating outside established multilateral review mechanisms in a wholly different regional and institutional context (Hensengerth, 2018), while China's transboundary river diplomacy toward Kazakhstan similarly proceeds through bilateral rather than basin-wide institutional channels (Ho, 2017). Read alongside the Mekong evidence, these cases suggest that the accountability gap documented in Section 3.3 is not an idiosyncratic feature of Cambodian governance but an instance of a broader and more consequential pattern in how externally financed hydraulic infrastructure is currently governed worldwide, a pattern with direct implications for what constitutes “responsible” development finance (Sultana, 2022).

No equivalent structural financier operates in the Mozambican case, since the humanitarian architecture examined in Section 4.3.2 is multilateral and donor-diffuse by design rather than concentrated in a single bilateral relationship. This asymmetry is itself a further point of divergence between the two cases: Cambodia's governance vacuum is actively produced by a specific and identifiable financing structure, whereas Mozambique's is a function of the fragility of multilateral coordination rather than of any single actor's design.

These findings raise a further question that lies beyond the empirical scope of this thesis but follows directly from it: whether concentrated bilateral hydraulic financing of the kind documented at Lower Sesan 2 also generates political leverage extending beyond the specific project, for instance over Cambodia's broader foreign policy alignment within the Mekong sub-region and vis-à-vis China. The present thesis has not gathered the evidence that would be required to test such a claim systematically, and it is flagged here as a question for the further comparative research discussed in Section 4.5.4 rather than as a conclusion the current evidence base can support.

4.4 The Water-Migration-Security Nexus Revisited

Chapter 1 introduced the Water-Migration-Security Nexus as an interdisciplinary junction rather than a settled theoretical framework, built from environmental security, forced migration studies, and human security theory. Having examined convergence and divergence between the two cases in Sections 4.1 to 4.3, this Section returns to that founding framework directly, asking what the comparison contributes to each of its constituent strands and to the open empirical question, identified in Section 1.6, of whether displacement form determines displacement outcome.

4.4.1 Human Security as an Evaluative Lens for Displacement Governance

Applying the UNDP's (1994) seven-dimension framework systematically to two structurally dissimilar cases, as Chapters 2 and 3 have done, provides a first test of the framework's own portability. In both Mozambique and Cambodia, all seven dimensions, economic, food, health, environmental, personal, community, and political security, proved analytically productive, generating concrete and case-specific findings rather than requiring artificial adaptation to fit an unsuitable template. This suggests that the human security paradigm, notwithstanding the depoliticising tendency for which it has been criticised (Section 1.5), retains genuine comparative traction across climate-induced and development-induced displacement alike.

The framework's limits are, however, equally instructive. Severity of impact across the seven dimensions tells us a great deal about what has happened to affected populations, but comparatively little about how amenable that impact is to institutional correction, a

gap made visible by the findings of Sections 4.2 and 4.3 and addressed directly by the diagnostic tool developed in Section 4.5.

The comparison also speaks directly to the depoliticising tendency identified in Section 1.5, in which human security scholarship is sometimes criticised for treating displaced populations primarily as objects of protection rather than as political actors in their own right (Oliver-Smith, 2010). Both cases examined here resist this reading. Mozambican host communities absorbing displaced neighbours outside formally designated resettlement sites, and Bunong and Lao villagers staging a ceremony to curse the officials and investors behind their displacement before contesting the outcome again at the ballot box, are not passive recipients of insecurity but active, if unevenly resourced, participants in shaping how that insecurity is contested. Reading the human security dimensions in Sections 2.4 and 3.4 alongside the agency documented throughout this Chapter therefore corrects, rather than confirms, a purely protection-oriented application of the framework.

