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Delivering
Mission Success

Climate Security Wargaming

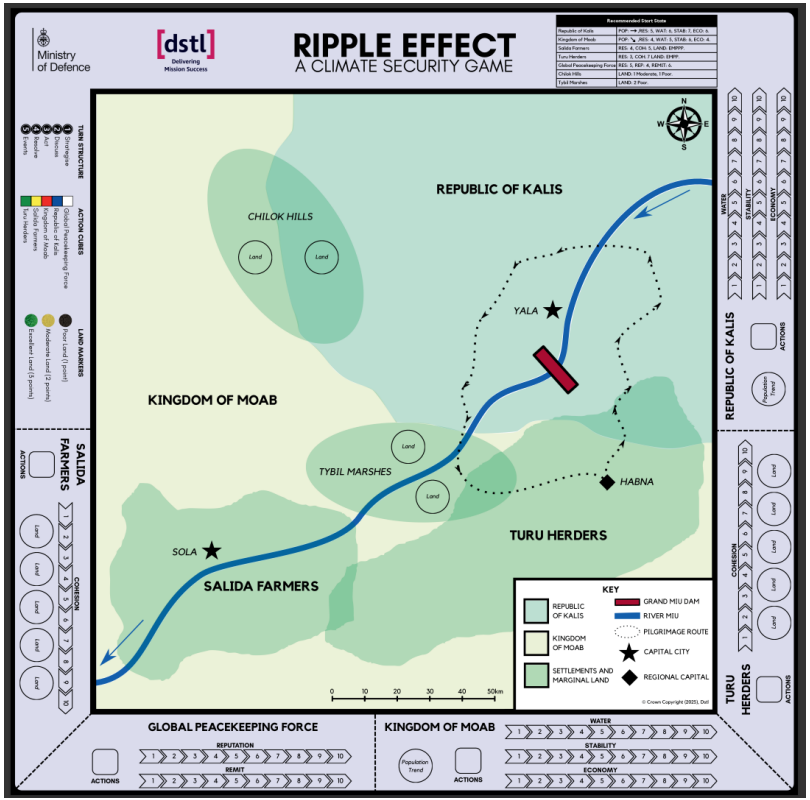
Andrew Crooks and Mary Hezelgrave

Ministry
of Defence

Ripple Effect: A Climate Security Game

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

Region and scenario

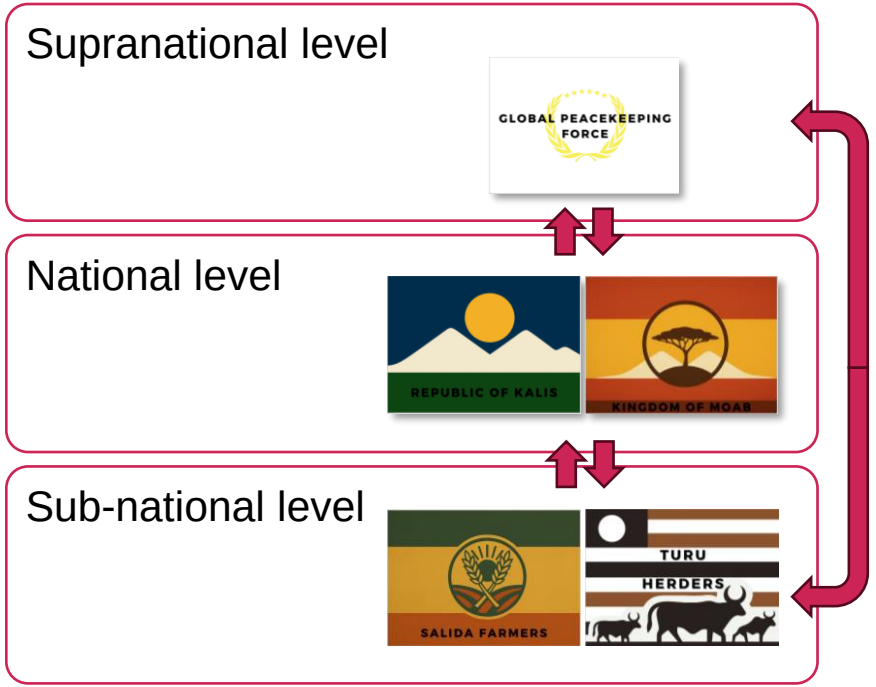


- Fictional region and scenario
  - Based on real-world case studies
  - Breakdown of transboundary water agreement
  - Farmer-herder skirmishes
  - Deployment of an international military force into a climate stressed region

