

Comprehensive Assessment of Climate Change Risks for Local Livelihoods and Challenges of Adaptation

地域生活への気候変動リスクの総合的評価と適応への課題



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Risk is determined by

Hazard

ハザード

Exposure

曝露

Vulnerability

脆弱性

Ultraviolet rays (UV)

Risk is determined by

Hazard

Exposure

Vulnerability

Intensity of UV

紫外線の強さ

Amount of UV exposure

紫外線を浴びる量



Ability to take measures

対策をとれる能力

Ease of turning red

赤くなりやすさ

Climate change

Risk is determined by

Hazard

Exposure

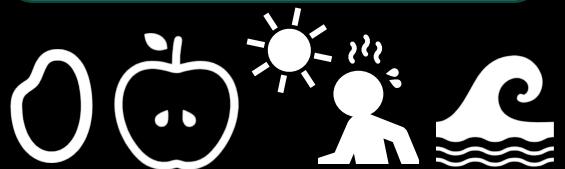
Vulnerability



Climate change

気候変動影響

Climate change
impact



適応能力：対策をとれる能力

Adaptation
ability



曝露量：影響を受ける量

Amount of
exposure



1,741 Local
Municipalities
In Japan

感受性：影響の受けやすさ

Sensitivity



Climate change risk for agriculture

Climate change impact



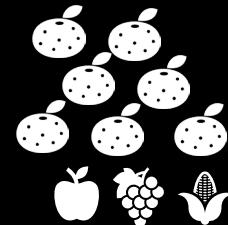
Yield change 収率変化

Amount of exposure



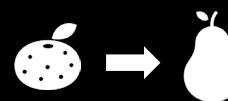
Amount of production 生産量（額）

Sensitivity



Dependency on the crop 当該作物への依存度

Adaptation ability



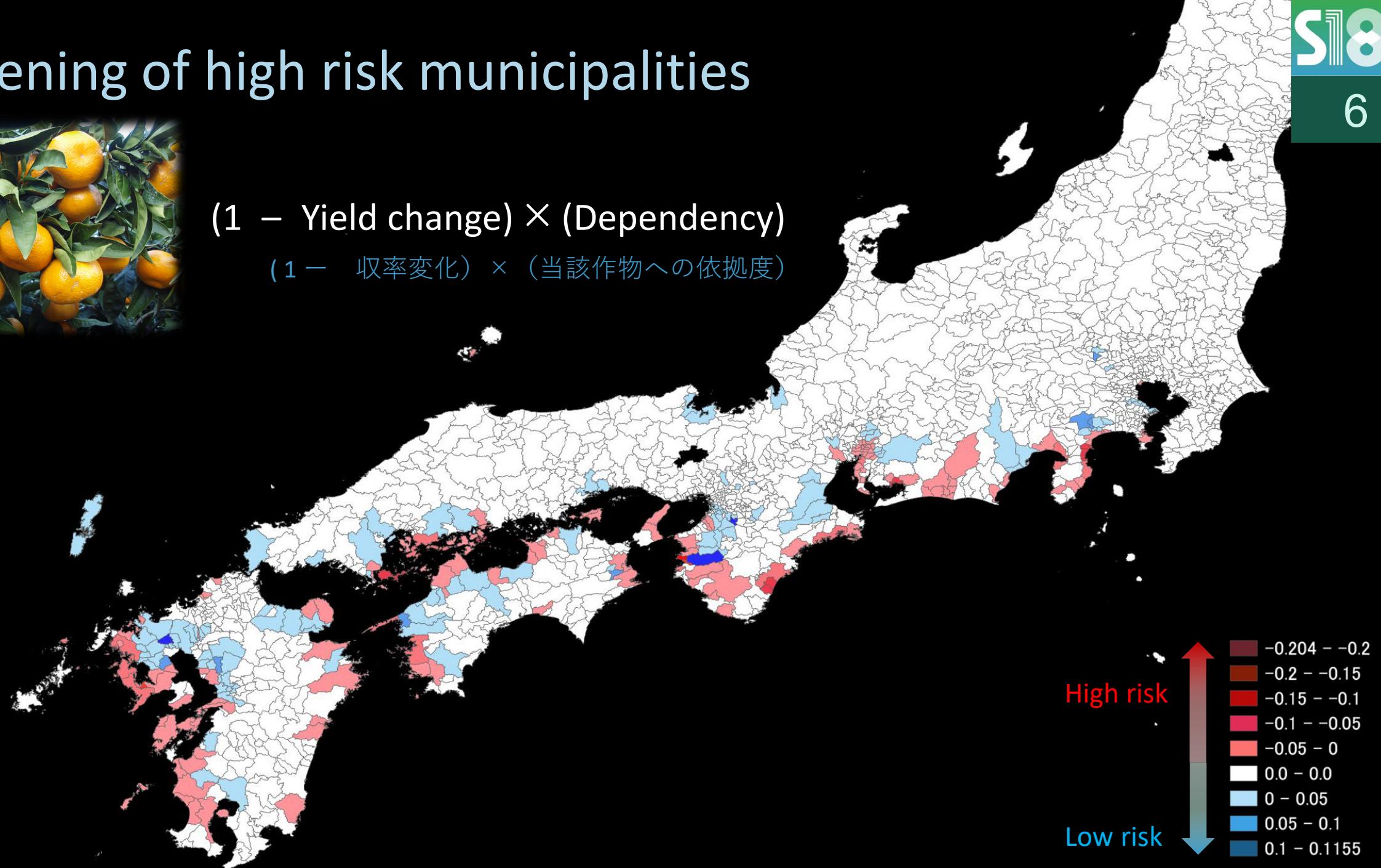
Ease of change 対策の容易さ

Screening of high risk municipalities



$(1 - \text{Yield change}) \times (\text{Dependency})$

(1 - 収率変化) × (当該作物への依拠度)