4.4.2 Adaptation, Resilience, and the Limits of International Protection

Adaptation and resilience operate in visibly different registers across the two cases. In Mozambique, resilience is expressed principally through livelihood-oriented coping mechanisms: community-based early warning committees, informal absorption of displaced populations by host communities, and household-level diversification strategies documented throughout Section 2.3.4. In Cambodia, by contrast, community agency finds its principal outlet not in adaptive coping but in political and symbolic contestation, from the 2015 ceremony invoking the guardian spirit Neakta Kraham Kor against the officials and investors associated with the dam, to the 2012 commune council election result in Srekor, in which dissatisfaction with the project contributed to a shift away from the ruling party (Hensengerth, 2017; Section 3.3.4). Resilience, in other words, is not a single variable that either case exhibits more or less of, but a register that shifts according to the nature of the threat: livelihood-oriented where the threat is a recurring exogenous hazard, politically contestatory where the threat is a single, endogenous, state-sanctioned decision.

International protection frameworks display a parallel asymmetry in applicability. The Nansen Initiative's (2015) agenda for cross-border disaster displacement, discussed in Section 1.2, addresses precisely the kind of climate-related mobility documented in

Mozambique, yet its cross-border framing has limited direct relevance to a case of predominantly internal displacement. ILO Convention No. 169 (ILO, 1989) and the UN Declaration on the Rights of Indigenous Peoples (UNGA, 2007) apply squarely to the Bunong community at Kbal Romeas, yet, as Section 3.4.3 demonstrated, their substantive protections were not met in practice. Both normative architectures, in short, exist on paper and exhibit the same implementation gap already identified in Section 4.2.2, reinforcing the conclusion that the deficit in water-related displacement governance lies less in the absence of applicable legal and normative standards than in the mechanisms available to enforce them.

4.4.3 Does Displacement “Form” Matter? Testing the Research Gap Identified in Chapter 1

Section 1.6 identified, as one of the central gaps this thesis was designed to address, an open empirical question: whether climate-induced and development-induced displacement produce qualitatively different or structurally similar patterns of human insecurity. The comparative evidence assembled across this Chapter allows a more precise answer than a simple yes or no. Stated directly: displacement form matters far less for the severity of human insecurity produced than for the governance response required to address it.

On the substantive erosion of human security itself, the two cases converge to a degree the literature's parallel development would not necessarily predict. Structural vulnerability functions as a shared precondition (Section 4.2.1), gendered insecurity recurs across both contexts even where the depth of available evidence differs (Section 4.2.3), and formal governance architecture in both cases exists on paper without translating reliably into implementation (Section 4.2.2). In this sense, displacement form matters considerably less than an analytical tradition organised around the climate/development distinction has tended to assume: the human toll experienced by affected populations is shaped more by pre-existing structural vulnerability and governance capacity than by whether the proximate trigger is a cyclone or a dam.

On the traceability of responsibility and the specific mechanism through which agency is compromised, however, the two cases diverge sharply (Sections 4.1.2 and 4.3.1). Climate-induced displacement in Mozambique generates diffuse, only partially

attributable responsibility, distributed across global emissions patterns, chronic underdevelopment, and an armed insurgency; development-induced displacement in Cambodia generates a concentrated, traceable chain of institutional decisions that nonetheless resists effective accountability. Displacement form, on this second dimension, matters decisively.

The overall finding is therefore one of partial confirmation and partial refinement of the assumption identified in Section 1.6. Water-related displacement, this Chapter suggests, produces convergent patterns of human insecurity across even maximally dissimilar contexts, a finding consistent with the logic of the Most Different Systems Design and supportive of treating human security erosion as a genuinely structural, rather than trigger-specific, phenomenon. At the same time, the governance and accountability dynamics through which that insecurity is, or is not, addressed remain sharply differentiated by displacement type, a divergence with direct consequences for what protection and policy response each case requires, developed in Section 4.5.3.

