

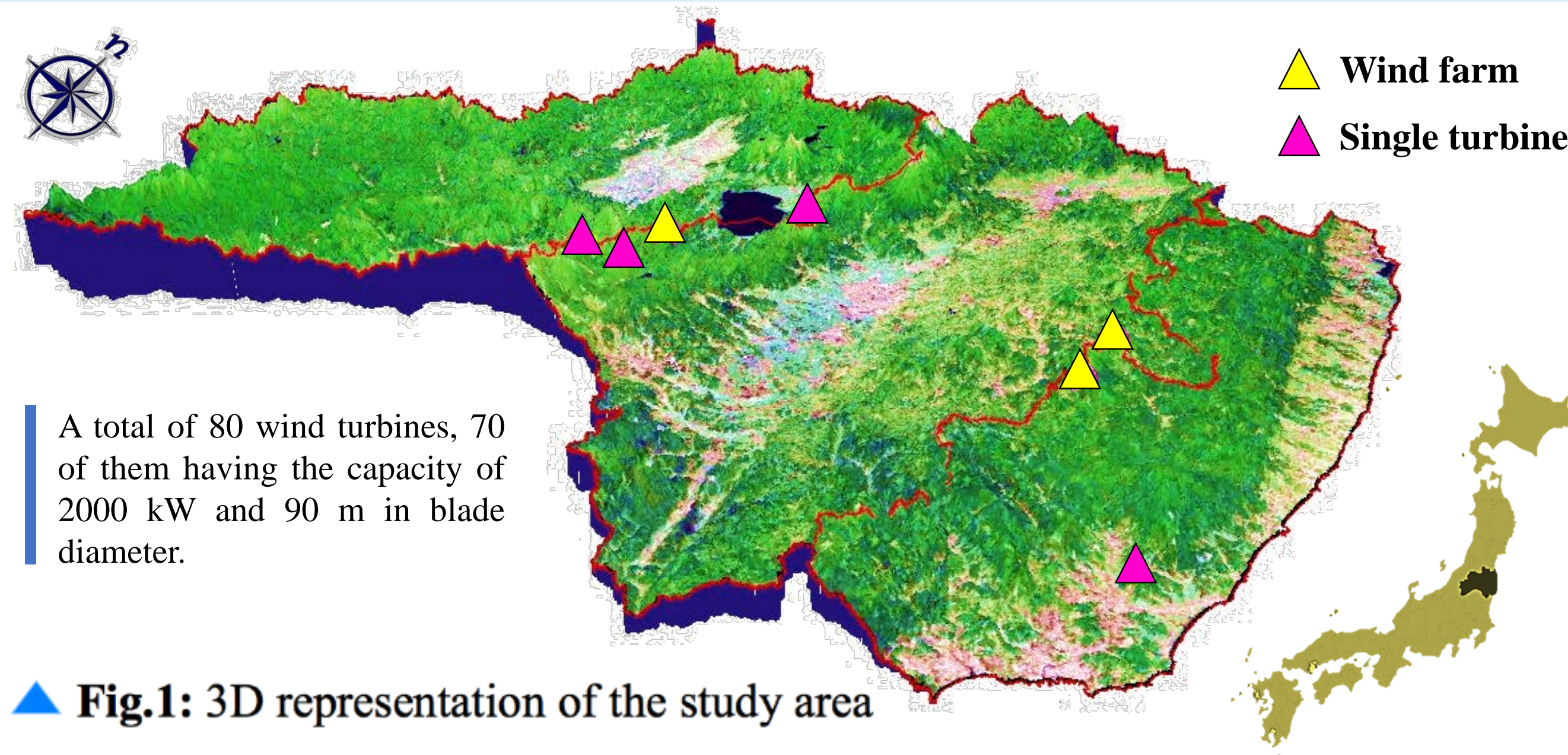
I. Introduction

- Fukushima was the **most damaged prefecture** by the nuclear crisis following the earthquake of March 2011;
- Local government has realized the urgent need to **develop clean, green and safe RE** to drive its energy structure into a safer and self-sufficient status;
- Wind is one of the **available energy resources** in the prefecture alongside other resources;
- Although offshore wind potential is higher than the onshore's, The former's projects are characterized by its **mature technology** and **cheap budget**.