Climate change risk for agriculture

Climate change impact



Yield change

Amount of exposure



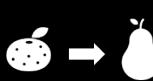
Production

Sensitivity



Dependency on the crop

Adaptation ability



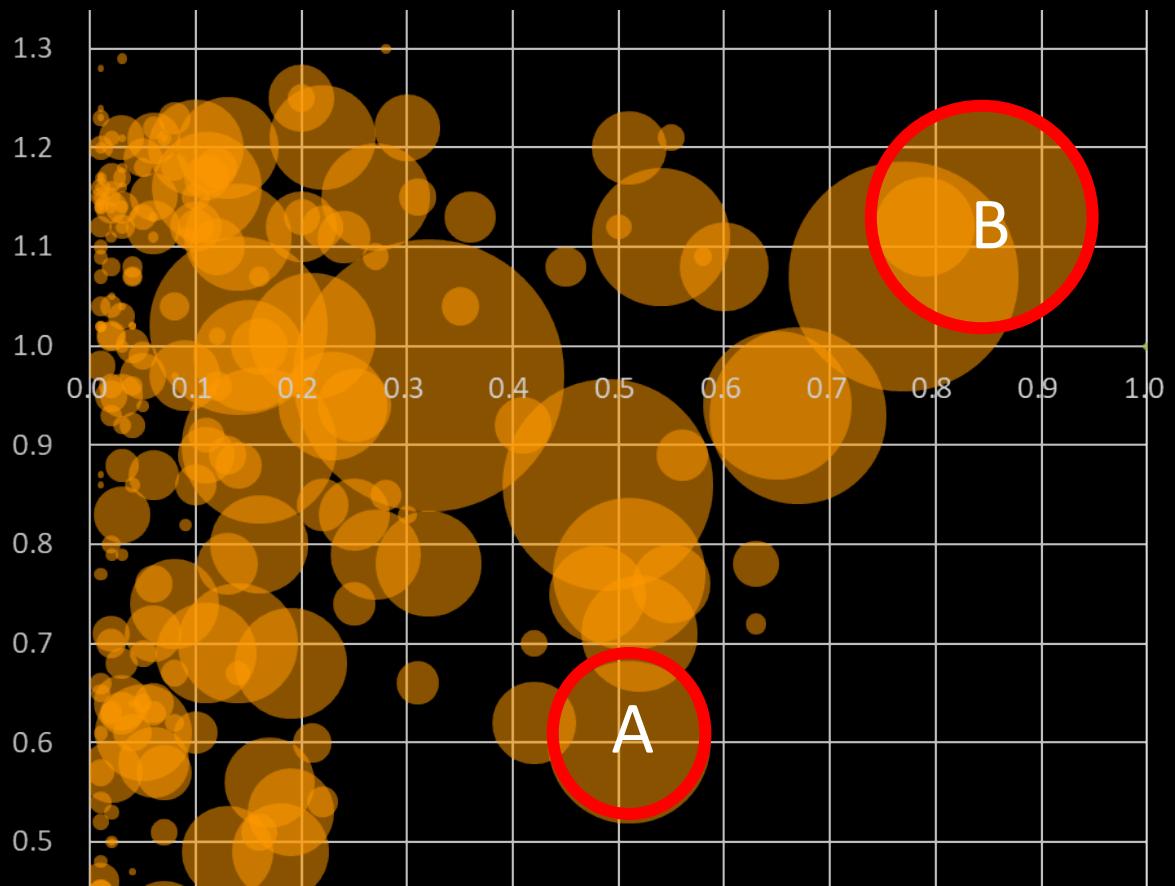
Ease of change

Interviews to the stakeholders 利害関係者へのインタビュー

- Prefecture 県
- City 市
- Japan agricultural cooperatives 農協
- Fruit tree experiment station 果樹試験場

Neighboring municipalities within the same prefecture

同一県内の隣り合う市町村



Climate change risk for agriculture

Adaptation
ability



Ease of change

■ Climate change impacts are multilayered 気候変動の影響は多層的

収率変化

Loss of fruit trees due to disasters
(landslides, etc.)

Yield decline

Increase in heatstroke
among farmers

Aging of farmers, Lack of successor

Population decline, Aging society

災害（土砂災害等）による果樹の損失

農業従事者の熱中症の増加

農業従事者の高齢化, 後継者不足

人口減少, 高齢化社会

Japan Agricultural Cooperatives (JA)

Fruit Tree Experiment Station

Screening of high risk municipalities

Risk score

Climate change



Temperature change
[2076-2095] — [1980-1999]



Precipitation ch
[2076-2095] / [1980-1999]

Climate
change impact



Infectious disease risk change
[2076-2095] / [1980-1999]

Sensitivity



Infant ratio
per population

Elderly Pop. ratio
per population

標準化(Z得点化)