This convergence on substantive erosion, alongside divergence on traceability, lends comparative weight to Barnett and Adger's (2007) argument, discussed in Section 1.1, that insecurity should be located in the erosion of the socioeconomic and institutional foundations of wellbeing rather than in resource competition or hazard type alone. Both Mozambique and Cambodia confirm that it is the erosion of these foundations, poverty, marginal political voice, weak implementation capacity, that principally determines the depth of human insecurity generated by water-related displacement, with the specific trigger functioning as an occasion for that erosion rather than as its primary cause.

4.5 Toward an Integrated Framework: The Governance-Tractability Matrix

The preceding Sections have shown that the human security dimensions identified by the UNDP travel well across two radically different cases, but that their governance implications do not: the same severity of impact can sit atop a diffuse or a concentrated causal structure, and atop a tractable or an intractable institutional response. This Section develops that finding into a modest original proposal, intended less as a finished theory than as a diagnostic instrument that other researchers working on water-related

displacement, in these two contexts or elsewhere, might find useful in distinguishing insecurities that are merely severe from insecurities that are also governable.

4.5.1 From Seven Dimensions to a Diagnostic Tool

The UNDP (1994) framework, as applied throughout this thesis, is a severity instrument: it identifies which dimensions of human wellbeing have been compromised and to what apparent degree. Sections 4.2 and 4.3 suggest that this instrument, valuable as it is, leaves two further analytically consequential questions unanswered for any given case of water-related displacement. First, how traceable is the causal and institutional chain of responsibility for the compromised dimension, a distinct question from severity, since a severely compromised dimension may have either a diffuse or a concentrated causal structure (Section 4.3.1). Second, independent of traceability, how tractable is the existing governance architecture, meaning the extent to which the mandates, resources and political will required to correct or mitigate the outcome are actually present, once responsibility has been identified (Section 4.2.2). The tractability axis, in particular, generalises beyond its original context the logic already implicit in Cernea's (1997) Impoverishment Risks and Reconstruction (IRR) model, whose Reconstruction component asks not only what has been lost but what can realistically be restored or corrected, a question the seven human security dimensions do not themselves pose.

These two additional axes, traceability of responsibility and institutional tractability, are proposed here as a modest extension of the human security framework rather than as its replacement. Their value lies in distinguishing three qualitatively different governance situations that the severity dimension alone conflates: insecurities that are both traceable and tractable, where accountability mechanisms exist and are likely to function if activated; insecurities that are traceable but not tractable, where responsibility is identifiable but existing institutions lack the capacity or willingness to act on it; and insecurities that are neither clearly traceable nor tractable, where the causal chain itself is too diffuse to support a clear accountability claim. The comparison developed across this Chapter positions Mozambique and Cambodia, and the sub-cases within each, quite differently across this typology, a positioning made explicit in the following Section.

4.5.2 Applying the Matrix: Mozambique and Cambodia Compared

Table 4.1 summarises how each of the seven human security dimensions manifests across the two cases, drawing on the evidence developed in Chapters 2 and 3, and indicates whether the comparative pattern across that dimension is best characterised as convergent or divergent.

Table 4.1: *The seven human security dimensions compared across Mozambique and Cambodia.*

Human Security Dimension	<i>Mozambique</i>	<i>Cambodia</i>	<i>Comparative Pattern</i>
Economic Security	<i>Loss of housing, productive and household assets against a baseline poverty rate of nearly 75%.</i>	<i>Compensation farmland of markedly lower fertility; forced shift to cash-crop production; construction-phase employment ends without a sustainable follow-on livelihood.</i>	<i>Convergent: asset loss compounds pre-existing structural poverty in both cases.</i>
Food Security	<i>Cyclone Idai alone damaged approximately 800,000 hectares of crops; the combined impact of Idai and Kenneth left 1.65 million people severely food insecure.</i>	<i>Projected 9.3% Mekong-wide fall in fish biomass; reservoir fisheries fail, in comparable cases, to replace lost migratory catch.</i>	<i>Convergent: food systems severely and directly compromised through different physical mechanisms.</i>

