

Navigating Peace in a Changing Climate

Climate and Security
Trend Analysis

The trends report was authored by Emma Whitaker (adelphi global), Janani Vivekananda (adelphi global) and Jakob Gomolka (adelphi global). Important contributions were provided by Rachele Semeghini (adelphi global), Dorian Wevers (adelphi global) and Mary Potts (adelphi global).



DISCLAIMER

This report is funded by the European Union. Its contents are the sole responsibility of the authors and do not necessarily reflect the views of the European Union.

PUBLISHED BY

adelphi global gemeinnützige GmbH
Alt-Moabit 91, 10559 Berlin, Germany
+49 (0) 8900068-0
office@adelphi.de
www.adelphi.de/en

CONTACT

Emma Whitaker
whitaker@adelphi.de

European External Action Service
MD-PSD-PCM-1@eeas.europa.eu

Foreign Policy Instruments
FPI-1@ec.europa.eu

DATE: February 2025

LICENSE

For texts in this publication, the publishers grant a license under the terms of Creative Commons Attribution No Derivatives 4.1 International. You may reproduce and share the licensed material if you name the organisations as follows: '© adelphi global gGmbH and European Commission CCBY ND 4.0.' Photographs and graphics are not covered by this license. In case of doubt please contact adelphi global gGmbH prior to reusing the material.

© adelphi global gGmbH/European Commission 2025

COVER IMAGE

© Ivan Bandura, Unsplash.com

INFOGRAPHICS AND DESIGN

Odile Stabon, Alexandra Steinkraus (adelphi global) and Nina Schmelzer (adelphi global)

SUGGESTED CITATION

Whitaker, E.; Vivekananda, J.; Gomolka, J. 2025: Navigating Peace in a Changing Climate: Climate and Security Trend Analysis. Berlin: adelphi global.

Navigating Peace in a Changing Climate

Climate and Security Trend Analysis

Table of Contents

I.	Executive Summary	3
II.	Acronyms	5
III.	Introduction	6
IV.	Conceptual Framework	10
V.	Methodology	12
VI.	Trends impacting the influence of climate change on peace and security	13
1	Water governance, food pricing and natural resource management	15
1.1	TREND: Water stress is increasing worldwide, with competition and tension likely to escalate. Climate change will undermine the potential of water as a source of cooperation, putting the achievement of Sustainable Development Goals and other global agendas like the Paris Agreement at risk.	15
1.2	TREND: Agricultural production will continue to be disrupted by climate change and environmental degradation, likely increasing price volatility in the future. Poorer countries close to the equator with fewer resources will be hardest hit, likely resulting in political instability associated with food price spikes.	16
1.3	TREND: As climate change increases the frequency and intensity of extreme weather events like droughts, wildfires, pests and floods, conflicts linked to resource scarcity and competition will increase and intensify. Most of these conflicts will take place at the local level in rural contexts.	18
1.4	Good practice and lessons	20
2	Migration, displacement and livelihoods	21
2.1	TREND: Climate change, environmental threats and biodiversity loss will amplify existing migration patterns. More people facing loss of livelihoods and liveability in highly climate-exposed locations will move within countries from rural locations to urban centres, with fewer opting for cross-border migration.	21
2.2	TREND: As climate change impacts worsen, fragile urban areas, including megacities, will face growing socio-political tensions and political mobilisation due to increased economic inequality and pressure on governance and services, especially for marginalised groups.	23
2.3	Good practice and lessons	24
3	Energy transition, decarbonisation risks and critical minerals	26
3.1	TREND: The necessary green transition and decarbonisation will add destabilising pressures in many contexts, risking stranded assets and instability in the most fragile communities.	26
3.2	TREND: Efforts of advanced economies, including EU member states, to rapidly procure and safeguard critical minerals for the energy transition may hinder sustainable, responsible and conflict-sensitive global practices.	28
3.3	Good practice and lessons	30

4	Environmental degradation, biodiversity loss and environmental crime	31
4.1	TREND: Climate change, coupled with demographic pressures and rising consumption, is accelerating ecosystem degradation and biodiversity loss. These environmental stressors increase risks to livelihoods, health and inequality, generating security challenges that reverberate across borders.	31
4.2	TREND: Military and defence organisations will increasingly need to navigate both the security challenges amplified by climate change and environmental degradation, while also addressing their own environmental impact - requiring a transformed approach to security strategy that encompasses both dimensions.	33
4.3	Good practice and lessons	35
5	Global governance, financial reform and climate justice	37
5.1	TREND: Rising political fragmentation weakens political will to meet Paris commitments, reduce emissions and support adaptation. Climate impacts will continue to fall most heavily on low-income and marginalised communities, which will reverse development and peacebuilding gains, undermine governance, and increase risks of conflict and instability.	37
5.2	TREND: Inadequate climate financing to fragile states will increase societal disparities and political grievances, fuelling ‘anti-West’ sentiments and related geopolitical divisions, weakening multilateralism along lines of climate justice.	39
5.3	TREND: Climate stress is eroding social bonds, making climate adaption and conflict prevention more challenging. The impacts of climate change will continue to fragment social connections, drive climate-related displacement, and undermine both peace and climate resilience.	41
5.4	Good practice and lessons	42
VII Conclusion		43
VII Bibliography		45
Annex 1: Methodological Framework.....		58

I. Executive Summary

The climate crisis is accelerating at an unprecedented pace, with 2024 marking the first time global temperatures exceeded 1.5°C above pre-industrial levels. This escalating crisis poses direct threats to peace, security, and defence both within the European Union (EU) and around the globe, demanding urgent multilateral action.

Following the **adoption of the EU's Joint Communication**¹ on the climate and security nexus, which establishes an enhanced framework for addressing climate change and environmental degradation as a threat multiplier, this inaugural **Navigating Peace in a Changing Climate** report identifies five critical pathways through which climate change is exacerbating security risks. These pathways will continue to shape the complex interplay between environmental degradation, climate change, and security in the years ahead, necessitating effective action from the EU.

- **Water governance, food pricing and natural resource management:** Climate and environment aggravated scarcity of water, food or land will further exacerbate social and political tensions, resource conflicts, and disrupt agricultural production, disproportionately affecting vulnerable communities and import-dependent nations. However, international cooperation in water governance and sustainable agricultural practices such as agroecology, will offer opportunities to mitigate these risks and foster resilience.
- **Migration, displacement and livelihoods:** Climate change will continue to disrupt both livelihoods and human mobility, affecting communities across all sectors of the economy, straining urban governance and social cohesion. Without robust governance and investments in infrastructure, rapid urban growth will increase socio-political tensions. Supporting resilient livelihoods, building social cohesion and improving rural-urban connectivity will be critical to addressing these challenges.
- **Energy transition, decarbonisation risks and critical minerals:** While global climate commitments on net-zero emissions are growing, achieving a just energy transition will require balancing geopolitical complexities and critical mineral demands with equitable socioeconomic considerations to prevent new forms of inequality and vulnerability. Ensuring conflict-sensitive supply chains and inclusive economic policies will be critical to achieving a just and sustainable energy transition.
- **Environmental degradation, biodiversity loss and environmental crime:** Climate change, environmental degradation, and biodiversity loss will continue to drive a destructive feedback loop in fragile regions, whereby ecological decline amplifies security threats and illicit economies, disproportionately affecting Indigenous Peoples and local communities. Urbanisation, resource overuse, and environmental crimes will exacerbate instability, migration, and inequality and require adaptations in security and defence policy. Inclusive environmental restoration, investments in climate-resilient development, improved civilian-military coordination and measures strengthening the fight against environmental crime are key to building resilience to these risks.
- **Global governance, financial reform and climate justice:** Transparent and accountable governance at both national and global levels will be crucial for managing climate and security threats. As the effectiveness of climate action and financial decisions impact

¹ European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2023: [Joint communication to the European parliament and the council](#). A new outlook on the climate and security nexus. Addressing the impact of climate change and environmental degradation on peace, security and defence.

government legitimacy, the one billion living in fragile and conflict-affected states will bear the highest costs of insufficient action.

Through a mixed methods approach drawing on global data sets and case studies, the report analyses these complex pathways to reveal 12 trends through which climate impacts are disproportionately affecting vulnerable regions. Fragile states receive just 33 cents for every dollar of adaptation finance reaching other low-income countries.² This disparity creates a vicious cycle in which climate impacts, social fragmentation, and security risks become mutually reinforcing.

The EU, spearheading efforts since 2008 to address climate-related security risks, recognises these challenges require a holistic societal approach, integrating climate and environmental science, security analysis, and policymaking. This report serves as a strategic tool to align EU foreign, development, defence and security policies with emerging climate and security challenges, providing actionable insights for policymakers and practitioners to strengthen resilience and adaptive capacities where they are most needed.

The European Union faces a changing geopolitical horizon with heightened global policy divergence and powerful countries increasingly asserting their interests. In the face of volatility in diplomatic and economic relations, maintaining a comprehensive vision of security through multilateral partnerships, sustainable development, humanitarian support as well as peace, security and defence engagement becomes increasingly crucial. While the scale of these challenges is daunting, the EU's continued commitment to utilising its wide array of policies and instruments offers hope for effective action in addressing pressing climate and security challenges.

² Jones, L.P.; Banga, J.; Notkin, B. S.; Brochen, A.; Guillaume, J. 2024: Closing the Gap: Trends in Adaptation Finance for Fragile and Conflict-affected Settings - Executive Brief (English). Washington, D.C.: World Bank Group.

II. Acronyms

CBAM (Carbon Border Adjustment Mechanism)

COP (Conference of the Parties)

CSDP (Common Security and Defence Policy)

DRR (Disaster Risk Reduction)

EU (European Union)

EDA (European Defence Agency)

EMPACT (European Multidisciplinary Platform against Criminal Threats)

FAO (Food and Agriculture Organization)

GAP (Gender Action Plan)

FRLD (Fund for Responding to Loss and Damage)

JRC (Joint Research Centre)

NDICI (Neighbourhood, Development and International Cooperation Instrument)

OECD (Organisation for Economic Co-operation and Development)

SDG (Sustainable Development Goals)

UN (United Nations)

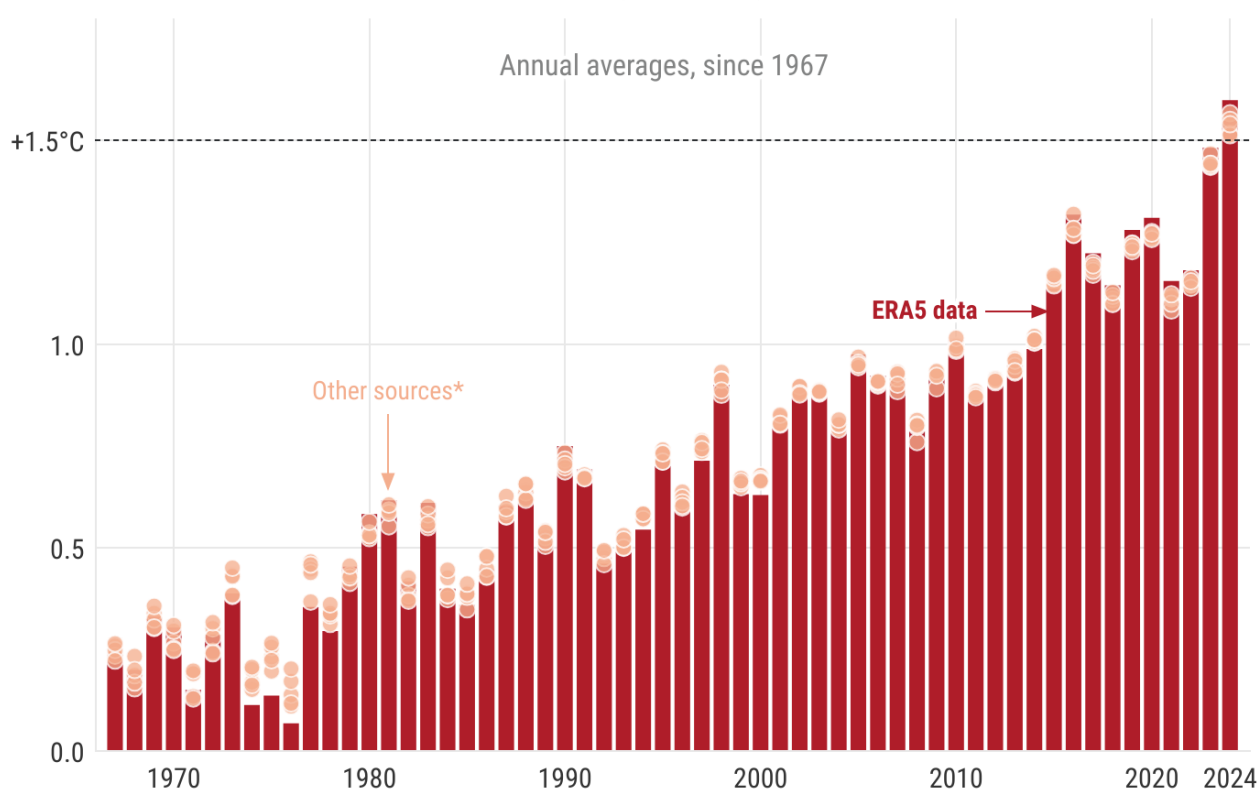
III. Introduction

The climate is transforming at an unprecedented pace, degrading ecosystems and unleashing erratic and extreme weather events that have spared no corner of the globe. Temperatures in 2024 set records as the hottest year ever documented.³ This year also marked the first time global temperatures surpassed 1.5°C above pre-industrial levels.⁴ Exceeding this threshold for a sustained time pushes the Earth's systems beyond critical limits, triggering changes that reinforce further warming and increase cascading consequences for economies and societies. **As global temperatures continue to rise, the safety and security of millions in the European Union (EU), its immediate neighborhood, and around the world, are increasingly at risk.**



Global surface temperature: increase above pre-industrial

Reference period: pre-industrial (1850–1900) • Credit: C3S/ECMWF



*Other sources comprise JRA-3Q, GISTEMPv4, NOAA GlobalTempv6, Berkeley Earth, HadCRUT5.



Figure 1: Global surface temperature: Increase above pre-industrial levels (Source: Copernicus)

³ World Meteorological Organisation 2024: State of the Climate 2024 Update for COP29. One or more year exceeding 1.5 does not imply that '1.5 degrees above pre-industrial levels' as stated in the Paris agreement is out of reach. Rather exceeding 1.5 as referred to in the Paris Agreement is largely understood as exceeding these thresholds for over an extended period of time, typically decades or longer.

⁴ European Commission; Climate Change Service; Copernicus 2024: Surface air temperature for October 2024.

The climate crisis poses a direct threat to people and the ecosystems on which they depend by amplifying risks to human security.⁵ From extreme heat in North Africa and the Sahel, to unprecedented rainfall and landslides in South Asia and South America, and record-setting droughts affecting more than 55 million globally per year, climate-related weather events and disasters are causing significant human suffering.⁶⁷ In contexts of acute insecurity or fragility, these challenges are magnified, profoundly destabilising communities and leading to widespread violence or displacement.

EU Policy Responses

Since 2008 the EU has spearheaded efforts to address climate-related security risks, championing action on climate change and advancing international peace and security. The EU recognises the **compounding risks posed by climate change, environmental degradation, biodiversity loss and pollution on peace, security and defence** both at home and abroad.⁸ As the climate crisis exacerbates existing vulnerabilities and creates new security challenges, the uptick in risks such as unplanned migration, rapid and uncontrolled urbanisation, or resource conflicts can have far-reaching impacts, necessitating robust collaboration. **The geopolitical implications of climate and security are therefore significant and demand urgent attention.**

The security challenges posed by climate-induced impacts are recognised across numerous policy domains including food security, displacement, water, governance, social cohesion and the energy transition - where achieving the 1.5°C target set in the Paris Agreement necessitates a swift transition to energy systems dominated by renewable sources.⁹ This shift is increasingly influencing geopolitical dynamics and altering the traditional balance of power. Effectively addressing these climate and security challenges requires a holistic societal approach that integrates climate science, security analysis, and policymaking. This approach must foster collaboration both vertically among various government levels and stakeholders, and horizontally across different policy areas and sectors.

The EU, Australia, Canada and the United Kingdom are among a growing coalition of international actors working to keep climate and security high on the international agenda. The urgency of these risks is further and powerfully underscored by more than 100 countries co-sponsoring a draft resolution on climate and security at the United Nations Security Council in 2021.¹⁰

⁵ Adger, W.; Neil, J. M. P.; Barnett J.; Dabelko G.D.; Hovelsrud, G.K.; Levy, M.; Oswald, S. U.; Vogel, C. H. 2014: Human Security. In: Climate Change 2014 – Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects. Working Group II Contribution to the IPCC Fifth Assessment Report. Cambridge and New York: Cambridge University Press, pp. 755-791.

⁶ Toreti A.; Tsegai, D.; Maurer, T.; Cremonese, E.; Rossi, L.; Wens, M.; de Moel, H.; Siemons A.; Navarro, J.; Harst Essenfelder, A.; Volpi, D.; Cotti, D.; Sparkes, E.; Hagenlocher, M. 2024: World Drought Atlas. European Commission. Joint Research Centre. United Nations Convention to Combat Desertification. Publications Office of the European Union. Luxembourg.

⁷ World Meteorological Organisation 2024: State of the Climate 2024 Update for COP29.

⁸ European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2023: Joint communication to the European parliament and the council. A new outlook on the climate and security nexus. Addressing the impact of climate change and environmental degradation on peace, security and defence.

⁹ Keramidas, K.; Fosse, F.; Diaz Rincon, A.; Dowling, P.; Garaffa, R.; Ordonez, J.; Russ, P.; Schade, B.; Shmitz, A.; Soria Ramirez, A.; Van Der Vorst, C.; Weitzel, M. 2023: Global Energy and Climate Outlook 2023. European Commission.

¹⁰ adelphi and the Permanent Mission of Guyana to the United Nations 2024: The Impact of Climate Change & Food Insecurity on the Maintenance of International Peace & Security. Report on Guyana's Signature Event during its Presidency of the UN Security Council. Berlin: adelphi.

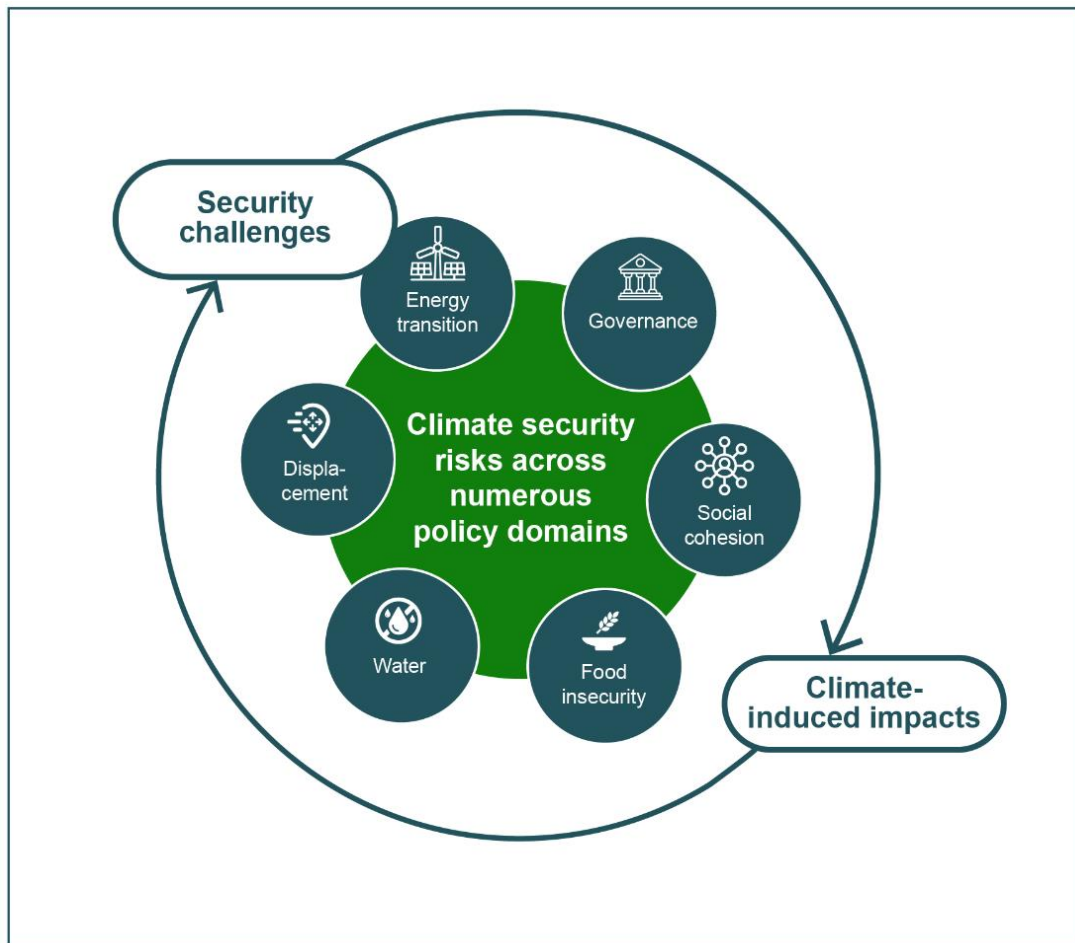


Figure 2: Climate induced security challenges across policy domains (elaborated by adelphi)

The importance of the climate and security nexus for the EU was most recently reaffirmed in the EU’s **Council Conclusions on Green Diplomacy of March 2024**, ‘EU diplomacy promoting the just and inclusive green transition and supporting the implementation of global commitments,’ which describes the climate crisis as ‘posing a global and existential threat and aggravating existing security concerns’ that ‘must be addressed [...] as a core component of EU foreign and security policy.’¹¹ This was also recalled in the **Council Conclusions on EU Security and Defence of May 2024**.¹² The championing of these efforts by the EU, including through the Group of Friends for an Ambitious EU Climate Diplomacy, has created an enabling space for action on climate and security, as well as collaboration across regions and sectors.¹³

While the scale of the challenge may be daunting, there is reason for optimism. The EU continues to utilise a wide array of policies and instruments at its disposal to confront these challenges in its immediate neighbourhood and beyond. The EU, including through the **Joint Research Centre** and **Horizon Europe**,¹⁴ has also been leading on research into climate and security dynamics, strengthening the evidence base for effective policy responses to these interconnected challenges.¹⁵

¹¹ Council of the European Union 2024: Council Conclusions on Green Diplomacy. Council Conclusions 7865/24. 18 March 2024.

¹² Council of the European Union 2024: Council Conclusions on the EU Security and Defence. Outcome of Proceedings 9224/24. 27 May 2024.

¹³ German Federal Office 2022: Launch of the Group of Friends for an ambitious EU climate diplomacy. Luxembourg.

¹⁴ European Commission (n.d.): Horizon Europe.

¹⁵ Examples of EU-funded projects that are highly relevant in the climate and security nexus include: [HABITABLE](#) (Linking Climate Change, Habitability and Social Tipping Points: Scenarios for Climate Migration); [CASCADES](#) (CASCading Climate risks: towards ADaptive and resilient European Societies); [RECEIPT](#) (REmote Climate Effects and their Impact on European sustainability, Policy and Trade); [CoCliCo](#) (Coastal Climate Core Service); [CLIMAAX](#) (CLIMAted risk and vulnerability Assessment framework and toolbox); [ESPRESSO](#) (Enhancing Synergies for disaster PREvention in the EurOpean Union); [CaseXtreme](#) (ChAngeS in the Statistics of EXTremes Events in climate); [MIRACA](#) (Multi-hazard Infrastructure Risk Assessment for Climate Adaptation); [ARCOS](#) (Arctic Observatory for Copernicus SEA Security Service); [CENTAUR](#) (Copernicus Enhanced Tools for

Recognising the need for continuous and up-to-date analyses of emerging climate-induced security risks to guide actions and investments, the EU works to facilitate the inclusion of the climate and security nexus into discussions and decision making at political and strategic levels. This report represents one of these initiatives.

This report was commissioned as foreseen by the EU's Joint Communication on the climate and security nexus '**A new outlook on the climate and security nexus: Addressing the impact of climate change and environmental degradation on peace, security and defence**' from 28 June 2023.¹⁶ The Navigating Peace in a Changing Climate report follows the Joint Communication in identifying the climate crisis as an urgent risk to international peace and security and a priority area for the EU. This is in line with the **Integrated Approach to External Conflicts and Crises**,¹⁷ the **European Green Deal**,¹⁸ and the **Strategic Compass on Security and Defence**.¹⁹

Implications for Security

The European Union should uphold a comprehensive vision of security that recognises how climate change can amplify existing dimensions of fragility and undermine human security. In an era of heightened global policy divergence and mounting geopolitical rivalries between major powers, this becomes particularly crucial. An increasingly divided world is less able to jointly respond to new security threats, while climate-induced fragility might provide additional flash points for confrontation. To deliver on this important work, the Commission must strike the balance between security needs and human rights protection.

The European Union is well placed to act on these needs through continued momentum for the European Green Deal, utilising the development of a **Preparedness Union Strategy**²⁰ for conflict-sensitive and inclusive preparedness, and the mainstreaming of climate and security into the forthcoming **White Paper on the Future of European Defence** as well as the **upcoming Communication on the Integrated Approach to Fragility**.²¹ This integrated approach which promotes "coordinated and mutually reinforced planning, design and implementation of all relevant actions and instruments, building on early warning and conflict analysis and making full use of the EU's mediation and dialogue tools" remains essential for addressing tomorrow's challenges effectively.²² The climate and security trends explored in this report also have important implications for European defence, which were first discussed in the **Climate Change and Defence Roadmap**²³ and were recently reiterated in the **2024 Council Conclusions on EU Defence and Security**.

The climate crisis' manifold impacts on resilience in Europe are significant and have been explored in the first **European Climate Risk Assessment**,²⁴ as well as the Joint Research Centre (JRC) and the European Defence Agency's (EDA) '**Impacts of climate change on defence-related critical**

Anticipative Response to Climate Change in the Emergency and Security Domain); [EGSIEM](#) (European Gravity Service for Improved Emergency Management); [GPP](#) (GEOSS Platform Plus); [PLACARD](#) (PLAtform for Climate Adaptation and Risk reduction); [AD4GD](#) (All Data 4 Green Deal); [Water4All](#) (Water4All – Water Security for the Planet) [MARCLAIMED](#) (Integrated Decision Support Tool for Reliable and Affordable Application of Manage Aquifer Recharge with Alternative Water Resources in River Basin and Drought Management Plans) [TRANS-SAHARA](#) (Novel WEF E Nexus-based approaches towards agroforestry management in the Greater North African Region)

¹⁶ European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2023: Joint communication to the European parliament and the council. A new outlook on the climate and security nexus. Addressing the impact of climate change and environmental degradation on peace, security and defence. 28 June 2023. Brussels.

