FFI Norwegian Defence Research Establishment

The Implications of Energy Transition for Security and Defence – A Scenario-Based Approach

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Foto: AdobeStock

Agenda

1. Motivation
2. Morphological Analysis
3. Categorisation of Hybrid Interference
4. Implications of Energy Transition for Security and Defence

NATO and Energy Security

- Energy security plays an important role in the common security of NATO Allies

- NATO 2022 Strategic Concept:
  - “We will enhance our energy security and invest in a stable and reliable energy supply, suppliers and sources”

- NATO seeks to:*
  - **enhance its strategic awareness of energy developments with security implications**
  - develop its capacity to support the protection of critical energy infrastructure
  - ensure reliable and efficient energy supplies to the military

* https://www.nato.int/cps/en/natohq/topics_49208.htm

Energy Security among NATO Member States

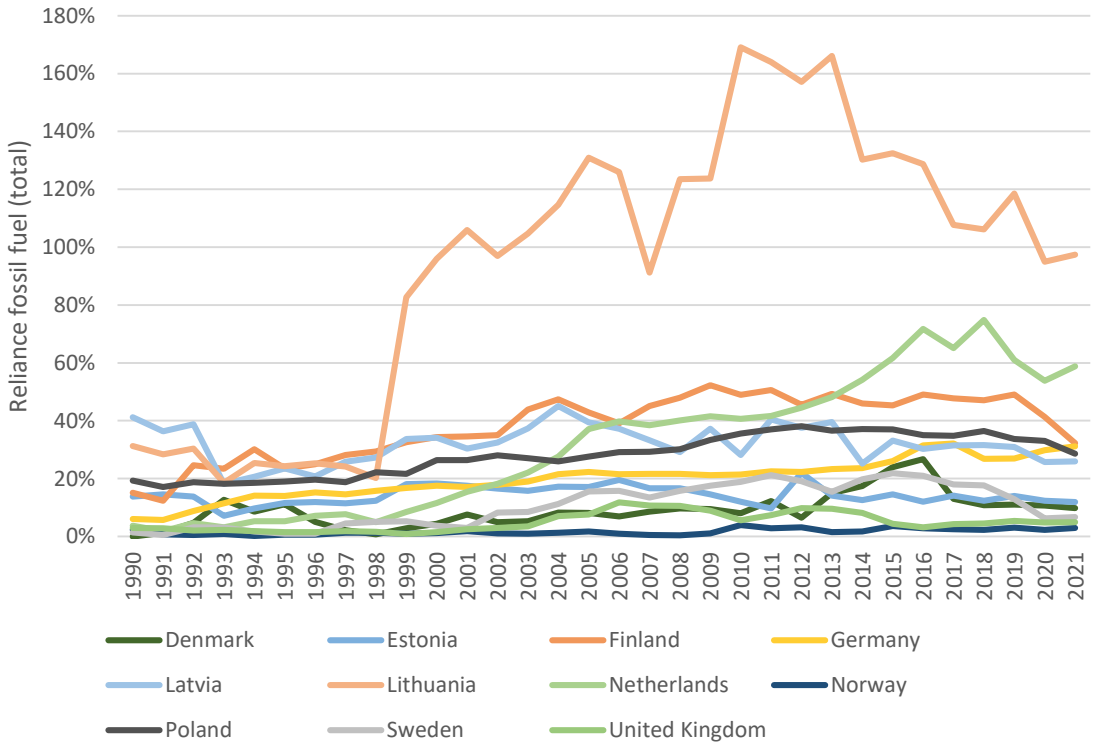
- Current state:
  - Near-term energy insecurity among NATO Member States
  - Persistent cyber threats to the energy sector
  - Energy sector supply chain vulnerabilities
  - Malign influence in the energy sector can have significant consequences

- Important factors going forward:
  - Climate change and pace of energy transition
  - Technological developments
  - Cyber crimes
  - Future terrorism threats
  - Future threats to national security
  - Trust in society