Human Security Dimension	<i>Mozambique</i>	<i>Cambodia</i>	<i>Comparative Pattern</i>
Health Security	<i>Cholera outbreak of more than 6,700 confirmed cases following Idai, linked to destroyed water and sanitation infrastructure.</i>	<i>Biological contamination reported in developer-supplied wells; drowning risk historically associated with comparable reservoirs.</i>	<i>Convergent: a secondary health crisis follows the primary displacement event in both cases.</i>
Environmental Security	<i>Progressive loss of protective mangrove cover in Sofala and Zambezia, compounding future storm-surge exposure.</i>	<i>Reservoir destroyed an estimated 30,000 hectares of forest; upstream fish-migration routes severed across 18,701 km of habitat.</i>	<i>Convergent: environmental degradation both caused by and compounding the displacement crisis.</i>
Personal Security	<i>Direct threat from an active insurgency in Cabo Delgado, including reported violence attributed to state security forces themselves.</i>	<i>Administrative and physical pressure, including police and military presence, directed at households refusing resettlement.</i>	<i>Convergent in outcome, divergent in source: an external conflict actor versus the displacing state itself.</i>
Community Security	<i>Fracturing of community structures through repeated displacement; host-community strain from informal absorption of the displaced.</i>	<i>Flooding of temples, ancestral burial grounds and spirit forests, cited by 88% of surveyed villagers as a primary anticipated harm.</i>	<i>Convergent in severity, divergent in register: material and social disruption versus spiritual and cultural loss.</i>

Human Security Dimension	<i>Mozambique</i>	<i>Cambodia</i>	<i>Comparative Pattern</i>
Political Security	<i>Limited direct risk from the cyclones themselves; severe risk in Cabo Delgado from conflict and contested state conduct.</i>	<i>Consultation reversed from 85% disagreement to 94% agreement within two months; no enforceable consent requirement in practice despite ILO 169.</i>	<i>Most clearly divergent dimension: the mechanism producing political insecurity differs fundamentally between the two cases.</i>

Source: Author's elaboration based on the evidence and citations presented in Chapters 2 and Chapter 3.

Table 4.2 applies the two additional axes introduced in Section 4.5.1 to the two cases as a whole, distinguishing where relevant between Mozambique's disaster-displacement and conflict-displacement registers, which Section 4.1.3 has already shown to behave differently along these same dimensions.

Table 4.2: *The Governance-Tractability Matrix applied to Mozambique and Cambodia.*

Case / Register	<i>Traceability of Responsibility</i>	<i>Institutional Tractability</i>	<i>Overall Positioning</i>
Mozambique: disaster displacement (cyclones, drought)	<i>Low: causation diffused across global emissions patterns, chronic poverty and weak infrastructure investment.</i>	<i>Improving: Freddy (2023) shows institutional learning relative to Idai (2019), though funding volatility threatens further gains.</i>	<i>Diffuse but improving</i>
Mozambique: conflict displacement (Cabo Delgado)	<i>Low: responsibility diffused across insurgent forces and multiple national, foreign private and regional security actors.</i>	<i>Low: no accountability mechanism for security-sector conduct; the 2021 “container massacre” allegations remain unresolved.</i>	<i>Diffuse and low tractability</i>
Cambodia: Lower Sesan 2	<i>High: a datable chain of specific institutional decisions runs from the 1999 feasibility study to the 2018 inauguration.</i>	<i>Low: no institution has enforced compliance with the standards it nominally accepts, despite identifiable responsibility.</i>	<i>Traceable but unenforced</i>

Source: *Author's elaboration.*

Read together, the two tables position Mozambique's disaster-related displacement in a quadrant of low traceability but improving tractability, consistent with the institutional learning documented between Idai (2019) and Freddy (2023); Mozambique's conflict-related displacement in Cabo Delgado in a considerably less favourable quadrant of low traceability and low tractability, given the diffusion of responsibility across national, foreign private, and regional security actors documented in Section 2.4.3; and Cambodia's development-induced displacement in a quadrant of high traceability but low tractability, in which the identity of the responsible institutions is well established but no mechanism currently compels them to act on that responsibility. No sub-case examined in this thesis occupies the most favourable quadrant of high traceability and high tractability, a finding that is itself a significant, if sobering, comparative result.

