

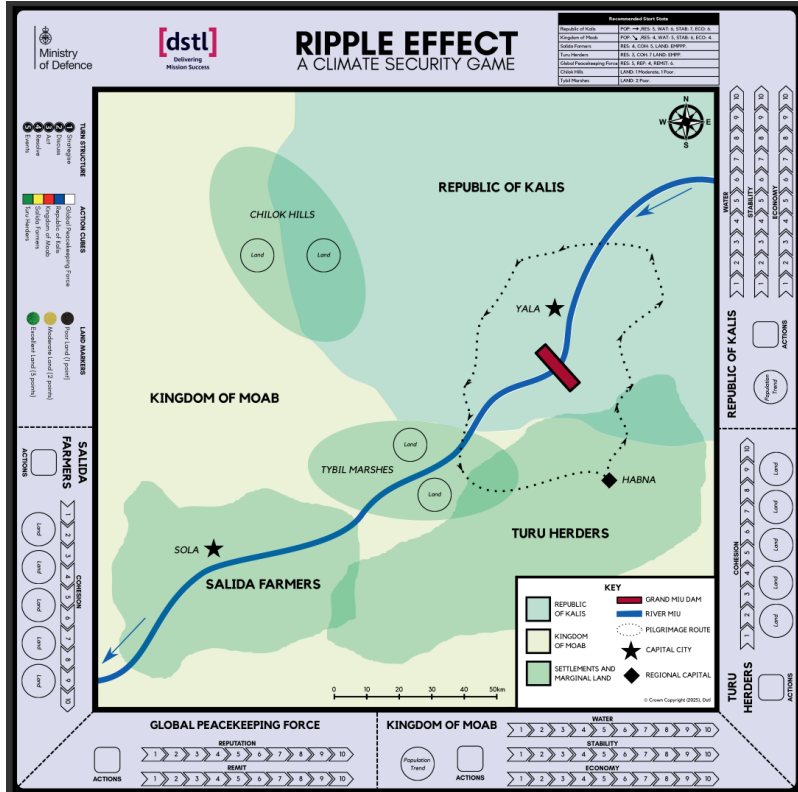


Climate Security Wargaming

Andrew Crooks and Mary Hezelgrave

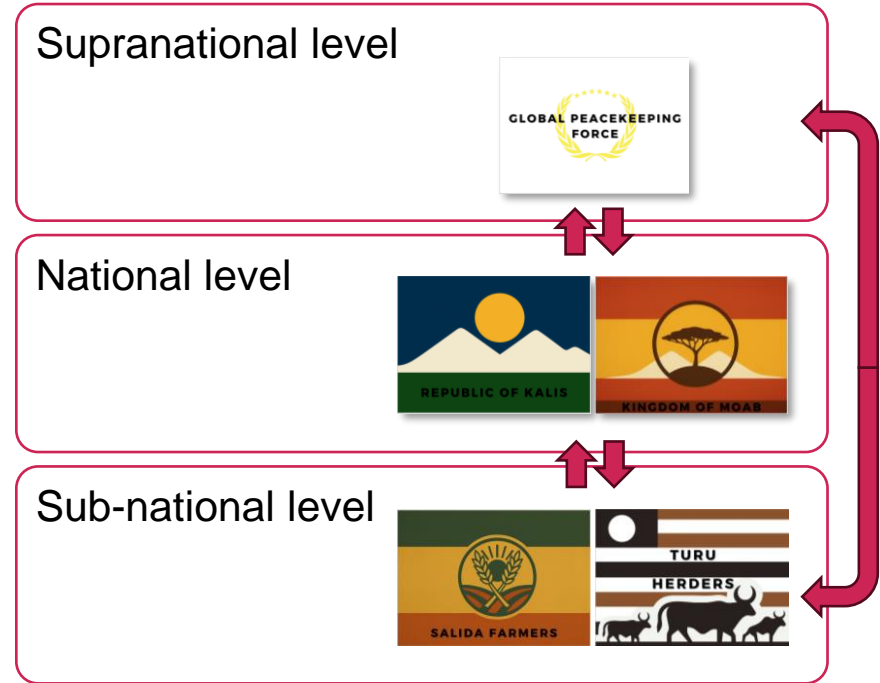
- Background / context
 - SDR (2025): Climate change and environmental degradation is a “persistent transnational challenge”
- Water security
- Aim + purpose of Ripple Effect
- Uses





