

Diagnosing Agroecosystems through Interdependent Networks of Actors, Actions and Outcomes

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Introduction

We still know little about how the dependencies between actors and actions can facilitate or obstruct the achievement of desired outcomes in agroecosystems.

This study aims to analyse the intra and inter-dependencies of actors, processes, and outcomes in agroecosystems using a multi-level network analysis in the case of Zayandeh-Rud river basin, Iran (Figure 1).

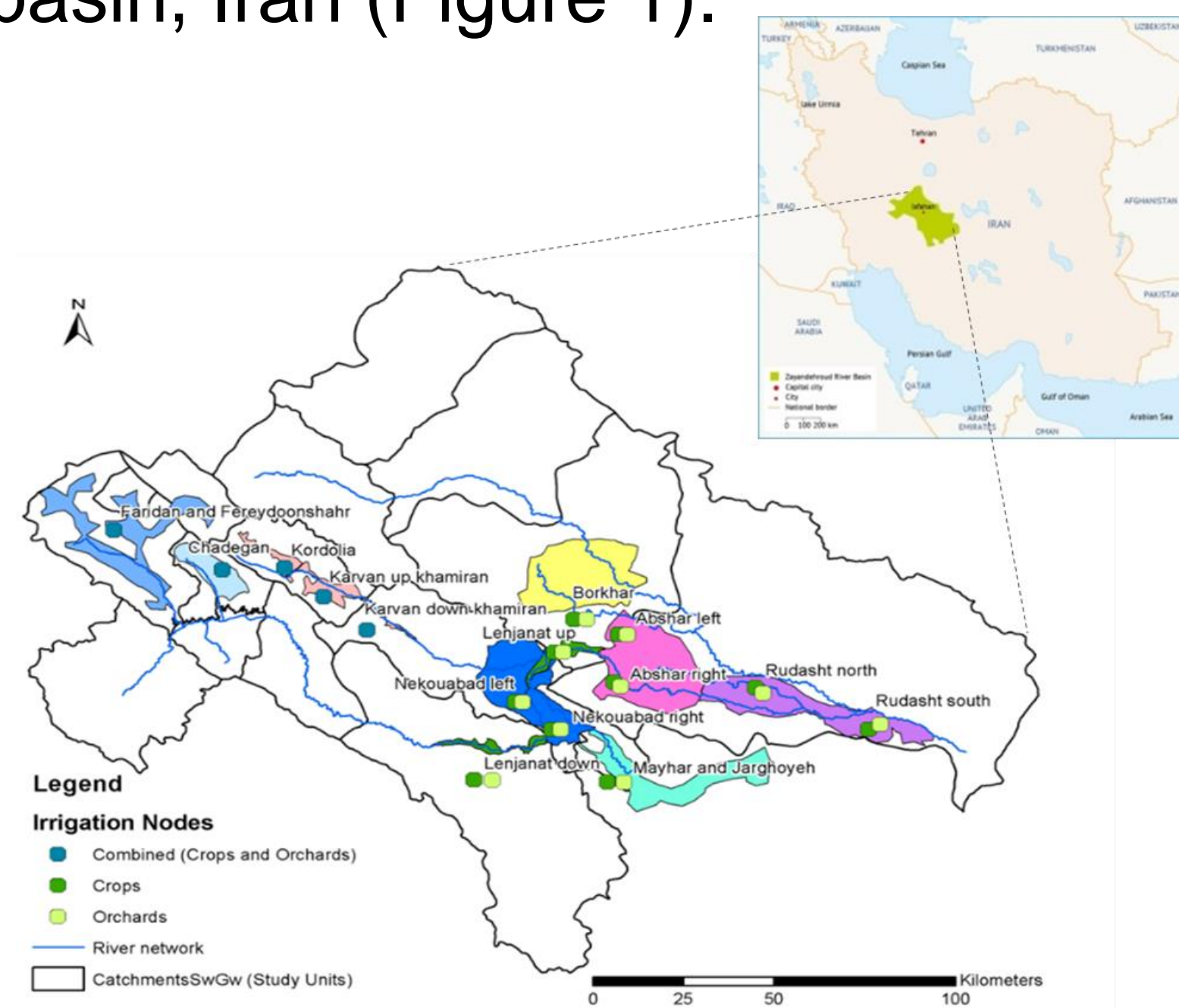


Figure 1: Location of the Zayandeh-Rud basin

Materials and methods

We adopted a Multi-level Institutional Analysis and Development (Multi-IAD) framework by incorporating the Networks of Action Situations (NAS) with a Network of Outcomes.

We used qualitative and quantitative methods to analyze data collected from three field-visits, five in-depth expert interviews, three focus-group discussions, four interactive workshops, and a questionnaire-based survey.

Results

Figure 3 presents the degree and betweenness centrality measures, highlighting the importance and position of actors, processes and outcomes in the network (Figure 2).

Conclusion

- ✓ The Multi-IAD framework is a powerful tool to analyse the intra and inter-dependence of actors, governance processes, outcomes, and relevant exogenous factors in agroecosystems.
- ✓ Water conflicts in the case of Zayandeh-Rud basin it is not simply resulted from technical interventions, but it is the eventual outcome of strong dominance of governmental authorities at constitutional and collective choice levels on the allocation and extraction of water resources.