4.5.3 Differentiated Policy Implications

The matrix developed above suggests that Mozambique and Cambodia require different policy interventions precisely because they occupy different positions within it, rather than a single generic recommendation applicable to water-related displacement as such. For Mozambique's disaster-displacement register, the priority indicated by the analysis is to consolidate and extend the institutional learning already visible between 2019 and 2023, scaling community-level early warning training beyond the districts where it has so far been documented, and insulating the humanitarian coordination architecture from the funding volatility exposed by the 2025 Reset process, since tractability in this register is already improving from a low base rather than absent altogether. Concretely, this could take the form of embedding the Chinde district model that proved effective during Cyclone Freddy directly into INGD's national training curriculum, rather than treating it as a localised success to be replicated informally, so that the tractability gain documented in one district becomes a standing institutional asset rather than a one-off outcome dependent on which communities happened to receive prior training. For the conflict-displacement register in Cabo Delgado, by contrast, the priority lies outside the disaster-management architecture entirely, in mechanisms capable of establishing accountability for the conduct of the multiple security actors operating in the province, a governance challenge the humanitarian cluster system was never designed to address.

For Cambodia, the matrix suggests that policy leverage lies specifically in closing the gap between traceability and tractability rather than in improving traceability further, since the causal chain behind Lower Sesan 2 is already unusually well documented by comparative standards. Extending the Mekong River Commission's prior consultation procedures to tributary projects, closing the jurisdictional gap identified in Section 3.3.2, and conditioning bilateral hydropower financing, whether Chinese or otherwise, on independent safeguard review comparable to the standards articulated by the World Commission on Dams (2000) and defended by Scudder (2005), would each convert already-identifiable responsibility into enforceable obligation. The broader pattern documented in Section 4.3.3 indicates that such conditions would need to be pursued at the level of hydraulic finance more generally, rather than through project-specific remedies alone, if they are to address the structural rather than merely local dimension of the accountability gap.

4.5.4 Scope Conditions and Avenues for Further Comparative Research

The Governance-Tractability Matrix proposed in this Section rests on the secondary sources, policy documentation, and GIS-based spatial analysis described in Section 1.7, rather than on the primary interview data that the original research design anticipated. Time and resource constraints meant that the semi-structured interview programme with humanitarian sector personnel in Mozambique and international organisation contacts engaged in Cambodia could not be completed within the scope of this thesis. This constraint bears most directly on the gendered vulnerability analysis in Section 4.2.3, where case-specific evidence for Cambodia remains comparatively thin, and it means that the matrix's positioning of each case should be read as a provisional diagnostic reading of the available documentary evidence rather than as a claim validated through direct testimony from affected communities or practitioners.

A further scope condition follows directly from the Most Different Systems Design logic introduced in Section 1.6: a comparison built from two cases generates analytical insight rather than statistical generalisation, and the Governance-Tractability Matrix should be read accordingly as a heuristic tool calibrated to this specific comparison rather than as a validated general instrument. Testing its portability against other transboundary and disaster contexts, the Grand Ethiopian Renaissance Dam dispute on the Nile (Cascão &

Nicol, 2016), the Southeastern Anatolia Project on the Tigris-Euphrates (Kibaroglu, 2019), or other Chinese-financed hydraulic projects beyond the Mekong and West Africa, would be a natural next step for research building on this thesis, potentially at the doctoral level envisaged in the original project design. Only through such extension could the distinction between traceability and tractability be confirmed as a generalisable feature of water-related displacement governance, rather than as a pattern specific to the two cases examined here. A more immediately tractable extension, requiring no new case selection, would be to apply the matrix within Mozambique itself across time, tracking whether the tractability gain documented between Idai and Freddy continues to improve as further cyclone seasons accumulate, or whether it plateaus once the most easily reached districts have already been covered; a within-case, longitudinal application of this kind would test the matrix's diagnostic value without the added complexity of cross-national comparison.

