Seed money project AIJA-POTU

Automated **I**nspection of **JA**panese **PO**tato **TU**ber quality

Seed Money Projecten Internationalisering 2018
Thursday 10th January, Rick van de Zedde

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Introduction

- Rick van de Zedde, 14 years at Wageningen University & Research.

  Senior scientist/ business developer Phenomics and Automation.

- Background: Artificial Intelligence.
  Focus: computer vision/ robotics

- Aim of this presentation:
  To share SMP results and to discuss future options.

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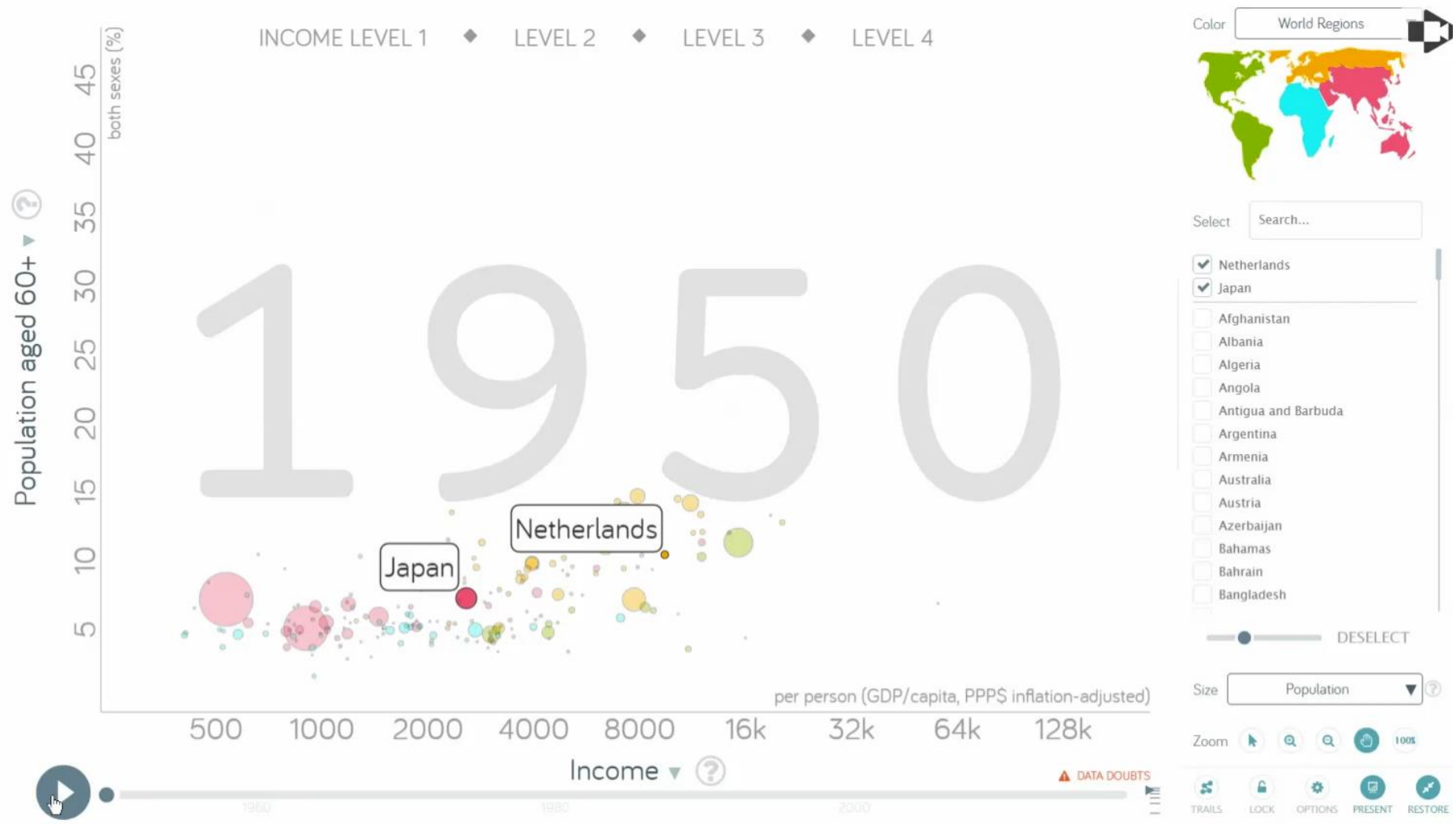
AIJA-POTU project

