

Facts

Research and Innovation section

Order number MSB2480 – November 2024

Critical flows and infrastructure under changing threats

This project focuses upon the multitude of supply chains, which sustain affluence and welfare in an advanced society, and how they relate to governance. The Covid-19 pandemic blatantly illustrated the vulnerability to breaks in such chains, immediately subsided by all-out war in Ukraine. The capability to manage rapid change in global threats is equally dependent upon the effects of specialization, out-contracting, and redundancy in infrastructure and stocks.

The project initially identified a knowledge gap in the field of critical flows and supply chain management. Research in this field tends to be carried out either as infrastructural, flow, or systems analyses, but rarely as combinations of the three. The role of external threats is frequently discussed, but then rarely in terms of change. This project forms three overlapping, multi-disciplinary study areas aimed at holistic perspectives upon critical supply and governance, particularly in the areas of interdependencies, public-private supply-chain governance, and civil preparedness under antagonistic threat. The intended audiences are researchers interested in critical flows and supply chains, crisis managers in the public and private spheres, and students on the master's or doctoral levels.

Areas of inquiry

The array of studies carried out in this project are subdivided in line with its five main purposes:

- Studies aimed at clarifying governance and incentive structures in critical flow systems, mapping interdependencies and their effect on resilience in supply chains under public-private partnership.
- Studies contributing with suggestions for conceptual, methodological, and contextual integration.
- Studies aimed at modeling actors and relationships across sectoral governance, facilitating a holistic perspective.

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Critical flows and infrastructure under changing threats

Project time: 2019–2023

The project aimed at creating multi-disciplinary knowledge supportive of preparedness and management in Swedish supply systems under changing images of threat to the nation.

Interdisciplinary cooperation between the universities of Umeå and Lund and the Swedish Defence Research Agency.

Final report:

<https://www.msb.se/sv/publikationer/kritiska-floden-och-infrastruktur-under-hot-i-forandring/>

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Swedish Civil
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- Studies directed toward Swedish crisis management actors, descriptive of present and future resource and coordination needs.
- Studies aimed at increasing knowledge about how the criticality of flows changes depending upon a peaceful or antagonistic global context.

Usefulness for decision makers and practitioners?

Three overlapping, multi-disciplinary study areas form the backbone of this project. The main results can be broken down as follows, the first being suggestions concerning *Resilience in critical flows*:

- Decision makers and practitioners can utilize our framework to improve the availability of critical resources in abnormal times. There are hints at principles for actor guidance, how supply-chain actors can be guided toward specific goals, and knowledge about how and when to engage with such actors to find common solutions.

The second multi-disciplinary study area is *Leadership and governance in centralized preparedness*, which inter alia leads to the following:

- Over the past century, governmental preparedness and procurement planning has vascillated between centralizing and decentralizing tendencies, between government and governance. Total defence preparedness planning today, however, demands other grounds for the mobilization of societal resources. The general will to defend the country, which is the classic marker, is less important than making sure that people continue going to work, whether in crisis or war.

The third multi-disciplinary study area is *Local priorities, the public sphere, and volunteerism*, an overarching conclusion of which is:

- Among Swedish municipalities, which are core actors in Total defence, there is a widespread notion that state agencies are overrepresented in civil defence. There is a call for adjustment to and better fit with the heterogeneity of the 290 Swedish municipalities, in which prioritization between welfare and civil defence is becoming increasingly difficult. Volunteerism is lauded both centrally and locally in the country, but still lacking any form of coherent guidance principles, let alone rules and regulations.

Conclusions

1. The complexity and interdependencies of critical flows complicate the achievement of transparency.
2. Public procurement facilitates communication, but goals and directives are often multiple and unclear.
3. In public-private partnerships, communication must be transparent enough to ensure a sense of shared risk.
4. Threat images have a direct effect on criticality. The pandemic pointed to dependencies in global trade networks. The war in Ukraine shifts public attention to critical infrastructure.
5. Central government in Sweden is historically flexible in preparedness planning, varying the degrees of involvement from private actors over time.
6. The idea that volunteerism is a societal force in disruptive events grows stronger over time, but is not followed by regulatory measures.
7. Swedish municipalities are key players in the reemergent Total defence system. Studies show alarming levels of uncertainty about what that means, however, and points to significant prioritization problems between every-day welfare functions and civil defence.
8. Decision making structures, information sharing, and economic incentives come to the fore as uncertainties among supply chain actors. Some of these uncertainties can be traced back to perceived political and institutional inadequacies.

Publication sample

Supply-chain strategy:

<https://www.emeraldgrouppublishing.com/journal/>

Resilience and dependencies:

<https://doi.org/10.1016/j.jidrr.2024.104295>

Conceptual integration:

<https://www.emerald.com/insight/content/doi/10.1108/ijlm-10-2023-0444/full/pdf>

Modelling partnership and governance:

<https://www.tlog.lth.se>

Volunteerism and steering:

<https://doi.org/10.1111/disa.12604>