- Five phases per turn
  - Strategise
  - Discuss
  - Act
  - Resolve
  - Events

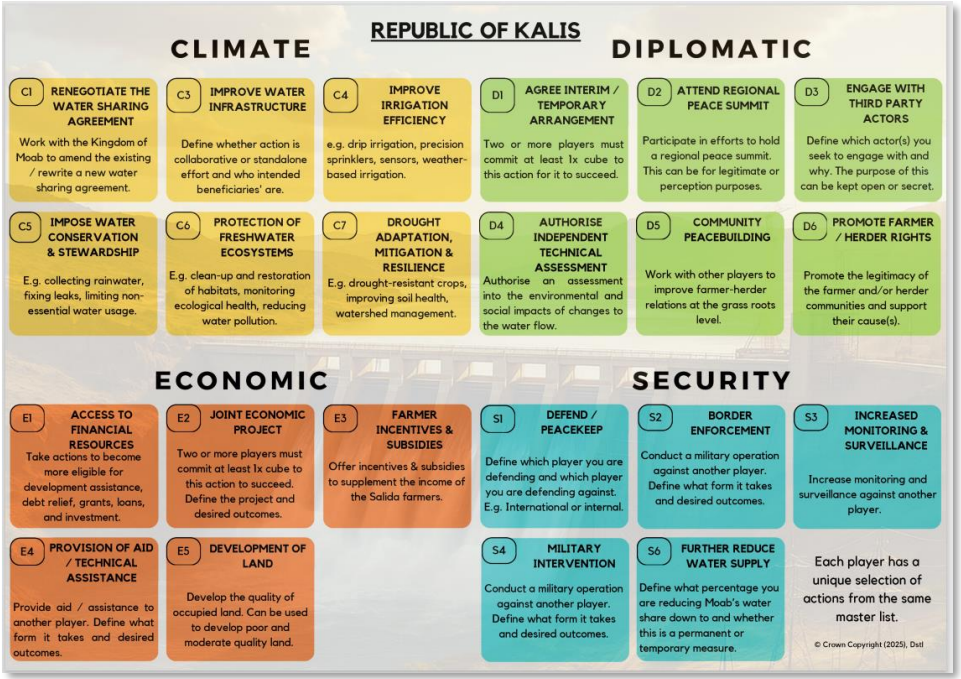
Players + Resources

- 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.



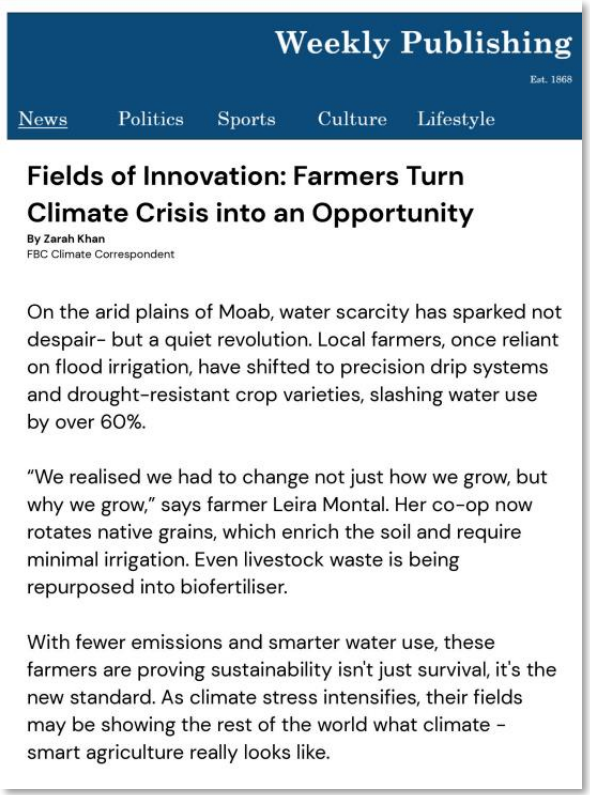
Player Actions

- 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



Events

- 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.

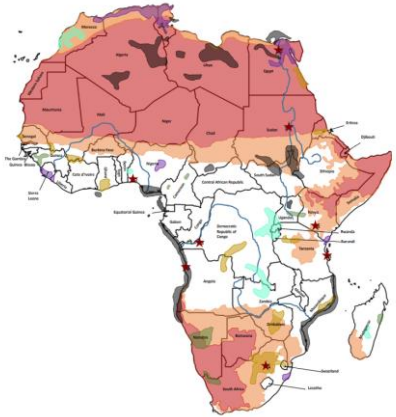
With fewer emissions and smarter water use, these farmers are proving sustainability isn't just survival, it's the new standard. As climate stress intensifies, their fields may be showing the rest of the world what climate - smart agriculture really looks like.

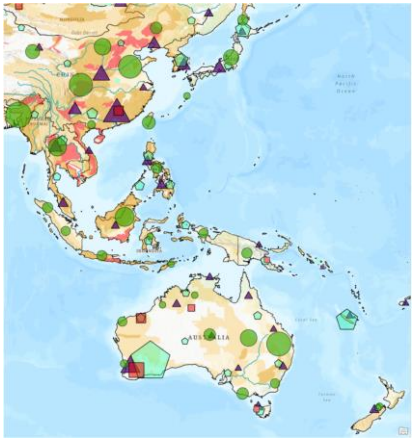
Recurrent gameplay themes

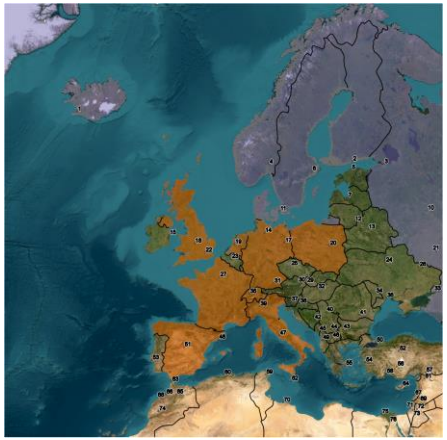
- The root causes and drivers of the conflict – i.e. climate change, colonial legacies – are often overlooked in favour of more immediate economic, military, or political explanations
- There is a relatively even balance between those who act competitively vs cooperatively at the start of the game
- 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

