

# **Sustainable Rural Development Utilizing Local Agricultural Resources in Japan: Implication for Rural Development in Asia**

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Workshop on China-Japan-Korea Rural Vitalization Experiences:  
Implications for ASEAN Countries

25/June/2019 Nanning, Guangxi, China

# Self-introduction

- A researcher of Ministry of Agriculture, Forestry and Fisheries, Japan since 2016
- Research fields: Agriculture and agricultural policy in Africa (mainly Kenya) and Indonesia, Social network analysis
- Interests: Development economy, Fieldwork in rural areas in development countries

# Outline

1. Background: Rural Development Policy in Japan
2. Results: Comparison of Collaborative Networks in three areas
3. Implication for Rural Development in Asian Countries
4. Conclusion

# 1. Background: Rural Development Policy in Japan

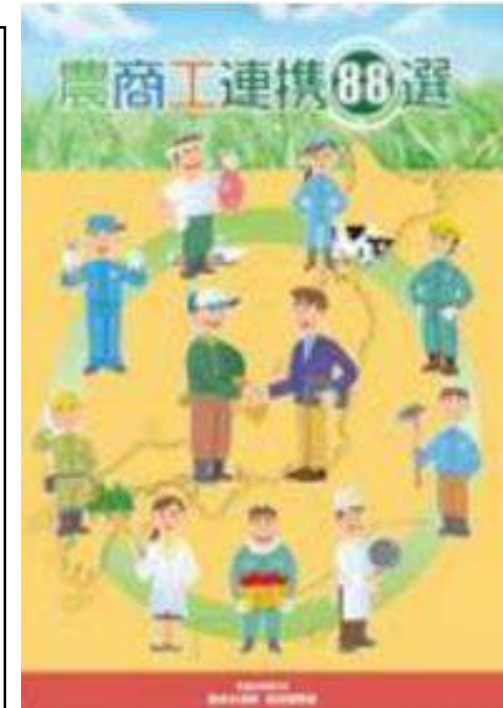
- Utilizing local agricultural resources and inducing **rural innovation**

Japanese government has been promoting the **inter-organizational collaborations**

Tsuruoka, Noto and Aso in Japan were internationally designated as a UNESCO Creative City (UCCN) and heritage sites (GIAHS)

- **Social Network Analysis (SNA)**

SNA has been employed to approach the collaborative structure of cross-industrial/regional relationship among stakeholders.



Noshoko-Renkei  
(agriculture-commerce-  
industry collaboration)  
project in Japan

# Objectives of the research

1. Employing SNA, **the cross-industrial/regional relationship** in Tsuruoka, Noto and Aso in Japan are compared.
2. Providing the different types of model cases of collaborative interactions in rural Japan
3. Leading implication for rural development in Asian countries