¹⁷ Council of the European Union 2018: Council Conclusions on the Integrated Approach to External Conflicts and Crises. Council Conclusions 5413/18. 22 January 2018. Brussels.

¹⁸ European Commission 2019: Communication from the Commission. The European Green Deal. Com (2019)640 final. 11 December 2019. Brussels.

¹⁹ Council of the European Union 2022: A strategic Compass for Security and Defence. For a European Union that protects its citizens, values and interests and contributes to international peace and security. 21 March 2022. Brussels.

²⁰ Niinistö, S. 2024: Safer Together: Strengthening Europe's Civilian and Military Preparedness and Readiness. European Commission.

²¹ Lazarou, E. 2024: White Paper on the future of European defence. European Parliamentary Research Service.

²² European Union 2023: European Union Common Security and Defence Policy: Civilian CSDP Compact Towards more effective civilian missions.

²³ European External Action Service 2020: Climate change Defence Roadmap. Council of the European Union. 9 November 2020. Brussels.

²⁴ European Environment Agency 2024: European Climate Risk Assessment. EEA Report 01.

energy infrastructure,²⁵ and the JRC's guidance '**Navigating Climate Change in Defence – Climate Risk Management Guide for Chiefs of Defence Staff**.²⁶ Strengthening European resilience to these threats must be a priority and can only be achieved by adapting to climate change. Beyond domestic responses within Europe, this report underlines that climate and security risks are global and necessitate European engagement in preventing climate impacts and their cascading effects worldwide.

This report is a pilot inaugural instalment in a series of forthcoming reports designed to complement the aforementioned studies by providing timely and comprehensive understanding of climate and security risks in the EU's geographic and thematic priority areas. It also provides a forward-looking perspective on the EU's strategic priorities for climate and security. Its recurring nature will enable it to capture the complex and evolving landscape of climate and security, addressing changes driven by geopolitical shifts, innovative solutions and emerging technologies. Furthermore, it offers new insights on entry-points to support resilience and adaptive capacities where they are most needed. As such, it acts as a resource to inform decision-making processes related to policy and operational planning.

Rather than being comprehensive, this report seeks to outline key challenges and evidence-based responses to equip policymakers with insights for informed decision making, and further exploration.

IV. Conceptual Framework

The analytical framework of this report recognises that today's complex geopolitical landscape - characterised by strategic competition, shifting energy politics, heightened national self-interest, and significant tensions over trade relationships - demands a comprehensive approach to security challenges. As highlighted in the EU's Joint Communication on the climate and security nexus, these disruptive forces are transforming the global operating environment and directly influence how climate and security risks are addressed.

Within this context, human security emerges as a crucial lens for understanding and responding to these challenges. This people-centred approach focuses on protecting communities from critical threats across multiple dimensions - economic, food, health, environmental, community and political security - while recognising their interdependencies.²⁷ The human security paradigm is anchored in a normative system that focuses on protecting individuals and communities' human rights. It also builds on the understanding that human insecurity both causes and enables instability, first within societies, and ultimately between states. As a consequence, and as this report will show, promoting human security is a key building block for international security.

The EU has integrated this approach into its foreign, security, and defence frameworks, acknowledging that protecting individuals and promoting safety, dignity, and livelihoods abroad is essential for ensuring the EU's own security. Thus, **the EU's Integrated Approach to External Conflicts and Crises**,²⁸ emphasises that enhancing human security globally "not only make(s) things safer for people in other countries but also boosts the security of EU citizens." This approach is particularly relevant when examining how climate change and environmental degradation act as risk multipliers for political, social, economic and demographic fragility.²⁹

²⁵ da Costa, R. T.; Krausmann, E.; Hadjisavvas, C. 2023: Impacts of climate change on defence-related critical energy infrastructure. European Commission; Joint Research Centre; European Defence Agency.

²⁶ da Costa, R. T.; Krausmann, E.; Hadjisavvas, C. 2024: Navigating climate change in defence – Climate risk management guide for chiefs of defence staff. European Commission; Joint Research Centre.

²⁷ Jolly, R.; Basu Ray D. 2006: The Human Security Framework and National Human Development Reports. A review of experiences and current debates. National Human Development Report Series. NHDR Occasional Paper 5. United Nations Development Programme.

²⁸ Council of The European Union 2018: Council Conclusions on the Integrated Approach to External Conflicts and Crises. Council Conclusions 5413/18. 22 January 2018.

²⁹ Adger, W.; Neil, J. M. P.; Barnett J.; Dabelko G.D.; Hovelsrud, G.K.; Levy, M.; Oswald, S. U.; Vogel, C. H. 2014: Human Security. In: Climate Change 2014 – Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects. Working Group II Contribution to the IPCC Fifth Assessment Report. Cambridge and New York: Cambridge University Press, pp. 755-791.

The analysis examines climate-security risk pathways by assessing how climate and environmental stressors interact with peace and security risks, considering contextual factors such as **governance, traditional knowledge, culture, gender and youth inclusion, and social resilience**. These factors critically influence vulnerability or resilience to risks. Communities with inadequate governance, deficient infrastructure, and degrading resource bases are particularly susceptible to cascading threats, where challenges in one area (such as water insecurity) can trigger broader instability.

The EU champions climate and security as an avenue to uphold human security, recognising that addressing climate risks requires integrated and coherent cross-sector collaboration.³⁰ This aligns with the Organisation for Economic Cooperation and Development's (OECD) understanding of instability as 'the combination of exposure to risk and insufficient coping capacities of the state, system and/or communities to manage, absorb or mitigate those risks.'³¹

This integrated perspective is reflected in the **EU's Humanitarian-Development-Peace** nexus approach, which emphasises early prevention, long-term solutions, and capacity building for enhanced resilience.³² Climate and security risks have been successfully incorporated into human security frameworks across climate,³³ defence,³⁴ and peacebuilding³⁵ fields, enabling more coherent response to these complex challenges.

To effectively address geopolitical priorities, the EU recognises that climate change and security must be integrated into the broader landscape of external policy including on trade, conflict prevention, crisis management, human rights, and development cooperation. Through the human security lens, multiple policy spheres can work in tandem to address core insecurities imposed by the climate crisis. This creates the foundation for collaborative, preventative action on climate-related security risks, even as geopolitical dynamics continue to evolve.

³⁰ European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2023: Joint communication to the European parliament and the council. A new outlook on the climate and security nexus. Addressing the impact of climate change and environmental degradation on peace, security and defence. 28 June 2023. Brussels. and Council of The European Union 2018: Council Conclusions on the Integrated Approach to External Conflicts and Crises. Council Conclusions 5413/18. 22 January 2018.

³¹ Organisation for Economic Co-operation and Development (OECD) 2022: States of fragility 2022. Paris. OECD Publishing.

³² Council of The European Union 2017: Operationalising the Humanitarian-Development nexus. Council Conclusions 9383/17. 19 May 2017. Brussels.

³³ The recognition of the security consequences of climate change led the Intergovernmental Panel on Climate Change (IPCC), in its Fifth Assessment Report, to include a chapter on human security, defined as protecting the 'vital core' of human lives. See: Adger, W.; Neil, J. M. P.; Barnett J.; Dabelko G.D.; Hovelsrud, G.K.; Levy, M.; Oswald, S. U.; Vogel, C. H. 2014: Human Security. In: Climate Change 2014 – Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects. Working Group II Contribution to the IPCC Fifth Assessment Report. Cambridge and New York: Cambridge University Press, pp. 755-791.

³⁴ NATO 2024: NATO climate change and security impact assessment. Third Edition 2024.

³⁵ Gaston, E.; Brown, O.; al-Dawsari, N.; Downing, C.; Day, A.; Bodewig, R. 2023: Climate-Security and peacebuilding. Thematic review. United Nations University Centre for Policy Research.

V. Methodology

This report draws on recent research in climate, environment, peacebuilding and security, integrating insights from across different scientific disciplines. It identifies key trends across core pathways linking climate change, environmental degradation, peace, security and defence. As well as risks, the analysis highlights opportunities to enhance resilience.

The report's findings derive from a mixed methods approach that offers a clear advantage in studying climate and security interactions across different time scales, avoiding overreliance on models trained on historical data.³⁶ The analysis centres on five core pathways on which policymakers need to focus to accurately assess climate risks in the coming years. These core pathways are analysed with a comprehensive range of risk determinants including vulnerability and resilience.³⁷

The methodology is replicable for future trend reports and is centred around the following three key questions:

- What are the impacts of climate change and environmental degradation on peace, security and defence, and how do these affect vulnerable groups in fragile and conflict-affected states?
- How do these trends intersect with the EU's integrated common foreign and security policy (CFSP) and its broad range of external cooperation across different policy areas?
- What are the available EU policy instruments or options to address these challenges? What are potential shortcomings and opportunities for more effectively addressing this nexus?

In seeking to understand and communicate the impacts of climate change and environmental degradation on peace, security and defence, this report builds on a broad and growing literature on the subject. This literature comprises both more quantitatively oriented studies that attempt to quantify and estimate climate change impacts as well as more qualitatively oriented research that seeks to assess what such impacts (on water and food security, displacement etc.) might imply for the political economies of countries or regions, and what risks this implies for peace and stability. Whereas quantitative approaches have advantages in describing the scale of the challenges and allowing for generalisation, qualitative approaches are more easily attuned to understanding the specific contexts in which multiple variables and actors interact – and what entry points might help strengthen peace and stability.

The quantitative literature that this report builds on includes numerous indicators and data sets that track climate change impacts and their effects over time. They use EU climate data and agroclimatic indicators from reliable global climate models - such as Copernicus Climate Data Store, INFORM Climate Change, INFORM Risk, African Knowledge Platform and data sets from the Food and Agricultural Organization (FAO), the OECD, and Earth Observation technologies - to assess physical climate risks, including temperature changes, precipitation patterns and extreme weather events. To inform vulnerability and resilience capacities at various scales, they often incorporate socioeconomic data and sometimes also security data. Wherever possible, the authors sought to include disaggregated analyses that examine the differentiated impacts of climate and environmental change, notably on women, children and vulnerable groups.

To contextualise quantitative impact data, the report builds on discourse and thematic analyses that help explain the complex interactions between climate-induced security risks while exploring ways to reduce them. It placed its qualitative findings within the broader climate and security discourse.

The report systematically draws on the 43 case studies, assessments, mapping exercises and scenarios from the Weathering Risk initiative (2020–2024) complemented by key additional climate

³⁶ Šedová, B.; Binder, L.; Michelini, S.; Schellens, M.; Rüttinger, L. 2024: A review of climate security risk assessment tools. *Environment and Security*, 2:1, pp. 175-210.

³⁷ Rüttinger, L.; Vivekananda, J.; Steinkraus, A. 2023: *Weathering Risk climate security assessment methodology. Guide and tools*. Berlin: adelphi.

and security publications.³⁸ Based on evidence from real world examples, the report outlines important dynamics, key uncertainties and entry points to address these risks.

Based on these analyses, the report identifies twelve important trends clustered into five topic areas. These trends spell out critical risks to peace and security that are driven or amplified by climate change, highlighting aspects that the authors deem particularly relevant for the future evolution of the trends. Findings were validated through triangulation using diverse data sources and peer-reviewed publications. The trends range from risks that are more directly linked to climate change impacts such as the changing availability of and access to natural resources towards more indirect, but no less important risks such as an exacerbation of global inequalities and a further delegitimisation of the current international order, with risks for regional and global order and Europe's place therein.

Annex 1 provides a methodological framework that can be replicated to assess climate and security trends on a recurring basis. This includes selected analytical components and indicators that can be used to further explore the trends. While not exhaustive, these indicators can help monitor changes over time and lay the groundwork for more sophisticated quantitative analysis in future reports. The annex demonstrates the wide range of data necessary to assess trends on climate, peace and security, highlighting both the interconnections between different sectors and the range of entry points that are available for addressing climate and security challenges over different time frames.

Against the backdrop of time and resource constraints, the present report is not exhaustive. It does not encompass all potential variables or scenarios pertaining to climate and security interactions, and it cannot go to great depth on how they would play out in a specific national or regional context (though many of the cited works go further). Moreover, climate projections are inherently uncertain, and that uncertainty increases as any ultimate political or security result that follows from physical impacts are first mediated by many interacting socioeconomic, cultural and political variables and repeatedly shaped by human agency. Consequently, the linkages between climate change and peace and security are not deterministic, and the findings presented in this report not all-encompassing.

To compile lessons and best practices, the report analyses existing projects under the Climate for Peace Initiative, complemented by reviewing United Nations (UN), EU, and bilateral peace operations in climate-affected contexts, as well as various Conference of the Parties (COP) climate and security initiatives. It examines policy documents, project reports, and case studies to identify recurring themes and innovative practices. This was supplemented by expert interviews and focus group discussions to verify and validate findings. This combined approach helped develop evidence-based lessons and best practices for climate and security actions in conflict-affected and peacebuilding contexts.

VI. Trends impacting the influence of climate change on peace and security

The following section examines emerging trends and thematic developments in the climate and security nexus through a sophisticated multi-causal lens, acknowledging the complex web of cause-and-effect relationships that characterise this domain. The analysis of the interactions between climate change, environment, security and peace are clustered into five topic areas.

While anchored in current data, historical patterns, and projected emissions trajectories extending to 2030, 2050, and 2080, the analysis specifically focuses on anticipated developments within a 10–15-year horizon. This temporal framework allows for a detailed examination of near-term security implications, including unprecedented stresses to the global order, whilst remaining cognisant of longer-term climate trajectories.

It is crucial to note that these trends should not be interpreted as definitive predictions, but rather as evidence-based projections of how climate and security dynamics may evolve, shaped by the

³⁸ Rüttinger, L.; Smith, D.; Stang, G.; Tänzler, D.; Vivekananda, J. 2015: A new climate for peace. Taking action on climate and fragility risks. Berlin: adelphi.

interplay of various factors including current environmental data, socio-political developments, and established emissions pathways.

This report is designed as a strategic tool to support EU action by aligning foreign, development, defence, and security policies with emerging climate and security challenges. By mapping these interconnected trends, it provides decision-makers with actionable insights to strengthen resilience and adaptive capacities where they are most needed. Policymakers and practitioners can use this analysis to ensure that strategies are both effective and responsive to evolving conditions.

1 Water governance, food pricing and natural resource management

Climate and environmental change reduces the availability of natural resources such as land and water. In areas experiencing conflict or in areas where certain groups face political exclusion and where governments are weak, **natural resource scarcity can worsen existing disputes and decrease already low levels of socio-ecological resilience**. This can increase social tensions in and between communities, deepen political conflicts and aggravate diplomatic tensions.³⁹

Countries with high levels of hunger and limited access to sufficient affordable, nutritious food are often also highly vulnerable to the impacts of climate change, making agriculture more difficult. This impacts everyone but has **disproportionate consequences for import-reliant countries** and those who rely on agriculture for survival. The rise of global food prices and food insecurity threatens livelihood stability, potentially catalysing social unrest and heightening conflict risks.

1.1 TREND: Water stress is increasing worldwide, with competition and tension likely to escalate. Climate change will undermine the potential of water as a source of cooperation, putting the achievement of Sustainable Development Goals and other global agendas like the Paris Agreement at risk.

Water stress occurs when demand in a given area exceeds the supply. Water resource dynamics are increasingly affected by both climatic factors — including altered seasonal flows, extreme weather events or regional scarcity - and societal transformations, such as demographic shifts, pollution, unsustainable management, evolving consumption patterns, and expanding infrastructure development.

There may be a shortage of water because of local ecological conditions or due to a lack of proper infrastructure or mismanagement. Even high-income countries, despite adequate resources to support adaptation, face water stress due to a range of factors including climate change, urbanisation, intensive industrial use, aging infrastructure or environmental regulations.

Climate change compounds pressures on water governance in many basins, which in turn affects human security and prospects for peace through its adverse impacts on food security, livelihoods, health, energy and climate resilience.⁴⁰ This is **particularly challenging in transboundary basins where one or several riparian states may be very dependent on other states for water supply or where governance mechanisms for allocating resources and resolving conflicting demands on water rights are weak**. The Mekong River basin, flowing through Southeast Asian countries including China, Myanmar, Laos, Thailand, Cambodia, and Vietnam, is a crucial lifeline for millions. However, climate change is disrupting this vital resource, with altered rainfall patterns and prolonged droughts affecting water flow and availability. These changes are **intensifying existing tensions over dam construction and water usage**, particularly between upstream and downstream nations.⁴¹

So far, international cooperation has been a mitigating factor in conflicts over water. In the post-World War II period, nation states have made concerted efforts to reduce tensions over water and ensure water rights. Most transboundary water disputes have been successfully managed cooperatively.⁴² Some 300 international water agreements have been signed since 1948. For example, India and Pakistan signed the Indus Water Treaty in 1960 and have managed to fulfil its

³⁹ A short synthesis showcasing the case of the Nile basin can be found here: <https://climate-diplomacy.org/magazine/cooperation/strengthening-water-diplomacy>

⁴⁰ Notable examples of water-related conflicts include disputes over water in the Nile Basin, water shortages and public discontent in Yemen, transboundary water disputes between Afghanistan and Iran, Dam projects and disputes in the Mekong River Basin, dispute over water in the Cauvery Basin in India, Drought, livestock prices and armed conflict in Somalia, Turkey-Armenia water tensions and cooperation, growing water scarcity and conflict in Egypt, and violence related to water privatisation in Cochabamba, Bolivia. Detges, A.; Pohl, B.; Schaller, S. 2017. Editor's Pick: 10 Violent Water Conflicts. adelphi.

⁴¹ Climate Diplomacy (n.d.): Dam projects and disputes in the Mekong River Basin. adelphi Global; German Federal Foreign Office.

⁴² Felter, C.; Robinson, K. 2021: Water Stress: A Global Problem That's Getting Worse. Council on Foreign Relations.

requirements even during periods of armed confrontation.⁴³ International norms also help to prevent further escalation; support by the African Union for mediation between Ethiopia and Egypt, endorsed by the UN Security Council, is a case in point.⁴⁴ Transboundary cooperation can significantly increase benefits for all riparians and thereby help defuse conflict.⁴⁵ For example, the Itaipu project between Brazil and Paraguay in 1973 ended a long-lasting border dispute by building a jointly-owned hydropower facility and is another example of mutually beneficial cooperation.⁴⁶

However, with **climate change leading to increased uncertainty around water availability, the resolve to cooperate rather than compete over water may weaken at all levels**. Global democratic backsliding and increasing instability could also **spur a growth in tensions — both violent and non-violent — around the world, which could have a major impact on water insecurity** in the coming decade. In Yemen, for example, weak governance has led to unsustainable resource use, particularly in fishing and groundwater extraction. The country faces a looming water crisis, with groundwater reserves at risk of depletion within a generation.⁴⁷

Mounting climate pressures on water makes it more challenging to achieve some **Sustainable Development Goals (SDGs)**, given the critical nature of water for its contribution to sustainable development, the eradication of poverty and hunger, and importantly, peace and stability. Already, over 70 countries have scored 'low or medium low' on SDG 6, which focuses on ensuring water and sanitation for all. These countries, with limited water resource management, often have lower socioeconomic development and face growing challenges like pollution. They are likely to remain highly vulnerable to water insecurity, pollution, floods, and droughts for decades with negative impacts to their national economies.⁴⁸ Reduced collaboration over water further undermines the 2022 UN General Assembly framing of access to water as a fundamental aspect of the human right to a clean, healthy and sustainable environment.⁴⁹

1.2 TREND: Agricultural production will continue to be disrupted by climate change and environmental degradation, likely increasing price volatility in the future. Poorer countries close to the equator with fewer resources will be hardest hit, likely resulting in political instability associated with food price spikes.

The increased uncertainty of weather patterns directly affects agricultural production, driving concerns about both the levels of future food production and price volatility. Climate change will disrupt traditional farming regions, forcing agricultural adaptation through new locations, techniques, and crops. Similarly, **environmental degradation is driving a decline in the diversity of pollinators, insectivores, and other beneficial organisms, likely leading to lower crop yields** and increasing vulnerability to pests and diseases over time.⁵⁰ Food prices are highly susceptible to various external shocks: declining soil productivity due to salinisation, erosion, and nutrient depletion; drought and pollution; armed conflict or political instability disrupting production; trade restrictions; and a growing global middle class driving up demand for resource-intensive foods like meat.

⁴³ United Nations Economic Commission for Europe (UNECE) 2021: Practical Guide for the Development of Agreements or Other Arrangements for Transboundary Water Cooperation. See also: Pohl, Benjamin et al. 2014, The Rise of Hydro-Diplomacy. Strengthening foreign policy for transboundary waters. adelphi. <https://adelphi.de/en/publications/the-rise-of-hydro-diplomacy>, p. 18

⁴⁴ United Nations 2021: Egypt, Ethiopia, Sudan Should Negotiate Mutually Beneficial Agreement over Management of Nile Waters, Top Official Tells Security Council. SC/14576. 8 July 2021.

⁴⁵ See e.g. the five case studies in Kramer, A.; Hensengerth, O.; Mertens, A.; Carius, A. 2012: Assessment of RBO-Level Mechanisms for Sustainable Hydropower Development and Management. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

⁴⁶ Ibid.

⁴⁷ Weathering Risk, adelphi. 2024. Voices from Yemen – How environmental dialogues can contribute to resilience and peace.

⁴⁸ United Nations; UN Water; UN Environment Programme 2024: Progress on implementation of Integrated Water Resources Management: Mid-term status of SDG Indicator 6.5.1 and acceleration needs, with a special focus on Climate Change.

⁴⁹ Gueye, M. K.; de Meyer, T. 2022: UN General Assembly recognizes human right to a clean, healthy, and sustainable environment.

⁵⁰ European Commission 2023: Commission Staff Working Document: Drivers of food security.

Price volatility is less likely to affect stability in richer countries,⁵¹ and indeed some countries, including Ethiopia, are potentially poised to benefit from higher yields.⁵² Decreasing water availability is also a significant consequence of climate change and driving food insecurity. In a scenario with a 3.5°C temperature increase and a 30% reduction in rainfall, Central and South America are projected to experience a decline in crop and livestock production and exports.⁵³ This decline is expected to worsen food insecurity, with Guatemala potentially facing a 1.2% decrease in GDP.⁵⁴

Poorer countries with fewer resources to support adaptation will be hit hardest. Those countries where populations can mobilise are expected to experience **significant political unrest** should food prices see a sudden spike. **Food insecurity and conflict are mutually reinforcing and closely linked**—decreased agricultural and economic productivity because of climate change will increase food prices, compounding fragility and conflict across the globe.⁵⁵ In the Middle East, many countries rely heavily on food imports, making them vulnerable to global price fluctuations. Over the past few decades, rising food prices, high import dependencies and regional risk factors including structural adjustment policies, led to strong destabilising effects, and were considered an important aggravating factor in the onset of the Arab Spring revolutions.⁵⁶

Ongoing technological development and the cyclical nature of agribusiness are expected to mitigate some — but not all — of the negative effects on the overall food index. More resilient seed and grain varieties and better agricultural practices are being rapidly rolled out to enable increased food supply, although some advances may take longer than the next ten years. In Somalia, regenerative agriculture is being promoted to enhance resilience against climatic shocks by reviving community-managed seed systems, promoting crop diversity, and leveraging traditional knowledge. This approach aims to encourage resource-based cooperation between clans for sustainable development.⁵⁷

If the **uptake of technological innovations is inequitable or fails to keep up with the projected changes** in agricultural productivity and food demand, however, it will result in a production gap, leading to higher food prices, unsustainable production practices and increased food insecurity. There are also risks that food crops will be increasingly replaced by energy crops for bioenergy production, leading to increased food prices and reduced availability of food crops. There may also be **resistance to some technologies** — for example, the non-genetically modified organism movement or mistrust of ‘Western’ technology — leading to slower or no uptake.

⁵¹ In richer countries, the potential link between increasing food prices, inflation, economic distress, political discontent and rising populism is feasible however, and may result in further prioritization of domestic interests over foreign climate, peace or sustainable development commitments.

⁵² Rüttinger, L.; Destrijcker, L.; Morales-Muñoz, H.; Foong, A.; Gomolka, J.; Binder, L.; Abdulkadir, T.; Akosa, T.; Belli, T.; Brubacher, M.; Dia, M.; Guillier, M.; Kadry, S.; Kendyuo, B.; Maviza, G.; Moyo, C.; Ndjekouneyoum, S.; Ogallo, L.; Saraka, M.; Šedová B.; Villa, V. 2024: Weathering Risk Africa Climate Security Risk Assessment. Berlin: adelphi.

⁵³ Pörtner, H. O.; Roberts, D. C.; Tignor, M.; Poloczanska, E. S.; Mintenbeck, K.; Alegría, A.; Craig, M.; Langsdorf, S.; Löschke, S.; Möller, V.; Okem, A.; Rama, B. (eds.) 2022: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK and New York, USA: Cambridge University Press.

⁵⁴ Ibid.

⁵⁵ adelphi and the Permanent Mission of Guyana to the United Nations 2024: The Impact of Climate Change & Food Insecurity on the Maintenance of International Peace & Security. Report on Guyana’s Signature Event during its Presidency of the UN Security Council. Berlin: adelphi.

⁵⁶ Climate Diplomacy (n.d.): Food price volatility and fragility in the MENA region. adelphi Global; German Federal Foreign Office.

⁵⁷ Böhle, A-S.; Tarif, K. 2024: Cultivating change: regenerative agriculture and peacebuilding in South-Central Somalia. SIPRI Policy Brief.

A high-emissions scenario by 2035 would lead to a 24% decline in corn and maize production, starting in the tropics and then affecting more advanced economies as well.⁵⁸ Temperature increases would **increase the likelihood of simultaneous droughts in the Big Five producers** (Argentina, Brazil, China, Ukraine and US) from 0% in any given year to 7%.⁵⁹ While grain production would increase or become feasible in certain areas due to climate change (e.g., the location of farms could be moved over time to more favourable climates of the future), it would require shifts in migration and take time to exploit the shifting weather patterns to benefit food production.



Figure 3: Risks from climate-induced temperature increase in The Big Five (elaborated by adelphi)

1.3 TREND: As climate change increases the frequency and intensity of extreme weather events like droughts, wildfires, pests and floods, conflicts linked to resource scarcity and competition will increase and intensify. Most of these conflicts will take place at the local level in rural contexts.

