

For many social-ecological systems it is still unclear why some groups thrive while others fail to achieve sustainable outcomes. It remains debated *which factors improve ecological success and resilience*. We find robust patterns of more than 20 factors related to success in a large number of case studies (irrigation, fisheries, forestry).

We demonstrate that a new methodology – artificial neural networks (ANN) *combined* with large data sets are especially suited since they allow non-linear statistic modelling of complex systems. Here, we use the IFRI data set (community-based forestry) with around 400 codeable cases. The output of our model is the ecological success.

The results show that ANNs are indeed capable of modelling the complexity of SES-systems. However, results on other data sets (irrigation and fishery) yield even more precise results than the models for forestry. Such an ANN-generated model might predict and optimize performance for communities world-wide facing SES-challenges.