- Fictional region and scenario
 - Based on real-world case studies
 - Breakdown of transboundary water agreement
 - Farmer-herder skirmishes
 - Deployment of an international military force into a climate stressed region
- Five phases per turn
 - Strategise
 - Discuss
 - Act
 - Resolve
 - Events

- Play as one of five actors
- Each player has their own objectives and key metric trackers
- The nation-state actors are primarily concerned about water; the non-state actors are primarily concerned about land quality / quantity respectively.
- Competition vs cooperation
- During the Discuss phase, players engage in free negotiations.



- Four action types
- Each player has a unique selection of actions from the same master list
- Players can create their own actions
- Actions are taken by committing action cubes to them
- Actions are adjudicated in the Resolve phase by the game's facilitator

REPUBLIC OF KALIS

CLIMATE			DIPLOMATIC		
C1 RENEGOTIATE THE WATER SHARING AGREEMENT Work with the Kingdom of Moab to amend the existing / rewrite a new water sharing agreement.	C3 IMPROVE WATER INFRASTRUCTURE Define whether action is collaborative or standalone effort and who intended beneficiaries' are.	C4 IMPROVE IRRIGATION EFFICIENCY e.g. drip irrigation, precision sprinklers, sensors, weather-based irrigation.	D1 AGREE INTERIM / TEMPORARY ARRANGEMENT Two or more players must commit to at least 1x cube to this action for it to succeed.	D2 ATTEND REGIONAL PEACE SUMMIT Participate in efforts to hold a regional peace summit. This can be for legitimate or perception purposes.	D3 ENGAGE WITH THIRD PARTY ACTORS Define which actor(s) you seek to engage with and why. The purpose of this can be kept open or secret.
C5 IMPOSE WATER CONSERVATION & STEWARDSHIP E.g. collecting rainwater, fixing leaks, limiting non-essential water usage.	C6 PROTECTION OF FRESHWATER ECOSYSTEMS E.g. clean-up and restoration of habitats, monitoring ecological health, reducing water pollution.	C7 DROUGHT ADAPTATION, MITIGATION & RESILIENCE E.g. drought-resistant crops, improving soil health, watershed management.	D4 AUTHORISE INDEPENDENT TECHNICAL ASSESSMENT Authorise an assessment into the environmental and social impacts of changes to the water flow.	D5 COMMUNITY PEACEBUILDING Work with other players to improve farmer-herder relations at the grass roots level.	D6 PROMOTE FARMER / HERDER RIGHTS Promote the legitimacy of the farmer and/or herder communities and support their cause(s).
ECONOMIC			SECURITY		
E1 ACCESS TO FINANCIAL RESOURCES Take actions to become more eligible for development assistance, debt relief, grants, loans, and investment.	E2 JOINT ECONOMIC PROJECT Two or more players must commit to at least 1x cube to this action to succeed. Define the project and desired outcomes.	E3 FARMER INCENTIVES & SUBSIDIES Offer incentives & subsidies to supplement the income of the Salida farmers.	S1 DEFEND / PEACEKEEP Define which player you are defending and which player you are defending against. E.g. International or internal.	S2 BORDER ENFORCEMENT Conduct a military operation against another player. Define what form it takes and desired outcomes.	S3 INCREASED MONITORING & SURVEILLANCE Increase monitoring and surveillance against another player.
E4 PROVISION OF AID / TECHNICAL ASSISTANCE Provide aid / assistance to another player. Define what form it takes and desired outcomes.	E5 DEVELOPMENT OF LAND Develop the quality of occupied land. Can be used to develop poor and moderate quality land.		S4 MILITARY INTERVENTION Conduct a military operation against another player. Define what form it takes and desired outcomes.	S6 FURTHER REDUCE WATER SUPPLY Define what percentage you are reducing Moab's water share down to and whether this is a permanent or temporary measure.	Each player has a unique selection of actions from the same master list.