Climate change impacts on natural resource availability, accessibility, and quality — particularly affecting land, water, soil, and agricultural assets — can **intensify competition and create conflicts, altering existing resource management dynamics**. In Kenya, climate change is disrupting traditional pastoral patterns as drought depletes water and grazing lands. This forces herders to move their livestock into territories used by other farming and pastoral communities, sparking resource conflicts. The **link between pastoral violence and erratic weather** is clear: when drought strikes, communities are forced to compete for increasingly scarce water and pasture.⁶⁰

In some countries, the pastoral economy can comprise up to 90% of all employment opportunities and 95% of family income and livelihood security.⁶¹ The **degradation of climate-sensitive natural resources and economic assets like pastures, cropland, arable land, fishing grounds and livestock drastically disrupt livelihoods** that depend on these resources. 80% of the world's poor depend on natural resources for their livelihoods in rural areas.⁶²

⁵⁸ Gray, E. 2021: Global Climate Change Impact on Crops Expected Within 10 Years, NASA Study Finds. Global Climate Change Vital Signs of the Planet.

⁵⁹ Qi, W.; Feng, L.; Yang, H.; Liu, J. 2022: Increasing Concurrent Drought Probability in Global Main Crop Production Countries. In Geophysical Research Letters. Volume 49, Issue 6.

⁶⁰ Whitaker, E.; Destrijcker, L.; Dieffenbacher, J.; Kurnoth, H. 2023. Climate Security Study: Kenya. adelphi

⁶¹ Kagunyu, A.W.; Thurairira, E.G.; Wanjohi, J.G. 2017: Development agents and their role in cushioning the pastoralists of Isiolo Central Sub-County, Kenya, against negative effects of climate variability. Pastoralism 7:33.

⁶² World Bank 2014: For Up to 800 Million Rural Poor, a Strong World Bank Commitment to Agriculture.

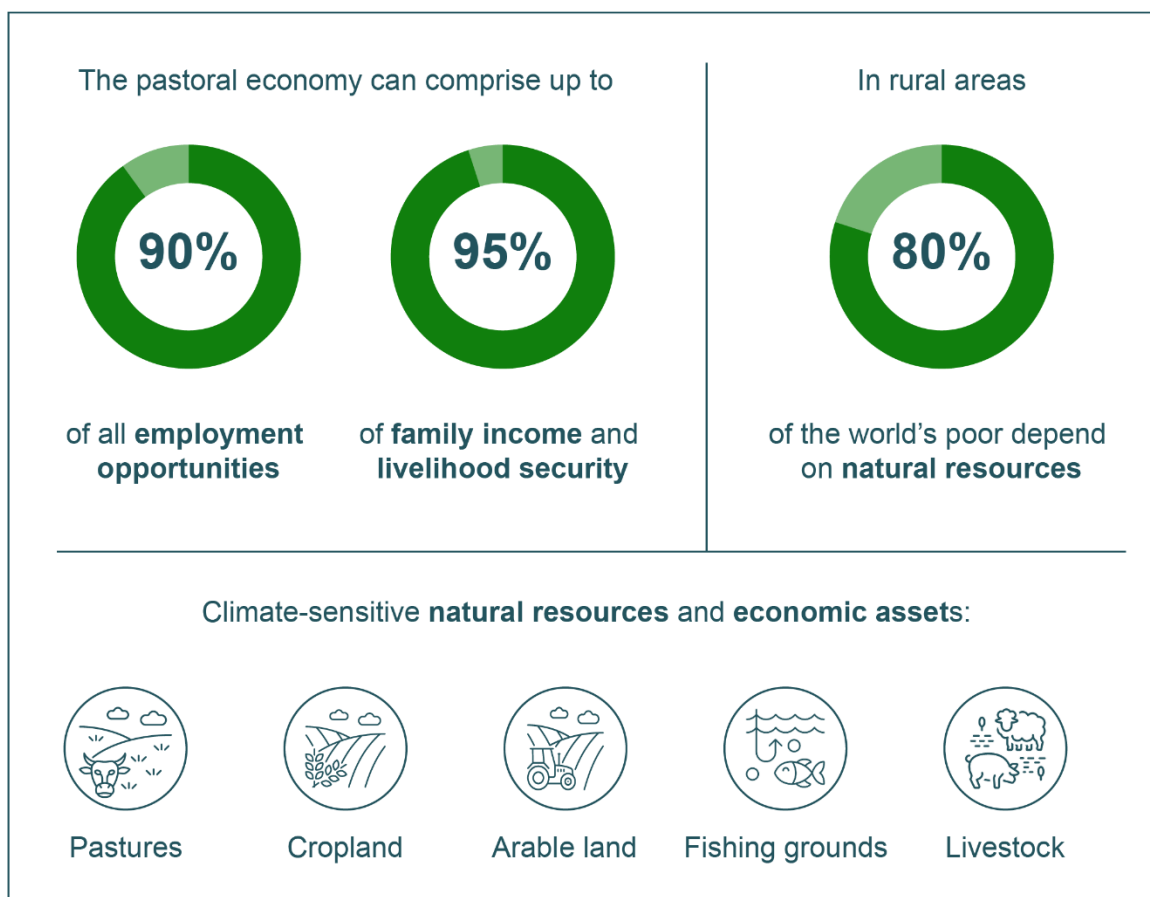


Figure 4: Climate-sensitive livelihood opportunities, natural resources and economic assets (elaborated by adelphi)

Conflict will continue to emerge when **traditional resource management clashes with imposed systems, especially where resource distribution is unequal and legal frameworks are unclear.** In the Democratic Republic of the Congo (DRC) and across Africa, weak land tenure policies fuel tensions.⁶³ This insecurity creates a destructive cycle where uncertain land rights leads to resource degradation, which in turn worsens food and water scarcity, driving conflict or forcing people to relocate. Similarly, in Afghanistan's central highlands, land conflict between Hazara villagers and Pashtun nomads, the Kuchis, has intensified under the Islamic Emirate of Afghanistan's rule, as Kuchis return to reclaim pastures and land property after 40 years.⁶⁴

Different groups of people based on, for example, gender, age, religion and livelihood have different levels of access, knowledge of and control over natural resources. The gendered nature of household resource management, specifically in food and water provision, combined with distinct patterns of public service utilisation, increases women's exposure to environmental stressors. These **identity-based barriers often prevent women and other marginalised groups from owning land and earning income, driving fragility.**

⁶³ Freudenberger, M.; Sanjak, J.; Tagliarino, N.; Thomson, N. 2019. Climate Change, Land and Resource Governance, and Violent Extremism: Spotlight on the African Sahel. Tetra Tech.

⁶⁴ Foschini, F.; Mirzada, R. 2024: The Pastures of Heaven: An update of Kuchi-Hazara disputes as spring approaches. Afghanistan Analysts Network.

1.4 Good practice and lessons

While effective climate mitigation and adaptation policies are essential for preventing future security risks, they must be **designed with attention to conflict dynamics and climatic vulnerabilities** to avoid unintended consequences. The **EU-funded Horizon Europe** program **CASCADES** project advances this work by developing critical evidence to inform decision-making on climate resilience in Europe and beyond.⁶⁵ Successful responses integrate natural resource management with livelihood diversification, helping communities adapt to environmental shocks while strengthening social cohesion and economic opportunities. The sharing of local and indigenous knowledge from neighbouring regions that have developed successful adaptation and mitigation strategies can also be promoted to support adaptation.

This approach is particularly crucial as climate risks can entrench cycles of violence, though well-designed adaptation efforts can serve as vehicles for peacebuilding. **Special attention must be paid to gender inequality and human rights**, with capacity building projects supporting excluded groups, including youth, through targeted economic and vocational initiatives. The EU deploys several key instruments to achieve these goals.

The EU's multiannual financial framework 2021-2027 including the **Neighbourhood, Development Cooperation and International Cooperation (NDICI)–Global Europe**, the external development financing tool, commits 30% to climate objectives, and up to 10% for biodiversity by 2027, while integrating conflict-sensitive adaptation and disaster risk reduction. Climate components within the NDICI have much scope to better integrate peace and security dimension, and similarly the peace and security components have scope to better integrate climate considerations.

This is complemented by **EU Global Gateway investments** in natural resource management and ecological restoration, exemplified by the EUR 700 million Team Europe Initiative in Central Asia. The Global Gateway strategy also includes a focus on gender equality and women's and girl's empowerment. EU financial commitments to gender equality and women's empowerment as a policy objective in climate adaptation and mitigation, biodiversity and environment protection represented 83% of all sector funding 2022.⁶⁶ **Renewed efforts are required, however, to build conducive environments to ensure women and girls have significant roles and leadership positions in climate-related decision making** and in economic sectors crucial for the green transition. The EU can further leverage diplomatic mediation for resource conflicts and provide humanitarian assistance, including through the Union Civil Protection Mechanism and food security programmes, particularly in climate-vulnerable and fragile regions.

In its engagement for international security, the EU's Common security and defence policy (CSDP) missions, which often operate in contexts affected by climate change and environmental degradation, are an important entry point when engaging with national security forces on the climate and security nexus. CSDP missions are guided in their engagement on the climate and security nexus by the **Climate and Defence Roadmap and Civilian CSDP Compact**.⁶⁷ The CSDP-Climate Package and deployment of environmental advisors by 2025 will strengthen this approach, ensuring that climate and environmental considerations inform mission planning and deployment. These efforts should align with upcoming Communication on the **Integrated Approach to Fragility**, building resilience and mainstreaming climate and environmental considerations.

⁶⁵ Townend, R.; Aylett, C.; Benzie, M. 2023: Cascading climate risks: strategic recommendations for European resilience. CASCADES. From 2019-2023 adelphi was a member of the CASCADES consortium which aimed to develop a European policy framework to address risks associated with Europe's extensive global connections through trade, investment and diplomatic interests that increased the continents' exposure to climate risks.

⁶⁶ High Representative of the Union for Foreign Affairs and Security Policy 2023: Joint Report to the European Parliament and the Council: Joint mid-term report on the implementation of the EU Gender Action Plan (GAP III). European Commission.

⁶⁷ European Union 2023: European Union Common Security and Defence Policy: Civilian CSDP Compact Towards more effective civilian missions.

2 Migration, displacement and livelihoods

Climate change disrupts where people live and how they earn a living. This is especially the case in predominantly agrarian communities where livelihoods are directly affected by climate impacts, **but also affects secondary and tertiary sector jobs such as tourism and food processing – especially when social safety nets are lacking.** These impacts can push people to move or change their regular migratory patterns, which could put them in conflict with others especially when moving to places where resources are already scarce. **In already fragile or conflict-affected regions, this may spur instability, violence and decreases resilience.** These risks are already undermining social balances within and between communities and increasing pressure on already underserved, rapidly growing urban areas, stretching governance capacities, resources and services.

Causes of and linkages between migration, instability and fragility are multidimensional and challenging to measure in precisely quantifiable metrics. While the reasons people move, like the links between migration and climate change, are complex, multifaceted and context-dependent, evidence shows that **climate-induced environmental pressures, livelihood stress and weakening governance increasingly affect migration patterns.** Individuals might choose or be forced to migrate, either in direct response to climatic impacts or as an indirect response to climate-related stresses to livelihoods.⁶⁸

Conflict and violence are also key drivers of mobility. Of course, these drivers are not mutually exclusive. In fact, with climate change, they more often reinforce each other. **Migration patterns correlate with community resilience** to climate impacts, which can be strengthened through targeted adaptation measures including enhanced access to infrastructure, social support networks, and legal frameworks.

2.1 TREND: Climate change, environmental threats and biodiversity loss will amplify existing migration patterns. More people facing loss of livelihoods and liveability in highly climate-exposed locations will move within countries from rural locations to urban centres, with fewer opting for cross-border migration.

There are considerable misconceptions about why people move, how many move, and what effects these migration patterns have. While there are often forecasts of large-scale migration, the evidence suggests a more complex situation.⁶⁹ In low- and middle-income countries, **most movement will be within-countries, from rural to urban settings,** a trend which is projected to increase.⁷⁰

From 2020-2023 there were upwards of 110 million internal displacements as a result of disasters in 188 countries and territories. Floods and storms drove most of that displacement, driving 53 million and 45 million people respectively.⁷¹ Research also points to a positive relationship between rainfall shortage and outmigration. A notable increase in outmigration was observed within Guatemala, El Salvador and Honduras following the onset of drought, which had adversely affected agricultural land and, consequently, food security.⁷²

Currently, most migration is temporary rather than permanent, but this trend will likely change over time, as **climate impacts reduce the viability of returning.** While rapid-onset disasters typically lead to short-term displacement, people may decide to move permanently or go farther away if

⁶⁸ Ginetti, J.; Kam, P. M.; Siguan, G. A.; Schewe, J.; Milano, L. 2019: Assessing the impacts of climate change on flood displacement risk. IDMC Methodological Paper. Cattaneo, C.; Beine, M.; Fröhlich, C. J.; Kniveton, D.; Martinez-Zarzoso, I.; Mastroiello, M.; Millock, K.; Piguat, E.; Schraven, B. 2019: Human Migration in the Era of Climate Change. Review of Environmental Economics and Policy 13:2, pp. 189-206. Bosetti, V.; Cattaneo, C.; Peri, G. 2018: Should they stay or should they go? Climate Migrants and Local Conflicts. NBER Working Paper, No. 24447. Cambridge, MA: National Bureau of Economic Research.

⁶⁹ Huang, L. 2023. Climate Migration 101: An Explainer. Migration Policy Institute.

⁷⁰ United Nations (n.d.): Around 2.5 billion more people will be living in cities by 2050, projects new UN report.

⁷¹ Internal Displacement Monitoring Centre (n.d.): IDMC Data Portal. Internal Displacements 2020-2023.

⁷² United Nations Environment Program 2023: Human Migration and Natural Resources: Global Assessment of an adaptive complex system. Nairobi, Kenya: UNEP.

events recur repeatedly or cause massive damage. **As warming intensifies, regions with high exposure and low ability to adapt would likely experience involuntary migration.**⁷³

The Philippines, for example, is especially vulnerable to coastal hazards exacerbated by climate change. In 2024, the country endured six major storms in November alone which resulted in more than 250,000 houses and 300 schools damaged, and water supplies affected in more than 50 cities.⁷⁴ This occurred just two months after suffering Typhoon Yagi, the most powerful storm to hit the South China Sea in 30 years.⁷⁵ As one of the most cyclone-prone countries in the world, the projected increase in intensity of cyclones will make a return to damage-prone areas in coastal communities less viable.⁷⁶ The **viability of return is further undermined by preexisting vulnerabilities and capacity for recovery**, as well as resulting physical damage, asset loss and financial recovery.

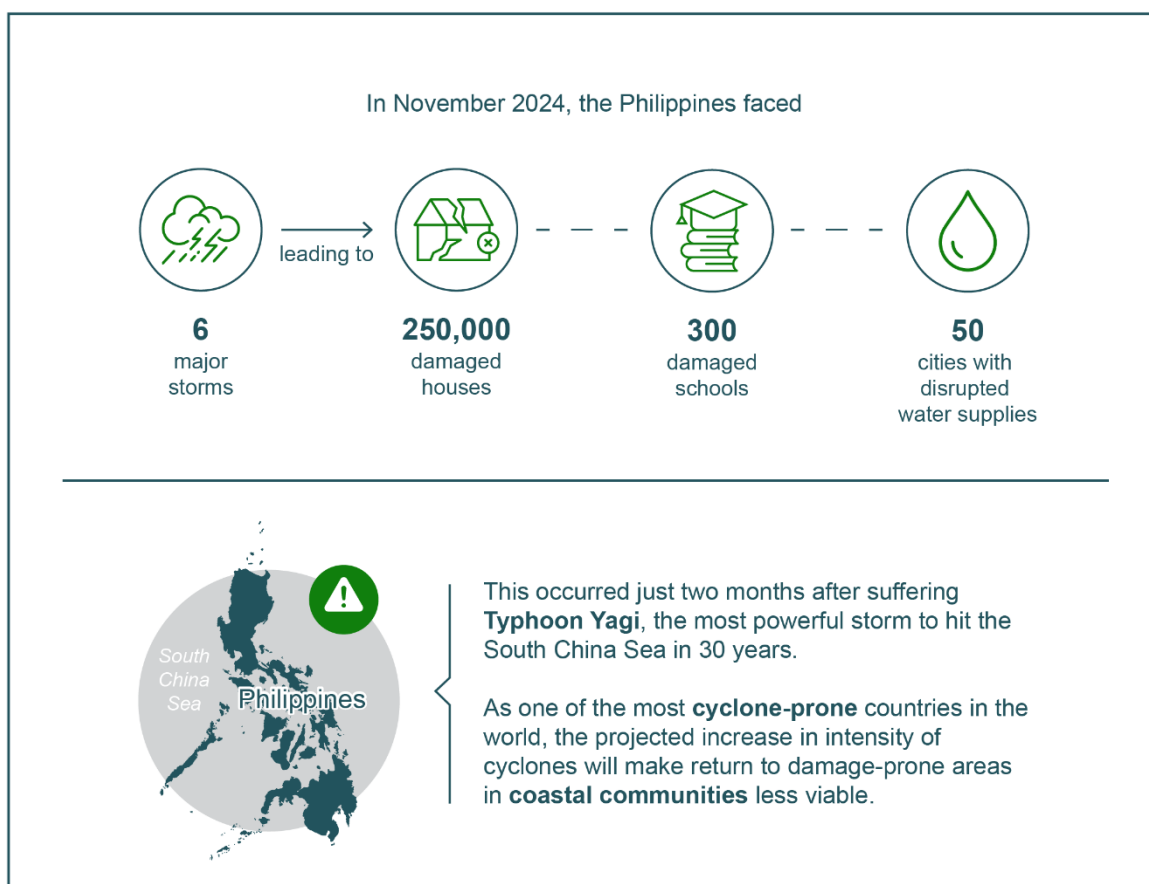


Figure 5: Occurrence of major storms in the Philippines, 2024 (elaborated by adelphi)

In Small Island Developing States, migration trends centre around rural-to-urban shifts, movement between smaller islands, and displacement due to disasters. These trends, seen in places like Kiribati and the Maldives, are driven by the pursuit of better employment and education opportunities.⁷⁷ When it comes to planning relief, disaster-displaced people are more likely to stay in

⁷³ Pörtner, H. O.; Roberts, D. C.; Tignor, M.; Poloczanska, E. S.; Mintenbeck, K.; Alegria, A.; Craig, M.; Langsdorf, S.; Löschke, S.; Möller, V.; Okem, A.; Rama, B. (eds.) 2022: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK and New York, USA: Cambridge University Press.

⁷⁴ International Federation of Red Cross and Red Crescent Societies 2024: Philippines, Asia Pacific: Typhoons and Floods – Operation update #1 (MDRPH056).

⁷⁵ Relief Web. 2024. Typhoon Yagi – Sep 2024.

⁷⁶ World Bank Group 2021: Climate Risk Country Profile: Philippines. World Bank Group and the Asian Development Bank.

⁷⁷ Clement, V.; Rigaud, K. K.; de Sherbinin, A.; Jones, B.; Adamo, S.; Schewe, S.; Sadiq, N.; Shabahat, E. 2021: Groundswell Part 2: Acting on Internal Climate Migration. Washington, DC: The World Bank.

their new location than those displaced by conflict. Research shows that 96% of people who have been displaced by disasters for more than five years plan to stay in their new location. Even among more recently displaced people, 71% prefer to remain in their current location if they feel safe.⁷⁸

Some people will not be able to move. Climate change and its impacts can trap the most vulnerable populations, including the marginalized or socio-economically vulnerable groups including women, youth and elderly as well as those with disabilities, who lack sufficient resources or rights to move. Climate and migration policy responses also require considerations of trapped populations. In the Marshall Islands, mobility has become an adaptation strategy for many but is not equally accessible to all Marshallese, with migration opportunities limited by educational and language requirements, as well as financial and health barriers.⁷⁹

It should also be noted that mobility itself is not inherently a risk. It can serve as a positive coping strategy and be an important driver of economic development.

2.2 TREND: As climate change impacts worsen, fragile urban areas, including megacities, will face growing socio-political tensions and political mobilisation due to increased economic inequality and pressure on governance and services, especially for marginalised groups.

The world's urban population is projected to double between 2025 to 2050, in part because people from rural areas whose lives and livelihoods are **undermined by climate change are being driven to cities in search of economic and social stability**.⁸⁰ But many of the world's rapidly growing cities are already struggling to handle their own climate stressors.

Climate change impacts such as flooding, sea level rise, and water scarcity are converging in cities with more than 80% of annual global adaptation costs arising in cities, from as early as 2010.⁸¹ Combined with increasing pressure from population growth and over stretched services, cities are increasingly becoming epicentres of social and economic inequality. Informal settlements, comprising over three-quarters of sub-Saharan Africa's residential areas, have rapidly expanded over the last thirty years.⁸² Often located in hazard-prone zones and excluded from urban resilience policies, these areas are highly vulnerable to climate change. Residents face disproportionate impacts from natural hazards, leading to injuries, displacement, asset loss, and economic disruption.

The collapse of the Kiteezi landfill in Kampala, Uganda, is a case in point of overstretched waste disposal mechanisms unable to keep pace with the growing urban population. The collapse of the landfill in 2024, triggered by intensive rains, resulted in more than 20 deaths. Despite earlier warnings, the collapse highlighted critical vulnerabilities of Uganda's urban planning, leading to calls for comprehensive support for affected individuals – largely urban poor, and a focus on sustainable waste management to prevent future disasters.⁸³ These factors increase the risk of tensions and violence in urban centres and can pose risks to stability for entire countries.

Rapid urbanisation, which climate change and environmental degradation is fuelling, will raise the risk of megacities in low- and lower-middle-income countries being **overwhelmed by a combination of, and interaction between, social and climate-related impacts**. These include direct impacts such as storm floods for many coastal and delta cities and changes in access to water or degrading

⁷⁸ Global Centre for Climate Mobility 2024: Climate Mobility Summit 2024.

⁷⁹ Zwar, C.; McMurray, S.; Rüttinger, L.; Binder, L.; Sedova, B.; Arcone, S. 2023: Republic of Marshall Islands Climate Security Risk Assessment. United Nations Development Programme (UNDP). (p. 37).

⁸⁰ United Nations (n.d.): Around 2.5 billion more people will be living in cities by 2050, projects new UN report.

⁸¹ Schreiber, F.; Dellas, E.; Ruttinger, L. 2016: Understanding fragile cities – the nexus between migration, climate change and urban fragility. Climate Diplomacy and adelphi.

⁸² Dodman, D.; Hayward, B.; Pelling, M.; Castan Broto, V.; Chow, W.; Chu, E.; Dawson, R.; Khirfan, L.; McPhearson, T.; Prakash, A.; Zheng, Y.; Ziervogel, G. 2022: Cities, Settlements and Key Infrastructure. In: Pörtner, H. O.; Roberts, D. C.; Tignor, M.; Poloczanska, E. S.; Mintenbeck, K.; Alegría, A.; Craig, M.; Langsdorf, S.; Löschke, S.; Möller, V.; Okem, A.; Rama, B. (eds.) Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge, UK and New York, USA: Cambridge University Press, pp. 907–1040.

⁸³ Parliament of the Republic of Uganda 2024: Kiteezi Landfill to be decommissioned After Tragic Collapse.

infrastructure for others. Jakarta's rapid growth and urbanisation for example, have led to significant infrastructure challenges, such as urban sprawl, traffic congestion, informal settlements, flooding, inadequate clean water and waste management. These issues, recognised by the government and felt by residents, make Jakarta highly vulnerable to climate change impacts, with flooding posing the greatest risk and incurring substantial human and economic costs. As a result, the government of Indonesia has embarked on a project to relocate the capitol to Nusantara, a project with untold economic, social and governance risks.

Threats to urban centres also comprise indirect impacts, especially **governance challenges** related to the task of making sufficient livelihood opportunities and government services available, in a sufficiently equitable manner, to avoid grievances leading to fragility. **Government effectiveness and legitimacy may also be tested through climate-related extreme weather events** and consequences such as high and volatile food prices. At the same time, urbanisation has historically also been linked with economic growth, democratisation and social progress, entailing opportunities for better governance.

2.3 Good practice and lessons

Investing in resilience is essential to addressing the growing pressures of climate migration. This aligns with EU strategy including the upcoming Communication on the **Integrated Approach to Fragility, as well as the humanitarian-development-peace nexus approach**. Further emphasis on the localisation of aid, recognises the importance of local knowledge and cultural understanding in providing effective and culturally appropriate development assistance, as outlined in the **Communication on the EU's humanitarian action** in 2021, will be critical to respond to the diverse and contextually driven risks from climate and security challenges.⁸⁴ Steps to address livelihood insecurity, as outlined in the good practices of section 1 of this analysis, are also therefore essential.

Best practice⁸⁵ of policy responses which support resilience include:

- Building social cohesion within and among communities. This can be done by providing access to mechanisms for justice and dialogue among people in IDP/refugee camps and host communities, between former fighters and other communities and across different generations.
- Securing peoples' right to land can directly contribute to increased confidence of communities to return post disaster, peacebuilding and enhanced social cohesion.
- Supporting resilient livelihoods that go beyond the simple provision of jobs. Livelihood support which is holistic and addresses all sections of society has the best scope to restore social cohesion and trust in local governance.
- Broadening people's access to basic services such as education, health, water, sanitation and energy. This is valuable not only to support communities in building their resilience to crises, but also to rebuild fractured relations between the state and citizens.

Responding to climate-induced migration is crucial to prevent security-relevant consequences for those displaced. While upstream investments in communities to prevent fragility that engenders migration is the most successful strategy, there remains a need to support displaced communities. Policy frameworks on climate-related migration and displacement such as **the Khartoum Process** increasingly outline the need for durable solutions for persons affected by climate change to be able to **move safely and with dignity**. One aspect of this is **assessing social cohesion in situations of climate-related mobility and displacement**.

⁸⁴ European Commission 2021: Communication from the Commission to the European Parliament and the Council on the EU's humanitarian action: new challenges, same principles. Com (2021) 110 final. 10 March 2021. Brussels.

⁸⁵ Based on analysis of over 43 climate security risk analysis under Weathering Risk (see <https://weatheringrisk.org/en/publications>) and all programmes under the Climate for Peace Initiative (see <https://climate-diplomacy.org/climate-for-peace-initiative>)

This requires **context-based indicators, including of perceptions and subjective experiences, particularly considering the experiences of youth, disaggregated by demographic and social groups** to understand differentiated experiences and challenges.

Existing best practice centres around investing in inclusive and context-specific processes to better understand the drivers of climate migration and inform well-targeted policies. This includes better rural-urban connectivity through markets, provision of internet access, energy and transport infrastructure; **more comprehensive urban plans to address projected population changes arising from climate impacts** in rural areas and integrating climate change and internal migration trends into climate and security risk-informed development planning. To do so, the EU must continue to build out its research and evidence base to make informed decisions on climate and security dynamics. The EU is already cooperating with the **Internal Displacement Monitoring Centre to deepen knowledge** on the drivers, vulnerabilities and risks of internal displacement.