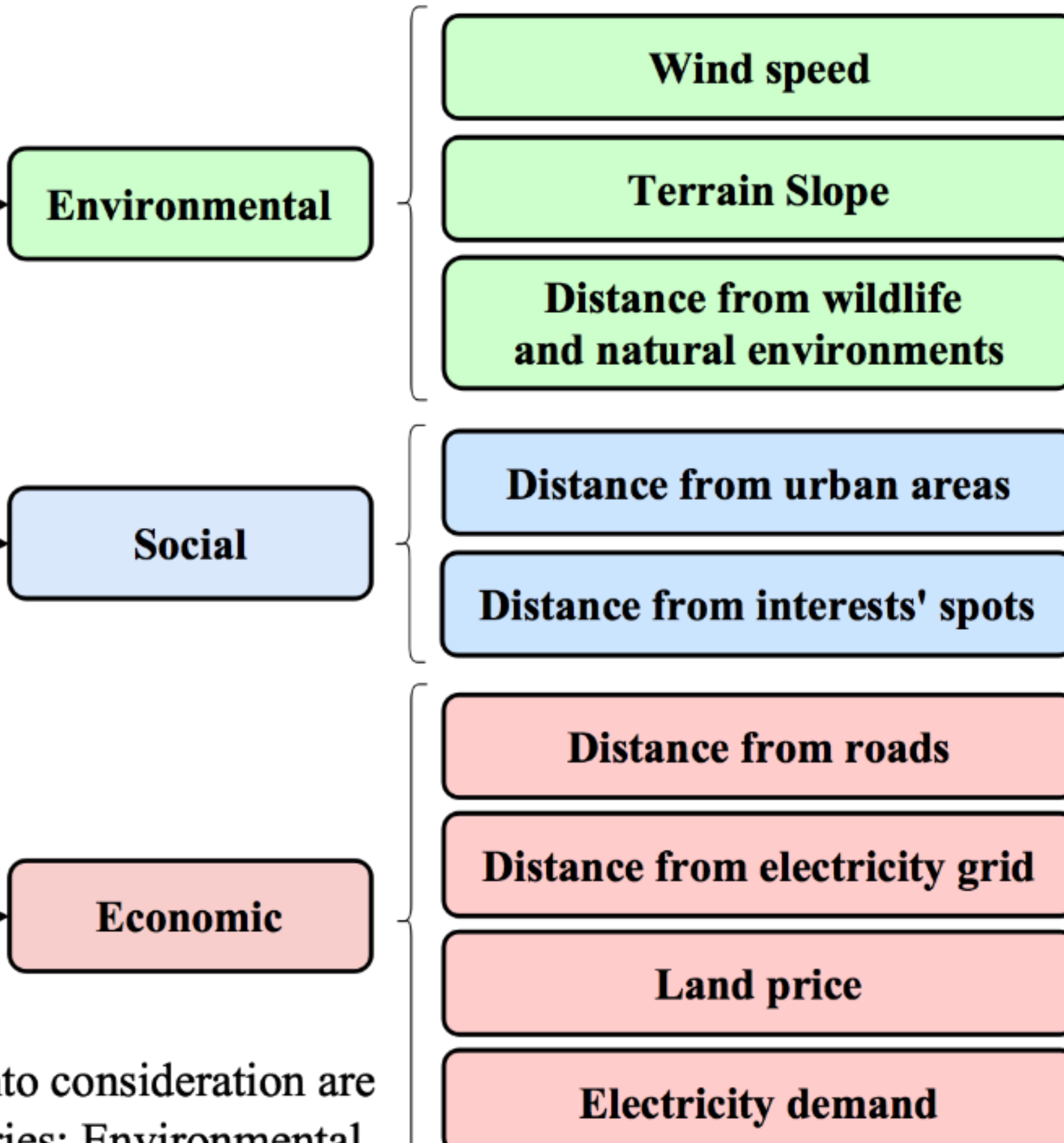
II. Research Questions

- **Any optimal locations** available for onshore wind farms in Fukushima prefecture?
- **Which factors** to consider to judge whether a location is optimal or not?
- How to extract **Suitability map** using GIS Model?