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- Events have a mechanical effect
- Purpose
 - Rebalance the relative power of players
 - Bring attention to a particular issue
 - Highlight second- and third-order effects
- Events include...
 - Climate adaptation successes
 - Commodity price shocks
 - Migration concerns
 - Wildfires

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Fields of Innovation: Farmers Turn Climate Crisis into an Opportunity

By Zarah Khan
FBC Climate Correspondent

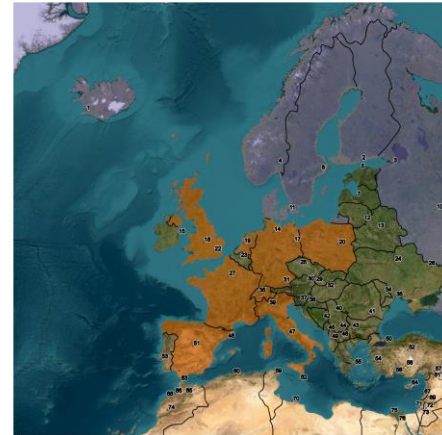
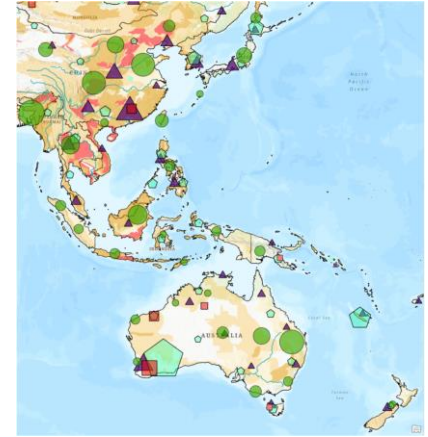
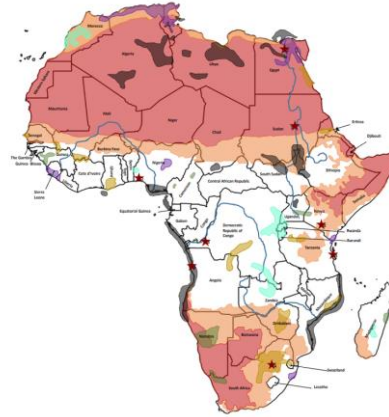
On the arid plains of Moab, water scarcity has sparked not despair- but a quiet revolution. Local farmers, once reliant on flood irrigation, have shifted to precision drip systems and drought-resistant crop varieties, slashing water use by over 60%.

"We realised we had to change not just how we grow, but why we grow," says farmer Leira Montal. Her co-op now rotates native grains, which enrich the soil and require minimal irrigation. Even livestock waste is being repurposed into biofertiliser.

With fewer emissions and smarter water use, these farmers are proving sustainability isn't just survival, it's the new standard. As climate stress intensifies, their fields may be showing the rest of the world what climate - smart agriculture really looks like.

- The root causes and drivers of the conflict – i.e. climate change, colonial legacies – are often overlooked in favour of more immediate economic, military, or political explanations
- There is a relatively even balance between those who act competitively vs cooperatively at the start of the game
- Player perceptions and strategy can vary significantly depending on the start state (i.e. the distribution of resources)
- Climate adaptation, mitigation, and resilience is a whole-of-society issue which necessitates engagement with all stakeholders
- Diplomatic attempts to resolve the water agreement and/or the farmer-herder conflict often exhibit issue linkage, where actors deliberately tie multiple issues together and refuse to resolve them individually

- Climate Change and Great Power Competition Wargame (CCGPC WG) Series
 - Two wargames previously explored CC + GPC across Africa and the Asia Pacific
 - Challenged players to consider opportunities and risks, and state actors' ability to pursue global ambitions in the face of climate change
 - We will be running the third Wargame in early 2026