Photo: Danish Defence

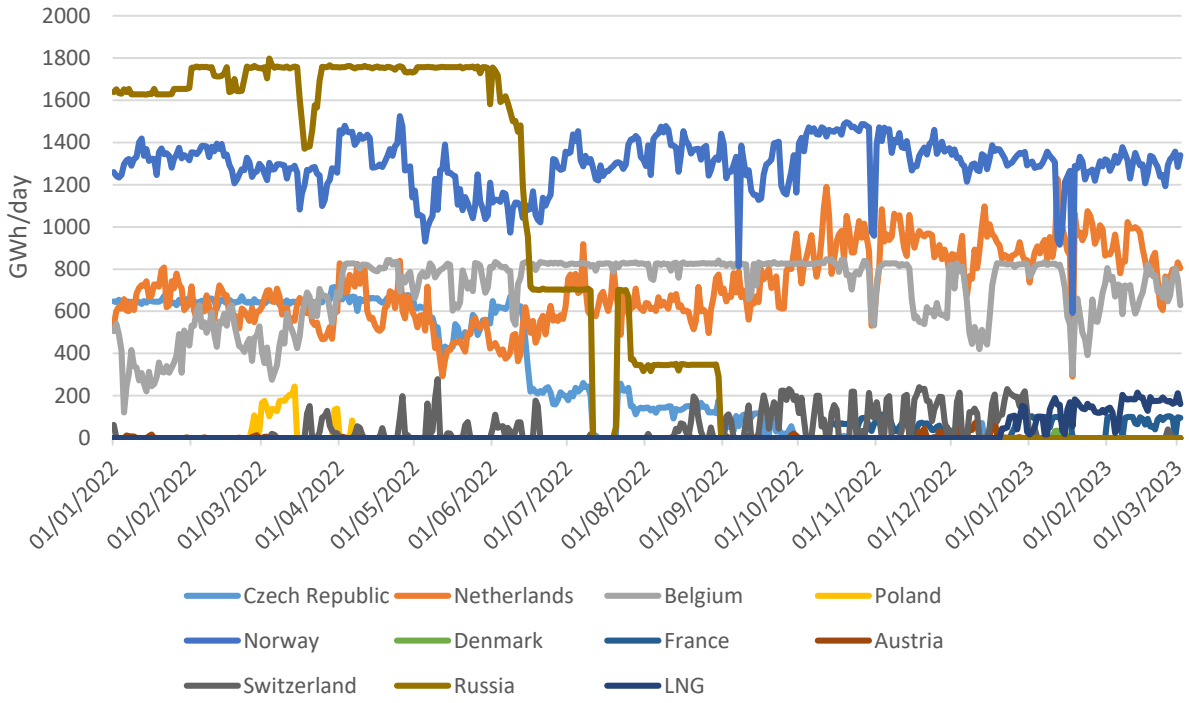
Norway's geopolitical role has increased due to the role as energy provider to Europe

