

Alma Mater Europaea (AME)

Annual Online Conference

“All About People 2021 - Digital Transformation in
Science, Education & Arts”

Management of Earthquake Housing Recovery Megaproject – practices and actual Croatian experience

Vandelić, Damir and Radujković, Mladen

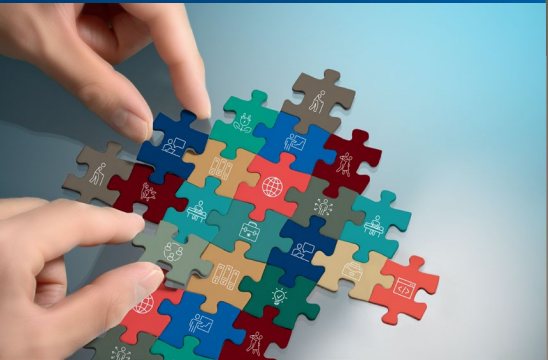
March 19th, 2021



**ALMA MATER
EUROPAEA**
ECM

Content

1. Introduction
2. Method
3. Results
4. Discussion
5. Future research
6. Conclusion
7. References



Introduction



In the year 2020 Croatia faced three major challenges during the year. At the beginning of the year, the pandemic of coronavirus influenced health, social life and endangered businesses. Then, on the morning of March 22nd Zagreb was hit by an earthquake of 5,5 Richter magnitude making 6,360 buildings inhabitable, one person died.

Then again, on December 29th 2020, an earthquake in the Petrinja area of 6,2 Richter magnitude made 11,447 buildings inhabitable, seven persons died.

Such an earthquake did not appear in this area since 1880. These rare and dramatic events require a response through institutions, legislative framework, processes, and portfolio management, programs, and projects.

This paper compares management practices of **earthquake housing recovery megaproject** in other countries and actual experience in Croatia.

For the housing recovery project, Croatian authorities decided for organized reconstruction via Agency for earthquake recovery applying Government-Driven Reconstruction (GDR) as given principle.