III. Study Area

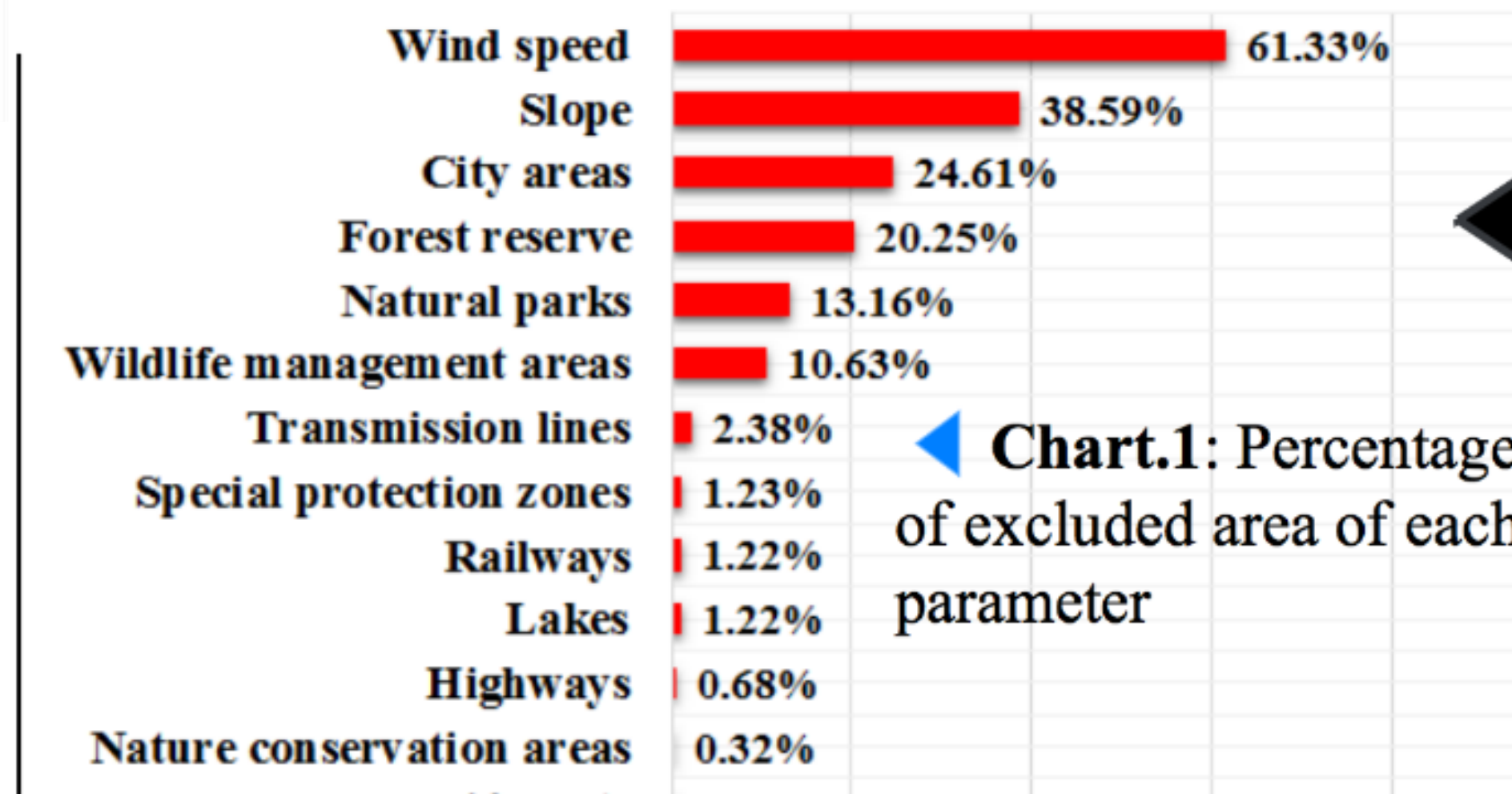