# Study areas

1. Tsuruoka (Yamagata prefecture)  
Food culture (UNESCO Creative City Network: UCCN)



2. Noto (Ishikawa prefecture)  
Satoyama and Satoumi, traditional agricultural systems (GIAHS)



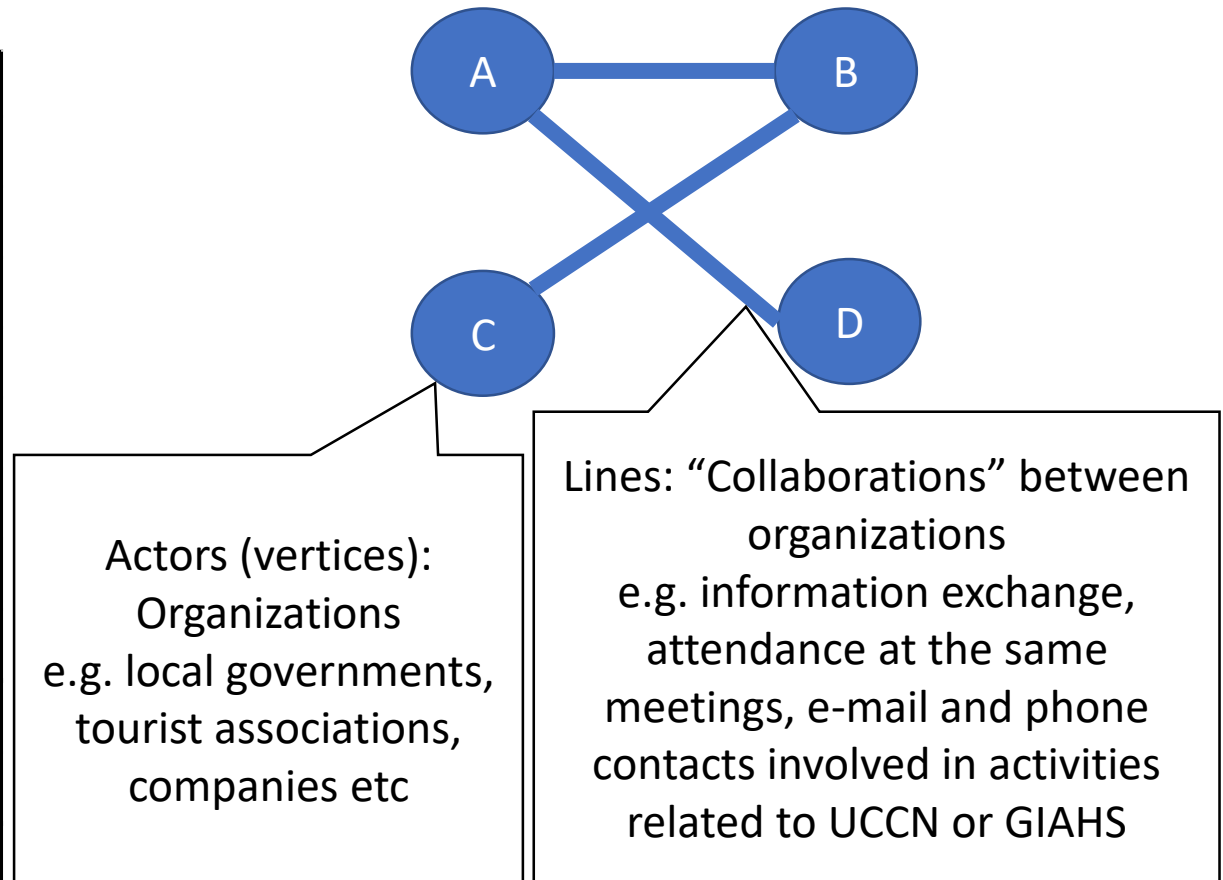
3. Aso (Kumamoto prefecture)  
"Burning off a field" and grassy plain management (GIAHS)