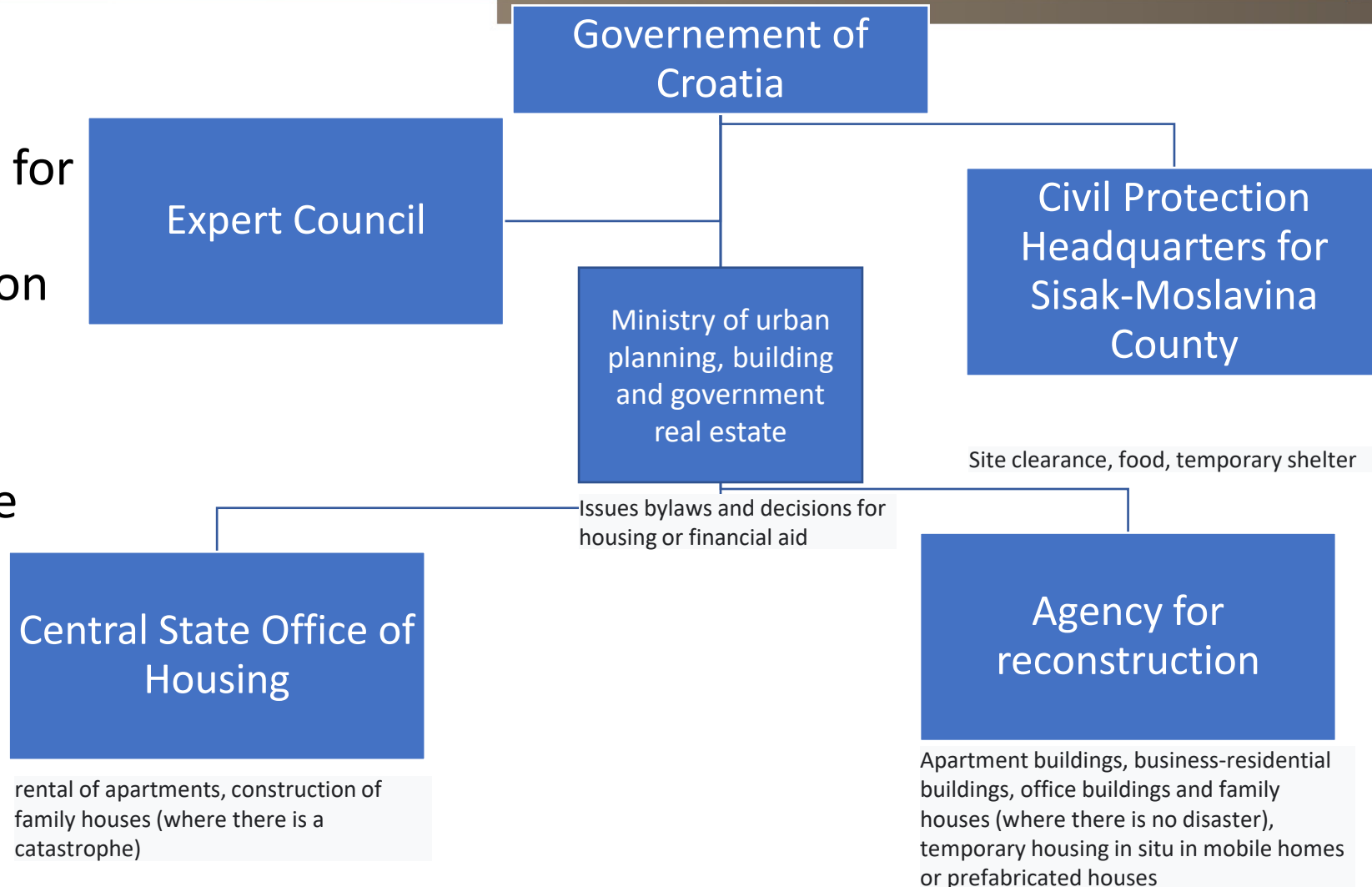


Introduction



Temporary organisation for earthquake reconstruction of housing

...an multiple agency approach



Method



- Qualitative Research: Integrative Literature Review comparing findings from qualitative studies (Grant and Booth, 2009) with actual Croatian practice
- Literature review as a research method is more relevant than ever, as knowledge production within the field of business research is accelerating at a tremendous speed while remaining fragmented and interdisciplinary, making it hard to keep up with state-of-the-art and to be at the forefront of research (Snyder, 2019)
- Sources: Scopus, Google Scholar, ResearchGate, Elsevier



Results



- Relevance of reconstruction of housing sector is large as the cost of recovery after Zagreb earthquake in the housing sector accounts for 52% of overall needs (Government of Croatia, 2020).

TABLE 4
Summary of recovery and reconstruction needs (in million EUR)

	Short-term	Medium-term	Long-term	Total
Sectors				
Housing	2,739	4,102	2,287	9,128
Health	374	210	1,851	2,435
Education	571	881	909	2,361
Culture and Cultural Heritage	500	1,570	447	2,517
Business	338	351	339	1,028
TOTAL	4,522	7,114	5,833	17,469

Results



- A review of the recent post-disaster recovery interventions in developing countries shows convergent trends in policies and practices. There are a number of shortcomings in knowledge transfer on post-disaster housing and livelihood recovery (Tafti and Tomilson, 2015).
- According to Lester (2003), half of the World Bank's loans for post-disaster recovery projects has been channelled for purpose of housing reconstruction. In Croatia estimates are that 52% of reconstruction costs is required for housing reconstruction (Government of Croatia, 2020).
- Gujarat/Bhuj, India (2001), Bam, Iran (2003) ... housing **owner-driven reconstruction (ODR)** approach that World Bank promotes as best practice post-disaster provisions (Tafti and Tomilson, 2015).
- The ODR approach is summarised as: 'conditional financial assistance is given, accompanied by regulations and technical support aimed at ensuring that houses are built back better' (Jha et al., 2010, 93).