As set out in the Joint Communication,⁸⁶ **preventive investments** (e.g. 10% of NDICI-Global Europe) should also be implemented and expanded where possible to support the management and governance of migration and forced displacement in a manner which is climate and security risk-informed.

⁸⁶ 'Indicatively, 10% of NDICI – Global Europe should be dedicated to action supporting the management and governance of migration and forced displacement and addressing the root causes of irregular migration and forced displacement when they directly target specific challenges relating to migration and forced displacement.' European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2023: Joint communication to the European parliament and the council. A new outlook on the climate and security nexus. Addressing the impact of climate change and environmental degradation on peace, security and defence. 28 June 2023. Brussels.

3 Energy transition, decarbonisation risks and critical minerals

Achieving climate-neutrality requires an ambitious drawdown of greenhouse gas emissions and a new growth model that promotes social equity. Recognising the closing window for climate action, global climate commitments, incentives and ambition have grown from countries around the world in the last decade, though more work is needed to ensure the world is on a pathway that is compatible with the Paris Agreement target of 1.5°C temperature change.⁸⁷ The **EU's European Green Deal leads with the most ambitious emissions reductions legislation which aims to make it climate neutral by 2050**. The shift towards a renewable energy economy depends heavily on the availability of critical minerals such as cobalt, graphite, and lithium, many of which are predominantly found in developing countries.⁸⁸

Achieving this **scale of transformation requires an inclusive understanding of the socioeconomics of climate action through a lens of equity and justice**. Without adequate consideration for a whole of society approach, transition efforts and strategic competition will exacerbate vulnerabilities and create new categories of inequalities.

3.1 TREND: The necessary green transition and decarbonisation will add destabilising pressures in many contexts, risking stranded assets and instability in the most fragile communities.

As of 2022, global fossil fuel combustion and industrial processes were responsible for 90% of greenhouse gas emissions, driving climate change.⁸⁹ Achieving a resilient net-zero economy demands an unprecedented transformation across all high-emitting industrial sectors. Europe's projected reduction in oil and gas consumption over the next quarter-century **signals a profound shift in its energy landscape that extends far beyond environmental considerations**. This transition will challenge the economic foundations of traditional energy suppliers, many of whom rely heavily on hydrocarbon exports for national revenue. As these established energy relationships evolve, Europe's diplomatic leverage and strategic influence in these regions may diminish, necessitating new frameworks for political and economic cooperation to maintain strategic partnerships.⁹⁰

These changes must be addressed with a thorough sensitivity for the differentiated impacts of fossil fuel drawdown, particularly on economically vulnerable groups and fragile states. For instance, Iraq is confronted with the significant challenge of transitioning from an oil-led growth model that has traditionally prioritised the export of oil over the competitiveness of non-oil sectors. Moving towards a green economy risks making oil reserves and investments obsolete. **As demand for fossil fuels falls, revenues will drop, threatening public sector jobs, which make up a large part of national employment.**⁹¹ While nearly two-thirds of Paris Agreement signatories have integrated sustainable, low-carbon economic transitions into their Nationally Determined Contributions, the path forward requires careful consideration.⁹²

Each country's path to clean energy is uniquely shaped by its national context.⁹³ Where **energy has been wielded as a tool for political influence**, many energy-importing states, such as those across the EU, have scrambled to reduce dependence on fossil fuels and promote non-hydrocarbon-based forms of energy.⁹⁴ Countries with **diverse economic structures are better positioned to manage**

⁸⁷ Keramidas, K.; Fosse, F.; Diaz Rincon, A.; Dowling, P.; Garaffa, R.; Ordonez, J.; Russ, P.; Schade, B.; Shmitz, A.; Soria Ramirez, A.; Van Der Vorst, C.; Weitzel, M. 2023: Global Energy and Climate Outlook 2023. European Commission.

⁸⁸ Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. Weathering Risk Synthesis Report. Berlin: adelphi.

⁸⁹ World Meteorological Organization (WMO) 2024: State of the Global Climate 2023. WMO-No. 1347.

⁹⁰ Walker, B.; Smith, R.; Pastukhova, M.; Liebrecht, C. 2024: Future of EU oil and gas suppliers in a low-carbon world. Risks of an unmanaged transition. Briefing Paper. E3G.

⁹¹ World Bank Group 2022: Iraq: Country Climate and Development Report. Washington DC, USA: World Bank Group.

⁹² United Nations Framework Convention on Climate Change (UNFCCC) Secretariat 2024: Nationally determined contributions under the Paris Agreement. Synthesis report by the secretariat. UN Climate Change Conference - Baku, November 2024.

⁹³ Dennison, S.; Engström, M. 2023: Decarbonisation nations: how EU Climate diplomacy can save the world. Policy Brief.

⁹⁴ Borrel, J.; Hoyer, W. 2022: Decarbonization, a strategic imperative. European Investment Bank.

change, enabling them to develop and implement inclusive policies for effective transformation. Energy-exporting nations, heavily reliant on rents from these resources, face a different set of challenges.

Meeting the Paris Agreement's warming limits will trigger economic losses, resulting in billions in stranded assets, particularly affecting fossil fuel-dependent economies.⁹⁵ **Among the world's 40 most vulnerable nations, which derive over one-third of their government revenue from energy exports, the economic impacts will be profound.**⁹⁶ Revenue losses threaten to cascade into lost jobs, reduced social protections and diminished investments in critical infrastructure.

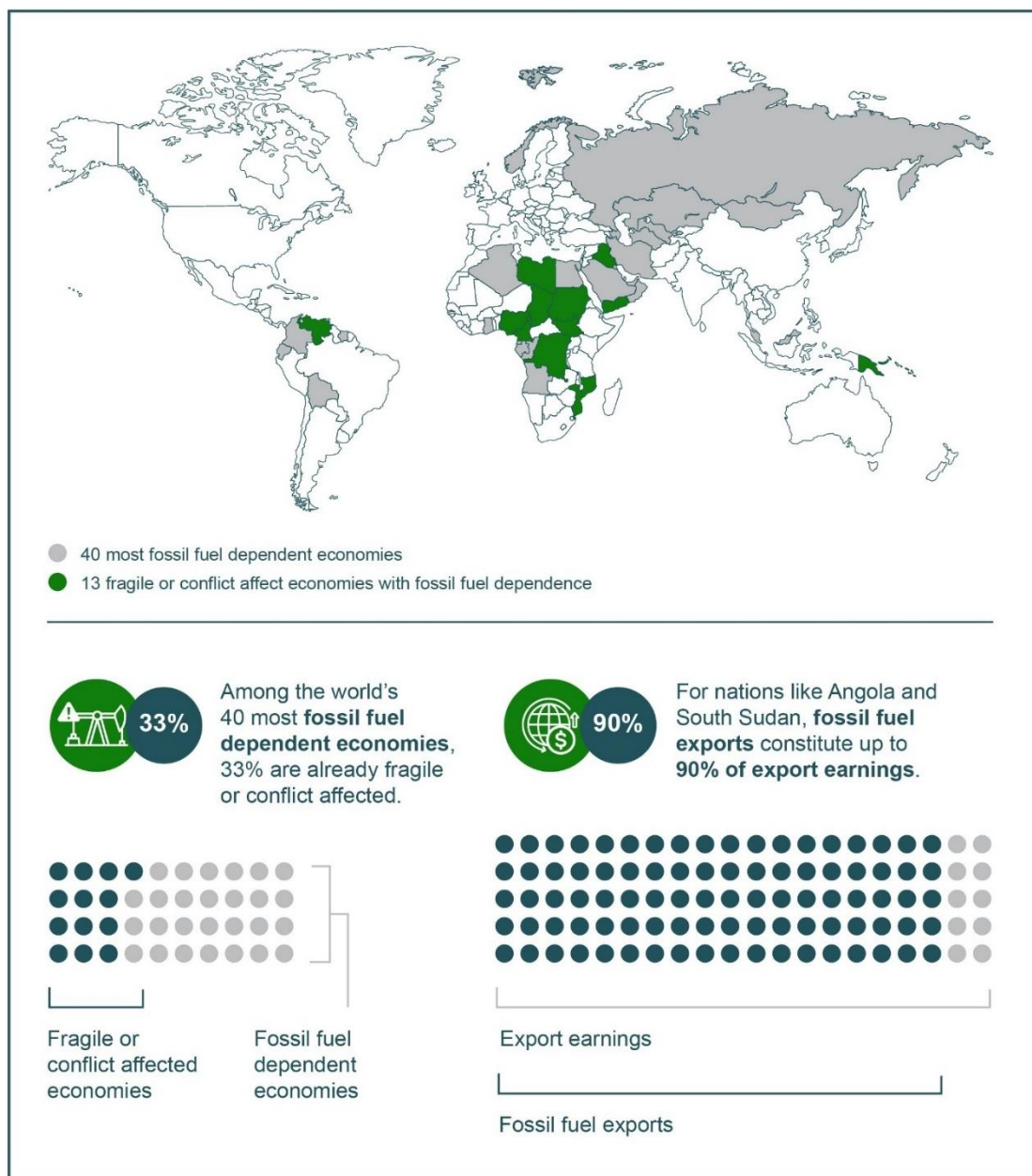


Figure 6: Fragile or conflict affected countries among the world's most fossil fuel dependent countries (elaborated by adelphi)

⁹⁵ Clarke, L.; Wei, Y. M.; De La Vega Navarro, D.; Garg, A.; Hahmann, A.N.; Khennas, S.; Azevedo, I.M.L; Löschel, A.; Singh, A.K.; Steg, L.; Strbac, G.; Wada, K. 2022: Energy Systems. In: Shukla, P. R.; Skea, J.; Slade, R.; Fradera, R.; Pathak, M.; Al Khourdajie, A.; Belkacemi, M.; van Diemen, R.; Hasija, A.; Lisboa, G.; Luz, S.; Malley, J.; McCollum, D.; Some, S.; Vyas, P. 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK and New York, USA: Cambridge University Press.

⁹⁶ Jensen, L. 2023: Global Decarbonization in Fossil Fuel Export-Dependent Economies. Fiscal and economic transition costs. United Nations Development Programme (UNDP). Development futures series working papers.

Developing nations such as India and South Africa, characterised by low adaptability to fossil fuel phase out and limited fiscal resilience, face particular challenges. Without robust fiscal transition policies, these nations risk revenue shortfalls that may reverse development gains including the eradication of poverty.⁹⁷ **These financial constraints create a downward spiral, progressively eroding capacity to manage a fossil fuel phase out.** These potential constraints must, however, be balanced in the context of greater economic costs without appropriate climate adaptation action. Damages from climate-induced weather events were estimated to cost the global economy nearly US \$ 4.3 trillion between 1970 and 2021.⁹⁸

Among the world's 40 most fossil fuel-dependent economies, 13 are already fragile or conflict-affected. For nations like Angola and South Sudan, fossil fuel exports constitute up to 90% of export earnings.⁹⁹ Others, like Chad, Yemen, Iraq and Venezuela, **remain critically dependent on oil revenues for their economic survival.** In these contexts, **global fossil fuel phase out will create new economies of violence.**

For fragile fossil fuel-dependent states, diminishing revenues for social spending, and intensifying resource competition, social tensions and demands for land and water resources **will likely deepen existing inequalities, challenge livelihoods and catalyse new conflicts.**¹⁰⁰ When governments fail to fulfil their basic social obligations due to declining resources, public discontent and communal tensions may intensify, creating opportunities for non-state armed groups to establish alternative systems of authority and service delivery. **The expanding influence of non-state armed groups could destabilise regional power dynamics and erode long-established diplomatic alliances.** This development risks triggering further violence and repression from states seeking to maintain control.

3.2 TREND: Efforts of advanced economies, including EU member states, to rapidly procure and safeguard critical minerals for the energy transition may hinder sustainable, responsible and conflict-sensitive global practices.

Securing critical minerals is fundamental to the EU's energy transition and regional security, underpinning both industrial and defence capabilities. These vital resources, including lithium, graphite, cobalt, and nickel, rely on complex supply chains that are often opaque and vulnerable to disruption and geopolitical competition. Geographic concentration amplifies risk, with **just three countries; South Africa, China and the Democratic Republic of the Congo controlling over 75% of global rare earth element output.**¹⁰¹ China in particular, produces most of the world's graphite, a key component for electrical vehicles and electricity grids.¹⁰² This dominance in critical minerals has significant strategic implications including for trade, and global climate commitments.

In response to increasing competition and escalating demand, since 2022, more than 35 countries have outlined over 450 policies to secure supply chains.¹⁰³ While these primarily pertain to supply reliability and innovation, they focus less on sustainable and responsible practices – a major gap **given the environmental and social impacts of mineral extraction.** As the world scrambles to secure mineral resources for the energy transition, there is a risk of deepening social and environmental injustices. These damages may further undermine the very climate adaptation efforts green mineral extraction endeavours to address. As with the extractives sector more generally, where such policies exist, they are often difficult to implement due to resource or capacity constraints.

⁹⁷ Laan, T.; Maino, A. G. 2022: Boom and Bust: The fiscal implications of fossil fuel phase-out in six large emerging economies. International Institute for Sustainable Development (IISD) and Global Subsidies Initiative (GSI).

⁹⁸ World Meteorological Organization 2022: Atlas of Mortality and Economic Losses from Weather, Climate and Water-related Hazards (1971-2021).

⁹⁹ United Nations Environment Programme (UNEP) 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again). Emissions Gap Report 2023. Nairobi: UNEP.

¹⁰⁰ Detges, A.; Klingensfeld, D.; König, C.; Pohl, B.; Rüttinger, L.; Schewe, J.; Sedova, B.; Vivekananda, J. 2020: 10 insights on climate impacts and peace - A summary of what we know. adelphi and Potsdam Institute for Climate Impact Research (PIK).

¹⁰¹ International Energy Agency (IEA) 2021: The Role of Critical Minerals in Clean Energy Transitions. Paris: IEA.

¹⁰² Ritchie, H.; Rosado, P. 2024: Which countries have the critical minerals needed for the energy transition. OurWorldinData.

¹⁰³ International Energy Agency (IEA) 2023: Critical Minerals Policy Tracker. Paris: IEA.

Developing nations, despite holding most critical mineral reserves, struggle with regulatory enforcement and safeguards due to development challenges. This compromises their ability to ensure supply chain reliability, equitable profit-sharing with local communities, and safe extraction policies. When existing vulnerabilities are not sufficiently addressed, **mineral extraction can intensify environmental, governance and social tensions, potentially escalating into conflict.** In Latin America, despite an increase in environmental regulations and protection frameworks, enforcement and compliance mechanisms require strengthening to ensure that the interests of local communities and environmental protection are safeguarded. Indeed, 45% of mining-related protests or conflicts were registered in different areas of Latin America.¹⁰⁴

One in six critical mineral sites worldwide are in regions experiencing severe water scarcity, and mining activities deplete or contaminate this limited supply.¹⁰⁵ In the DRC, cobalt mining operations are already compromising local water resources through excessive consumption and pollution.¹⁰⁶ Further, in contexts with weak governance, risks of corruption can stall supply chains, delaying the green transition, and can also fuel illicit economies. Research has shown that militia-controlled rare earth mining along borders in east and southeast Asia allegedly supplies state enterprises through illegal operations. These activities, reportedly involving bribery, illegal taxation and shell companies, have caused environmental degradation including water contamination and instability.¹⁰⁷ **These impacts disproportionately affect Indigenous lands and communities.**

Half of all known deposits of minerals essential for the energy transition lie within or adjacent to Indigenous Peoples' lands.¹⁰⁸ When these **communities, notably women, are excluded from resource planning and decision making, it can trigger conflict or resistance and fail to adequately respond to intersectional needs.** This is also evident in southern Africa, where mining operations in Zimbabwe, Mozambique, and Angola face protests and legal challenges over environmental violations and Indigenous rights violations.¹⁰⁹ Such exclusion typically results in inadequate compensation for displacement, destruction of cultural heritage, and community tensions over uneven benefit distribution.¹¹⁰

The minerals boom creates dual pressures: **governments face incentives to weaken environmental and social protection while pursuing rapid production.** Over-dependence on mineral exports creates economic vulnerability through unstable public spending and limited economic diversification.¹¹¹ High commodity dependency has been linked to lower development outcomes, income volatility to market fluctuations, and increased vulnerability to climate change. Nearly all nations most at risk from climate change – 19 out of 20 – depend heavily on commodity exports.¹¹² **These increased risks will widen the gap between those able to adapt and those left behind.**

¹⁰⁴ Bernal, A.; Husar, J.; Bracht, J. 2023: Latin America's opportunity in critical minerals for the clean energy transition. IEA.

¹⁰⁵ Lakshman, S. 2024: More Critical Minerals Mining Could Strain Water Supplies in Stressed Regions. World Resources Institute.

¹⁰⁶ Ibid.

¹⁰⁷ Natural Resource Governance Institute 2022: Preventing Corruption in Energy Transition Mineral Supply Chains: An urgent call for action.

¹⁰⁸ Owen, J.R.; Kemp, D.; Lechner, A.M.; Harris, J., Zhang, R.; Lèbre, É. 2023: Energy transition minerals and their intersection with land-connected peoples. *Nature Sustainability* 6, pp. 203–211.

¹⁰⁹ Rüttinger, L.; Destrijcker, L.; Morales-Muñoz, H.; Foong, A.; Gomolka, J.; Binder, L.; Abdulkadir, T.; Akosa, T.; Belli, T.; Brubacher, M.; Dia, M.; Guillier, M.; Kadry, S.; Kendyuo, B.; Maviza, G.; Moyo, C.; Ndjekouneyoum, S.; Ogallo, L.; Saraka, M.; Šedová B.; Villa, V. 2024: Weathering Risk Africa Climate Security Risk Assessment. Berlin: adelphi.

¹¹⁰ Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. *Weathering Risk Synthesis Report*. Berlin: adelphi.

¹¹¹ Kotarska, G.; Young, L. 2023: Unearthing Environmental and Human Security Risks Critical Minerals in the UK's Energy Transition. Royal United Services Institute for Defence and Security Studies. RUSI Occasional Paper.

¹¹² United Nations Trade and Development (UNCTAD) 2024: Critical minerals boom: Global energy shift brings opportunities and risks for developing countries.

3.3 Good practice and lessons

The drawdown of fossil fuels demands a **sustainable and just approach that is sensitive to the outsized social and environmental risks placed on developing countries**. In pursuit of this transition, equal weight must be placed on environmental, economic and social sustainability, the recognition of intersectional vulnerabilities and the potential for conflict.¹¹³

This relies heavily on good governance. A **just transition framework** provides innovative opportunities for countries to align their security, development and climate objectives into more comprehensive decarbonisation policies to meet this demand.

An equitable transition can be achieved through approaches that **integrate local perspectives** and realities with broader **sustainability objectives**, while ensuring vulnerable groups, notably youth and **Indigenous communities, are actively recognised** and included in regional transformation processes.¹¹⁴ Best practice on mitigating risks integrates conflict sensitivity into the planning and implementation of renewable energy projects, including specific legal safeguards to curb the frequency of violence against women in the extractives sector. This involves conducting thorough **impact assessments, engaging with local communities, ensuring fair compensation and benefit sharing, and respecting cultural and environmental considerations**. By doing so, the phasing out of fossil fuel production and the creation of renewable energy and climate mitigation projects can contribute positively to sustainable development and peace.

The **Just Energy Transition Partnership** between EU member states and international developing partner countries provides a good opportunity for the EU to bring to bear its leadership in climate and security to ensure a just transition.¹¹⁵ By transforming the partnership's technical agreements to include a focus on a socially just transition, including benefit sharing, as well as climate and security considerations, the EU can bring a stabilising influence to the forefront of the global energy transition and **maintain its diplomatic influence abroad**.

Development partners supporting mineral-rich nations should further **strengthen good governance including strong and inclusive institutions**, and the diversification of economies. This includes an **integration between economic oversight mechanisms and anti-corruption frameworks** specifically within the critical minerals sector.¹¹⁶

¹¹³ Matanzima, J.; Loginova, J. 2024: Sociocultural risks of resource extraction for the low-carbon energy transition: Evidence from the Global South. *The Extractive Industries and Society* 18:101478.

¹¹⁴ European Environment Agency 2024: Just Sustainability Transitions - From concept to practice. EEA Report 12/2024. Copenhagen: EEA.

¹¹⁵ Rüttinger, L.; Destrijcker, L.; Morales-Muñoz, H.; Foong, A.; Gomolka, J.; Binder, L.; Abdulkadir, T.; Akosa, T.; Belli, T.; Brubacher, M.; Dia, M.; Guillier, M.; Kadry, S.; Kendyuo, B.; Maviza, G.; Moyo, C.; Ndjekouneyoum, S.; Ogallo, L.; Saraka, M.; Šedová B.; Villa, V. 2024: *Weathering Risk Africa Climate Security Risk Assessment*. Berlin: adelphi.

¹¹⁶ Natural Resource Governance Institute 2022: *Preventing Corruption in Energy Transition Mineral Supply Chains: An Urgent Call for Action*.

4 Environmental degradation, biodiversity loss and environmental crime

Climate change, environmental degradation and biodiversity loss are intricately woven into a complex network of social, economic, and political risk factors heightening vulnerability. This is particularly evident in fragile and conflict-affected regions, where environmental stressors combined with **climate change are undermining stability and fuelling various security threats – from political upheaval and food insecurity to the growth of illicit economies**. Indigenous Peoples and local communities face disproportionate impacts from this degradation and are often excluded from institutional decision making. This can create a destructive cycle where **exclusion, inequality and conflict further accelerate environmental deterioration**.¹¹⁷

4.1 TREND: Climate change, coupled with demographic pressures and rising consumption, is accelerating ecosystem degradation and biodiversity loss. These environmental stressors increase risks to livelihoods, health and inequality, generating security challenges that reverberate across borders.

Environmental quality, biodiversity and ecosystem integrity are critical links influencing the impacts of climate change on security. These factors are essential for the survival of more than 3 billion people, yet they are increasingly challenged, with 20–40% of total global land area degraded or degrading.¹¹⁸ This can **intensify societal vulnerabilities, creating ripple effects through social structures**. This environmental-social cascade often heightens fragility, potentially transforming into conflict and instability.

Climate change and urbanisation play a substantial role in undermining biodiversity and ecosystem degradation. Climate change and urbanisation are also interconnected. Climate change is increasing urbanisation trends, particularly among youth. Half of the world's growing population is under 30 years of age, with 90% living in developing countries and around 600 million in conflict or fragile situations.¹¹⁹¹²⁰ While most movements remain within countries, urbanisation trends are projected to increase as rural communities face mounting economic uncertainty and search for new opportunities. While climate and environmental degradation will also drive rural to rural migration, by 2030, urban areas are expected to account for 48% of the total population in fragile contexts.¹²¹

From 2000 to 2020, cities expanded in area nearly four times faster than they became denser, creating **substantial pressure on surrounding landscapes and natural resources**.¹²² Africa leads global urbanisation rates, experiencing unprecedented urban growth.¹²³ Unregulated urban expansion in nearly all cities across the world's critical biodiversity zones directly threatens both species preservation and climate resilience.¹²⁴ For example, in the DRC, **nighttime lights visible inside protected areas increased roughly 450% between 2014 and 2022**, demonstrating human pressure in protected areas and the limited application of frameworks such as the Kunming-Montreal Global Biodiversity Framework.¹²⁵

¹¹⁷ Rüttinger, L.; Munayer, R.; van Ackern, P.; Titze, F. 2022: The nature of conflict and peace. The links between environment, security and peace and their importance for the United Nations. Gland: WWF International; Berlin: adelphi consult GmbH.

¹¹⁸ Mosello, B.; Potts, M.; Morales-Muñoz, H.; Madar, S.; Brown, O. 2024: Ground for Peace: Land Restoration for International Peace and Security. United Nations Convention to Combat Desertification (UNCCD). Bonn: UNCCD.

¹¹⁹ United Nations. 2024: The Sustainable Development Goals Report 2024.

¹²⁰ European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2022: Joint Communication to the European parliament and the Council. Youth Action Plan (YAP) in EU external action 2022 – 2027. Promoting meaningful youth participation and empowerment in EU external action for sustainable development, equality and peace. 4.10.2022. Strasbourg.

¹²¹ Organisation for Economic Co-operation and Development (OECD) 2022: States of fragility 2022. Paris. OECD Publishing.

¹²² United Nations 2024: The Sustainable Development Goals Report 2024.

¹²³ Rüttinger, L.; Destrijcker, L.; Morales-Muñoz, H.; Foong, A.; Gomolka, J.; Binder, L.; Abdulkadir, T.; Akosa, T.; Belli, T.; Brubacher, M.; Dia, M.; Guillier, M.; Kadry, S.; Kendyuo, B.; Maviza, G.; Moyo, C.; Ndjekouneyoum, S.; Ogallo, L.; Saraka, M.; Šedová B.; Villa, V. 2024: Weathering Risk Africa Climate Security Risk Assessment. Berlin: adelphi.

¹²⁴ Rudd, A.; Menon, S.; Pastore, C.; Subramanian, K. 2022: White Paper Cities and Nature: Planning for the Future. UN Habitat for a Better Urban Future.

¹²⁵ Joint Research Centre (JRC) of the European Commission (n.d.): Protected Areas Dynamics in Africa - Africa Knowledge Platform.