# Methodology: Social Network Analysis (SNA)

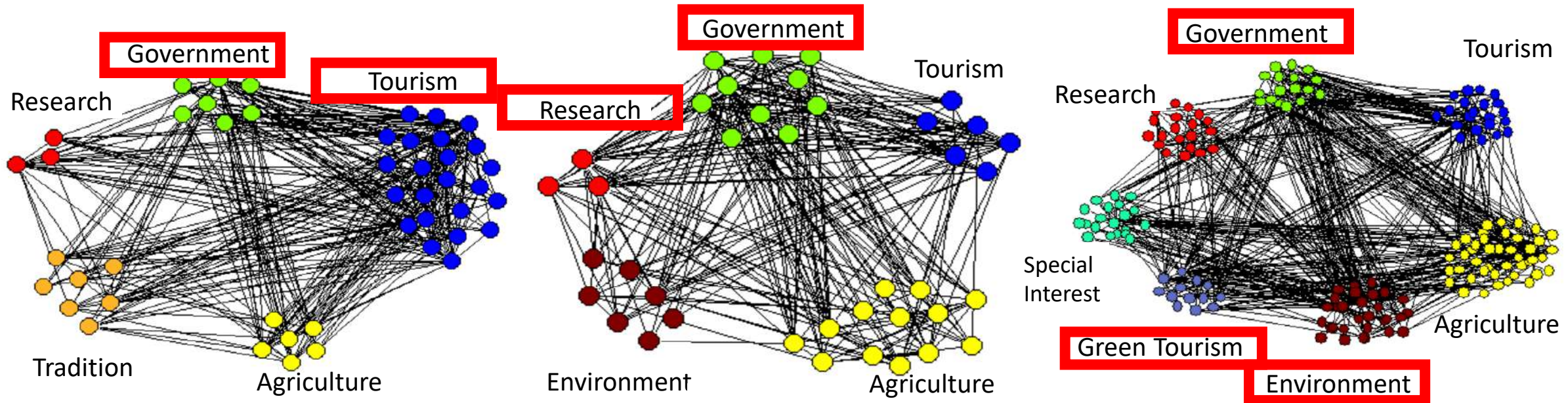
## Surveyed organizations

|                               |                  | Tsuruoka | Noto | Aso |
|-------------------------------|------------------|----------|------|-----|
| Industrial category (sectors) | Government       | 7        | 10   | 17  |
|                               | Agriculture      | 6        | 13   | 44  |
|                               | Tourism          | 23       | 6    | 21  |
|                               | Resrach          | 3        | 3    | 20  |
|                               | Tradition        | 7        | -    | -   |
|                               | Environment      | -        | 7    | 30  |
|                               | Green Tourism    | -        | -    | 13  |
|                               | Special Interest | -        | -    | 22  |
| Geographical category         | Central areas*   | 26       | 13   | 118 |
|                               | Others           | 20       | 26   | 49  |
| Total                         |                  | 46       | 39   | 167 |





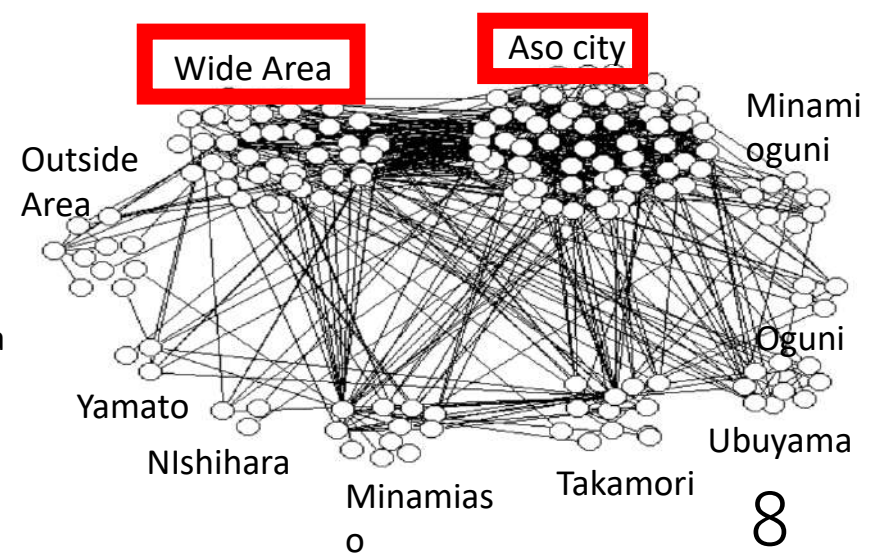
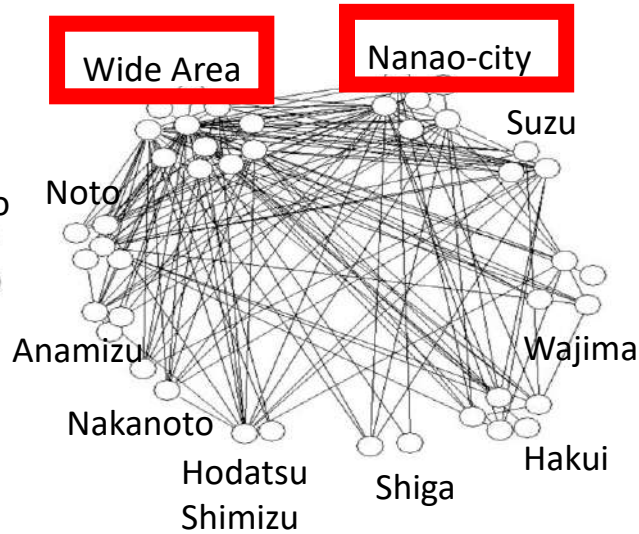
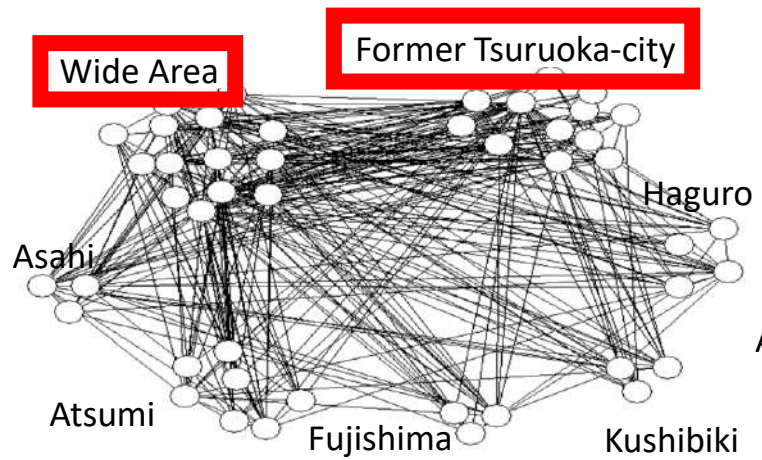
# 2. Results: Comparison of Collaborative Network