Fossile fuel reliance



Source: IEA

German import of natural gas

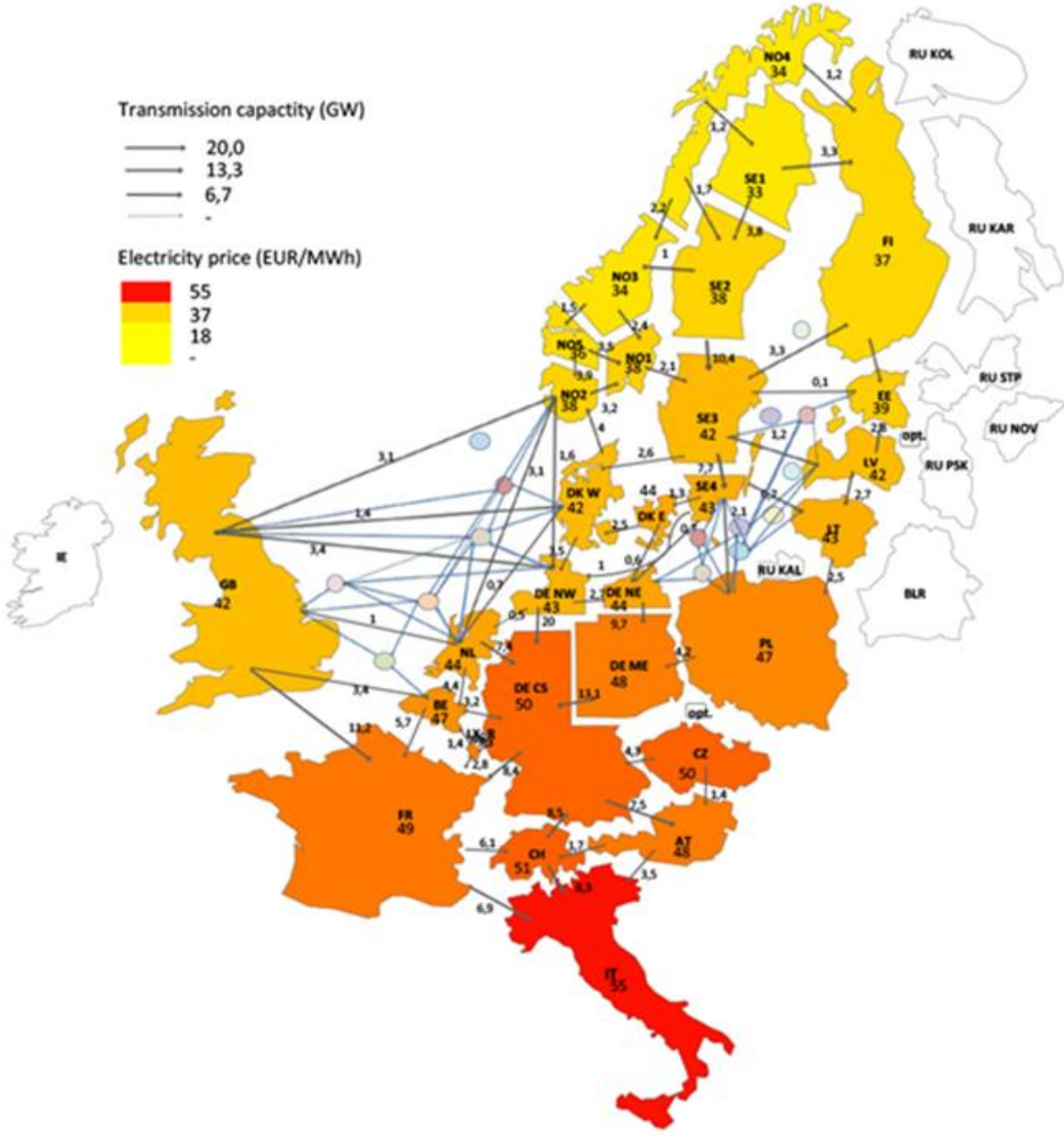


Source: Bundesnetzagentur

Nordic Clean Energy Scenarios by 2050

- Electricity is key to the global energy transition
  - power infrastructure security is becoming the cornerstone of energy security