Results



Five reconstruction approaches (Jha et al, 2010; p. 93):

1. Cash Approach: Unconditional financial assistance is given without technical support.
2. Owner-Driven Reconstruction: Conditional financial assistance is given, accompanied by regulations and technical support aimed at ensuring that houses are built back better.
3. Community-Driven Reconstruction: Financial and/or material assistance is channeled through community organizations that are actively involved in decision making and in managing reconstruction.
4. Agency-Driven Reconstruction in-Situ: Refers to an approach in which a governmental or nongovernmental agency hires a construction company to replace damaged houses in their predisaster location.
5. Agency-Driven Reconstruction in Relocated Site: Refers to an approach in which a governmental or nongovernmental agency hires a construction company to build new houses in a new site.



Results



- Owner-Driven Reconstruction (ODR) is recommended because it ‘has proven to be the most empowering, dignified, sustainable, and cost-effective reconstruction approach in many types of post-disaster situations’ (Jha et al., 2010, 93)
- The ODR approach provides directions through assistance conditionality, instalment-based disbursement and fines to push people to do what policies defined as the ‘right thing’ to do – i.e. to build earthquake-resilient houses within a fixed time frame. (Tafti and Tomilson, 2015, pp.178)
- „The United States and Japan are similar in their approaches to a more limited role for government in disaster recovery, with a focus on public funding primarily for infrastructure, limited government support for housing and private-sector recovery, and limited disaster insurance for homes.” (Comerio, 2014, p. 60)
- The problems with a multiple-agency approach in Tamil Nadu showed that a unified agency approach is better than multiple agencies dealing with different aspects of reconstruction (Shaw, 2014, p 31)





Croatian approach:

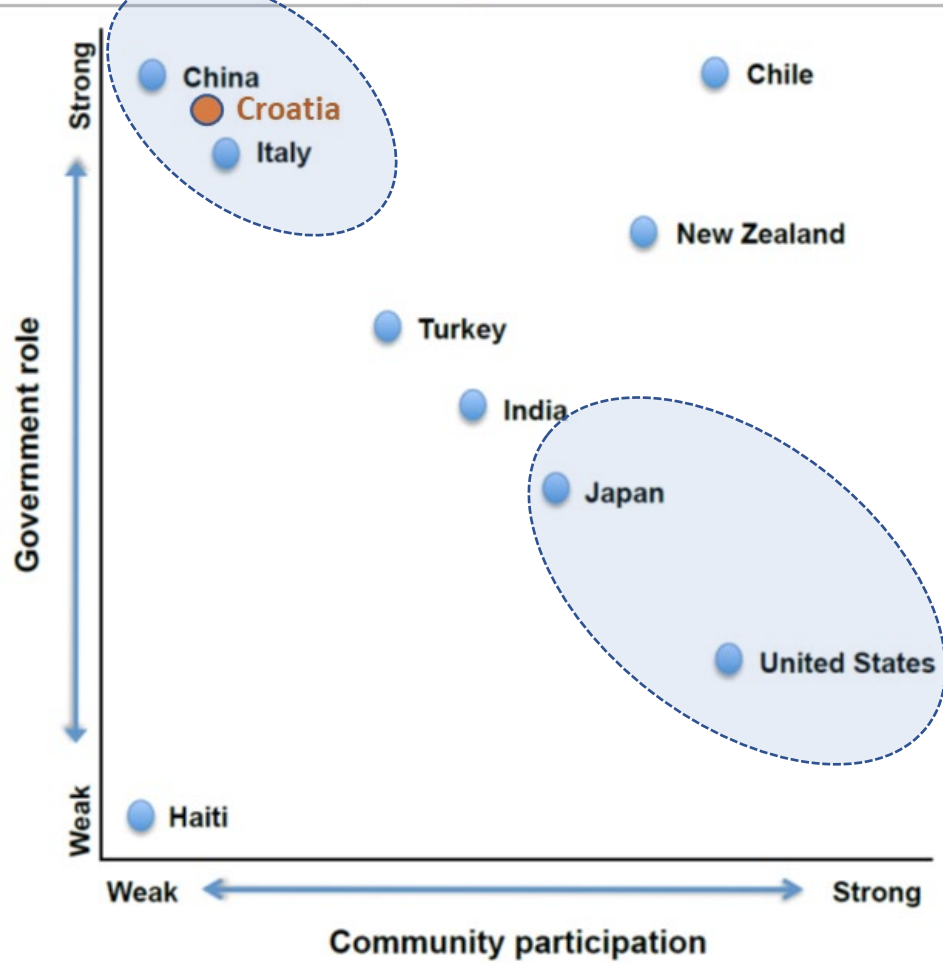
- After earthquake on March 22nd 2020, Croatia in September 2020 issued Law of reconstruction supporting 4th approach: **Agency-Driven Reconstruction in-Situ (ADRiS)** providing construction costs funding of 80-100% for first housing and 50-100% for second and other.
- Ministry of urban planning, building and government real estate creates decisions for private building reconstruction.
- Agency for reconstruction is newly formed by contract on 29th October 2020 with aim to conduct recovery works via designers, supervisors, coordinators, technical and financial control and civil work companies – according to decision of Ministry.