Having established both the convergent human security erosion and the divergent governance dynamics that characterise climate-induced displacement in Mozambique and development-induced displacement in Cambodia, and having proposed a diagnostic extension of the human security framework capable of capturing this divergence more precisely than severity alone, the thesis turns in its concluding Chapter to drawing out the fuller implications of these findings for the Water-Migration-Security Nexus literature and for the policy actors, national governments, international organisations, and development financiers, whose choices will shape the governance of water-related displacement in the years ahead.

Conclusion

This thesis set out to ask how different forms of water-related displacement, climate-induced in Mozambique and development-induced in Cambodia, affect human security, and what the comparison of these two cases reveals about the Water-Migration-Security Nexus. Chapters 2 and 3 examined each case in turn against the UNDP's seven-dimension human security framework; Chapter 4 brought the two cases into systematic comparison and proposed the Governance-Tractability Matrix as an original diagnostic extension of that framework. This concluding chapter draws together the principal findings, situates them within the wider Water-Migration-Security Nexus literature introduced in Chapter 1, and sets out their implications for policy and for further research.

The comparison's central empirical finding is one of convergence where the literature's parallel development would not necessarily have predicted it. Structural vulnerability, chronic poverty in Mozambique's coastal and riverine provinces, and the marginal political and linguistic standing of the Bunong and Lao communities of Kbal Romeas and Srekor in Cambodia, functions in both cases as the decisive precondition without which neither cyclone nor dam produces the scale of human insecurity documented in this thesis. Gendered vulnerability recurs across both contexts, even where, as discussed further below, the depth of case-specific evidence available to document it differs. Formal governance architecture, Mozambique's disaster management framework and Cambodia's consultation and compensation procedures alike, exists on paper in both cases without reliably translating into implementation. Taken together, these findings support Barnett and Adger's (2007) contention that insecurity should be located in the erosion of the socioeconomic and institutional foundations of wellbeing rather than in resource competition or hazard type alone: the specific water-related trigger, whether climatic or infrastructural, functions as an occasion for that erosion rather than as its primary cause.

Where the two cases diverge sharply is in the traceability of responsibility for the harms documented, and, following from it, in the accountability mechanisms available to address them. Mozambique's climate-related displacement is shaped by a diffuse causal field, global emissions patterns, chronic underdevelopment, and, in Cabo Delgado, an armed insurgency, in which no single decision-maker can be isolated for the outcomes observed. Cambodia's Lower Sesan 2 Dam, by contrast, offers a documented, datable

chain of institutional decisions running from the ADB's 1999 feasibility study to the Council of Ministers' 2012 approval and the compensation terms negotiated and published in January 2014. Yet, as Chapters 3 and 4 both show, this traceability has not converted into effective accountability: no institution, not the Cambodian state, the project company, its Chinese financiers, or the Mekong River Commission, has been positioned or willing to enforce compliance with the standards each nominally accepts. Concentrated responsibility, the comparison suggests, is a necessary but not a sufficient condition for accountability.

The Governance-Tractability Matrix developed in Chapter 4 was designed to capture this distinction more precisely than severity alone allows, by adding two further diagnostic axes, the traceability of causal and institutional responsibility and the tractability of the existing governance architecture, to the UNDP's severity-oriented human security framework. Applied to the two cases, the matrix positions all three sub-cases examined in this thesis outside its most favourable quadrant, that of high traceability and high tractability: Cambodia scores high on traceability but low on tractability, while Mozambique's two displacement registers, disaster-related and conflict-related, both score low on traceability and diverge chiefly in the trajectory of tractability rather than in causal clarity. That no sub-case reaches the favourable quadrant is itself a significant, if sobering, comparative finding, one the thesis offers as a modest diagnostic tool for future research on water-related displacement governance elsewhere, rather than as a validated general theory.