- **A**utomated **I**nspection of **JA**panese **PO**tato **TU**ber quality
- Seed money project international 2018
- Project coordinator: Rick van de Zedde
- A cross-over SMP between Agri & Food and Horticulture & Starting materials
- The aim of the **AIJA-POTU** project was to explore which NL knowledge and products / technology can be applied in the **Japanese potato sector**, and what has to be done to make this happen (ie. research, promotion, demonstration etc).

GapMinder.org - Income/ population 65+



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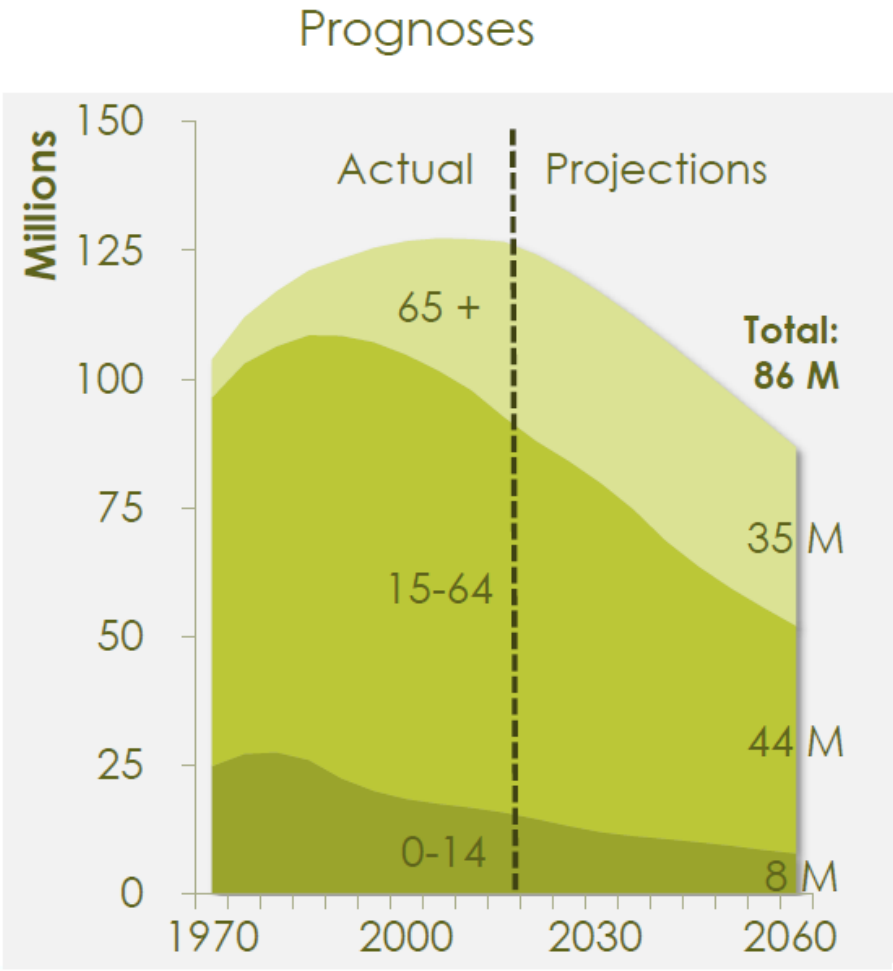
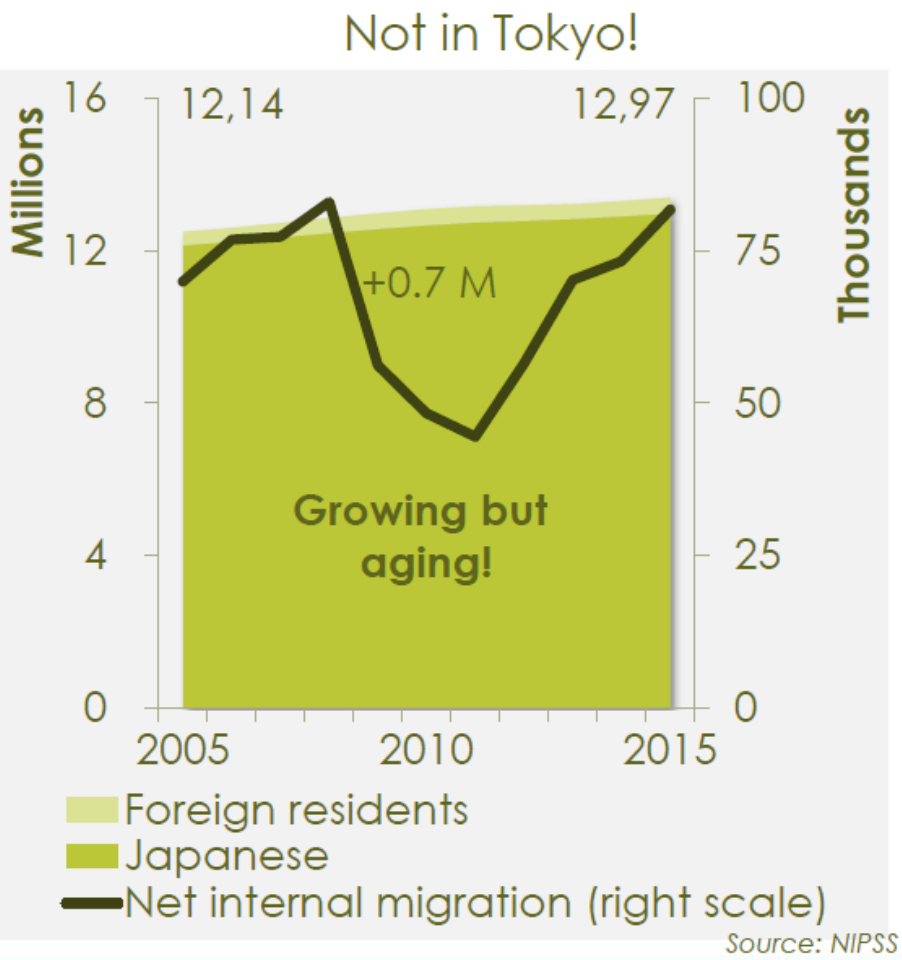
Decrease Japanese population