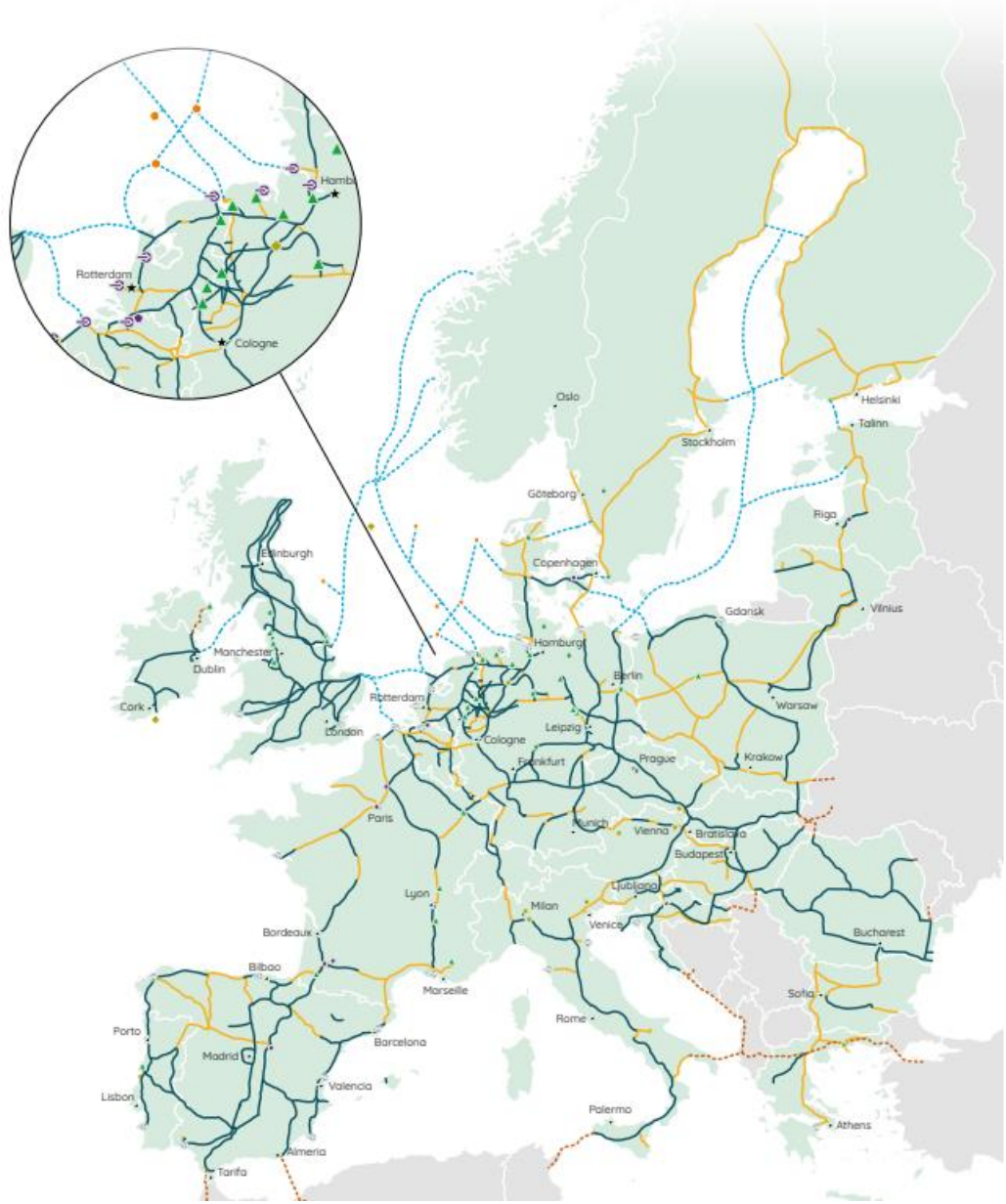
- The future power infrastructure will be a highly complex, tightly coupled system



Wråke et al. (2021). *Nordic Clean Energy Scenarios. Solutions for Carbon Neutrality*. Nordic Energy Research. http://doi.org/10.6027/NER2021-01

The European Hydrogen Backbone by 2040

- A core European Hydrogen Backbone can be envisaged by 2040
  - Pan-European hydrogen infrastructure connecting 28 European countries
  - The proposed backbone can have a total length of almost 53 000 km
  - Ca. 60% repurposed existing infrastructure and 40% of new hydrogen pipelines
  - Could be able to meet the foreseen 1 640 TWh of annual hydrogen demand in Europe by 2040



Pipelines
- Repurposed
- New
- Subsea
- Import / Export

Storages
- Salt cavern
- Aquifer
- Depleted field
- Rock cavern

Other
- City, for orientation purposes
- Energy hub / Offshore (wind) hydrogen production
- Existing or planned gas-import-terminal

Source: https://www.ehb.eu/files/downloads/ehb-report-220428-17h00-interactive-1.pdf

Morphological Analysis

- Developed by Fritz Zwicky
  - A non-quantitative method of structuring and analysing multidimensional problems (Ritchey, 2013; Zwicky, 1969).
  - Especially suitable for the analysis of complex questions in policy analysis (Ritchey, 2013; Rittel & Webber, 1973).