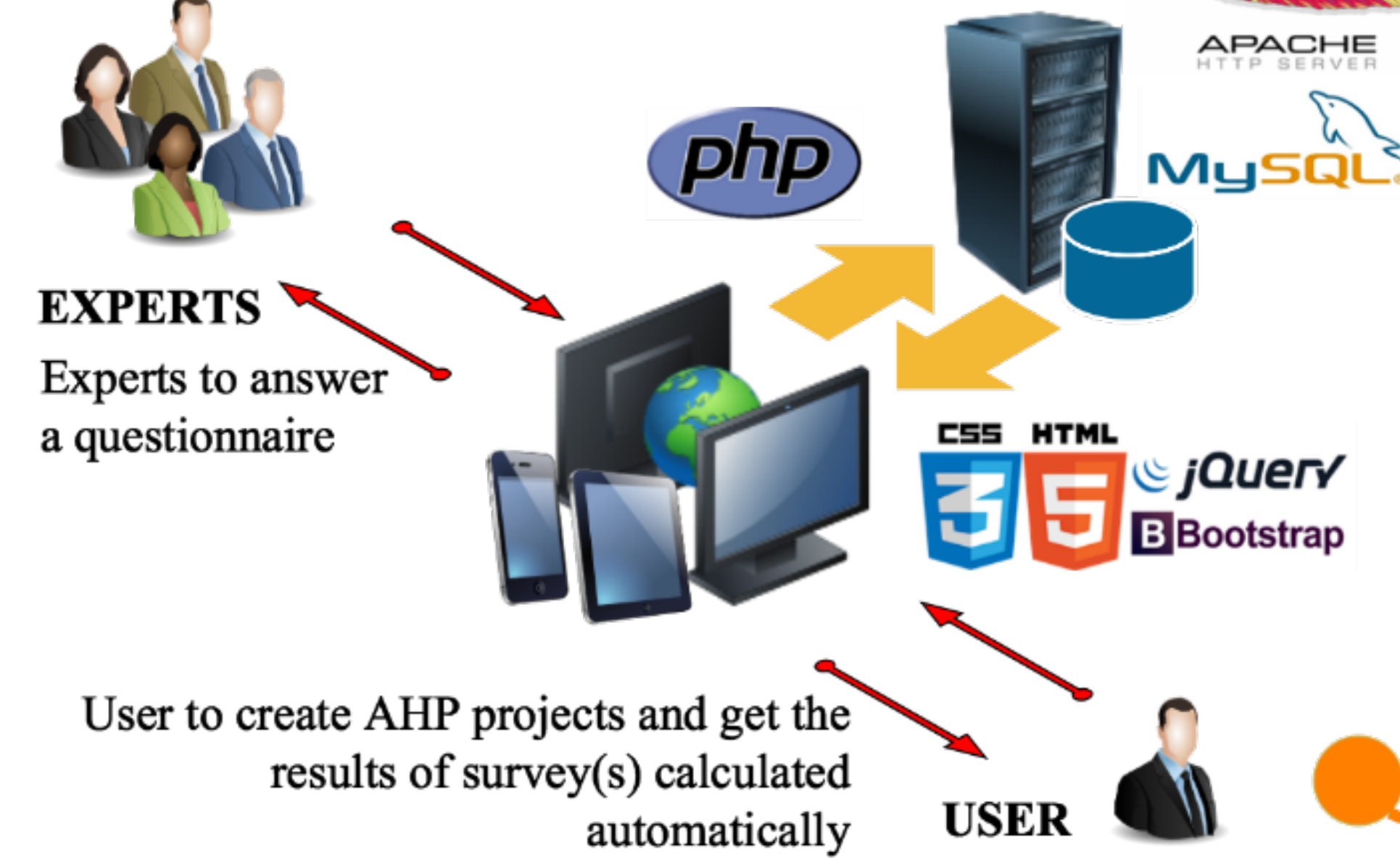