Tsuruoka

Noto

Aso





# Whole network indices

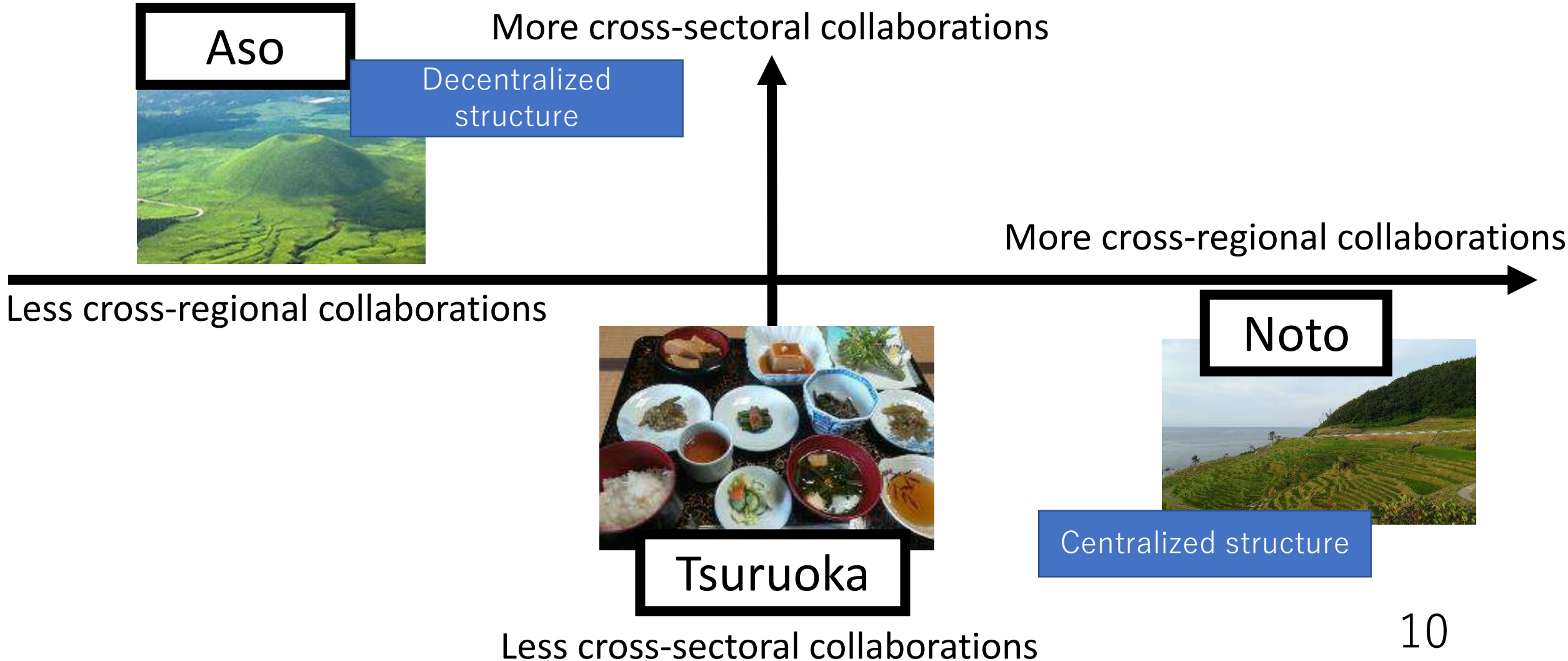
Density & Degree centralization of **Aso** are lower than those of the other areas.