- Five step approach:
  1. Formulation of problem
  2. Identify parameters within the problem
  3. Construct morphological space
  4. Conduct internal consistency analysis
  5. Solution space and grouping solutions into appropriate categories

- Six parameters describe the research problem:

  1. **Threat actor:** What type of actors pose a threat to European security?
  2. **Objective:** What overall objectives are motivating these threat actors?
  3. **Target:** What societal areas and/or assets of the energy system can be targeted, to reach these objectives?
  4. **Method:** What methods can the threat actors use to reach their objectives?
  5. **Instrument:** Which instruments are necessary for utilizing a specific method?
  6. **Concealment:** Will the threat actor conceal its actions?

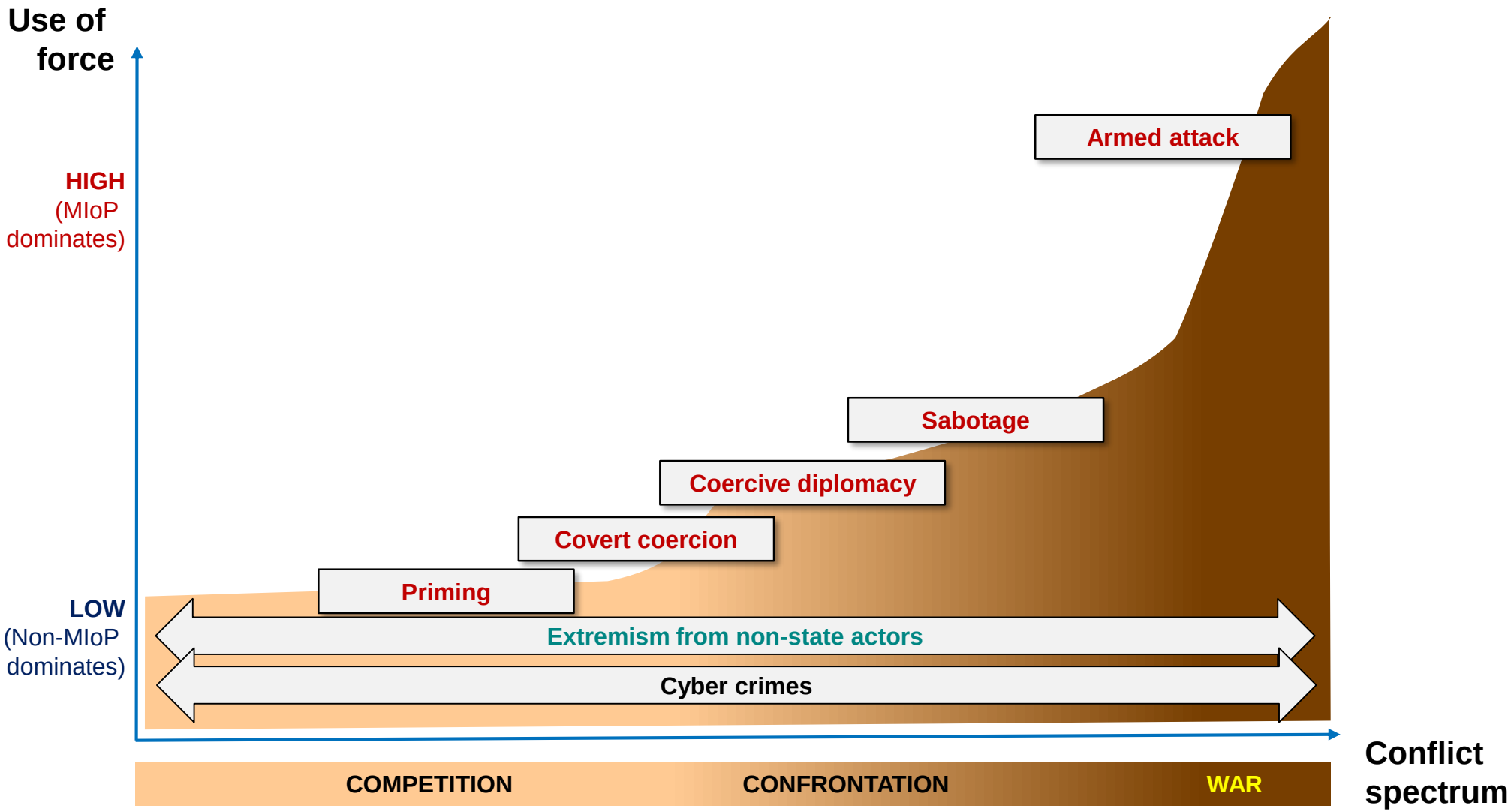
Categorisation of hybrid Interference

- **Coercive diplomacy**
  - Open use of coercion methods
- **Priming**
  - Covert use of influence methods
  - “Long game effects”
- **Covert coercion**
  - Covert use of coercion methods
  - “Wide array of tasks such as asset development, political action, propaganda and disinformation, economic warfare, and paramilitary action just to name the main categories” (Wittmer, 2013)
- **Sabotage and assassinations**
  - Covert use of methods to damage
  - “Hybrid interference avoids the use of overt kinetic means in order to maintain plausible deniability” (Wigell, 2021)