Suitable sites for onshore wind farms

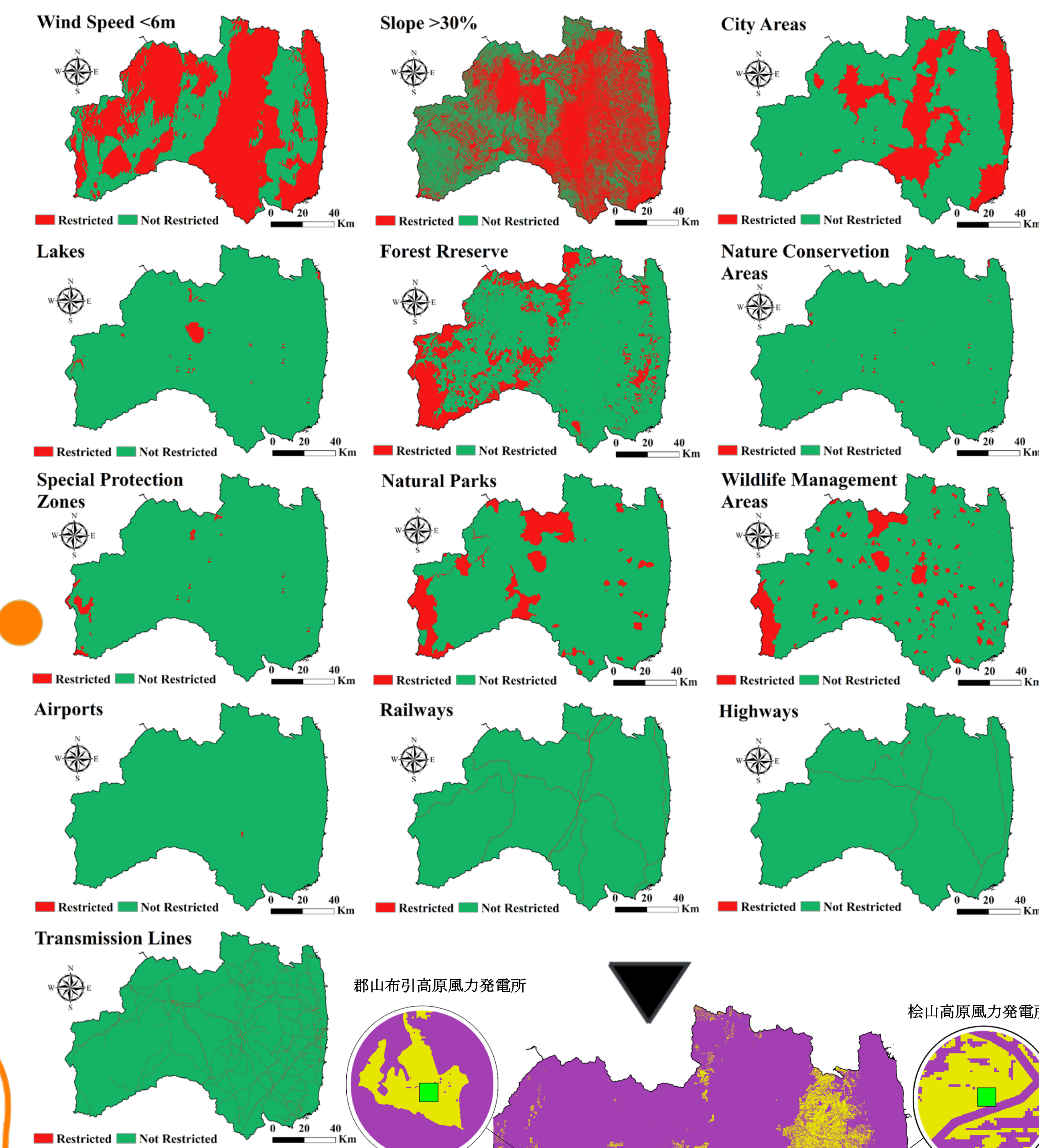


▲ Fig.3: Criteria to take into consideration are classified into three categories: Environmental, Social and Economic.