Process of creating the Wargame

- Research and engagement with internal and external SMEs
- Scenario and Future History workshops
- Inject workshops
- Map creation collaboration



Disease



Landslide



Heavy Rain /
Flooding



Heat Wave



New Economic Investment



New Military Agreement



New Diplomatic Agreement



New Research Agreement



Extreme Cold



Wildfires



Migration Landing
Points

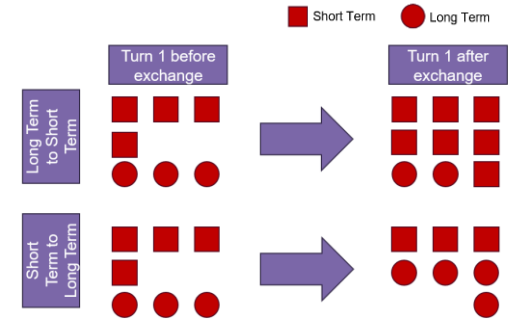
- Action lists
 - To be used as a handrail.
 - Actions taken by committing cubes to them.

- Resource cubes
 - Based on economic projections where possible.
 - Can fluctuate throughout the game.
 - Split into long term and short term resource cubes.

- Order submission sheets and Agreement templates.

Agreement	Turn	
	Short term	Long term
Point #1	Cubes Spent	Cubes Spent
Point #2	Cubes Spent	Cubes Spent
Point #3	Cubes Spent	Cubes Spent
Signatories		

ORDER SUBMISSION SHEET:		OFFICIAL SENSITIVE – NATO SECRET REL. AUTHORIZED FOR COMPLETION ONLY – EXERCISE ONLY		
Action Name	Call	Turn		
Intent of the Action				
Supported by the following lines of effort:		Conditionality? [If X occurs then Y]	Resource allocated	Target / Location



■ Injects

- These have a mechanical effect.
- Mixture of pre-scripted weather injects and injects created on the day by the white cell.
- Used to recentre climate change throughout the game and highlight the second and third order effects.

■ Weather projections

- The Met Office has created a weather projection timeline and sea ice projections ahead of the wargame.

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Climate Change Has Opened the Door to Diseases in Europe

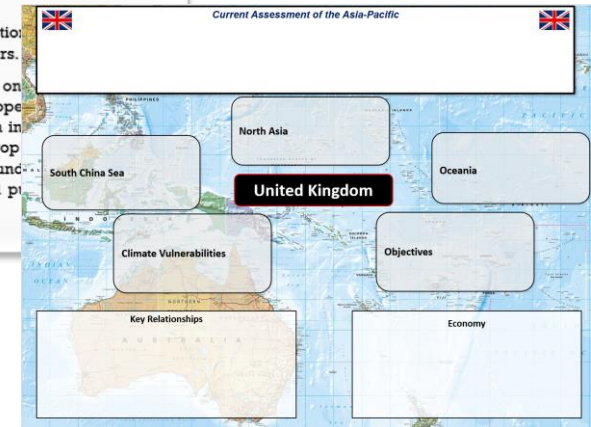
Many diseases previously not found in Europe have had significant outbreaks in the region as temperatures have changed

By Alberto Gilchrist

A team of scientists first spotted the issue that climate change would have for European crops when Pierce's disease began effecting vineyards in the Mediterranean. This epidemic in 2017 has been mirrored in a series of crop diseases which were previously not found in Europe or not able to survive due to temperature differences, this is no longer the case with temperature rises.

This is affecting already vulnerable crop production workers and their livelihoods as well as consumers.

Though recent case studies have focused on production, this issue will not be isolated to Europe increase in new diseases effecting crops and an increase in crop disease. This is being shown in changes in crop production worldwide. Scientists are petitioning to increase funding for research and solutions and mitigations can be identified and put into place.



- Why use wargaming for resilience research?
 - Decision-making under Deep Uncertainty (DMDU) and pressure
 - Explore cascading effects + reveal systemic vulnerabilities
 - Identify assumptions, flaws, and gaps in planning and preparedness
 - Promote interdisciplinary collaboration and enhance stakeholder engagement



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