|                                     | Tsuruoka | Noto   | Aso    |
|-------------------------------------|----------|--------|--------|
| Density                             | 0.3208   | 0.3617 | 0.0382 |
| Degree Centralization               | 0.6792   | 0.6383 | 0.1486 |
| Cross-boundary exchange(industrial) | 64%      | 71%    | 74%    |
| Cross-boundary exchange (regional)  | 71%      | 88%    | 51%    |

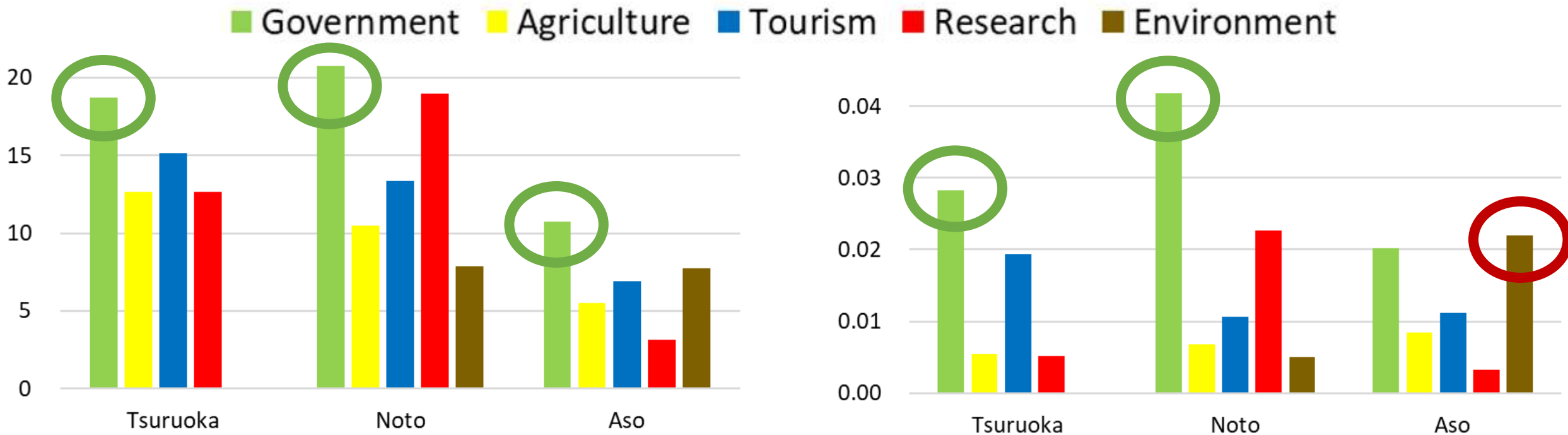
\*See Supplementary information (last page) as to the definition of network indices.

\*\* The highest (lowest) score among the 3 areas is marked with red (green).

# The relation between the cross-industrial interactions and the cross-regional interactions



# Degree centrality & Betweenness centrality (Average by industry)



Degree centrality of Gov. is the highest in the 3 areas.

Betweenness centrality of Environment is higher than that of Gov. in Aso.