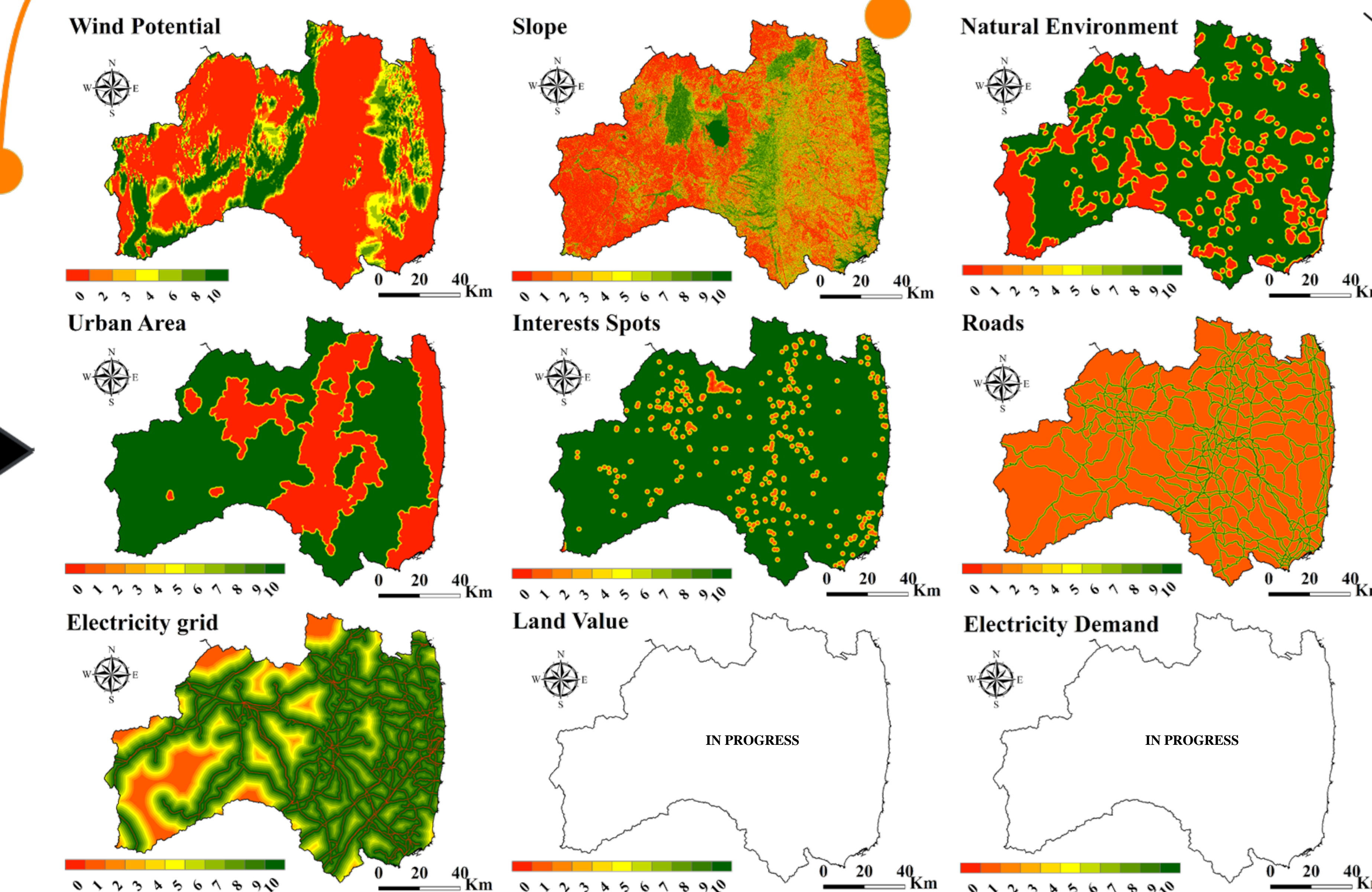