Analytical Climate Change Wargaming

- 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

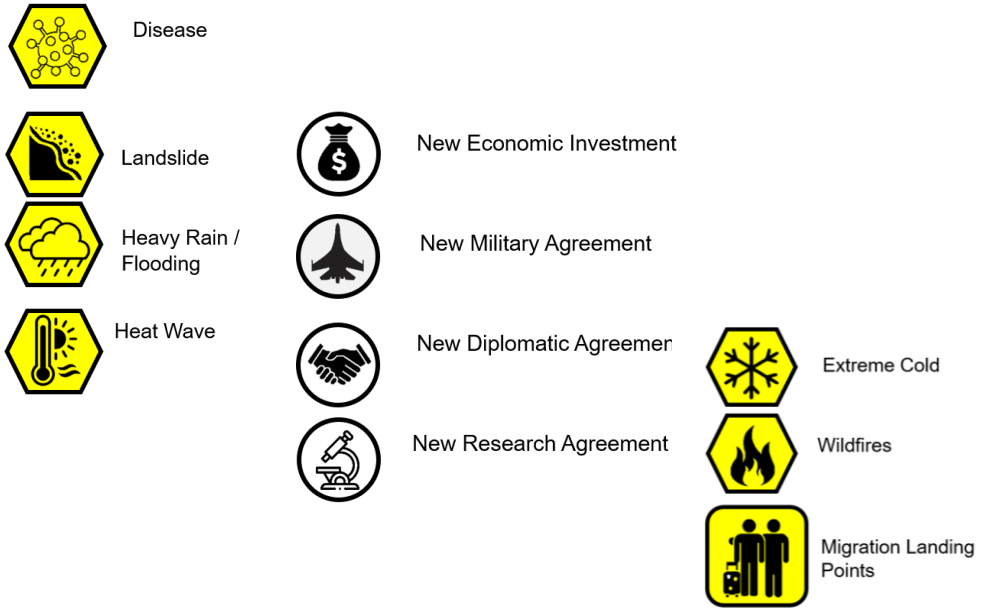






Process of creating the Wargame

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



Mechanics

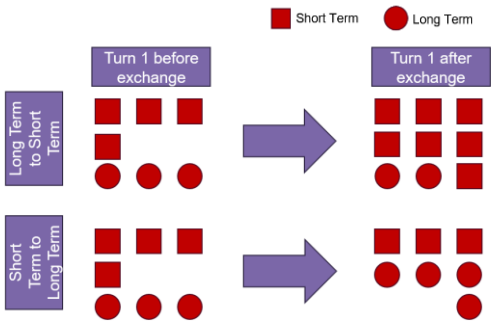
- Action lists
  - To be used as a handrail.
  - Actions taken by committing cubes to them.
- Resource cubes
  - Based on economic projections where possible.
  - Can fluctuate throughout the game.
  - Split into long term and short term resource cubes.
- Order submission sheets and Agreement templates.

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 AUS/NZ/ROK WHEN COMPLETED – EXERCISE ONLY

Action Name		Cell		Turn	
Intent of the Action					
Supported by the following lines of effort:		Conditionality? [If X occurs then Y]	Resource allocated	Target / Location	



Mechanics

- 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.

The Column Menu World in Brief Search

Climate Change Has Opened the Door to Diseases in Europe

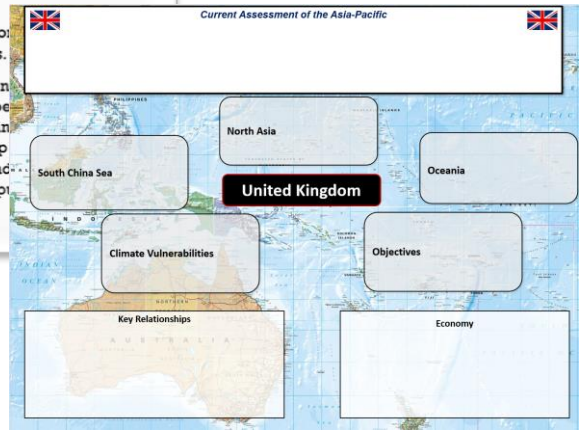
Many diseases previously not found in Europe have had significant outbreaks in the region as temperatures have changed

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 productio 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 in crop disease. This is being shown in changes in crop the world. Scientists are petitioning to increase fund solutions and mitigations can be identified and p possible.



Conclusion

- 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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