



## Cascading Disasters: Theory, Methods and Empirics International workshop

November 28-29 2018

Technion, Israel Institute of Technology, Israel

This first workshop is jointly sponsored by National Knowledge and Research Center for Emergency Readiness and the dim2sea research project and will take place on November 28 and 29, 2018 at the Technion, Israel Institute of Technology, in Haifa, Israel. The topic is: **Cascading Disasters: Theory, Methods and Empirics**. The intention is to address this topic from multi-disciplinary perspectives, including, but not limited to, approaches based in hazards engineering and planning, social and environmental sciences and policy, sociology and social work, public health and emergency medicine, computational modelling and economics.

Modern disasters tend to have domino effects: natural emergencies can develop into anthropogenic crises and the network structure of the economy means that post-crisis equilibria are rarely stable. This tight interconnectivity of disaster situations is fertile ground for new exploration in terms of theory, methods and empirics of disaster science. In terms of *theory*, cascading disasters call for use of non-linear models, complex and adaptive systems to tackle to the challenges of disasters with reciprocal and feedback loops. In terms of *methods*, cascading disasters call for approaches that distinguish between direct and indirect effects, first order and second order influences, identification and causality. In terms of empirics; recent disasters have generated multiple opportunities for studying the domino effects of disasters ranging from the 2011 Great East Japan tsunami and Fukushima disaster, through the Icelandic volcanic ash crises that affected Europe in 2010, and on to Superstorm Sandy (2012).

On November 28 we will hold a workshop where both international and Israeli scholars will present papers and discuss research with the intention of fostering collaboration, and hope to publish the workshop papers in an appropriate international venue. It will be open to all Center researchers and partners.

On November 29 there will be a half day larger conference open to Israeli stakeholders and the public, followed by a half day tour of disaster readiness installations in Haifa.



## Agenda

### Day 1 November 28<sup>th</sup>

Faculty of Architecture and Town planning, Amado building, room 232

**09:00 – 09:30 Reception coffee**

**09:30 - 09:45 Introduction and Welcome**

**Deborah Shmueli**, Head, National Knowledge and Research Center for Emergency Readiness

**Pnina Plaut**, Technion, Head of Engineering, Technology and Planning group at the Center

**09:45 – 11:15 Session 1: Understanding Cascading Disasters**

**Chair: Scira Menoni**

- **Gianluca Pescaroli**, University College, London: *Understanding Cascading Disasters: A Framework for Analysis*
- **Shlomo Havlin**, Bar Ilan University: *Cascading Failures and Recovery in Interdependent Infrastructures*
- **Yakov Ben-Haim**, Technion - Israel Institute of Technology: *Cascading Failures: A Preliminary Info-Gap Analysis*

**11:15 - 11:30 Coffee Break**

**11:30 – 13:00 Session 2: Social, Health and Planning**

**Chair: Deborah Shmueli**

- **Deborah Thomas**, University of North Carolina: *Using health (in)equity to gauge social vulnerability and potential for cascading disasters*
- **Ben Sachs**, Technion and Tel Aviv University Faculty of Medicine: *Crises and Turnaround Management: Lessons Learned from Recovery of New Orleans and Tulane University Following Hurricane Katrina.*
- **Scira Menoni**, Politecnico di Milano: *A systemic approach to deal with enchain failures and damages triggered by natural hazards in complex urban environments*
- **Alexander Altshuler**, Israel National Emergency Management Authority: *Social and community aspects of cascading disasters: the case of new immigrants following the Second Lebanon War*

**13:00 - 14:00 Lunch**



### 14:00 – 15:30 Session 3: Infrastructure and Physical Damage

Chair: Daniel Felsenstein

- **Erick Mas**, IRIDES, Tohoku University: *Large-scale damage assessment and evacuation feasibility in cascading disasters*
- **Hillel Bar Gera**, Ben Gurion University: *Scheduling Road Network Recovery in Cascading Disasters*
- **Luis Moya**, IRIDES, Tohoku University: *Building damage detection from multiple disasters by fusion of remote sensing and numerical simulation of demand parameters*

15:30 - 15:45 Coffee Break

### 15:45 – 17:15 Session 4: Socio-Economic Modeling

Chair: Deborah Thomas

- **Sebastian Poledna**, IIASA Laxenburg: *Assessing cascading disaster losses with an agent-based model: an application to floods in Austria*
- **Shlomo Mizrachi**, Haifa University: *Cascading Disasters, Information Cascades and Continuous Time Models of Domino Effects*
- **Daniel Felsenstein**, Hebrew University: *Cascading Disasters and Labor Market Outcomes*

## Day 2 November 29<sup>th</sup> Open Conference

*Mechanical Engineering Faculty, Kahn building, auditorium 6*

09:00 – 09:25 Gathering and Coffee

09:25-09:30 Deborah Shmueli, Head, National Knowledge and Research Center for Emergency Readiness: *Introductory remarks*

09:30 – 09:45 **Alexander Bligh**, Chief Scientist, Israeli Ministry of Science and Technology: *Opening remarks*

09:45 – 10:10: **Ze'ev (Vova) Zuk-Ram**, Head of the Israeli National. Emergency Authority (RACHEL)

### 10:10 – 10:50 Lectures

10:10 – 10:30 **Gianluca Pescaroli**, University College, London: *One thing leads to another: being ready for cascading crises and disasters*

10:30 – 10:50 **Sebastian Poledna**, IIASA Laxenburg: *How to estimate the risk of cascading flood losses: the Austrian case*



**10:50 – 11:20 Coffee break**

**11:20 – 12:20 Lectures (cont.)**

11:20 – 11:40 **Miki Halbertal** Deputy Director of Rambam Hospital Center (in Hebrew): *Innovative solution for continuous emergency situation.*

11:40 – 12:00 **Itsic Gai**, Former commander of the Home Front Command (HFC) Planning Department (in Hebrew): *The Earthquake in Nepal as a Case Study of Cascading Disasters.*

12:00 – 12:20 **Alexander Altshuler**, Israel National Emergency Management Authority (in Hebrew): *It's all about synergy and integration: towards strategic responses to cascading disasters*

**12:20 – 13:30 Multi-disciplinary panel on cascading disasters** (in Hebrew)

Facilitator: **Deborah Shmueli**, Head of the National Knowledge and Research Center for Emergency Readiness, with Center researchers: **Yakov Ben-Haim** (Risk Assessment and Management), **Eran Feitelson** (Environment), **Daniel Felsenstein** (Public Policy), **Miki Halberthal** (Public Health and Emergency Medicine), **Rassem Khamaisi** (Social Sciences), **Michal Shamai** (Social Work and Welfare).

13:30 – 14:30 Light lunch

14:30 – 17:30 Visit to the Haifa emergency center and Rambam hospital.





## אסונות מתגלגלים: תאוריות, שיטות ומחקרים אמפיריים

סדנא בינלאומית

28-29 בנובמבר 2018

טכניון, חיפה

למגיעים ברכב: נא לאמר בכניסה לטכניון שאתם מגיעים ל"כנס אסונות מתגלגלים" – זו הסיסמא  
לאישור כניסה וחניה בטכניון בימי הכנס

Workshop Wednesday 28.11  
Amado Bld. Room 232



כנס יום חמישי 29.11.18  
בנין קאהן (הנדסת מכונות) אולם 6