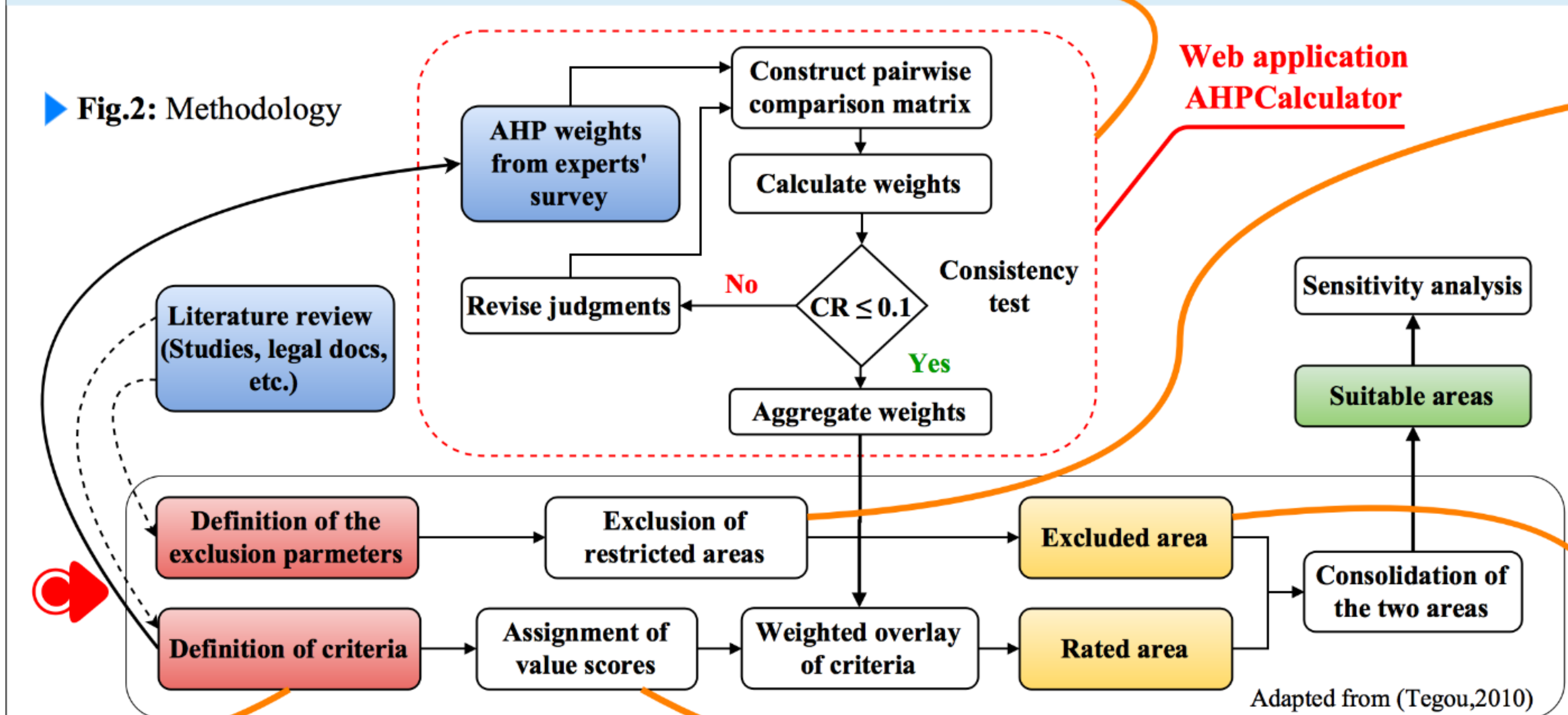
▼ Fig.5: System architecture