- The combination of interference activities within or across these categories is **hybrid interference**

Threat actor	Objective	Target	Method	Instrument	Concealment
State actor	Create change in policy	Government agencies / civil service	Damage	Military	Open
	Weakening agency	The Armed forces / military	Coercion	Physical	Covert
	Undermine trust in societal institutions	The population	Influence	Political	
		Business / infrastructure/ natural resources		Economic	
				Judicial / law	
				Informational	
				Cyber	

Bergaust, J. C. & Sellevåg, S. R. (2023). Improved Conceptualizing of Hybrid Interference below the Threshold of Armed Conflict. *European Security*, https://doi.org/10.1080/09662839.2023.2267478 (accepted for publication)

Scenario categories		Coercive diplomacy	Priming	Covert coercion	Sabotage	Armed Attack
Threat actor	State actor	X	X	X	X	X
Objective	Create change in policy	X	X	X	X	X
	Weakening agency	X	X	X	X	X
	Undermine trust		X	X	X	
Method	Influence NOR energy supply		X			
	Coerce NOR energy supply	X		X		
	Damage NOR energy supply				X	X
Target	The population		X			
	Energy companies	X	X	X		
	Authorities	X	X	X		
	Energy infrastructure			X	X	X
Instrument	Political	X				
	Informational	X	X	X		
	Judicial / law	X	X	X		
	Economic	X	X	X		
	Cyber	X	X	X	X	
	Physical			X	X	
	Military	X	X	X		X
Concealment	Open	X				X
	Covert		X	X	X	