Results



Comparison of Recovery Management Approaches



- Adapted with Croatia data from Comerio, 2014, pp.63.



Discussion



- ODR and ADRiS approach both could achieve similar levels of an integrated approach to disaster risk reduction (Ranghieri and Ishiwatari, 2014, p.5) if Agency provides same level of supervision in both models.
- ODR approach in Croatian case shows that a lot of time has been lost.
- Government did not decide on the policy for housing and community reconstruction in consultation with the affected community (Jha et al, 2010) and communication in Croatian case is not satisfactory.



Future research



- To properly evaluate an approach that Croatia undertook, one could make a survey to determine which approach citizens and/or professional association would prefer as better.
- Community rehabilitation facilitator role is missing and one could research his relevance in disaster recovery
- One could investigate how investing in pre-disaster mitigation of lifelines and reduction of social vulnerability helped in reducing losses to the community and hasten recovery (Miles and Chang, 2003, p. 69)



Conclusion



- Croatian approach is different than recommended practice by World Bank (Jha et al, 2010) – Croatia decided for ADRiS approach versus recommended ODR approach.
- One year after Zagreb earthquake still there are no decisions from Ministry towards Agency for reconstruction for removal, reconstruction of buildings or building of new homes.
- If ODR approach has been taken, with prompt building permitting and Agency supervision (build back better approach), there is higher chance that reconstruction would already start, citizens would be happier and GDP would grow up to 1%.



References



- Jha, Abhas K., Barenstein, Jennifer Duayne, Phelps, Priscilla M., Pittet, Daniel, Sena, Stephen. 2010. Safer Homes, Stronger Communities: A Handbook for Reconstructing After Natural Disasters. Publisher: World Bank Publications. ISBN: 0821380451,9780821380451
- Tafti, Mojgan Taheri and Richard Tomlinson. 2015. Best practice post-disaster housing and livelihood recovery interventions: winners and losers. *International Development Planning Review*, 37(2), pp.165-186.
- Snyder, Hannah. 2019. Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, pp.333-339.
- Government of Croatia. 2020. The Croatia Earthquake - Rapid Damage and Needs Assessment 2020 report.



References



- Grant, Maria J. and Booth, Andrew. 2009. A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, 26, 91–108. <https://doi.org/10.1111/j.1471-1842.2009.00848.x>.
- Shaw, Rajib. 2014. *Disaster Recovery. Disaster Risk Reduction*. Springer. doi:10.1007/978-4-431-54255-1
- Comerio, Mary C. 2014. Disaster recovery and community renewal: Housing approaches. *Cityscape*, 16(2), pp.51-68.
- Ranghieri, Federica, and Mikio Ishiwatari. 2014. Learning from megadisasters: lessons from the Great East Japan Earthquake. The World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/18864>



Thank you for
your attention