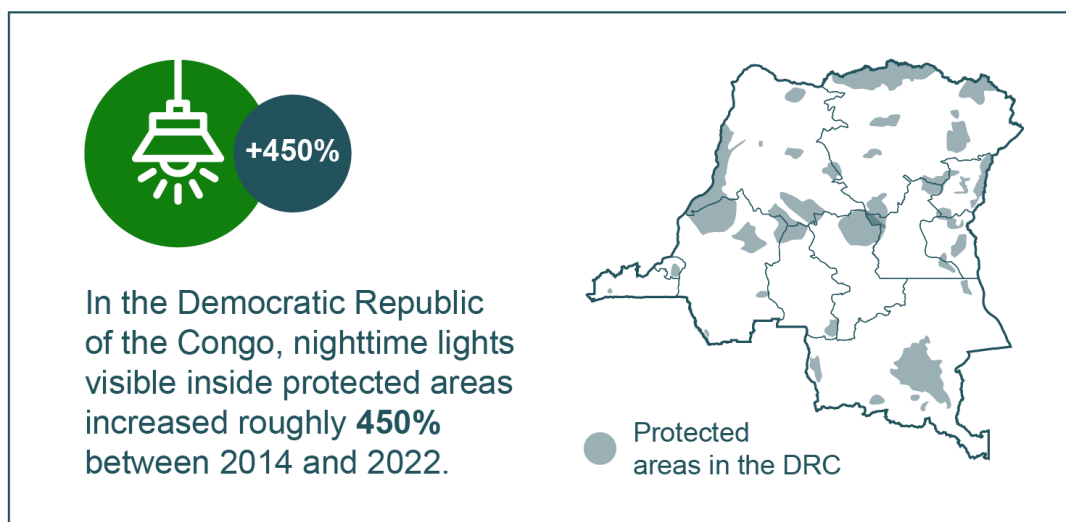


Figure 7: Light pollution in protected areas, Democratic Republic of the Congo (elaborated by adelphi)

While urban areas utilise more resources per capita, it is not only urban expansion and climate change that threaten environmental degradation.¹²⁶ **Unsustainable consumption in leading economies such as the United States, China, Arab States of the Gulf and Europe, as well as emerging markets including Brazil, India and Turkey, pose major sustainability challenges.**¹²⁷

Consumption of goods and services drives demand for fossil fuels and natural resources, including crops for food, palm oil, rubber, wood and metals like aluminium and copper, as well as the illegal trade in wildlife.¹²⁸ **By 2060, intensive resource use is projected to rise 60% above 2020 levels.**¹²⁹ In regions like the Pacific and across Asia, economic growth has reduced poverty, but increased burdens on ecosystems. The impact of unsustainable consumption manifests through contaminated air, growing water shortages, and escalating waste production, threatening human health, ecological systems and social stability.¹³⁰

The deterioration of natural environments and the decline in land and marine biodiversity can impact peace and security in several ways. Research points to pathways related to the **loss of livelihoods, increased food and water scarcity, migration and displacement, socioeconomic disparities and weak resource governance structures**, all of which increase the risk of conflict and criminal activity, notably across borders.¹³¹ Context factors that influence vulnerability and resilience to climate and security risks, including a variety of cross-cutting topics like history of conflict, social inclusion and gender or economic equality, play a decisive role in moderating the impacts of climate change on peace and security outcomes.

¹²⁶ United Nations Environment Programme (UNEP) 2024: Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes. International Resource Panel. Nairobi: UNEP.

¹²⁷ European Environment Agency 2023: Environment and climate pressures from household consumption in Europe. Briefing no. 12/2023.

¹²⁸ Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. Weathering Risk Synthesis Report. Berlin: adelphi.

¹²⁹ United Nations Environment Programme 2024: Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes. International Resource Panel. Nairobi: UNEP.

¹³⁰ Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. Weathering Risk Synthesis Report. Berlin: adelphi.

¹³¹ Mosello, B.; Potts, M.; Morales-Muñoz, H.; Madar, S.; Brown, O. 2024: Ground for Peace: Land Restoration for International Peace and Security. United Nations Convention to Combat Desertification (UNCCD). Bonn: UNCCD.

Evidence shows that in the **context of conflict, where communities are already struggling with declining income sources, climate shock impacts can lead to slower economic recovery.**¹³² In the aftermath of floods, conflict-affected areas are found to shoulder a greater and longer-term burden as compared to non-conflict contexts, pronounced through a sustained decline in economic activities post-disaster.¹³³

Without livelihood alternatives and safety nets, fluctuations in the availability of food and livelihood inputs, such as feed for cattle, can quickly lead to competition and conflict. This can encourage many to turn to illicit economies and environmental crimes, **heightening opportunities for exploitation by non-state armed groups.** Environmental crimes, including wildlife trafficking and the illegal extraction of oil, minerals, and timber, account for about 38% of the funding for illegal non-state armed groups, including terrorist organisations.¹³⁴ These activities bolster criminal networks, exacerbating insecurity and enabling these groups to act as de facto authorities and service providers in areas of weak governance.¹³⁵

4.2 TREND: Military and defence organisations will increasingly need to navigate both the security challenges amplified by climate change and environmental degradation, while also addressing their own environmental impact - requiring a transformed approach to security strategy that encompasses both dimensions.

There is substantial evidence that climate change and environmental degradation directly affect security and defence.¹³⁶ As these impacts increasingly influence relative power and risk sparking or deepening rivalries, they might become catalysts for future conflicts and geopolitical tensions. This requires integrating them more systematically into conflict analysis and security policy. **Climate change as a threat multiplier has thus been found to have a 'profound impact on Allied security,'**¹³⁷ with the United States government identifying it as a high level of risk to national security interests, particularly through climate-induced migration and increased humanitarian demands.¹³⁸

Military forces must now operate in environments transformed by climate change, requiring significant adaptations in capabilities and planning. Despite international norms favouring civilian-led humanitarian responses, the growing frequency and intensity of extreme weather events increasingly necessitate military involvement.¹³⁹ **Since 2022, over 450 military deployments from 87 countries have responded to climate-related disasters across 97 nations.**¹⁴⁰ This expanding disaster response role raises questions about military readiness for traditional security threats.¹⁴¹ Defence and security capabilities must also become more adaptable to intense operating environments, including weather events and frequent natural disasters.

Environmental destruction has become weaponised in modern conflicts, exemplified by the deliberate targeting of water infrastructure in Ukraine.¹⁴² Additionally, environmental crime, including illegal logging, resource extraction, and wildlife trade, has emerged as one of the largest areas of

¹³² Bih, K. B.; Desjonqueres, C.; Jarafino, B.; Blanc, E., Masson, S. 2024: Impacts of Disasters in Conflict Settings: Evidence from Mozambique and Nigeria. World Bank Group.

¹³³ Ibid.

¹³⁴ Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. Weathering Risk Synthesis Report. Berlin: adelphi.

¹³⁵ Bertrand, B.; Koko, A. D. 2024: Climate Change and Armed Groups - Key Takeaways. Strengthening Disarmament, Demobilization, and Reintegration Practitioner's Analysis of and Response to the Links between Climate Change and Armed Group Recruitment Patterns. A SCORE Analysis in the Tillaberi Region in Niger. SeeD – Centre for Sustainable Peace and Democratic Development.

¹³⁶ NATO 2024: NATO climate change and security impact assessment. Third Edition 2024.

¹³⁷ NATO 2021: NATO Climate Change and Security Action Plan.

¹³⁸ National Intelligence Council 2021: National Intelligence Estimate. Climate Change and International Responses Increasing Challenges to US National Security Through 2040.

¹³⁹ Ibid.

¹⁴⁰ Council on Strategic Risks - Center for Climate and Security (CCS) (n.d.): Military Responses to Climate Hazards (MiRCH) tracker.

¹⁴¹ Center for Climate and Security, CSR Blog 2024: MiRCH Update: Key Takeaways from Tracking Climate-Related Military Deployments.

¹⁴² Zimmerman, A. 2022: Russia's war on water in Ukraine. In: POLITICO, 25.05.2022.

organised crime worldwide.¹⁴³ **These activities fuel conflict, corruption, and environmental degradation while providing funding for terrorist or illegal armed groups.**¹⁴⁴

Armed conflicts create severe unintended environmental damage through interruptions in environmental management systems and toxic war remnants that pollute water, air, and soil. In Gaza, approximately 62% of homes have been damaged or destroyed, creating unprecedented debris levels - 107kg per square meter.¹⁴⁵ **This debris poses significant health risks from hazardous materials including asbestos, heavy metals, fire contaminants, and explosive residue.**¹⁴⁶ Similar impacts have been documented in Ukraine,¹⁴⁷ Yemen,¹⁴⁸ and other conflict zones,¹⁴⁹ with effects persisting long after conflicts end and often extending across borders to affect regional watersheds and landscapes.

The defence sector must address its own significant environmental impact, particularly its contribution to climate change through large-scale emissions, which remain largely unaccounted for in IPCC assessments.¹⁵⁰ Military emissions represent one of the largest sources of global carbon output - ranking fourth worldwide if counted as a single nation, with a carbon footprint surpassing that of Russia.¹⁵¹ Military capabilities require adaptation not only to respond to climate-related threats but also to reduce their own environmental footprint. This includes reassessing infrastructure, operations, and planning to minimise environmental impact while maintaining operational effectiveness.¹⁵²

¹⁴³ World Wildlife Fund (WWF) 2022: A new EU environmental crime directive. Position Paper. Brussels: WWF

¹⁴⁴ European Commission 2020: Commission Staff Working Document Evaluation of the DIRECTIVE 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law (Environmental Crime Directive). SWD(2020) 259 final. 28 October 2020. Brussels.

¹⁴⁵ United Nations Environment Programme 2024: Environmental impact of the conflict in Gaza: Preliminary assessment of environmental impacts. Nairobi: UNEP.

¹⁴⁶ Ibid.

¹⁴⁷ Iraola, C. 2024: Ukraine: Reframing the narrative of climate, environmental degradation and conflict. Adelphi and International Rescue Committee (IRC).

¹⁴⁸ Barry, S.; Mosello, B.; McMurray, S.; Destrijcker, L. 2024: Undercurrents: How conflict, climate change and the environment intersect in Yemen. adelphi research and the European Institute of Peace (EIP).

¹⁴⁹ Edwards, G.; Vella, C.; Darbyshire, E. 2022: Reverberating civilian and environmental harm from explosive weapons use in Gaza. Conflict and Environment Observatory.

¹⁵⁰ Harvey, C.; E&E News 2024: Warfare's Climate Emissions Are Huge but Uncounted. Scientific American.

¹⁵¹ Parkinson, S.; Cottrell, L. 2022: Estimating the Military's Global Greenhouse Gas Emissions. Scientists for Global Responsibility (SGR) and the Conflict and Environment Observatory (CEOBS).

¹⁵² NATO 2024: NATO climate change and security impact assessment. Third Edition 2024.

4.3 Good practice and lessons

To address emerging security risks, policymakers must promote **comprehensive environmental restoration while strengthening diplomatic and economic ties**. The **EU can demonstrate its value as a strategic partner by championing green and circular economies** and sharing sustainable technologies, deepening diplomatic relationships while advancing geopolitical interests through meaningful economic partnerships. The EU Gender Action Plan (GAP) provides a gender-transformative and intersectional approach that supports more comprehensive policies focused on well-being and sustainability.¹⁵³

The Climate and Defence Support Mechanism, to be set up among relevant Commission services, the Climate and Defence Network, the European Union External Action Service (EEAS) and the EDA, will help adapt European militaries to climate change. Key priorities should include:

- Strengthening civilian-military cooperation.
- Enhancing civilian emergency response capabilities.
- Building resilience in defence and military operations.
- Prioritise environmental protection mechanisms.

Through targeted programmes supporting biodiversity protection, sustainable resource management, and improved governance, **the EU can help combat criminal networks that profit from illegal resource exploitation**. By tackling illegal logging and wildlife trafficking while providing communities with alternative income sources, these initiatives weaken the grip of non-state armed groups on local resources. Initiatives like the EU's **Great Green Wall** foster cross-border cooperation, reduce resource conflicts, and create economic opportunities, particularly for youth, addressing key drivers of instability.¹⁵⁴ To address climate and security risks related to deliberate environmental destruction and crime, the EU has at its disposal:

- The **Environmental Crime Directive** which provides for a solid list of unlawful conducts to be established as criminal offences in national legislation by the EU Member States. The Directive aims to ensure long-lasting effects and improve the effectiveness of criminal law enforcement against the most serious environmental offences.
- The Council of Europe's new Convention on environmental crime (expected Spring 2025).
- The **European Multidisciplinary Platform against Criminal Threats (EMPACT)**, 'which enables EU law enforcement cooperation with relevant authorities from third countries on operational actions to tackle environmental crimes,' is providing leadership on this front.¹⁵⁵
- EU initiatives like **EI PAcCTO**¹⁵⁶ and **Eco-solve**¹⁵⁷ provide platforms to integrate resilience building and conflict-sensitive approaches.
- Common Security and Defence Policy (CDSP) missions can also contribute to helping national authorities fight environmental crime.

¹⁵³ European External Action Service 2023: Gender Action Plan III & its key areas of EU engagement. 21 November 2023.

¹⁵⁴ European Commission (n.d.). Growing the Great Green Wall. International Partnerships, Global Gateway.

¹⁵⁵ European Commission 2024: EMPACT fighting crime together. Migration and Home Affairs. 25 June 2024.

¹⁵⁶ EL PAcCTO Europa LatinoAmérica (n.d.): What is EL PAcCTO?

¹⁵⁷ ECO-SOLVE (n.d.): Eco-Solve: Enhanced Solutions For Tackling Environmental Crimes. Global Initiative Against Transnational Organized Crime.

Demand-driven and conflict-sensitive natural resource management and adaptation activities are important to complement and support environmental restoration. **Support for the development of sustainable and climate-resilient livelihoods is critical and should be prioritised by development partners.**¹⁵⁸ Investments in projects that aim to conserve biodiversity while supporting local economies through sustainable eco-tourism and agriculture for example, or for capacity-development for natural resource management and biodiversity conservation should be prioritised. The implementation of integrated water or resource management principles with targeted development assistance has been proven transformative for livelihoods and conflict reduction.¹⁵⁹ **Investments in urban resilience, notably those that support capacity building for youth,** are also critical to address climate fragility. Effective urban planning must combine green infrastructure and **clean energy access with social inclusion measures** to reduce climate-driven insecurity and urban vulnerability.

The establishment, implementation and evaluation of international environmental policies that focus on environmental restoration, including ecology, biodiversity, water and soil, **must be informed by inclusive stakeholder consultation** that aligns with **existing systems of governance and Indigenous customs or practise.**¹⁶⁰ The inclusion of women, including the **fostering of feminist agendas,** enables the development of more comprehensive policies that focus on well-being and sustainability.¹⁶¹ The **EU's NDICI** presents a strong avenue for delivering on this area and on the SDGs, for example through the **Team Europe Initiatives** in the Amazon Basin, with indicative funding of EUR 430 million.¹⁶²

Additionally, the **EU must ensure that its own consumption does not undermine the environment elsewhere.** The EU Directive on corporate sustainability due diligence¹⁶³ aims to foster sustainable and responsible behaviour in corporate operations and provides a good opportunity to uphold these principles. This will require sufficient monitoring and enforcement to ensure conflict and environmentally sensitive corporate practices. Regulatory standards such as those implemented with the **Deforestation Regulation**¹⁶⁴ ensure that the EU uses its market power to prevent environmental degradation that leads to security risks. Additional initiatives such as the **EU's Carbon Border Adjustment Mechanism (CBAM)** ensures imported carbon-intensive goods are priced to reflect their environmental impact, encouraging cleaner industrial practices both within and beyond EU borders.¹⁶⁵

¹⁵⁸ Schmelzer, N.; Mosello, B.; Kruckow, C.; Strumpf, N.; Zakri, A. 2024: Upscaling peace-positive climate action and climate-informed peacebuilding: lessons learned and ways forward. Berlin: adelphi.

¹⁵⁹ United Nations Environment Programme (UNEP) 2024: Lessons learned from the Implementation of the Wadi El Ku Catchment Management Project (Phase 2). Nairobi: UNEP.

¹⁶⁰ Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. Weathering Risk Synthesis Report. Berlin: adelphi.

¹⁶¹ Morales Muñoz, H.; Clemente Pereira, L. 2024: Harmonising biodiversity and climate action with a peace lens in Latin America and the Caribbean. Berlin: adelphi global.

¹⁶² Global Gateway European Commission (n.d.): Latin America and the Caribbean (LAC) - Amazon Basin.

¹⁶³ Official Journal of the European Union 2024: Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859 (Text with EEA relevance). 2024/1760. 05 July 2024.

¹⁶⁴ European Commission 2025: Regulation on Deforestation-free Products. Energy, Climate Change, Environment.

¹⁶⁵ European Commission 2025: Carbon Border Adjustment Mechanism. Taxation and Customs Union. 17 January 2025.

5 Global governance, financial reform and climate justice

Effective, transparent, and accountable governance structures are essential for managing the complex interaction between climate and environmental change and security threats. This is true for the national level, where both **slow and rapid-onset climate events, and the responses to them, can be hampered by, increase, or undermine government legitimacy.** This relationship is even more influential on the global level, where significant decisions will continue to be made on climate action, climate finance and accountability, **affecting not only the 1 billion people in fragile and conflict-affected states,** but everyone around the world who looks to the global regulatory frameworks to drive climate action.¹⁶⁶

5.1 TREND: Rising political fragmentation weakens political will to meet Paris commitments, reduce emissions and support adaptation. Climate impacts will continue to fall most heavily on low-income and marginalised communities, which will reverse development and peacebuilding gains, undermine governance, and increase risks of conflict and instability.

Growing public frustration with political elites and economic inequality has fuelled the rise of populist leaders across the political spectrum. These leaders often prioritise local interests over global challenges, including climate action.¹⁶⁷

Social media platforms amplify these tensions, as evidenced by the significant rise in climate disinformation engagement. Studies show that climate-related misinformation continues to receive significant engagement on major platforms, undermining public understanding and support for climate action.¹⁶⁸

Populist movements typically champion state sovereignty and claim to represent majority interests while dismissing minority voices and established institutions. In response to environmental policies, some groups are mobilising against progressive climate initiatives, particularly those involving stricter energy and transport regulations. This growing resistance is making policymakers increasingly hesitant to pursue ambitious climate action, affecting decisions on trade, development, and investment.¹⁶⁹ The resulting policy uncertainty threatens to undermine progress on crucial climate and environmental initiatives.

These political shifts will undermine global cooperation on climate issues. Short-term national interests will take precedence over long-term commitments, such as the Paris Agreement's 1.5° temperature goal. This model is set by the Trump Administration's withdrawal from the Paris Agreement and **may embolden others to follow suit and reject green agendas. Corporations may also seize a favourable political landscape to push for deregulation** and reverse important climate commitments. Countries in the EU face a challenge of balancing multiple priorities: maintaining strategic independence, rebuilding an industrial base, ensuring security, and reducing reliance on countries that don't share their values. Global climate governance mechanisms are challenged at this decisive moment.

2025 will continue to see record droughts, floods, tropical cyclones, heatwaves, and cold waves cause extensive damage, loss of life, and hamper sustainable development efforts globally. While climate-related governance challenges transcend North-South divides, developing nations, and states experiencing fragility will bear the greatest impacts of climate inaction.

¹⁶⁶ International Monetary Fund (n.d.): Fragile and Conflict-Affected States (FCS).

¹⁶⁷ Wike, R.; Fagan., M.; Clancy, L. 2024: Global Elections in 2024: What we learned in a year of political disruption. Pew Research Centre.

¹⁶⁸ Sethi, P. 2024. Explainer: What are climate misinformation and disinformation and what is their impact? The London School of Economics and Political Science.

¹⁶⁹ World Economic Forum 2024: Trade and Values: Navigating the Intersection of Policy and Principles. White Paper. and Jones, E.; Youngs, R. 2024: Civic Activism in an Intensifying Climate Crisis. Carnegie Endowment for International Peace. Washington: Carnegie Endowment for International Peace.

States experiencing fragility have heightened vulnerability to the impacts of climate change. These nations often face dual exposure: **geographic susceptibility to severe and persistent climate hazards, with constrained adaptive capacity due to institutional and socioeconomic fragility**.¹⁷⁰ Within these states, low-income and marginalised communities are disproportionately impacted. Gender-based structural disparities will amplify climate-related vulnerabilities, and by 2050, **climate impacts are projected to exacerbate gender-differentiated poverty**, potentially pushing an estimated 158 million women and girls below the international extreme poverty threshold (USD 2.15 per day).¹⁷¹ These intersectional vulnerabilities also expose marginalised groups to higher climate-induced violence. For example, in Iraq, evidence from the aftermath of climate-related disasters reveals gender-specific protection gaps regarding security provisions in displacement settings.¹⁷²

Institutional capacity constraints in fragile contexts, particularly regarding climate adaptation and social protection mechanisms, risk driving populations — notably youth — towards adverse coping strategies, **including resource exploitation and engagement with non-state armed groups**.¹⁷³ The absence of effective governance and service delivery will continue to erode trust in and legitimacy of governments and increase support for violence.

The intersecting pressures from climate vulnerabilities, economic volatility, and violent conflict sustain conditions of structural fragility, **endangering the realisation of the SDGs**. Since their Adoption by UN Member States in 2015, almost half of the targets within the 17 Sustainable Development Goals are displaying minimal or moderate progress.¹⁷⁴

¹⁷⁰Hardaway, A.; Levine, E.; Mercer, S.; Scheiner, A. 2023: Adapting in Adversity. Challenges and opportunities for climate action in fragile and conflict affected situation. Mercy Corps.

¹⁷¹ Bhatt, A.; Fillo, G.F.; Frick, F.; Min, Y.; Page, H.; Tosi, N.; You, S. 2024: Progress on the Sustainable Development Goals: The Gender Snapshot 2024. New York: UN-Women and DESA.

¹⁷² McMurray, S. 2024: Integrating Climate Security into Policies: Roadmap for Iraq. Berlin: adelphi.

¹⁷³ Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. Weathering Risk Synthesis Report. Berlin: adelphi.

¹⁷⁴ United Nations. 2024: The Sustainable Development Goals Report 2024.

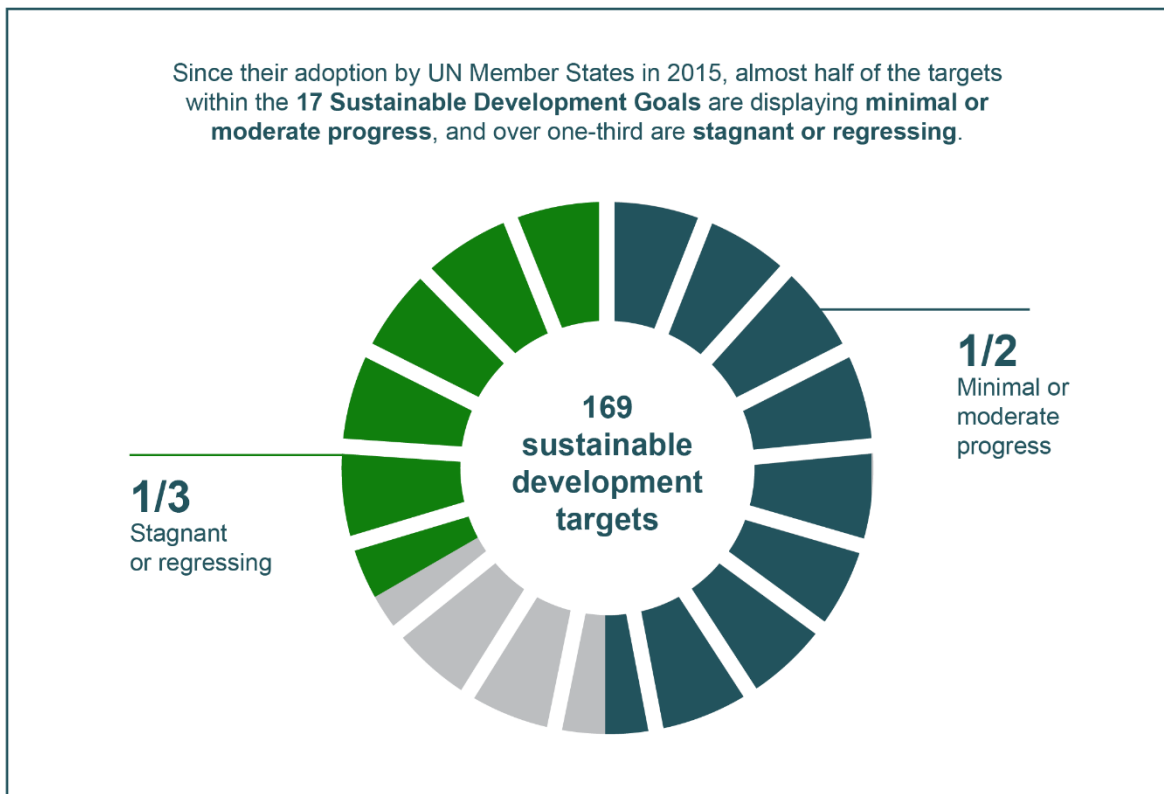


Figure 8: UN Member States' progress in achieving the sustainable development targets (elaborated by adelphi)

Delays and reversals in sustainable development efforts further increase climate risks for regions facing conflict and fragility, trapping communities in an ongoing cycle of hardship.

In the MENA region, despite some progress in ending extreme poverty (SDG 1) and ensuring access to clean energy (SDG 7), there has been little or no progress for many of the other SDGs. Armed conflict in countries like Yemen, has made the attainment of the SDGs even more challenging. Addressing the stagnation or regression of SDGs cannot therefore be isolated from addressing the many existing factors driving fragility throughout the MENA region.¹⁷⁵

5.2 TREND: Inadequate climate financing to fragile states will increase societal disparities and political grievances, fuelling 'anti-West' sentiments and related geopolitical divisions, weakening multilateralism along lines of climate justice.

Despite this widespread and high-level acknowledgement of the connection between climate change and security, **international climate decision making continues to marginalise or overlook the needs and perspectives of developing countries.**¹⁷⁶ The IPCC makes clear that current climate trends are at risk of undermining the foundations of key systems of civilization, including the stability of states and societies and thereby the international system. Despite this, the response has been characterised by an extreme caution at odds with the scale of the challenge. Because of **the inequity of the impacts of climate change, this inadequate response undermines the legitimacy of the international rules-based system** which ultimately marginalises the interests of a majority that is

¹⁷⁵ Göll, E.; Uhl, A.; Zwiers, J. 2019: Sustainable Development in the Mena Region. Middle East and North Africa Regional Architecture (MENARA). Future Notes No. 20.

¹⁷⁶ Over 78 UN Member States from diverse regions are part of the Group of Friends on Climate and Security, a coalition addressing climate-security challenges within the United Nations.

primarily in the Global South. In areas experiencing conflict and fragility, a considerable financing deficit for adaptation persists, leaving essential large-scale investments in resilience unfunded.

The disparity in climate finance distribution is stark and growing. In 2020, for every dollar of adaptation finance reaching other low-income countries, fragile states received just 33 cents.¹⁷⁷ The distribution of adaptation finance shows other worrying patterns: **as global funding increases, the proportion reaching conflict zones decreases**, with severe conflict areas facing the largest shortfalls.¹⁷⁸ This gap creates a vicious cycle. **As their share of funding decreases, adaptation costs will continue to rise**, exacerbated by ongoing climate impacts and their ripple effects across all sectors.

When fragile states do receive climate funding, it **predominantly takes the form of loans and debt instruments, further increasing already substantial financial burdens**. The debt crisis is particularly severe where adaptation finance is most needed. Africa's foreign debt hit USD 1.1 trillion in 2023, while highly vulnerable states — including Afghanistan,¹⁷⁹ Haiti,¹⁸⁰ Syria,¹⁸¹ and Yemen¹⁸² — face crushing debt burdens. **High debt repayments undermine development in these countries by diverting funds from critical investments**. Resources that could strengthen resilience and decrease the development gap through education, healthcare, infrastructure, or social safety nets, are instead used to service debt.