# 3. Implication for Rural Development in Asia



Bio-resource industry



Processing industry

Agriculture

Leisure agriculture & rural tourism



Food industry

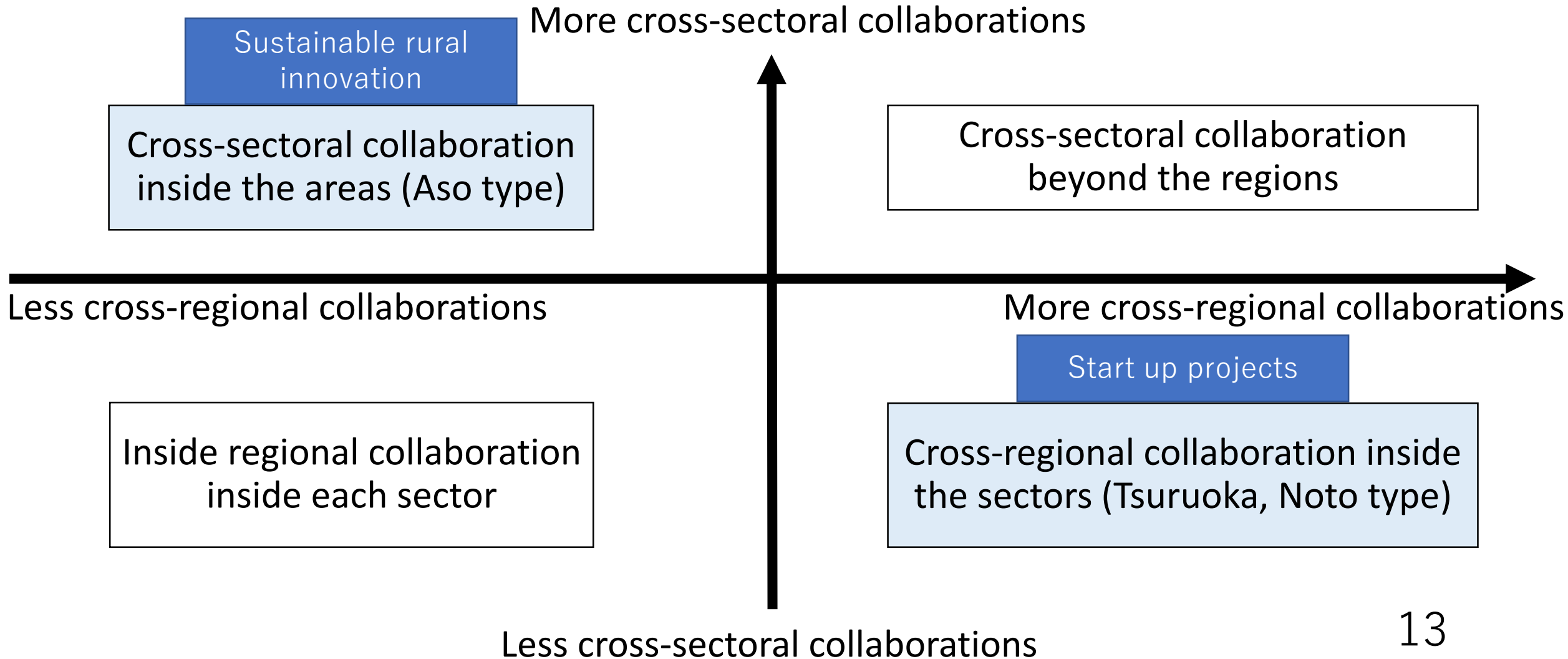


Cultural industry

(Source) Min Qingwen

- Collaboration among various sectors are also promoted in GIAHS sites in Asia.
- This study's social network analysis can be employed to studies in such sites for understanding the structure of collaboration network empirically.