For the Water-Migration-Security Nexus literature introduced in Chapter 1, the comparison suggests that the human security paradigm travels well across climate-induced and development-induced displacement alike, generating concrete and case-specific findings in both contexts without requiring artificial adaptation to fit an unsuitable template. At the same time, the comparison confirms that human security analysis, on its own, says comparatively little about how amenable a given insecurity is to institutional correction, precisely the gap the Governance-Tractability Matrix is intended to address. The comparison further corrects a depoliticising tendency for which human security scholarship has sometimes been criticised (Paris, 2001): Mozambican host communities absorbing displaced neighbours, and Bunong and Lao villagers contesting their displacement through ritual and through the ballot box alike, appear

throughout this thesis not as passive objects of protection but as agents responding, with unevenly distributed resources, to conditions imposed upon them.

These findings carry different implications for the actors engaged in the governance of water-related displacement, developed in case-specific terms in Section 4.5.3 and recalled here only in their broader significance. The case-level lesson, for both Mozambique and Cambodia, is that governance leverage lies specifically where the traceability-tractability gap is narrowest: in consolidating institutional learning already underway for Mozambique's disaster-displacement register, and in converting Cambodia's already well-documented chain of responsibility into enforceable obligation, rather than in generating further diagnosis in either case. The more general lesson, cutting across both actors and both cases, concerns the international organisations and development financiers whose choices shape water-related displacement governance worldwide: neither an over-dependence on multilateral humanitarian architecture, exposed in Mozambique, nor its complete absence, exploited in Cambodia's BOT financing structure, reliably protects the human security of displaced populations, and the applicable legal and normative standards in both cases are less the problem than the mechanisms available to enforce them.

Two limitations qualify these conclusions and should be stated plainly rather than left implicit, both already flagged where they first arose in Chapter 4. The interview-based fieldwork that the original design had built into Section 1.7 did not materialise within the time available, a gap that weighs most heavily on the Cambodian side of the gendered vulnerability comparison and leaves the Governance-Tractability Matrix resting on documentary inference rather than on testimony from the people it concerns. And because the comparison rests on only two cases, selected precisely for their dissimilarity, what it yields is a set of mechanisms worth pursuing further, not a statistically warranted general law of water-related displacement.

Both limitations chart out where this research could go next. Completing the fieldwork originally planned would do most to close the Cambodian evidence gap on gender specifically. Beyond that, the matrix proposed here is a hypothesis about how water-related displacement is governed, not yet a tested one, and the most direct way to test it would be to apply it elsewhere: to the Grand Ethiopian Renaissance Dam dispute on the

Nile, to the Southeastern Anatolia Project on the Tigris-Euphrates, or to other Chinese-financed hydraulic projects beyond the Mekong and West Africa. A more immediately feasible test would not require a new case at all: tracking whether Mozambique's own tractability gains, visible between Idai and Freddy, continue to hold as further cyclone seasons pass. Taken together, completing the fieldwork and extending the matrix to further cases outline a coherent trajectory for sustained doctoral-level research, rather than a set of disconnected next steps.

Water, this thesis has argued, occupies a structurally ambivalent position in the displacement of the populations examined here: a life-sustaining resource whose scarcity or excess drove Mozambican households from their homes, and a developmental asset whose harnessing displaced the communities of Kbal Romeas and Srekor from theirs. In both registers, the human security consequences documented across this thesis were neither inevitable nor, in the main, unforeseen. They were, in the end, the product of institutions that identified risks they did not consistently act upon, and of populations left to absorb the resulting insecurity with whatever resources, material, social or political, they had left.

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