As borrowing costs rise, the **risk of destabilising debt defaults will increase**, which could have far-reaching consequences beyond the defaulting countries. The existing power imbalance in global climate governance facilitates a continuation of this exclusion. **Countries with significant influence over global climate regimes do not endure climate disaster losses proportional to their influence**, raising issues of justice.¹⁸³ Climate justice is based on the principle that those more responsible for climate change should bear the greatest burden in addressing it — i.e. the fair allocation of resources from industrialised nations to those countries that are currently facing most of its impacts.

Despite their minimal contribution to greenhouse gas emissions and global climate change, Small Island Developing States face significant challenges in obtaining a fair allocation of financial resources due to inadequate, imbalanced, and unpredictable climate financing flows. Despite a general international acknowledgement of their extreme vulnerability to impacts from climate change, they still face great barriers in accessing concessional finance and are faced with high debt burdens.¹⁸⁴

As effective international cooperation is making inclusive climate agreements harder to achieve, **questions of justice in climate action will continue to be raised**. In 2024 at the behest of the Pacific Island of Vanuatu and a core group of UN Member States, the International Court of Justice facilitated hearings on climate change. Oral testimonies are expected to inform an advisory opinion which will clarify States' legal obligations on climate change, and the consequences of breaches of this obligation.¹⁸⁵ Calls for improved action on climate justice at the highest level will continue to be matched by civic engagement, connecting climate justice to the struggle for human rights.

The growing **frustration with inadequate climate action will spark further widespread mobilisation**. 2024 was witness to more than 55 climate protests around the world involving between 100–60,000 participants. From across the EU to South Korea and the Philippines, citizens

¹⁷⁷ Jones, L.P.; Banga, J.; Notkin, B. S.; Brochen, A.; Guillaume, J. 2024: Closing the Gap: Trends in Adaptation Finance for Fragile and Conflict-affected Settings - Executive Brief (English). Washington, D.C.: World Bank Group.

¹⁷⁸ Ibid.

¹⁷⁹ 3,393 million in 2022. World Bank 2023: International Debt Report 2023. Washington, DC.: World Bank.

¹⁸⁰ 2,560 million in 2022. Ibid.

¹⁸¹ 4,848 million in 2022. Ibid.

¹⁸² 7,351 million in 2022. Ibid.

¹⁸³ Wang, D.; Fang, Y. 2024: Global climate governance inequality unveiled through dynamic influence assessment. npj climate action 3:75.

¹⁸⁴ De Marez, L.; Bee, S.; Bartle, B.; Chintulga, O.; Nguyen, C. 2022: Accessing climate finance: challenges and opportunities for Small Island Developing States Accessing Climate Finance: Challenges and opportunities for Small Island Developing States. United Nations.

¹⁸⁵ United Nations 2024: Landmark climate change hearings represent largest ever case before UN world court. UN News.

opposed factory farms, gas drilling and demanded more aggressive climate legislation.¹⁸⁶ In restricted civic spaces across the Middle East and through increasingly strident activism in Africa, citizens demonstrated in solidarity for far-reaching political transformation and social justice.¹⁸⁷ These grassroots movements signal a **growing global demand for fundamental changes to how climate action is structured** and delivered to those most in need.

5.3 TREND: Climate stress is eroding social bonds, making climate adaption and conflict prevention more challenging. The impacts of climate change will continue to fragment social connections, drive climate-related displacement, and undermine both peace and climate resilience.

The uneven **impacts of climate change strike hardest along existing lines of social inequality**, eroding social cohesion and hampering collective climate action. Strong **social bonds** – both vertical connections between communities and governance structures, and horizontal bonds across societal groups – are fundamental for achieving development objectives and building community resilience. They serve as a **critical buffer between climate change and security risks.**^{188 189}

Climate-driven social fragmentation manifests through both acute climate shocks and gradual environmental degradation. The Mediterranean region endured unprecedented climate extremes in 2024 from devastating wildfires to floods and record-breaking heatwaves. As these events grow in frequency and intensity, they will **continue to expose critical gaps in early warning systems and community preparedness.**¹⁹⁰ The compounding pressures of these disasters, coupled with climate-induced demographic shifts, **will drive political polarisation and weaken the vital bonds between communities and governance structures, both traditional/informal and institutional.**

These challenges will be particularly acute in conflict-affected or fragile regions, where persistent vulnerability has already eroded social trust. **Climate shocks will overwhelm remaining community bonds, while the corrosive effects of slow-onset environmental degradation steadily weaken social connectivity.** This social fragmentation accelerates environmental destruction, creating a dangerous feedback loop.¹⁹¹ For example, in the Marshall Islands, depleting fish stocks are undermining traditional resource-sharing practices and social cohesion.¹⁹² When vital resources deteriorate, through soil desertification, water scarcity or erratic rainfall patterns, tensions can escalate into major security risks.¹⁹³

While climate impacts and climate-related mobility can occasionally strengthen community ties, mounting evidence shows how **climate stresses often undermine vital social support systems, eroding traditional practices of mutual aid**, food sharing, and credit networks that historically bolstered community resilience.¹⁹⁴ In receiving communities, climate-driven migration can further strain social cohesion as competition intensifies over limited resources.¹⁹⁵ In Haiti, communities are experiencing increasing tensions as displacement rises, putting pressure on limited resources. Traditional social structures in both rural and urban areas are eroding as populations become more

¹⁸⁶ Carnegie Endowment for International Peace 2024: Climate Protest Tracker.

¹⁸⁷ Jones, E.; Youngs, R. 2024: Civic Activism in an Intensifying Climate Crisis. Carnegie Endowment for International Peace. Washington: Carnegie Endowment for International Peace. (p. 49)

¹⁸⁸ Mercy Corps 2024: COALESCE: Mercy Corps' Social Cohesion Handbook. Portland: Mercy Corps.

¹⁸⁹ Detges, A.; Foong, A. 2023: Context matters. A review of the evidence of how social, economic, and other variables influence the relationship between climate and security. Berlin. adelphi.

¹⁹⁰ Mathiesen, K.; Hernández-Morales, A.; Weise, Z. 2024: Spain's 'monster' floods expose Europe's unpreparedness for climate change. In: POLITICO, 30.10.2024.

¹⁹¹ Organisation for Economic Co-operation and Development (OECD) 2023: Biodiversity and Fragility: A perspective on fragile contexts. OECD Development Co-operation Directorate. Paris: OECD Publishing.

¹⁹² Zwar, C.; McMurray, S.; Rüttinger, L.; Binder, L.; Sedova, B.; Arcone, S. 2023: Republic of Marshall Islands Climate Security Risk Assessment. United Nations Development Programme (UNDP).

¹⁹³ Rüttinger, L.; Munayer, R.; van Ackern, P.; Titze, F. 2022: The nature of conflict and peace. The links between environment, security and peace and their importance for the United Nations. Gland: WWF International; Berlin: adelphi consult GmbH.

¹⁹⁴ Lindegaard, L. S. 2023: Loss and damage and social cohesion. Current knowledge and next steps for programming and practice. Dansk Institut for Internationale Studier (DIIS).

¹⁹⁵ United Nations High Commissioner for Refugees (UNHCR) 2024: No escape: On the frontlines of climate change, conflict and forced displacement. UNHCR.

transient and diverse. Faced with severe economic challenges, these communities struggle to maintain mutual support networks that once characterised their social fabric.¹⁹⁶

5.4 Good practice and lessons

To effectively prevent future climate and security risks, **building trust through the delivery of effective, inclusive climate action is essential**. This can be achieved through continued **conflict-sensitive decarbonisation**, investments in sustainable development and **reinforced commitments to the European Green Deal**.¹⁹⁷ Internationally, the EU can uphold its position as trusted partner for decarbonisation by continuing to take a leading role as well as accounting for and reducing military emissions.

EU member states and countries around the world that are challenged to navigate domestic or geopolitical tensions while also navigating climate responses would be **well served to pursue entry points amenable to cooperation**. This could include **investments in broader SDGs** (good governance, livelihoods, food security, safe cities) and **climate and security-sensitive humanitarian efforts, as well as disaster risk reduction**, and energy and economic security. Addressing climate challenges and upholding the international rules-based order are interconnected priorities: neither can succeed without the other, and both are fundamental to safeguarding human and national security.

To achieve political consensus, policymakers should leverage **multi-track diplomacy uniting on the shared threat of climate and security**. The newly appointed EU High Representative for Foreign Affairs and Security Policy is strategically positioned to lead **diplomatic engagement on climate and security threats and advance resilient, forward-looking solutions, together with key members of the European Commission**. Such engagement must include grassroots organisations, youth led organisations and civil society, as inclusive, diverse and evidenced-based decision making on climate mitigation and adaptation is essential.¹⁹⁸ More broadly, the EU should accelerate its action on peace mediation in line with **EEAS's Peace Mediation Guidelines**, recognising the opportunity provided by natural resource and the environment as entry points to initiate cooperation and resolve conflict.¹⁹⁹

These provide critical opportunities to **promote the voices and experiences of the most vulnerable and marginalised** in climate discussions. Where feasible, highlighting collective regional security, or framing collaboration in the face of shared threats to self-interests posed by climate change, can also be bolstered in outreach efforts.

To equip international partners with the financial tools to respond to these joint climate and security threats, the EU must **continue to ensure more climate finance reaches fragile and conflict-affected states**. EU commitments to programmes such as the **Fund for Responding to Loss and Damage (FRLD)** have already demonstrated leadership in ambition and delivery for international partners and provide resources for the most affected states to build up resilience. Further leadership on the **development of requirements for vertical climate funds to dedicate a predetermined portion of investments to fragile and conflict-affected states**, could further support the EU's commitment to climate justice. The EU's support for a **reform of the global financial architecture**, such as via the **Bridgetown Initiative**, could open additional funding sources, increasing the total amount of climate finance globally to be invested in resilience against climate insecurity.

¹⁹⁶ Mosello, B.; Destrijcker, L.; McMurray, S. A. 2023: Roots for Peace: Uncovering climate security challenges in Haiti and what to do about them. adelphi research; United Nations Environment Programme (UNEP); United Nations Development Programme (UNDP); Ministry of Environment of Haiti; the Groupe sur la Sécurité Climatique en Haïti.

¹⁹⁷ European Commission (n.d.): The European Green Deal - Striving to be the first climate-neutral continent.

¹⁹⁸ Al Naber, M.; Al Haddadin, R.; Fakhoury, S.; Simpson, R. 2023: Gender, climate and cohesion: Uncovering the linkages between climate change, human security and gender in Jordan. International Alert; WANA Institute.

¹⁹⁹ European External Action Service 2024: Peace Mediation Guidelines.

VII Conclusion

The findings of this report reveal a world characterised by historically unparalleled levels of connectivity, but fracturing along new lines. It is currently a world of harsh geostrategic competition, at a critical juncture. Climate change is a **fundamental and urgent security challenge that is reshaping global stability**. The cascading effects of climate change are **amplifying existing vulnerabilities** and **creating new security risks**, particularly in fragile regions and urban centres. Increasingly, there is a balance to be drawn between the imperative for security and the opportunities to enhance broader prosperity and stability.

Most concerning is the **growing gap between those who can adapt and those who cannot**, creating a cycle whereby climate impacts, social fragmentation, and security risks become mutually reinforcing. Regardless of political appetite to confront these challenges, climate-driven security risks will continue to threaten lives, livelihoods, economies, food security and overall stability in Europe and abroad. While the analysis has highlighted various concerning trends, the focus must now shift decisively toward ensuring integrated application of comprehensive policy solutions that incorporate both mitigation and adaptation strategies.

The EU's global leadership and strategic relevance increasingly depend on its ability to address climate and security risks where impacts are greatest. **By demonstrating meaningful partnership with countries facing the most extreme challenges, the EU strengthens its position as an essential global actor while building the diplomatic capital needed to advance its broader geopolitical interests.**

Though the challenge is daunting, there are **clear pathways forward**. Success will depend on **moving beyond traditional approaches, to embrace inclusive, conflict-sensitive climate action** that recognises the unique needs of vulnerable communities. Beyond responding to challenges to European defence, resilience and adaptation, climate and security risks require support from the EU to lead global efforts on decarbonisation and stabilisation. By strengthening inclusive governance at all levels and addressing disparities in climate finance for fragile states, climate action can serve as a vehicle for peacebuilding rather than a source of new tensions.

The EU stands uniquely positioned as a global leader in addressing climate and security challenges. To maintain and strengthen this leadership position, the EU must pursue a comprehensive policy agenda that includes:

- **Enhanced Climate Finance and Justice for Fragile States:** Address the critical disparity where fragile states receive just 33 cents for every dollar of adaptation finance reaching other low-income countries through the Fund for Responding to Loss and Damage, NDICI-Global Europe or dedicated funding from vertical climate funds.
- **Strengthened Multilateral Partnerships:** As the European Union faces heightened global policy divergence, the EU's Green Diplomacy framework and the Group of Friends for ambitious EU climate diplomacy should be harnessed to demonstrate leadership in maintaining comprehensive security through multilateral partnerships. This will be increasingly crucial in the face of mounting strategic opposition.
- **Integrated Urban Resilience:** Support rapid urbanisation challenges by harnessing Team Europe Initiatives and the Union Civil Protection Mechanism to deliver climate-resilient infrastructure and inclusive economic policies, particularly in fragile contexts where urban areas are expected to account for 48% of the total population by 2030.
- **Environmental Protection and Restoration:** Work against environmental crime and promote wholesale environmental restoration leveraging initiatives such as the EU Global Gateway investments, Deforestation Regulation, or EMPACT, while strengthening and upholding environmental protection mechanisms.

- **Conflict Sensitivity in the Green Transition:** Ensure the energy transition balances critical mineral demands with equitable socioeconomic considerations. The European Green Deal and Just Energy Transition Partnership can be used to also prevent new forms of inequality by promoting conflict-sensitivity in supply chains.
- **Evidence-Informed Migration and Displacement Policy:** Increase investments and integration of climate and security into frameworks like the Khartoum Process. Preventive investments to support climate-informed migration governance should also be expanded, while developing durable solutions for climate-affected persons to move safely and with dignity.
- **Social Cohesion and Community Resilience:** Build resilience through facilitating access to just processes, secure land rights, and comprehensive basic services, embedding these approaches in the upcoming Communication on the Integrated Approach to Fragility, recognising that strong social bonds are fundamental for climate action and security.

The success of these initiatives depends on continued coordination and integration across policy areas. The EU's comprehensive approach, combining targeted instruments with broader policy frameworks, positions it as a global leader in addressing climate and security challenges. By leveraging these tools effectively while encouraging other global actors to follow suit, the EU can help build a more resilient and equitable global future.

VII Bibliography

- adelphi and the Permanent Mission of Guyana to the United Nations 2024: The Impact of Climate Change & Food Insecurity on the Maintenance of International Peace & Security. Report on Guyana's Signature Event during its Presidency of the UN Security Council. Berlin: adelphi. Retrieved 11.12.2024 from <https://weatheringrisk.org/en/publication/impact-climate-change-food-insecurity-maintenance-international-peace-security>.
- Adger, W.; Neil, J. M. P.; Barnett J.; Dabelko G.D.; Hovelsrud, G.K.; Levy, M.; Oswald, S. U.; Vogel, C. H. 2014: Human Security. In: Climate Change 2014 – Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects. Working Group II Contribution to the IPCC Fifth Assessment Report. Cambridge and New York: Cambridge University Press, pp. 755-791. Retrieved 08.01.2025 from <https://www.cambridge.org/core/books/abs/climate-change-2014-impacts-adaptation-and-vulnerability-part-a-global-and-sectoral-aspects/human-security/0AB0BA0441B97CCAA50DC2D91F4B2044>
- Al Naber, M.; Al Haddadin, R.; Fakhoury, S.; Simpson, R. 2023: Gender, climate and cohesion: Uncovering the linkages between climate change, human security and gender in Jordan. International Alert; WANA Institute. Retrieved 08.01.2025 from <https://www.international-alert.org/app/uploads/2023/12/Jordan-research-paper.pdf>.
- Barry, S.; Mosello, B.; McMurray, S.; Destrijcker, L. 2024: Undercurrents: How conflict, climate change and the environment intersect in Yemen. Berlin: adelphi research and the European Institute of Peace (EIP). Retrieved 07.01.2025 from https://weatheringrisk.org/sites/default/files/document/Undercurrents_Yemen.pdf.
- Bernal, A.; Husar, J.; Bracht, J. 2023: Latin America's opportunity in critical minerals for the clean energy transition. IEA. Retrieved 24.01.2025 from <https://www.iea.org/commentaries/latin-america-s-opportunity-in-critical-minerals-for-the-clean-energy-transition>.
- Bertrand, B.; Koko, A. D. 2024: Climate Change and Armed Groups - Key Takeaways. Strengthening Disarmament, Demobilization, and Reintegration Practitioner's Analysis of and Response to the Links between Climate Change and Armed Group Recruitment Patterns. A SCORE Analysis in the Tillaberi Region in Niger. SeeD – Centre for Sustainable Peace and Democratic Development. Retrieved 07.01.2025 from https://peacekeeping.un.org/sites/default/files/climate_change_and_armed_groups_key_takeaways.pdf.
- Bhatt, A.; Fillo, G.F.; Frick, F.; Min, Y.; Page, H.; Tosi, N.; You, S. 2024: Progress on the Sustainable Development Goals: The Gender Snapshot 2024. New York: UN-Women and DESA. Retrieved 17.12.2024 from <https://unstats.un.org/sdgs/gender-snapshot/2024/GenderSnapshot2024.pdf>.
- Bih, K. B.; Desjonqueres, C.; Jarafino, B.; Blanc, E., Masson, S. 2024: Impacts of Disasters in Conflict Settings: Evidence from Mozambique and Nigeria. World Bank Group. Retrieved 20.12.2024 from <https://documents1.worldbank.org/curated/en/099020312092438810/pdf/IDU167bd455d1907a14d67194fd18951da0a2ff3.pdf>.
- Borrel, J.; Hoyer, W. 2022: Decarbonization, a strategic imperative. European Investment Bank. Retrieved 07.01.2025 from <https://www.eib.org/en/stories/decarbonization-a-strategic-imperative>.
- Bosetti, V.; Cattaneo, C.; Peri, G. 2018: Should they stay or should they go? Climate Migrants and Local Conflicts. NBER Working Paper, No. 24447. Cambridge, MA: National Bureau of Economic Research. Retrieved 09.01.2025 from <https://www.nber.org/papers/w24447>.

- Böhle, A-S.; Tarif, K. 2024: Cultivating change: regenerative agriculture and peacebuilding in South-Central Somalia. SIPRI Policy Brief. Retrieved 24.01.2025 from https://www.sipri.org/sites/default/files/2024-11/pb_2411_cultivating_change.pdf.
- Cattaneo, C.; Beine, M.; Fröhlich, C. J.; Kniveton, D.; Martinez-Zarzoso, I.; Mastrorillo, M.; Millock, K.; Piguat, E.; Schraven, B. 2019: Human Migration in the Era of Climate Change. Review of Environmental Economics and Policy 13:2, pp. 189-206. Retrieved 09.01.2025 from <https://www.journals.uchicago.edu/doi/10.1093/reep/rez008>.
- Center for Climate and Security, CSR Blog 2024: MiRCH Update: Key Takeaways from Tracking Climate-Related Military Deployments. Retrieved 24.01.2025 from <https://councilonstrategicrisks.org/2024/01/18/mirch-update-key-takeaways-from-tracking-climate-related-military-deployments/>.
- Clarke, L.; Wei, Y. M.; De La Vega Navarro, D.; Garg, A.; Hahmann, A.N.; Khennas, S.; Azevedo, I.M.L.; Löschel, A.; Singh, A.K.; Steg, L.; Strbac, G.; Wada, K. 2022: Energy Systems. In: IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK and New York, USA: Cambridge University Press. Retrieved 07.01.2025 from <https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-6/>.
- Clement, V.; Rigaud, K. K.; de Sherbinin, A.; Jones, B.; Adamo, S.; Schewe, J.; Sadiq, N.; Shabahat, E. 2021: Groundswell Part 2: Acting on Internal Climate Migration. Washington, DC: The World Bank. Retrieved 16.01.2025 from <https://openknowledge.worldbank.org/entities/publication/2c9150df-52c3-58ed-9075-d78ea56c3267>.
- Climate Diplomacy (n.d.): Dam projects and disputes in the Mekong River Basin. adelphi Global; German Federal Foreign Office. Retrieved 24.01.2025 from <https://climate-diplomacy.org/case-studies/dam-projects-and-disputes-mekong-river-basin>.
- Climate Diplomacy (n.d.): Food price volatility and fragility in the MENA region. adelphi Global; German Federal Foreign Office. Retrieved 24.01.2025 from <https://climate-diplomacy.org/case-studies/food-price-volatility-and-fragility-mena-region>.
- Council of the European Union 2017: Operationalising the Humanitarian-Development nexus. Council Conclusions 9383/17. 19 May 2017. Retrieved 10.12.2024 from <https://www.consilium.europa.eu/media/24010/nexus-st09383en17.pdf>.
- Council of the European Union 2018: Council Conclusions on the Integrated Approach to External Conflicts and Crises. Council Conclusions 5413/18. 22 January 2018. Retrieved 12.12.2024 from <https://data.consilium.europa.eu/doc/document/ST-5413-2018-INIT/en/pdf>.
- Council of the European Union 2022. A strategic Compass for Security and Defence. For a European Union that protects its citizens, values and interests and contributes to international peace and security. Brussels. 21 March 2022. Retrieved 12.12.2024 from <https://data.consilium.europa.eu/doc/document/ST-7371-2022-INIT/en/pdf>.
- Council of the European Union 2024. Council Conclusions on Green Diplomacy. Council Conclusions 7865/24. 18 March 2024. Retrieved 12.12.2024 from <https://data.consilium.europa.eu/doc/document/ST-7865-2024-INIT/en/pdf>.
- Council of the European Union 2024: Council Conclusions on the EU Security and Defence. Outcome of Proceedings 9224/24. 27 May 2024. Retrieved 16.01.2024 from <https://www.consilium.europa.eu/en/press/press-releases/2024/05/28/eu-security-and-defence-council-sets-out-five-main-priorities/>.

Council on Strategic Risks - Center for Climate and Security (CCS) (n.d.): Military Responses to Climate Hazards (MIRCH) tracker. Retrieved 24.01.2025 from <https://councilonstrategicrisks.org/ccs/mirch/>.

da Costa, R. T.; Krausmann, E.; Hadjisavvas, C. 2023: Impacts of climate change on defence-related critical energy infrastructure. European Commission; Joint Research Centre; European Defence Agency. Luxembourg: Publications Office of the European Union. Retrieved 24.01.2025 from <https://data.europa.eu/doi/10.2760/03454>.

da Costa, R. T.; Krausmann, E.; Hadjisavvas, C. 2024: Navigating climate change in defence – Climate risk management guide for chiefs of defence staff. European Commission; Joint Research Centre. Publications Office of the European Union, 2024. Retrieved 24.01.2025 from <https://data.europa.eu/doi/10.2760/252092>.

De Marez, L.; Bee, S.; Bartle, B.; Chintulga, O.; Nguyen, C. 2022: Accessing climate finance: challenges and opportunities for Small Island Developing States Accessing Climate Finance: Challenges and opportunities for Small Island Developing States. United Nations. Retrieved 24.01.2025 from https://www.un.org/ohrlls/sites/www.un.org.ohrlls/files/accessing_climate_finance_challenges_sids_report.pdf.

Dennison, S.; Engström, M. 2023: Decarbonisation nations: how EU Climate diplomacy can save the world. Policy Brief. Retrieved 07.01.2025 from <https://ecfr.eu/wp-content/uploads/2023/05/Decarbonisation-nations-How-EU-climate-diplomacy-can-save-the-world.pdf>.

Detges, A.; Klingensfeld, D.; König, C.; Pohl, B.; Rüttinger, L.; Schewe, J.; Sedova, B.; Vivekananda, J. 2020: 10 insights on climate impacts and peace - A summary of what we know. adelphi and Potsdam Institute for Climate Impact Research (PIK). Retrieved 07.01.2025 from https://weatheringrisk.org/sites/default/files/document/10%20Insights%20on%20Climate%20Impacts%20and%20Peace%20Report_0.pdf.

Detges, A.; Pohl, B.; Schaller, S. 2017: Editor's Pick: 10 Violent Water Conflicts. adelphi. Retrieved 16.01.2025 from <https://climate-diplomacy.org/magazine/conflict/editors-pick-10-violent-water-conflicts>.

Detges, A.; Foong, A. 2023: Context matters. A review of the evidence of how social, economic, and other variables influence the relationship between climate and security. Berlin. adelphi. Retrieved 08.01.2025 from <https://weatheringrisk.org/en/publication/context-matters>.

Dodman, D.; Hayward, B.; Pelling, M.; Castan Broto, V.; Chow, W.; Chu, E.; Dawson, R.; Khirfan, L.; McPhearson, T.; Prakash, A.; Zheng, Y.; Ziervogel, G. 2022: Cities, Settlements and Key Infrastructure. In: Pörtner, H. O.; Roberts, D. C.; Tignor, M.; Poloczanska, E. S.; Mintenbeck, K.; Alegría, A.; Craig, M.; Langsdorf, S.; Löschke, S.; Möller, V.; Okem, A.; Rama, B. (eds.) Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge, UK and New York, USA: Cambridge University Press, pp. 907–1040. Retrieved 24.01.2025 from https://www.researchgate.net/publication/359560865_Cities_Settlements_and_Key_Infrastructure.

ECO-SOLVE (n.d.): Eco-Solve: Enhanced Solutions For Tackling Environmental Crimes. Global Initiative Against Transnational Organized Crime. Retrieved 24.01.2025 from <https://page.globalinitiative.net/eco-solve/index.html>.