Network of Actors, Action Situations and Outcomes

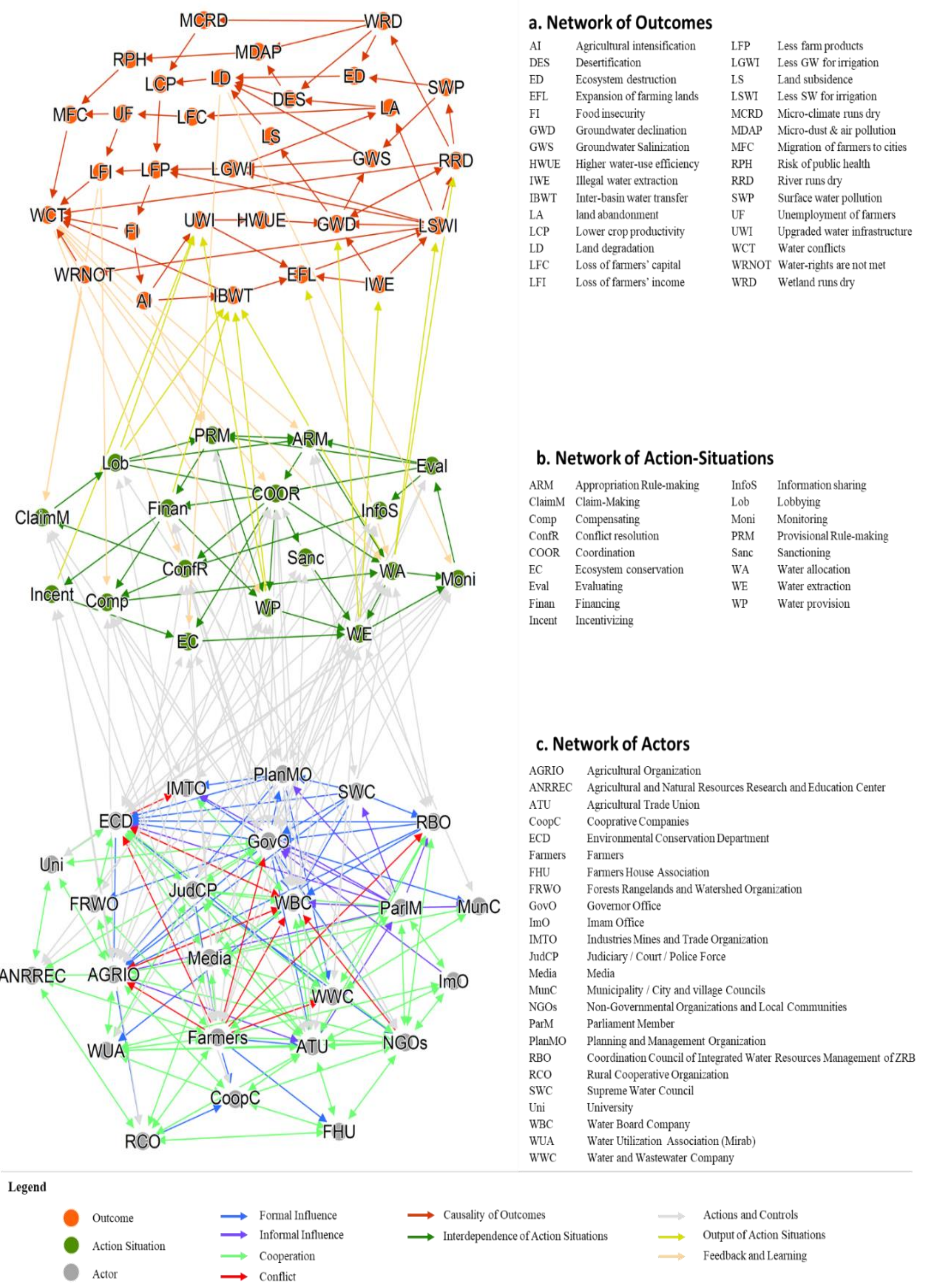


Figure 2: Multi-level network of actors, action situations and outcomes

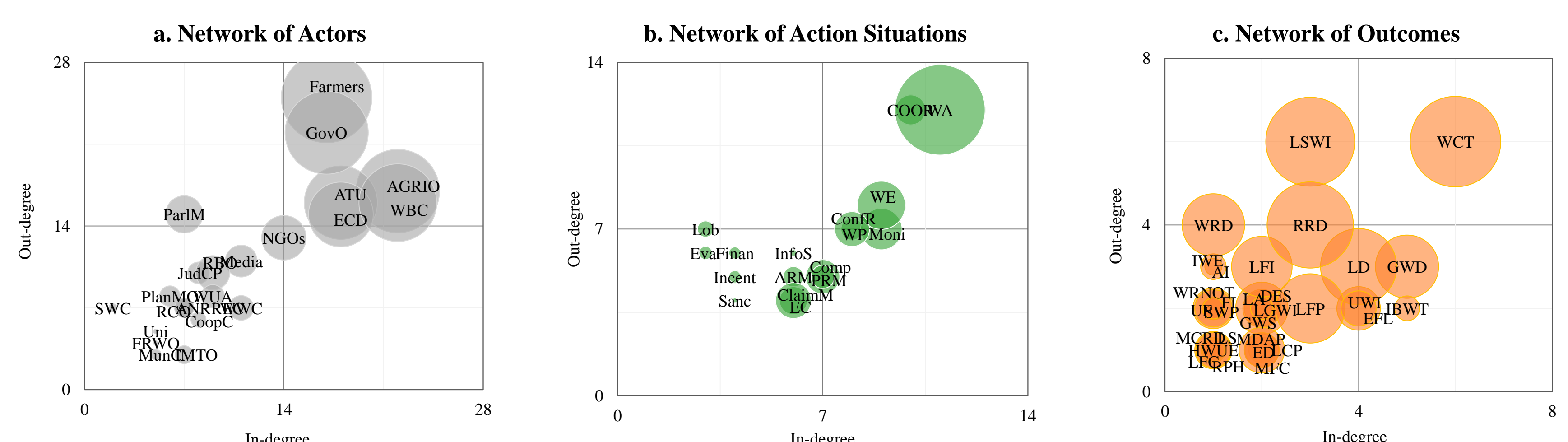


Figure 3: Matrix of centrality metrics of network of actors, network of action situations, and network of outcomes (the size of nodes present the betweenness centrality metric)