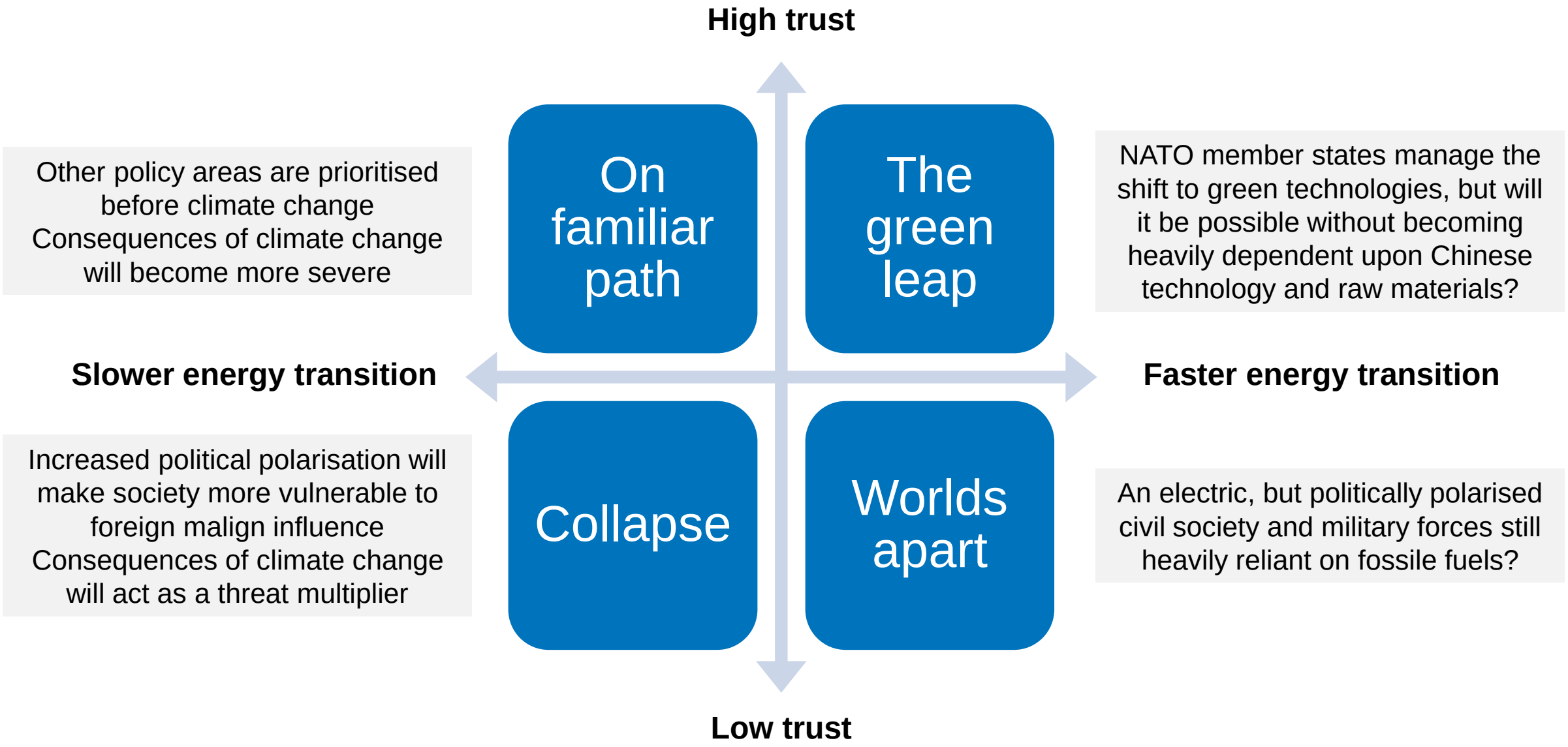

Use of force
HIGH (MIoP dominates)
LOW (Non-MIoP dominates)
Armed attack
Sabotage
Coercive diplomacy
Covert coercion
Priming
Extremism from non-state actors
Cyber crimes
COMPETITION
CONFRONTATION
WAR
Conflict spectrum

Uncertainty associated with other factors in society*

	Electrification of society	Trust in society
Today's trend	Electrification of society is on-going, but the climate goals for 2030 will not be met	High trust in society
Today's trend strengthened	Faster energy transition to reach 2030 climate commitments, establishment of green industry and new digital technologies	Trust in society is increased following responsible use of AI and protection of personal data
Today's trend weakened	Slower energy transition due to economic recession	Trust in society is weakened due to political polarisation
«Jokers»	Rapid phase-out of oil and gas industry	Lack of trust in the political elite

* based on Norwegian case (Scenarioer for offentlig sektor i 2040 - regjeringen.no)

Implications of Energy Transition for Security and Defence



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