Agricultural production
per capita



Farmers ratio
per population



Non-fireproof wooden
house ratio



Ambulance
arrival time

Adaptation
ability



Producer-age pop.
per population



Recent population
change

Climate change



Climate
change impact



Sensitivity



Fishermen ratio
per population



Forest ratio

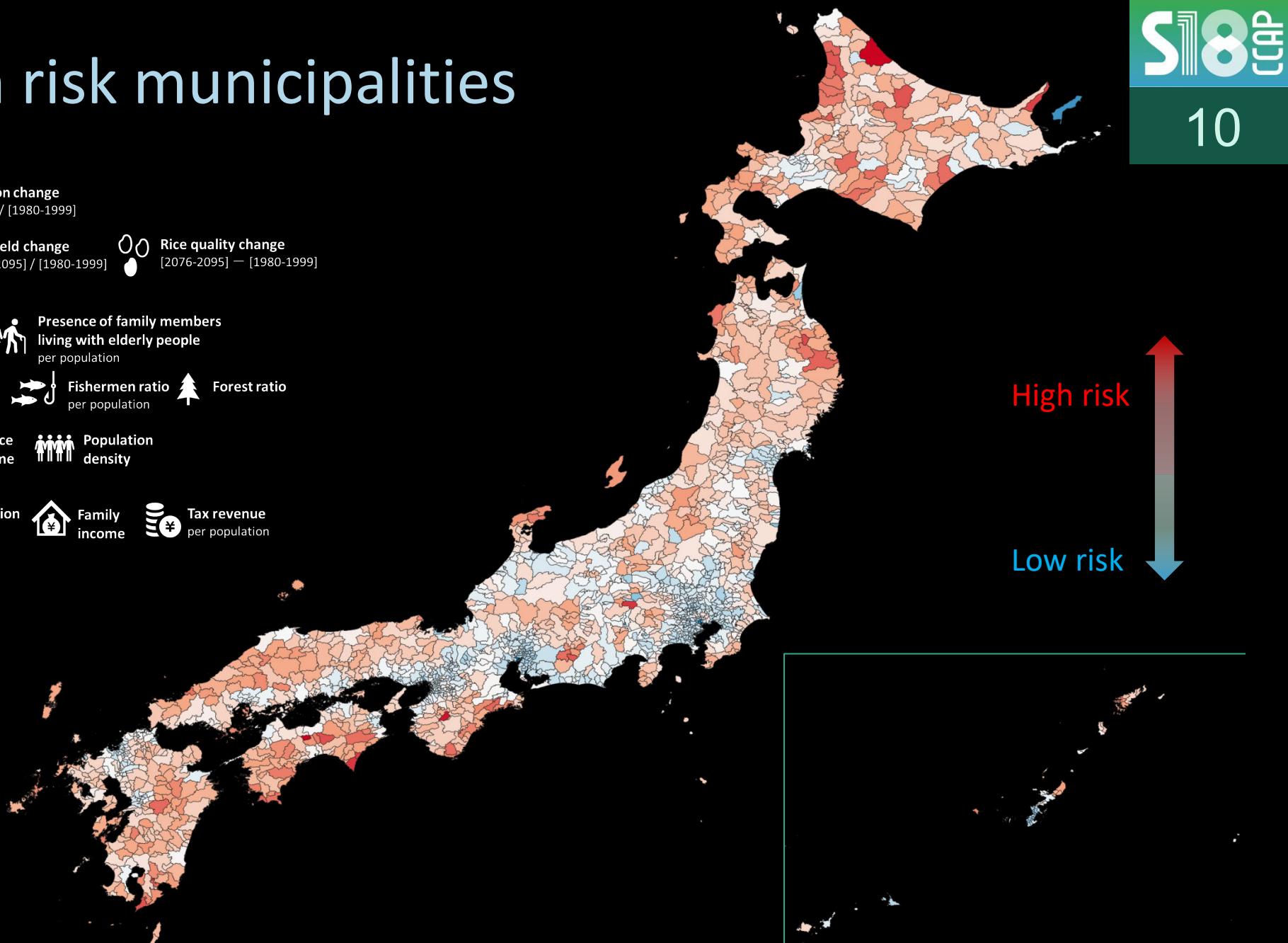
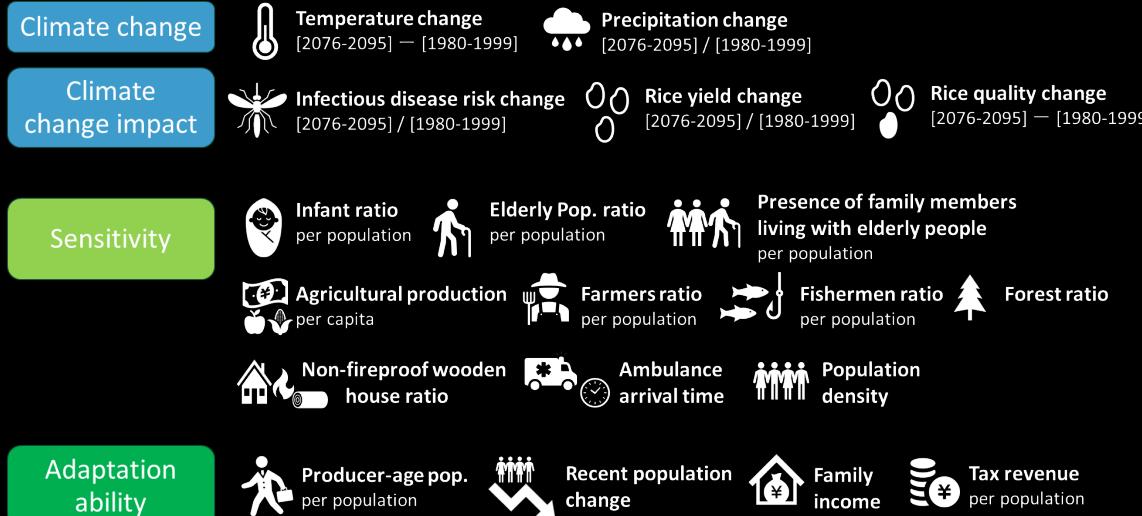


Population
density

Adaptation
ability

Tax revenue
per population

Screening of high risk municipalities



Risk evaluation is just relative comparison

リスク評価（スコア）は相対比較にすぎない

The purpose is screening the high-risk municipalities

目的は高リスクの自治体をスクリーニングするところにある

Selection of indicators and weighting is still in trial stage

指標の選定や重みづけなどはまだ検討途中である

関連研究をポスターでも発表しています



今井 葉子（研究員）

- ◆ Regional Vulnerability Assessment of Climate Change Impacts on Agriculture in Japan



白井 浩介（D3）

- ◆ Climate change impact on quality of life in local municipalities in Japan



竹中 順太郎（M2）

- ◆ Evaluation of Climate-change Adaptation Measures from the Perspective of Co-benefits with Mitigation - Case Study of Logging Trees in River Channel -
- ◆ エキスパートインタビューによる気候変動適応推進のための論点整理



井田 新（M1）

- ◆ 全国自治体におけるハザード・曝露・脆弱性から見た気候変動へのリスクの評価