# Types of interorganizational collaboration



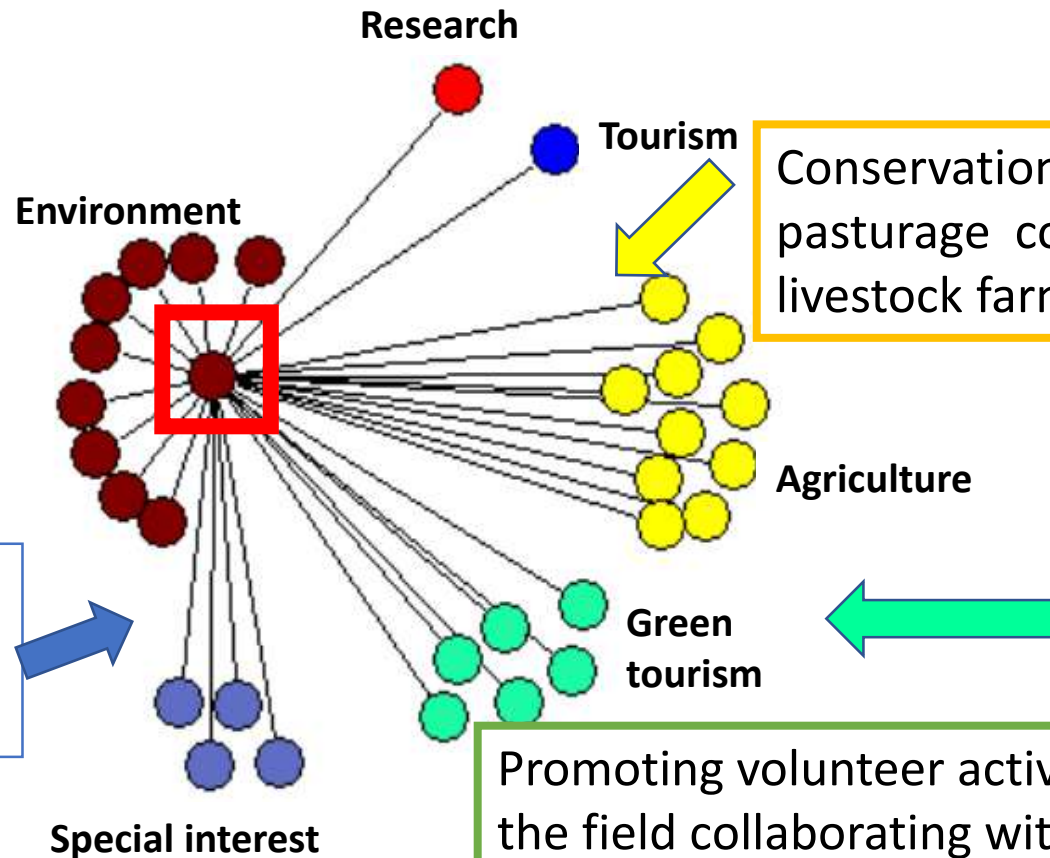


# Example of a coordinating role among the various sectors in Aso

Organizations that coordinate the various sectors are considered to play important roles in maintaining decentralized networks and inducing innovation (Ohe 2014).



Marketing of the native beef collaborating with the distributing companies



Conservation of traditional pasturage collaborating with the livestock farmers



Promoting volunteer activities of burning off the field collaborating with Green tourism

# Summary & Implications for rural development in Asia

1. Tsuruoka's and Noto's networks are characterized by relatively centralized structures, while Aso's network is characterized by a relatively decentralized structure
2. Decentralized structure may lead to spillovers of knowledge and innovation through cross-sectoral collaborations in the areas in the long run.
3. Organizations that coordinate the various sectors are considered to play important roles in maintaining decentralized networks and inducing innovation.

# References

- Fliervoet, J. et al. (2016) “Analyzing Collaborative Governance Through Social Network Analysis: A Case Study of River Management Along the Waal River in The Netherlands”, *Environmental Management* 57: 355-367.
- Ohe, Y. (2014) “Roles of Network-Integrating NPOs that Connect Local Stakeholders in Rural Tourism: Evidence from Japan”, in H. Pechlaner and E. Smeral eds., *Tourism and Leisure: Current Issues and Perspectives of Development*, Springer Gabler, 231-244.
- S. Inoue, N. Ito, Y. Uchiyama and R. Kohsaka (2019) “Sustainable Development Utilizing Local Agricultural Resources: Network Analysis among Social Organizations in Tsuruoka, Noto and Aso Area in Japan,” 2019 Annual Conference of Agricultural Economics Society of Japan (oral presentation)
- Min Qingwen “GIAHS/NIAHS Conservation and Rural Revitalization”, CAS-IGSNRR-CNACH [https://www.giahs-minabetanabe.jp/erahs/assets/pdf/GIAHSConservationandRuralVitalization\\_MinQingwen.pdf](https://www.giahs-minabetanabe.jp/erahs/assets/pdf/GIAHSConservationandRuralVitalization_MinQingwen.pdf)

\*This study was partly supported by JSPS KAKENHI Grant Numbers 16K16656, 18H02287, 19K20537.

# Supplementary information: Definition of network indices

- Density: Number of actual ties in a network divided by the maximum possible number of ties
- Degree centralization: the ratio of the actual sum of variations to the maximum possible sum of variations.
- Cross boundary exchange: Number of ties connecting actors with different groups divided by the total number of connections in the network and expressed as percentage
- Degree (degree centrality) : Number of ties of an actor
- Betweenness centrality : Probability of an actor being on the shortest path between any two actors in a network. The actor with high betweenness centrality could act as a bridge between two actors who are not connected otherwise.