Edwards, G.; Vella, C.; Darbyshire, E. 2022: Reverberating civilian and environmental harm from explosive weapons use in Gaza. Conflict and Environment Observatory. Retrieved 09.01.2025

- from <https://ceobs.org/reverberating-civilian-and-environmental-harm-from-explosive-weapons-use-in-gaza/>.
- EL PAcCTO Europa Latinoamérica (n.d.): What is EL PAcCTO? Retrieved 24.01.2025 from <https://elpaccto.eu/en/sobre-el-paccto/que-es-el-paccto/>.
- European Commission 2019: Communication from the Commission. The European Green Deal. Com (2019)640 final. 11 December 2019. Brussels. Retrieved 12.12.2024 from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A640%3AFIN>.
- European Commission 2020: Commission Staff Working Document Evaluation of the DIRECTIVE 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law (Environmental Crime Directive). SWD(2020) 259 final. 28 October 2020. Brussels. Retrieved 24.01.2025 from https://commission.europa.eu/document/download/e9bc5c87-f34d-47da-b56e-4b65874093dd_en?filename=environmental_crime_evaluation_report.pdf.
- European Commission 2021: Communication from the Commission to the European Parliament and the Council on the EU's humanitarian action: new challenges, same principles. Com (2021) 110 final. 10 March 2021. Brussels. Retrieved 22.01.2025 from <https://ec.europa.eu/echo/files/aid/hacommunication2021.pdf>.
- European Commission 2023: Commission Staff Working Document: Drivers of food security. Brussels. Retrieved 21.01.2025 from https://commission.europa.eu/system/files/2023-01/SWD_2023_4_1_EN_document_travail_service_part1_v2.pdf.
- European Commission 2024: EMPACT fighting crime together. Migration and Home Affairs. 25 June 2024. Retrieved 09.01.2025 from https://home-affairs.ec.europa.eu/policies/law-enforcement-cooperation/empact-fighting-crime-together_en.
- European Commission 2025: Regulation on Deforestation-free Products. Energy, Climate Change, Environment. Retrieved 24.01.2025 from https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en.
- European Commission 2025: Carbon Border Adjustment Mechanism. Taxation and Customs Union. 17 January 2025. Retrieved 24.01.2025 from https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.
- European Commission (n.d.): The European Green Deal - Striving to be the first climate-neutral continent. Retrieved 08.01.2025 from https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en.
- European Commission (n.d.): Horizon Europe. Retrieved 24.01.2025 from https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en.
- European Commission (n.d.): Growing the Great Green Wall. International Partnerships, Global Gateway. Retrieved 24.01.2025 from https://international-partnerships.ec.europa.eu/policies/global-gateway/growing-great-green-wall_en.
- European Commission; Climate Change Service; Copernicus 2024: Surface air temperature for October 2024. Retrieved 11.12.2024 from <https://climate.copernicus.eu/surface-air-temperature-october-2024>.

- European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2022: Joint communication to the European parliament and the council. Youth Action Plan (YAP) in EU external action 2022 – 2027. Promoting meaningful youth participation and empowerment in EU external action for sustainable development, equality and peace. 4.10.2022. Strasbourg. Retrieved 20.12.2024 from [fe1bcd30-58da-4a37-ab2a-61848789da60 en](https://ec.europa.eu/external-action/youth-action-plan-2022-2027_en).
- European Commission; High Representative of the Union for Foreign Affairs and Security Policy 2023: Joint communication to the European parliament and the council. A new outlook on the climate and security nexus. Addressing the impact of climate change and environmental degradation on peace, security and defence. 28 June 2023. Brussels. Retrieved 10.12.2024 from https://www.eeas.europa.eu/eeas/joint-communication-climate-security-nexus_en.
- European Environment Agency 2023: Environment and climate pressures from household consumption in Europe. Briefing no. 12/2023. Retrieved 20.12.2024 from <https://www.eea.europa.eu/publications/environment-and-climate-pressures-from>.
- European Environment Agency 2024: European Climate Risk Assessment. EEA Report 01. Retrieved 12.12.2024 from <https://www.eea.europa.eu/publications/european-climate-risk-assessment>.
- European Environment Agency 2024: Just Sustainability Transitions - From concept to practice. EEA Report 12/2024. Copenhagen: EEA. Retrieved 07.01.2025 from <https://www.eea.europa.eu/en/analysis/publications/just-sustainability-transitions>.
- European External Action Service 2020: Climate Change Defence Roadmap. Council of the European Union. Brussels. 9 November 2020. Retrieved 12.12.2024 from <https://data.consilium.europa.eu/doc/document/ST-12741-2020-INIT/en/pdf>.
- European External Action Service 2023: Gender Action Plan III & its key areas of EU engagement. 21 November 2023. Retrieved 24.01.2025 from https://www.eeas.europa.eu/eeas/gender-action-plan-iii-its-key-areas-eu-engagement_en#:~:text=The%20EU%20is%20determined%20to%20lead%20by%20example,lessons%20learned%20and%20the%20achievements%20of%20GAP%20II.
- European External Action Service 2024: Peace Mediation Guidelines. Retrieved 09.01.2024 from <https://www.eeas.europa.eu/sites/default/files/documents/2024/EEAS%20Peace%20Mediation%20Guidelines%202023.pdf>.
- European Union 2023: European Union Common Security and Defence Policy: Civilian CSDP Compact Towards more effective civilian missions. Retrieved 21.01.2025 from https://www.eeas.europa.eu/sites/default/files/documents/2023/Civilian%20CSDP%20Compact%20Report_22.05.2023.pdf.
- Felter, C.; Robinson, K. 2021: Water Stress: A Global Problem That's Getting Worse. Council on Foreign Relations. Retrieved 29.12.2024 from <https://www.cfr.org/backgrounder/water-stress-global-problem-thats-getting-worse>.
- Foschini, F.; Mirzada, R. 2024: The Pastures of Heaven: An update of Kuchi-Hazara disputes as spring approaches. Afghanistan Analysts Network. Retrieved 24.01.2025 from <https://www.afghanistan-analysts.org/en/reports/political-landscape/the-pastures-of-heaven-an-update-of-kuchi-hazara-disputes-as-spring-approaches/>.
- Freudenberger, M.; Sanjak, J.; Tagliarino, N.; Thomson, N. 2019. Climate Change, Land and Resource Governance, and Violent Extremism: Spotlight on the African Sahel. Tetra Tech. Retrieved 16.01.2025 from [climate-change-land-resource-governance-violent-extremism-a-look-at-the-african-sahel.pdf](https://www.tetra-tech.com/~/media/Files/2019/Climate-Change-Land-Resource-Governance-Violent-Extremism-A-Look-at-the-African-Sahel.pdf).

- Gaston, E.; Brown, O.; al-Dawsari, N.; Downing, C.; Day, A.; Bodewig, R. 2023: Climate-Security and peacebuilding. Thematic review. United Nations University Centre for Policy Research. Retrieved 10.12.2024 from https://www.un.org/peacebuilding/sites/www.un.org.peacebuilding/files/documents/climate_security_tr_web_final_april10.pdf.
- German Federal Office 2022: Launch of the Group of Friends for an ambitious EU climate diplomacy. Luxembourg. Retrieved 12.12.2024 from <https://www.auswaertiges-amt.de/en/newsroom/news/group-of-friends-eu-climate/2558706>.
- Ginetti, J.; Kam, P. M.; Siguan, G. A.; Schewe, J.; Milano, L. 2019: Assessing the impacts of climate change on flood displacement risk. IDMC Methodological Paper. Retrieved 09.01.2025 from <https://www.internal-displacement.org/publications/assessing-the-impacts-of-climate-change-on-flood-displacement-risk/>.
- Global Gateway European Commission (n.d.): Latin America and the Caribbean (LAC) - Amazon Basin. Retrieved 07.01.2025 from https://capacity4dev.europa.eu/resources/team-europe-tracker/partner-countries/latin-america-and-caribbean/amazon-basin_en.
- Global Centre for Climate Mobility 2024: Climate Mobility Summit 2024. Retrieved 08.01.2025 from <https://climatemobility.org/event/climate-mobility-summit/>.
- Gray, E. 2021: Global Climate Change Impact on Crops Expected Within 10 Years, NASA Study Finds. Global Climate Change Vital Signs of the Planet. Retrieved 09.01.2025 from <https://climate.nasa.gov/news/3124/global-climate-change-impact-on-crops-expected-within-10-years-nasa-study-finds/>.
- Göll, E.; Uhl, A.; Zwiers, J. 2019: Sustainable Development in the Mena Region. Middle East and North Africa Regional Architecture (MENARA). Future Notes No. 20. Retrieved 24.01.2025 from https://www.iai.it/sites/default/files/menara_fn_20.pdf.
- Gueye, M. K.; de Meyer, T. 2022: UN General Assembly recognizes human right to a clean, healthy, and sustainable environment. Retrieved 07.01.2025 from <https://www.ilo.org/resource/article/un-general-assembly-recognizes-human-right-clean-healthy-and-sustainable>.
- Hardaway, A.; Levine, E.; Mercer, S.; Scheiner, A. 2023: Adapting in Adversity. Challenges and opportunities for climate action in fragile and conflict affected situation. Mercy Corps. Retrieved 11.12.2024 from <https://www.mercycorps.org/research-resources/adapting-in-adversity>.
- Harvey, C.; E&E News 2024: Warfare's Climate Emissions Are Huge but Uncounted. Scientific American. Retrieved 24.01.2025 from <https://www.scientificamerican.com/article/warfares-climate-emissions-are-huge-but-uncounted/>.
- High Representative of the Union for Foreign Affairs and Security Policy. 2023. Joint Report to the European Parliament and the Council: Joint mid-term report on the implementation of the EU Gender Action Plan (GAP III). European Commission. Retrieved 16.01.2025 from https://international-partnerships.ec.europa.eu/document/7bd3f0b5-1a87-43a4-9c10-faede23cf644_en.
- Huang, L. 2023. Climate Migration 101: An Explainer. Migration Policy Institute. Retrieved 16.01.2025 from [Article: Climate Migration 101: An Explainer | migrationpolicy.org](https://www.migrationpolicy.org/article/climate-migration-101-an-explainer)
- Internal Displacement Monitoring Centre (n.d.): IDMC Data Portal. Internal Displacements 2020-2023. Retrieved 24.01.2025 from <https://www.internal-displacement.org/database/displacement-data/>.

- International Energy Agency (IEA) 2021: The Role of Critical Minerals in Clean Energy Transitions. Paris: IEA. Retrieved 07.01.2025 from <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>.
- International Energy Agency (IEA) 2023: Critical Minerals Policy Tracker. Paris: IEA. Retrieved 07.01.2025 from <https://www.iea.org/data-and-statistics/data-tools/critical-minerals-policy-tracker>.
- International Federation of Red Cross and Red Crescent Societies. 2024. Philippines, Asia Pacific: Typhoons and Floods – Operation update #1 (MDRPH056). Relief web. Retrieved 16.01.2024 from <https://reliefweb.int/report/philippines/philippines-asia-pacific-typhoons-and-floods-operation-update-1-mdrph056>.
- International Monetary Fund (n.d.): Fragile and Conflict-Affected States (FCS). Retrieved 07.01.2025 from <https://www.imf.org/en/Topics/fragile-and-conflict-affected-states>.
- Iraola, C. 2024: Ukraine: Reframing the narrative of climate, environmental degradation and conflict. Adelphi and International Rescue Committee (IRC). Retrieved 07.01.2025 from https://www.rescue.org/sites/default/files/2024-09/IRC_adelphi_Ukraine_Climate_final.pdf.
- Jensen, L. 2023: Global Decarbonization in Fossil Fuel Export-Dependent Economies. Fiscal and economic transition costs. United Nations Development Programme (UNDP). Development futures series working papers. Retrieved 07.01.2025 from <https://www.undp.org/sites/g/files/zskgke326/files/2023-05/Global%20Decarbonization%20in%20Fossil%20Fuel%20Export-Dependent%20Economies.pdf>.
- Joint Research Centre (JRC) of the European Commission (n.d.): Protected Areas Dynamics in Africa - Africa Knowledge Platform. Retrieved 20.12.2024 from https://africa-knowledge-platform.ec.europa.eu/tool/pa_dynamics.
- Jolly, R.; Basu Ray, D. 2006: The Human Security Framework and National Human Development Reports. A review of experiences and current debates. National Human Development Report Series. NHDR Occasional Paper 5. United Nations Development Programme. Retrieved 10.12.2024 from <https://hdr.undp.org/system/files/documents/human-security.pdf>.
- Jones, E.; Youngs, R. 2024: Civic Activism in an Intensifying Climate Crisis. Carnegie Endowment for International Peace. Washington: Carnegie Endowment for International Peace. Retrieved 07.01.2025 from <https://carnegieendowment.org/research/2024/12/climate-change-protest-activism-green-transition?lang=en>.
- Jones, L.P.; Banga, J.; Notkin, B.S.; Brochen, A.; Guillaume, J. 2024: Closing the Gap: Trends in Adaptation Finance for Fragile and Conflict-affected Settings - Executive Brief (English). Washington, D.C.: World Bank Group. Retrieved 08.01.2025 from <http://documents.worldbank.org/curated/en/099071924093054876/P18036714d751b00c1bad519fb47fa0581c>.
- Kagunyu, A.W.; Thurair, E.G.; Wanjohi, J.G. 2017: Development agents and their role in cushioning the pastoralists of Isiolo Central Sub-County, Kenya, against negative effects of climate variability. Pastoralism 7:33. Retrieved 09.01.2025 from <https://doi.org/10.1186/s13570-017-0103-3>.
- Keramidas, K.; Fosse, F.; Diaz Rincon, A.; Dowling, P.; Garaffa, R.; Ordonez, J.; Russ, P.; Schade, B.; Shmitz, A.; Soria Ramirez, A.; Van Der Vorst, C.; Weitzel, M. 2023: Global Energy and Climate Outlook 2023. European Commission. Retrieved 21.01.2025 from <https://publications.jrc.ec.europa.eu/repository/handle/JRC136265>.

- Kotarska, G.; Young, L. 2023: Unearthing Environmental and Human Security Risks Critical Minerals in the UK's Energy Transition. Royal United Services Institute for Defence and Security Studies. RUSI Occasional Paper. Retrieved 07.01.2025 from <https://static.rusi.org/critical-minerals-energy-transition-occasional-paper-nov-23.pdf>.
- Kramer, A.; Hensengerth, O.; Mertens, A.; Carius, A. 2012: Assessment of RBO-Level Mechanisms for Sustainable Hydropower Development and Management. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Retrieved 27.01.2025 from https://adelphi.de/system/files/mediathek/bilder/rbo_mechanisms_sustainablehydropower_report_mrc-giz_1.pdf
- Laan, T.; Maino, A. G. 2022: Boom and Bust: The fiscal implications of fossil fuel phase-out in six large emerging economies. International Institute for Sustainable Development (IISD) and Global Subsidies Initiative (GSI). Retrieved 07.01.2025 from <https://www.iisd.org/system/files/2022-07/fossil-fuel-phase-out-briics-economies.pdf>.
- Lakshman, S. 2024: More Critical Minerals Mining Could Strain Water Supplies in Stressed Regions. World Resources Institute. Retrieved 07.01.2025 from <https://www.wri.org/insights/critical-minerals-mining-water-impacts>.
- Lazarou, E. 2024: White Paper on the future of European defence. European Parliamentary Research Service. Retrieved 16.01.2024 from [https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/766229/EPRS_BRI\(2024\)766229_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/766229/EPRS_BRI(2024)766229_EN.pdf).
- Lindegaard, L.S. 2023: Loss and damage and social cohesion. Current knowledge and next steps for programming and practice. Dansk Institut for Internationale Studier (DIIS). Retrieved 08.01.2025 from <https://www.diis.dk/node/26795>.
- Matanzima, J.; Loginova, J. 2024: Sociocultural risks of resource extraction for the low-carbon energy transition: Evidence from the Global South. The Extractive Industries and Society 18:101478. Retrieved 07.01.2025 from <https://doi.org/10.1016/j.exis.2024.101478>.
- Mathiesen, K.; Hernández-Morales, A.; Weise, Z. 2024: Spain's 'monster' floods expose Europe's unpreparedness for climate change. In: POLITICO, 30.10.2024. Retrieved on 08.01.2025 from <https://www.politico.eu/article/spain-floods-valencia-europe-climate-change-preparation/>.
- McMurray, S. 2024: Integrating Climate Security into Policies: Roadmap for Iraq. Berlin: adelphi. Retrieved on 08.01.2025 from https://weatheringrisk.org/sites/default/files/document/Integrating_Climate_Security_into_Policies_Roadmap_for_Iraq.pdf.
- Mercy Corps 2024: COALESCE: Mercy Corps' Social Cohesion Handbook. Portland: Mercy Corps. Retrieved 08.01.2025 from <https://dldocs.mercycorps.org/MercyCorpsSocialCohesionHandbook.pdf>.
- Morales Muñoz, H.; Clemente Pereira, L. 2024: Harmonising biodiversity and climate action with a peace lens in Latin America and the Caribbean. Berlin: adelphi global. Retrieved 07.01.2025 from <https://weatheringrisk.org/sites/default/files/document/Harmonising%20biodiversity%20and%20climate%20action%20with%20a%20peace%20lens%20in%20Latin%20America%20and%20the%20Caribbean.pdf>.
- Mosello, B.; Destrijcker, L.; McMurray, S. A. 2023: Roots for Peace: Uncovering climate security challenges in Haiti and what to do about them. adelphi research; United Nations Environment Programme (UNEP); United Nations Development Programme (UNDP); Ministry of Environment of Haiti; the Groupe sur la Sécurité Climatique en Haïti. Retrieved 24.01.2025 from

- https://weatheringrisk.org/sites/default/files/document/Roots_for_peace_uncovering_climate_security_challenges_in_Haiti_3.pdf.
- Mosello, B.; Potts, M.; Morales-Muñoz, H.; Madar, S.; Brown, O. 2024: Ground for Peace: Land Restoration for International Peace and Security. United Nations Convention to Combat Desertification (UNCCD). Bonn: UNCCD. Retrieved 07.01.2025 from https://climate-diplomacy.org/sites/default/files/2024-12/DIGITAL_Ground_for_Peace_0.pdf.
- National Intelligence Council 2021: National Intelligence Estimate. Climate Change and International Responses Increasing Challenges to US National Security Through 2040. Retrieved 24.01.2025 from https://www.dni.gov/files/ODNI/documents/assessments/NIE_Climate_Change_and_National_Security.pdf.
- NATO 2021: NATO Climate Change and Security Action Plan. Retrieved 16.01.2025 from https://www.nato.int/cps/en/natohq/official_texts_185174.htm.
- NATO 2024: NATO climate change and security impact assessment. Third Edition 2024. Retrieved 10.12.2024 from https://www.nato.int/nato_static_fl2014/assets/pdf/2024/7/pdf/240709-Climate-Security-Impact.pdf.
- Natural Resource Governance Institute 2022: Preventing Corruption in Energy Transition Mineral Supply Chains: An urgent call for action. Retrieved 07.01.2025 from https://resourcegovernance.org/sites/default/files/documents/preventing_corruption_in_energy_transition_mineral_supply_chains.pdf.
- Niinistö, S. 2024: Safer Together: Strengthening Europe's Civilian and Military Preparedness and Readiness. European Commission. Retrieved 16.01.2024 from https://commission.europa.eu/topics/defence/safer-together-path-towards-fully-prepared-union_en.
- Official Journal of the European Union 2024: Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859 (Text with EEA relevance). 2024/1760. 05 July 2024. Retrieved 24.01.2025 from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401760.
- Organization for Economic Co-operation and Development (OECD) 2022: States of fragility 2022. Paris. OECD Publishing. Retrieved 10.12.2024 from https://www.oecd.org/en/publications/states-of-fragility-2022_c7fedf5e-en/full-report.html.
- Organization for Economic Co-operation and Development (OECD) 2023: Biodiversity and Fragility: A perspective on fragile contexts. OECD Development Co-operation Directorate. Paris: OECD Publishing. Retrieved 08.01.2025 from [https://one.oecd.org/document/DCD\(2023\)46/en/pdf#:~:text=In%20turn%2C%20biodiversity%20loss%20can%20worsen%20fragility%2C%20especially.and%20political%20capacities%20to%20cope%20with%20environmental%20challenges](https://one.oecd.org/document/DCD(2023)46/en/pdf#:~:text=In%20turn%2C%20biodiversity%20loss%20can%20worsen%20fragility%2C%20especially.and%20political%20capacities%20to%20cope%20with%20environmental%20challenges).
- Owen, J.R.; Kemp, D.; Lechner, A.M.; Harris, J.; Zhang, R.; Lèbre, É. 2023: Energy transition minerals and their intersection with land-connected peoples. Nature Sustainability 6, pp. 203–211. Retrieved 07.01.2025 from <https://doi.org/10.1038/s41893-022-00994-6>.
- Parliament of the Republic of Uganda 2024: Kiteezi Landfill to be decommissioned After Tragic Collapse. Retrieved 24.01.2025 from <https://www.parliament.go.ug/index.php/news/2994/kiteezi-landfill-be-decommissioned-after-tragic-collapse>.

- Parkinson, S.; Cottrell, L. 2022: Estimating the Military's Global Greenhouse Gas Emissions. Scientists for Global Responsibility (SGR) and the Conflict and Environment Observatory (CEOBS). Retrieved 24.01.2025 from <https://ceobs.org/wp-content/uploads/2022/11/SGRCEOBS-Estimating-Global-Military-GHG-Emissions-Nov22-rev.pdf>.
- Pörtner, H. O.; Roberts, D. C.; Tignor, M.; Poloczanska, E. S.; Mintenbeck, K.; Alegría, A.; Craig, M.; Langsdorf, S.; Löschke, S.; Möller, V.; Okem, A.; Rama, B. (eds.) 2022: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK and New York, USA: Cambridge University Press. Retrieved 24.01.2025 from <https://doi.org/10.1017/9781009325844>.
- Qi, W.; Feng, L.; Yang, H.; Liu, J 2022: Increasing Concurrent Drought Probability in Global Main Crop Production Countries. In Geophysical Research Letters. Volume 49, Issue 6. Retrieved 24.01.2025 from [Increasing Concurrent Drought Probability in Global Main Crop Production Countries - Qi - 2022 - Geophysical Research Letters - Wiley Online Library](https://doi.org/10.1029/2022GL099999).
[Relief Web. 2024. Typhoon Yagi – Sep 2024. Retrieved 16.01.2024 from https://reliefweb.int/disaster/tc-2024-000161-phl](https://reliefweb.int/disaster/tc-2024-000161-phl).
- Ritchie, H.; Rosado, P. 2024: Which countries have the critical minerals needed for the energy transition. OurWorldinData. Retrieved 22.01.2025 from <https://ourworldindata.org/countries-critical-minerals-needed-energy-transition#article-citation>.
- Rudd, A; Menon, S; Pastore, C.; Subramanian, K. 2022: White Paper Cities and Nature: Planning for the Future. UN Habitat for a Better Urban Future. Retrieved 20.12.2024 from https://unhabitat.org/sites/default/files/2022/12/white_paper_cities_and_nature_rev2.pdf.
- Rüttinger, L.; Smith, D.; Stang, G.; Tänzler, D.; Vivekananda, J. 2015: A new climate for peace. Taking action on climate and fragility risks. Berlin: adelphi. Retrieved 08.01.2025 <https://climate-diplomacy.org/sites/default/files/2020-11/NewClimateForPeace-FullReport-small-0.pdf>.
- Rüttinger, L.; Munayer, R.; van Ackern, P.; Titze, F. 2022: The nature of conflict and peace. The links between environment, security and peace and their importance for the United Nations. Gland: WWF International; Berlin: adelphi consult GmbH. Retrieved 07.01.2025 from <https://climate-diplomacy.org/sites/default/files/2022-05/WWF-adelphi-The%20Nature%20of%20Conflict%20and%20Peace-mid%20res-0.pdf>.
- Rüttinger, L.; Vivekananda, J.; Steinkraus, A. 2023: Weathering Risk climate security assessment methodology. Guide and tools. Berlin: adelphi. Retrieved 08.01.2025 from <https://weatheringrisk.org/sites/default/files/document/WR-Climate-Security-Risk-Assessment-Methodology-Guide-Tools-0.pdf>.
- Rüttinger, L.; Destrijcker, L.; Morales-Muñoz, H.; Foong, A.; Gomolka, J.; Binder, L.; Abdulkadir, T.; Akosa, T.; Belli, T.; Brubacher, M.; Dia, M.; Guillier, M.; Kadry, S.; Kendyuo, B.; Maviza, G.; Moyo, C.; Ndjekouneyoum, S.; Ogallo, L.; Saraka, M.; Šedová B.; Villa, V. 2024: Weathering Risk Africa Climate Security Risk Assessment. Berlin: adelphi. Retrieved 07.01.2025 from <https://weatheringrisk.org/sites/default/files/document/240924-ACRA-Full-Report.pdf>.
- Šedová, B.; Binder, L.; Michelini, S.; Schellens, M.; Rüttinger, L. 2024: A review of climate security risk assessment tools. Environment and Security, 2:1, pp. 175-210. Retrieved 08.01.2024 from <https://doi.org/10.1177/27538796241226996>.
- Sethi, P. 2024. Explainer: What are climate misinformation and disinformation and what is their impact? The London School of Economics and Political Science. Retrieved 06.02.2025 from [What are climate misinformation and disinformation and what is their impact? - Grantham Research Institute on climate change and the environment](https://www.lse.ac.uk/PolicyInsights/articles/2024/02/06/what-are-climate-misinformation-and-disinformation-and-what-is-their-impact/)

- Schmelzer, N.; Mosello, B.; Kruckow, C.; Strumpf, N.; Zakri, A. 2024: Upscaling peace-positive climate action and climate-informed peacebuilding: lessons learned and ways forward. Berlin: adelphi. Retrieved 07.01.2025 from https://weatheringrisk.org/sites/default/files/document/Practical_Note_FriEnt_Final_3.pdf.
- Schreiber, F.; Dellas, E.; Ruttinger, L. 2016: Understanding fragile cities – the nexus between migration, climate change and urban fragility. Climate Diplomacy and adelphi. Retrieved 22.01.2025 from https://climate-diplomacy.org/sites/default/files/2020-10/Working%20Paper_Understanding%20climate%20fragility.pdf.
- Steinkraus, A.; Vivekananda, J.; Whitaker, E.; Potts, M.; Schmelzer, N. 2024: Strengthening peace and resilience in a changing climate: Nine global trends and opportunities. Weathering Risk Synthesis Report. Berlin: adelphi. Retrieved 07.01.2025 from <https://weatheringrisk.org/en/publication/strengthening-peace-and-resilience-changing-climate-nine-global-trends-and>.
- Toreti A.; Tsegai, D.; Maurer, T.; Cremonese, E.; Rossi, L.; Wens, M.; de Moel, H.; Siemons A.; Navarro, J.; Harst Essfelder, A.; Volpi, D.; Cotti, D.; Sparkes, E.; Hagenlocher, M. 2024: World Drought Atlas. European Commission. Joint Research Centre. United Nations Convention to Combat Desertification. Publications Office of the European Union. Luxembourg. Retrieved 11.12.2024 from <https://publications.jrc.ec.europa.eu/repository/handle/JRC139691>.
- Townend, R.; Aylett, C.; Benzie, M. 2023: Cascading climate risks: strategic recommendations for European resilience. CASCADES. Retrieved 24.01.2025 from <https://www.cascades.eu/publication/cascading-climate-risks-strategic-recommendations-for-european-resilience/>.
- United Nations; UN Water; UN Environment Programme 2024: Progress on implementation of Integrated Water Resources Management: Mid-term status of SDG Indicator 6.5.1 and acceleration needs, with a special focus on Climate Change. Retrieved 21.01.2025 from https://www.unwater.org/sites/default/files/2024-08/SDG6_Indicator_Report_651_Progress-on-Implementation-of-IWRM_2024_EN_0.pdf.
- United Nations 2021: Egypt, Ethiopia, Sudan Should Negotiate Mutually Beneficial Agreement over Management of Nile Waters, Top Official Tells Security Council. SC/14576. 8 July 2021. Retrieved 09.01.2025 from <https://press.un.org/en/2021/sc14576.doc.htm>.
- United Nations. 2024: The Sustainable Development Goals Report 2024. Retrieved 11.12.2024 from <https://unstats.un.org/sdgs/report/2024/The-Sustainable-Development-Goals-Report-2024.pdf>.
- United Nations 2024: Landmark climate change hearings represent largest ever case before UN world court. UN News. Retrieved 08.01.2025 from <https://news.un.org/en/story/2024/12/1157671>.
- United Nations (n.d.): Around 2.5 billion more people will be living in cities by 2050, projects new UN report. Retrieved 09.01.2025 from <https://www.un.org/en/desa/around-25-billion-more-people-will-be-living-cities-2050-projects-new-un-report#:~:text=Owing%20to%20both%20demographic%20shifts%20and%20overall%20population,UN%20Department%20of%20Economic%20and%20Social%20Affairs%20%28DESA%29>.
- United Nations Economic Commission for Europe (UNECE) 2021: Practical Guide for the Development of Agreements or Other Arrangements for Transboundary Water Cooperation. Retrieved 04.01.2025 from https://unece.org/sites/default/files/2021-11/ece_mp.wat_68_eng.pdf.