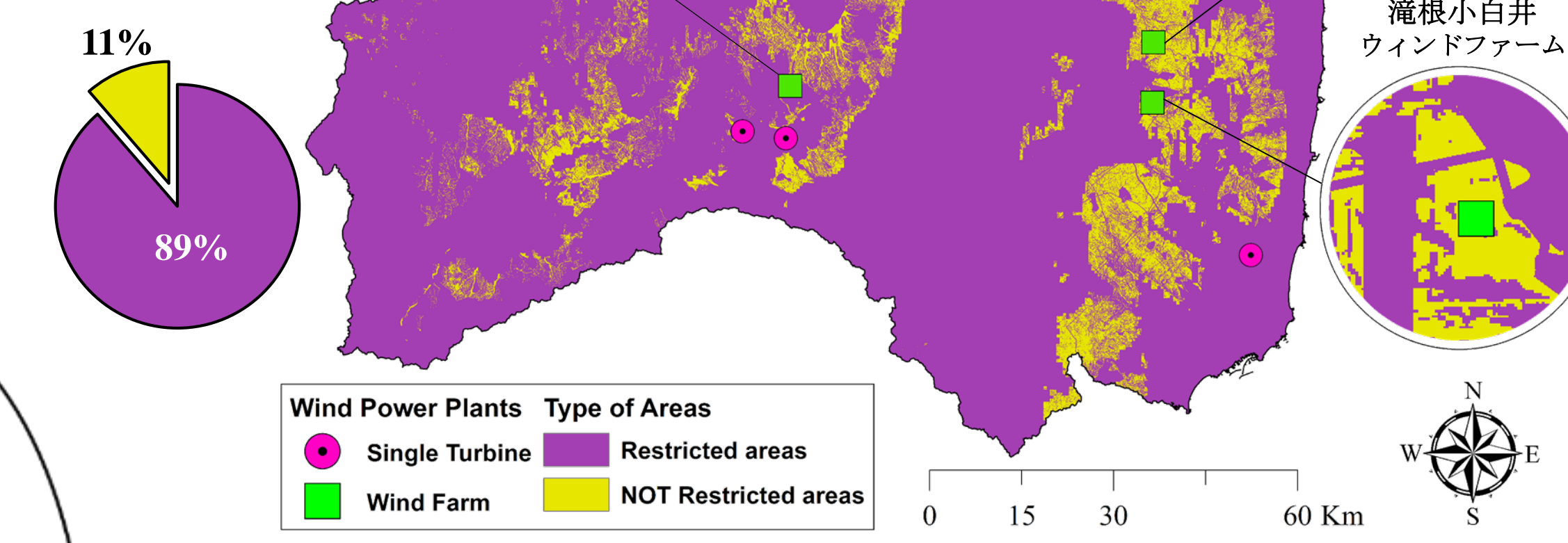
▶ Fig.6: Maps of excluded area for each parameter



IV. Methodological Framework and Results



▶ Fig.4: Reclassified suitability maps according to each criteria



▶ Fig.7: Excluded area map
▶ Chart.2: Percentage of "restricted" and "not restricted" areas

V. Key findings

- **Not restricted areas (Chart.2)** are only 11% of the total area of the prefecture;
- All the **three existing wind farms** in Fukushima prefecture are **within** the zone labeled as "Not restricted" (Fig.7);

VI. Future directions

- To extract the **rated area** after weighting the criteria using experts' judgments;
- To extract **suitability map** by consolidating the "Excluded" and the "Rated" areas;
- To validate the results using **sensitivity analysis**.

Reference

Tegou, L. I., Polatidis, H., & Haralambopoulos, D. A. (2010). Environmental management framework for wind farm siting: Methodology and case study. *Journal of Environmental Management*, 91(11), 2134-2147.