- United Nations Environment Programme (UNEP) 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again). Emissions Gap Report 2023. Nairobi: UNEP. Retrieved 07.01.2025 from <https://doi.org/10.59117/20.500.11822/43922>.
- United Nations Environment Programme 2023: Human Migration and Natural Resources: Global Assessment of an adaptive complex system. Nairobi, Kenya: UNEP. Retrieved 22.01.2025 from <https://www.resourcepanel.org/reports/human-migration-and-natural-resources>.
- United Nations Environment Programme (UNEP) 2024: Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes. International Resource Panel. Nairobi: UNEP. Retrieved 20.12.2024 from <https://wedocs.unep.org/20.500.11822/44901>.
- United Nations Environment Programme (UNEP) 2024: Lessons learned from the Implementation of the Wadi El Ku Catchment Management Project (Phase 2). Nairobi: UNEP. Retrieved 07.01.2025 from <https://wedocs.unep.org/20.500.11822/46745>.
- United Nations Environment Programme (UNEP) 2024: Environmental impact of the conflict in Gaza: Preliminary assessment of environmental impacts. Nairobi: UNEP. Retrieved 24.01.2025 from <https://www.unep.org/resources/report/environmental-impact-conflict-gaza-preliminary-assessment-environmental-impacts>.
- United Nations Framework Convention on Climate Change (UNFCCC) Secretariat 2024: Nationally determined contributions under the Paris Agreement. Synthesis report by the secretariat. UN Climate Change Conference - Baku, November 2024. Retrieved 07.01.2025 from <https://unfccc.int/documents/641792>.
- United Nations High Commissioner for Refugees (UNHCR) 2024: No escape: On the frontlines of climate change, conflict and forced displacement. UNHCR. Retrieved 08.01.2025 from <https://www.unhcr.org/media/no-escape-frontlines-climate-change-conflict-and-forced-displacement>.
- United Nations Trade and Development (UNCTAD) 2024: Critical minerals boom: Global energy shift brings opportunities and risks for developing countries. Retrieved 07.01.2025 from <https://unctad.org/news/critical-minerals-boom-global-energy-shift-brings-opportunities-and-risks-developing-countries>.
- Walker, B.; Smith, R.; Pastukhova, M.; Liebrecht, C. 2024: Future of EU oil and gas suppliers in a low-carbon world. Risks of an unmanaged transition. Briefing Paper. E3G. Retrieved 07.01.2025 from https://www.e3g.org/wp-content/uploads/EU-oil-and-gas-suppliers-brief-draft_e3g_final-for-publishing.pdf.
- Wang, D.; Fang, Y. 2024: Global climate governance inequality unveiled through dynamic influence assessment. npj climate action 3:75. Retrieved 08.01.2025 from <https://doi.org/10.1038/s44168-024-00159-5>.
- Weathering Risk.; adelphi. 2024: Voices from Yemen – How environmental dialogues can contribute to resilience and peace. Retrieved 10.01.2025 from <https://weatheringrisk.org/en/impact-note/voices-yemen-how-environmental-dialogues-can-contribute-resilience-and-peace>.
- Whitaker, E.; Destrijcker, L., Dieffenbacher, J., Kurnoth, H. 2023. Climate Security Study: Kenya. Berlin. adelphi Retrieved 10.01.2024 from https://weatheringrisk.org/sites/default/files/document/Climate_Security_Study_Kenya.pdf
- Wike, R.; Fagan., M.; Clancy, L. 2024: Global Elections in 2024: What we learned in a year of political disruption. Pew Research Centre. Retrieved 17.12.2024 from

<https://www.pewresearch.org/global/2024/12/11/global-elections-in-2024-what-we-learned-in-a-year-of-political-disruption/#the-staying-power-of-right-wing-populism>.

World Bank 2014: For Up to 800 Million Rural Poor, a Strong World Bank Commitment to Agriculture. Retrieved 09.01.2025 from <https://www.worldbank.org/en/news/feature/2014/11/12/for-up-to-800-million-rural-poor-a-strong-world-bank-commitment-to-agriculture>.

World Bank Group 2021: Climate Risk Country Profile: Philippines. World Bank Group and the Asian Development Bank Retrieved 16.01.2025 from <https://www.adb.org/sites/default/files/publication/722241/climate-risk-country-profile-philippines.pdf>.

World Bank Group 2022: Iraq: Country Climate and Development Report. Washington DC, USA: World Bank Group. Retrieved 24.01.2025 from <https://www.worldbank.org/en/country/iraq/publication/iraq-country-climate-and-development-report>.

World Bank 2023: International Debt Report 2023. Washington, DC.: World Bank. Retrieved 08.01.2025 from <https://documents1.worldbank.org/curated/en/099146012112331629/pdf/IDU0e959f3f60973404af0088210e669e5f07689.pdf>.

World Economic Forum 2024: Trade and Values: Navigating the Intersection of Policy and Principles. White Paper. Retrieved 17.12.2024 from https://www3.weforum.org/docs/WEF_Trade_and_Values_2024.pdf.

World Meteorological Organization (WMO) 2022: Atlas of Mortality and Economic Losses from Weather, Climate and Water-related Hazards (1971-2021). Retrieved 22.01.2025 from <https://storymaps.arcgis.com/stories/8df884dbd4e849c89d4b1128fa5dc1d6>.

World Meteorological Organization (WMO) 2024: State of the Global Climate 2023. WMO-No. 1347. Retrieved 07.01.2025 from <https://library.wmo.int/idurl/4/68835>.

World Wildlife Fund (WWF) 2022: A new EU environmental crime directive. Position Paper. Brussels: WWF. Retrieved 24.01.2025 from https://wwfeu.awsassets.panda.org/downloads/eecd_position_paper_march_2022.pdf.

Zimmerman, A. 2022: Russia's war on water in Ukraine. In: POLITICO, 25.05.2022. Retrieved 24.01.2025 from <https://www.politico.eu/article/russias-war-on-water-in-ukraine/>.

Zwar, C.; McMurray, S.; Rüttinger, L.; Binder, L.; Sedova, B.; Arcone, S. 2023: Republic of Marshall Islands Climate Security Risk Assessment. United Nations Development Programme (UNDP). Retrieved 08.01.2025 from <https://www.undp.org/pacific/publications/republic-marshall-islands-climate-security-risk-assessment>.

Annex 1: Methodological Framework

This annex outlines a comprehensive methodology for analysing climate and security risks, which can be adapted and replicated for future assessments. While the current report, due to scope and resource limitations, implements selected elements of this approach, the full methodology offers a flexible framework that can be scaled according to analytical needs and data availability. This framework lays the groundwork for future reports to develop more sophisticated quantitative analysis. For a more comprehensive approach, significant time and resources should be dedicated to collecting and analysing the data highlighted below.

The methodology integrates quantitative and qualitative approaches to climate and security analysis, combining high-resolution climate impact data with conflict analysis. Its adaptable design allows for application across different geographical scales and analytical depths, while maintaining a forward-looking perspective essential for anticipating emerging risks. Importantly, even in contexts where climate data is limited, macro-level, or incomplete, this approach can still identify valuable entry points for building resilience.

1. Comprehensive Data Collection:

Core Components

- A. Baseline assessment:

Examining and evaluating previous editions of **Navigating Peace in a Changing Climate** to take stock of the evidence base, focusing on themes and trends from which to analyse changes in the reporting period. Future editions of the report may opt to integrate changes in themes and trends from the inaugural report and/or include new themes and trends that are more suited to the reporting period.

- Systematic literature review of white and grey sources covering peace, security, and socio-economic dynamics during the reporting period
- Historical and political context analysis for newly prominent trends identified in the reporting period
- B. Climate and environmental data

Climate changes, environmental challenges and their direct impacts, including temperature rise and its impacts on agriculture or flooding and its impact on infrastructure as well as environmental issues such as pollution.

- Utilise climate models and data sets to update climate variables from baseline (or establish a more comprehensive baseline) such as those from:
 - Copernicus Climate Data store
 - Africa Knowledge Platform
 - Climate Change Knowledge Portal
 - EU Earth Observation Programme,
 - Analysis Hub (within SatCen,)
 - Global Drought Observatory
- C. Contextual vulnerability & socio-economic data

Context factors shaping vulnerability and resilience to climate and security risks, including a variety of cross-cutting topics like gender equality and social inclusion. These context factors normally play a decisive role in all pathways and should be at the centre of the analysis.

- Incorporate socio-economic data from sources like the World Bank, FAO or UN databases, as well as more established climate and security risk analysis platforms including Climate Diplomacy, as well as regular reporting from political missions, to understand the socio-political context at various scales (quantitative and qualitative). Sources can include:
 - Risk Data Hub Atlas
 - INFORM Climate Change
 - INFORM Warning
 - ASAP – Anomaly Hotspots of Agricultural Production
 - World Food Program Hunger Map
 - Food and Agricultural Organization Hunger Map
 - The Humanitarian Data Exchange
 - GDACS- Global Disaster Alert and Coordination System
 - Office of the Special Envoys for Joint Regional Analysis
 - Famine Early Warning Systems Network
 - Internal Displacement Monitoring Centre
 - Displacement Tracking Matrix
 - OCHA HNO & HRP reports
 - IGAD’s Climate Predictions and Applications Centre (ICPAC)
 - INFORM RISK

- D. Peace and security data

Peace and security context is the state of economic, social and political (in)stability, at international, national and sub-national levels, past and ongoing security risks and conflict dynamics, the drivers and causes of insecurity, and the main actors that have an impact on security and stability.

- **Security Indicators:** Use security-related data, such as conflict databases or peace indices, to measure security dynamics. Sources can include:
 - Carnegie Climate Protest Tracker
 - Council on Strategic Risks Military Responses to Climate Hazards Tracker
 - ACLED
 - Dynamic Conflict Risk Model
 - Climate and Conflict Vulnerability Index
 - EU Global Conflict Risk Index

Proxy Components

Core climate and security data should be complemented by proxy data which can provide an additional lens to unpack the interconnections between different sectors and the various entry points available for addressing climate security challenges.

Each thematic area in the report draws on multiple analytical components and indicators to identify and forecast trends. The indicators below combine qualitative and quantitative measures utilized to inform the comprehensive insights in this report. The proxies below demonstrate the wide range of data used to assess these trends, highlighting both the, highlighting both the interconnections between different sectors and the various entry points available for addressing climate security challenges.

Theme 1: Water governance, food pricing and natural resource management

Analytical Component	Dimension	Description
Context Factors	Food	Food Insecurity Levels: Measured through surveys and reports, changes in food insecurity levels can highlight the impact on access to food.
Climate and environmental stressors	Climate	Historical emissions development and temperature projections: to estimate the severity of second-order climate security effects. Ex. global average surface temperature.
Climate and environment stressors	Climate	Data on heavy precipitation & crop damages: can be used to forecast countries and regions requiring targeted resilience support.
Context Factors	Food	Malnutrition Rates: Rising rates of malnutrition and health issues related to poor diet can indicate underlying food access problems.
Context Factors	Food	Food Price Index (e.g. FAO Cereals Price Index): Fluctuations in the global or local food price index can indicate instability, as rising prices may lead to reduced access to food.
Context Factors	Food	Crop Yield Variability: Changes in average crop yields, especially staple crops, can directly reflect agricultural disruptions.
Context Factors	Socioeconomic	Migration Patterns: Increases in rural-to-urban migration or cross-border movement can serve as proxies for agricultural distress and food insecurity.
Peace and security risks	Conflict	Social Unrest and Protests: Increased frequency of protests related to food prices or shortages can serve as a proxy for instability.
Context Factors	Socioeconomic	Economic Losses in Agriculture: Financial losses within the agricultural sector can indicate broader economic instability.
Context Factors	Socioeconomic	Livelihood Changes: Shifts in employment patterns or increased unemployment in agricultural communities can indicate economic stress.
Peace and security risks	Conflict	Small or large-scale conflicts: Shifts to conflict patterns cross-referenced with climate and environment change can reveal where impacts are most acute, and resilience lowest.
Climate and environmental stressors	Environmental	Land Use Changes: Rapid changes in land use, such as increased deforestation for agriculture or abandonment of farmland, can be proxies for environmental and economic pressures.

Theme 2: Migration, displacement and livelihoods

Analytical Component	Dimension	Description
Climate and environmental stressors	Environmental	Temperature and Precipitation Changes: Altered climate patterns affecting agricultural productivity can drive migration.
Climate and environmental stressors	Socioeconomic	Crop Yield Variability: Declining or unpredictable crop yields can lead to economic stress and prompt migration.
Climate and environmental stressors	Socioeconomic	Livestock Losses: Increased mortality or reduced productivity in livestock due to climate impacts can affect livelihoods.
Climate and environmental stressors	Environment	Frequency of Droughts: Prolonged droughts can make rural living unsustainable, leading to migration.
Context Factors	Socioeconomic	Income Levels in Rural Areas: Declining rural incomes due to climate impacts can increase migration to urban centres in search of better opportunities.
Context Factors	Socioeconomic	Population Density Changes: Increasing population density in urban areas can indicate rural to urban migration.
Context Factors	Socioeconomic	Frequency and Severity of Extreme Weather Events: Increased incidents of floods, and storms can force rural populations to migrate.
Context Factors	Socioeconomic	Economic dependence on primary sector jobs: Localised analysis of economic diversification can flag livelihood vulnerability to climate shocks.
Climate and environmental stressors	Environmental	Changes in Water Resources: Diminishing water supplies for irrigation and consumption can push rural populations towards urban areas.
Context Factors	Socioeconomic	Demographic Shifts: Changes in the age and gender composition of rural and urban populations can reflect migration patterns.
Peace and Security	Conflict	High levels of unemployment: notably among youth populations, can undermine social cohesion, increase competition for diminishing resources and contribute to social instability.
Climate and environmental stressors	Climate	Disaster-related displacement/Conflict related displacement: high numbers of internal or cross-border displacement can lead to political and economic instability.
Context Factors	Governance	Access to Basic Services: Lack of access to healthcare, education, and other services in rural areas due to climate impacts can trigger migration. In urban areas this can lead to marginalization and fragility.
Context Factors	Governance	Housing and Urban Infrastructure Stress: Increased demand for housing and services in urban areas can indicate rising migration.

Theme 3: Energy transition, decarbonisation risks and critical minerals

Analytical Component	Dimension	Description
Peace and security risks	Conflict	Conflict over Mining Rights: Disputes or conflicts over mining rights and land use in mineral-rich regions can be direct indicators of instability.
Context Factors	Governance	Resource Nationalism: Increased government control or nationalisation of critical mineral resources can indicate geopolitical tensions.
Peace and security risks	Political	Supply Chain Disruptions: Fluctuations or interruptions in the supply chains of critical minerals can signal potential instability or conflict.
Context Factors	Socioeconomic	Investment Shifts: Sudden changes in investment patterns in energy sectors can reflect underlying economic and geopolitical shifts.
Context Factors	Governance	International Energy Agency (IEA): Reports on energy transitions and critical minerals can provide insights into supply and demand dynamics.
Context Factors	Governance	World Bank: Provides data on resource management, economic impacts, and investment trends related to green energy and minerals.
Peace and security risks	Political	Environmental and Social Protests: Increased protests related to mining activities or energy projects can reflect social tensions and opposition to the transition processes.
Context Factors	Political	Trade Policies and Tariffs: Introduction of tariffs or restrictive trade policies on critical minerals can indicate rising tensions.
Context Factors	Socioeconomic	Technological Dependency: Over-reliance on specific countries for technology or resources can indicate vulnerabilities and potential geopolitical risks.
Context Factors	Socioeconomic	United Nations Commodity Trade Statistics Database (UN Comtrade): Offers data on trade flows of critical minerals.
Context Factors	Environment	Geological Surveys: National geological surveys can provide data on mineral reserves and production levels.
Peace and Security Risks	Governance	Academic and Policy Reports: Organisations like Global Witness and the Natural Resource Governance Institute provide insights into governance and conflict risks associated with resource extraction.

Theme 4: Environmental degradation, biodiversity loss and environmental crime

Analytical Component	Dimension	Description
Climate and environmental stressors	Climate	Climate vulnerability: how vulnerable countries are to climate change impacts, and whether they are becoming more so. Ex. ND-GAIN index.
Climate and environmental stressors	Environment	Resource Degradation: soil erosion, desertification or change of agriculture area and total land area under cultivation can indicate ecosystem decline and force communities to compete for arable land.
Peace and Security Risks	Governance	Weak Regulatory Frameworks: Poor enforcement of environmental laws can facilitate environmental crimes and exacerbate conflicts.
Climate and environmental stressors	Environment	Water Availability: Reduced access to clean water can lead to disputes over water resources.
Climate and environmental stressors	Environment	Deforestation Rates: High rates of deforestation can indicate increased illegal logging activities and potential land conflicts.
Context Factors	Socioeconomic	Migration Patterns: Increased migration due to environmental degradation can lead to tensions in receiving areas.
Climate and environmental stressors	Environment	Species Decline: Rapid decline in species populations can disrupt ecosystems and local economies reliant on biodiversity.
Climate and environmental stressors	Environment	Habitat Fragmentation: Loss of habitats can lead to increased human-wildlife conflicts.
Peace and Security Risks	Governance	Illegal Wildlife Trade: Increases in poaching and illegal trade can reflect weakened governance and enforcement. This can also be a proxy for the growth of armed groups.
Peace and Security Risks	Socioeconomic	Livelihood Changes: Shifts from traditional livelihoods to unsustainable practices can indicate economic stress and potential for conflict.
Peace and Security Risks	Socioeconomic	Illegal Fishing and Logging: Rising incidents of illegal activities can indicate governance challenges and contribute to local conflicts.
Context Factors	Governance	Corruption Levels: High corruption or perceptions of corruption can undermine efforts to manage resources sustainably and equitably.
Context Factors	Conflict	Protests and Social Unrest: Increased protests related to environmental degradation can indicate rising tensions and potential conflict.

Theme 5: Global governance, financial reform and climate justice

Analytical Component	Dimension	Description
Context Factors	Socioeconomic	Economic impacts of climate change: anticipating fallouts from climate change related to economic malperformance. Ex. Economic inequality data, GDP per capita and change rate, national GDP losses, GDP contribution from agriculture, forestry, and fishing.
National self-interest: Indicators of national self-interest often revolve around policies and actions that prioritize a country's own economic, political, and security goals. Below are some common indicators.		
Context Factors	Governance	Foreign Policy Decisions: Alliances and partnerships that enhance a country's strategic position or access to resources, such as military alliances or energy deals, can reflect national self-interest.
Context Factors	Socioeconomic	Economic Policies: Tariffs, subsidies, and trade agreements that favour domestic industries over international competitors can indicate national self-interest. This includes protectionist measures to safeguard local jobs and industries.
Context Factors	Governance	Resource Management: Policies aimed at securing access to critical resources like oil, gas, or rare minerals demonstrate a focus on national needs.
Context Factors	Governance	Environmental Policies: Sometimes, environmental policies are shaped by national interests, especially if they affect economic growth or resource availability.
Context Factors	Governance	Immigration and Border Control: Strict immigration laws and border security measures can be indicators, as they aim to protect national security and economic interests.
Context Factors	Governance	National Security Measures: Investments in military and defence capabilities, as well as cybersecurity initiatives, are often driven by a desire to protect national sovereignty and interests.
Context Factors	Governance	Cultural Policies: Efforts to promote national identity and culture, such as language preservation or media regulations, can also reflect national self-interest.
Context Factors	Socioeconomic	Technological Development: Investments in technology and innovation to maintain or achieve leadership in key sectors can be a sign of prioritising national interests.
Domestic support and popular opinion towards climate action: expected to play an increasing role in climate action at home and abroad in the next decade. Indicators of popular opinion towards climate action within EU countries can be gleaned from various sources and activities that reflect public sentiment. Below are some common indicators.		
Context Factors	Political	Election Results and Political Platforms: The success of political parties that prioritise climate action in their platforms can indicate public support for such measures.
Context Factors	Political	Public Surveys and Polls: Regular surveys conducted by organisations like Eurobarometer can provide insights into public attitudes towards climate change and support for climate policies.

Context Factors	Socioeconomic	Public Demonstrations and Movements: Participation in climate strikes, marches, and other forms of activism, such as those led by groups like Fridays for Future, can signal strong public demand for climate action.
Context Factors	Socioeconomic	Media Coverage and Public Discourse: The prominence of climate issues in media outlets and public debates can reflect and influence public opinion.
Context Factors	Socioeconomic	Consumer Behaviour: Trends in purchasing decisions, such as increased demand for sustainable products or renewable energy, can indicate public support for climate-friendly practices.
Context Factors	Governance	Institutional Frameworks: Dedicated agencies or bodies responsible for overseeing climate commitments and ensuring compliance can demonstrate willingness on climate action.
Context Factors	Socioeconomic	Engagement in Local Initiatives: Participation in local environmental projects, such as community recycling programmes or green energy cooperatives, can show grassroots support for climate action.
Context Factors	Socioeconomic	Social media trends: Analysis of social media platforms for discussions and campaigns related to climate change can provide real-time insights into public sentiment.
Context Factors	Political	Support for Policy Measures: Public backing for specific climate policies, such as carbon taxes or renewable energy subsidies, often reflected in public consultations or opinion pieces, can be a strong indicator.

Lack of an enforcement mechanism: climate action will remain voluntary in the next ten years. Indicators of enforcement mechanisms for climate adaptation financing or mitigation commitments are essential to ensure that countries and organizations are meeting their obligations to address climate change. Below are some common indicators.

Context Factors	Governance	Legal Frameworks: The existence of national or international laws and regulations that mandate climate adaptation and mitigation actions. This includes legally binding agreements like the Paris Agreement.
Context Factors	Governance	Monitoring and Reporting Systems: Regular reporting requirements for greenhouse gas emissions and climate adaptation efforts. These systems track progress and ensure transparency.
Context Factors	Governance	Compliance Mechanisms: Penalties or sanctions for non-compliance with climate commitments, such as fines or restrictions on access to international funding.
Context Factors	Governance	Independent Audits and Evaluations: Third-party assessments of climate actions and financial flows to verify that commitments are being met.
Context Factors	Governance	Financial Incentives and Penalties: Mechanisms that provide financial rewards for meeting targets or penalties for failing to do so, such as carbon pricing or tax incentives for renewable energy investments.

2. Data Analysis for the identification of themes and climate security risk pathway trends

Multiple data analysis approaches should be used in combination to ensure robust and comprehensive findings. The combination of approaches strengthens the analysis by compensating for individual methodological limitations while maximizing the insights gained from diverse data sources. This multi-method approach is particularly valuable for climate and security analysis, where complex interactions require examination from multiple analytical perspectives to fully understand their implications. A typical analytical process might integrate:

Sequential and Parallel Analysis

- Begin with parallel analysis of quantitative climate data and qualitative security and contextual evidence
- Use initial findings to inform sequential deeper dives into specific areas of concern
- Allow each stage to inform and refine subsequent analysis

Triangulation and Thematic Analysis

- Cross-verify findings through data triangulation
- Use thematic analysis to identify patterns across verified data
- Apply matrix analysis to map relationships between themes
- Validate findings through multiple methodological lenses

Integration and pathways visualization

Questions to develop pathways (thematic areas): How do climate change impacts, stability, peace and security interact? How does climate change affect stability and peace? How does climate change impact drivers and dynamics of conflict? How do climate impacts affect actors and power dynamics in conflicts?

- Transform compatible data types for integrated analysis
- Create joint displays to visualize relationships through climate and security risk pathways
- Use matrix frameworks to map complex interactions
- Develop integrated pathway visualizations for key findings

3. Stakeholder engagement for data validation

To validate findings, capture contextual nuances, and ensure comprehensive analysis through systematic stakeholder consultation. These consultations also provide an opportunity to identify further relevant programming, policy and leverage points to support building resilience to climate and security risks. Quality assurance should be implemented through multiple validation layers, including cross-reference verification between different stakeholder groups, structured multi-stakeholder validation workshops, and targeted expert panel reviews. These processes must be complemented by continuous community feedback loops to ensure findings remain grounded in local realities while meeting rigorous analytical standards.

Primary Engagement Methods

- Semi Structured Interviews

1. Individual expert consultations
 2. Decision-maker perspectives
 3. Technical specialist insights
 4. Policy practitioner views
- Focus Group Discussions
 1. Thematic expert groups
 2. Regional specialist panels
 3. Cross-sectoral dialogues
 4. Community representative forums
 - Regional stakeholder dialogues
 1. Multi-stakeholder workshops
 2. Regional consultation meetings
 3. Cross-border coordination
 - Local-national dialogue platforms

Stakeholder Categories

- International and regional bodies
- EU institutional stakeholders
- Thematic expert groups
- Civil society groups

4. Drafting and dissemination

Report development and dissemination should proceed through clearly defined stages. The drafting phase begins with organizing validated findings into a coherent narrative structure, ensuring each section builds logically from evidence to implications to recommendations. This draft must undergo systematic review, including technical accuracy checks, strategic relevance assessment, and stakeholder validation. Dissemination requires a coordinated approach across platforms: formal institutional channels for key decision-makers, interactive engagement with practitioner communities, strategic media outreach, and digital distribution through relevant networks and platforms.