Source: NIPSS

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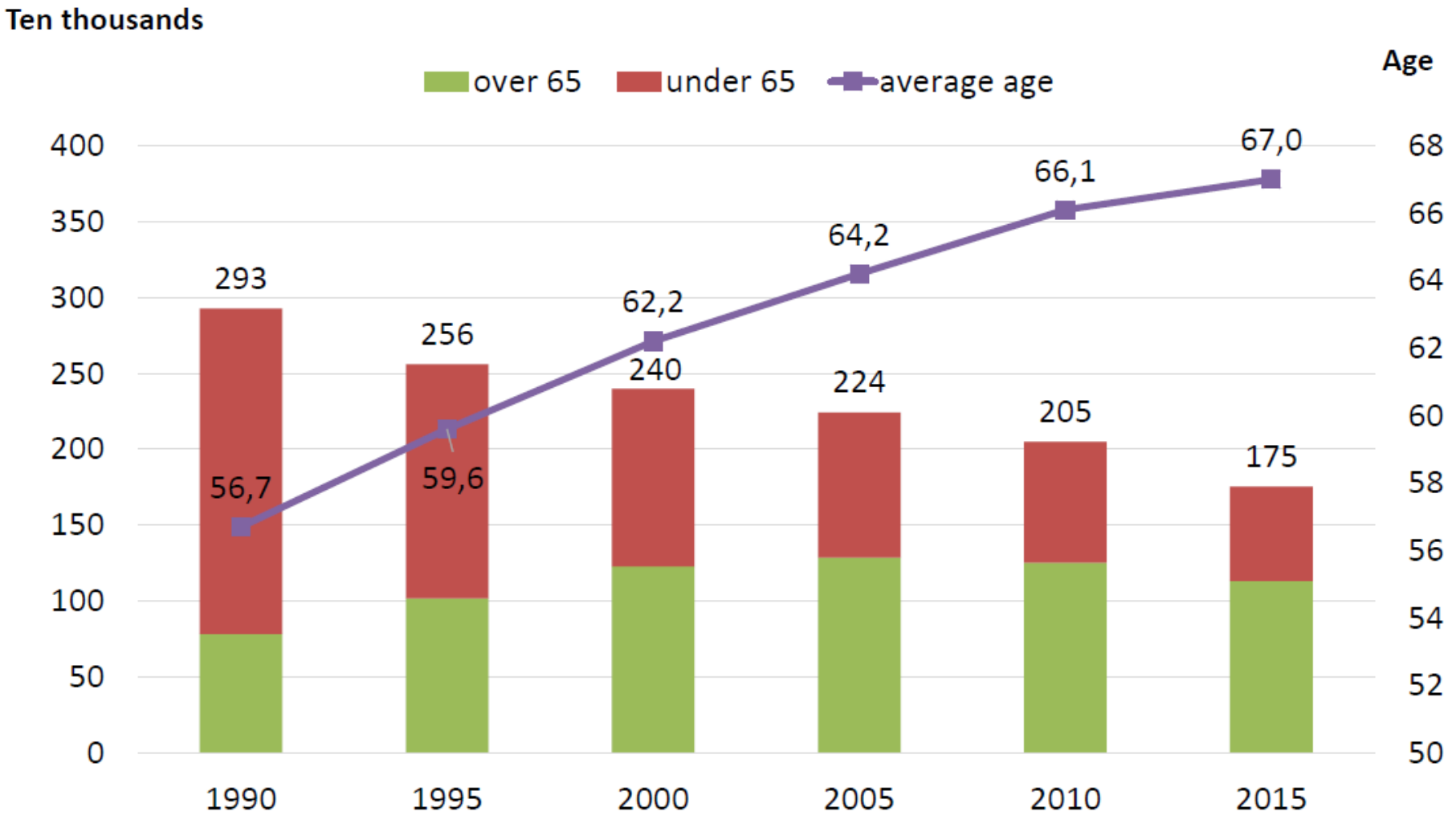
Number of Core farmers mainly engaged in farming / Average age



Source: MAFF "Census of Agriculture and Forestry"

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Challenges within scope of SMP project

- Declining potato yield/ production quantities
- Labour is declining in main region Hokkaido (80%)
    - Ageing (50% farmers above 70), immigrant policy, young generation is focussed on city life.
- Understanding and improving the quality of the potato through the whole production chain
    - Robust/ resistant varieties to diseases
    - Improved logistic chain/ storage

Japanese potato production numbers

- Hokkaido (80% of production of potatoes in Japan): 51.200 ha of potato. Total production Hokkaido: 1.9 mln ton. Yield – ca. 37 ton/ ha (in 2017)
- Average farm size 4 ha/ farm.
- Nr of farmers decreasing, area per farm is expanding.
- Limited nr of varieties planted in Hokkaido
- 1.750.000 farmers in Hokkadio
- Average age of farmer 67 (2015)

Project partners/ active contributors

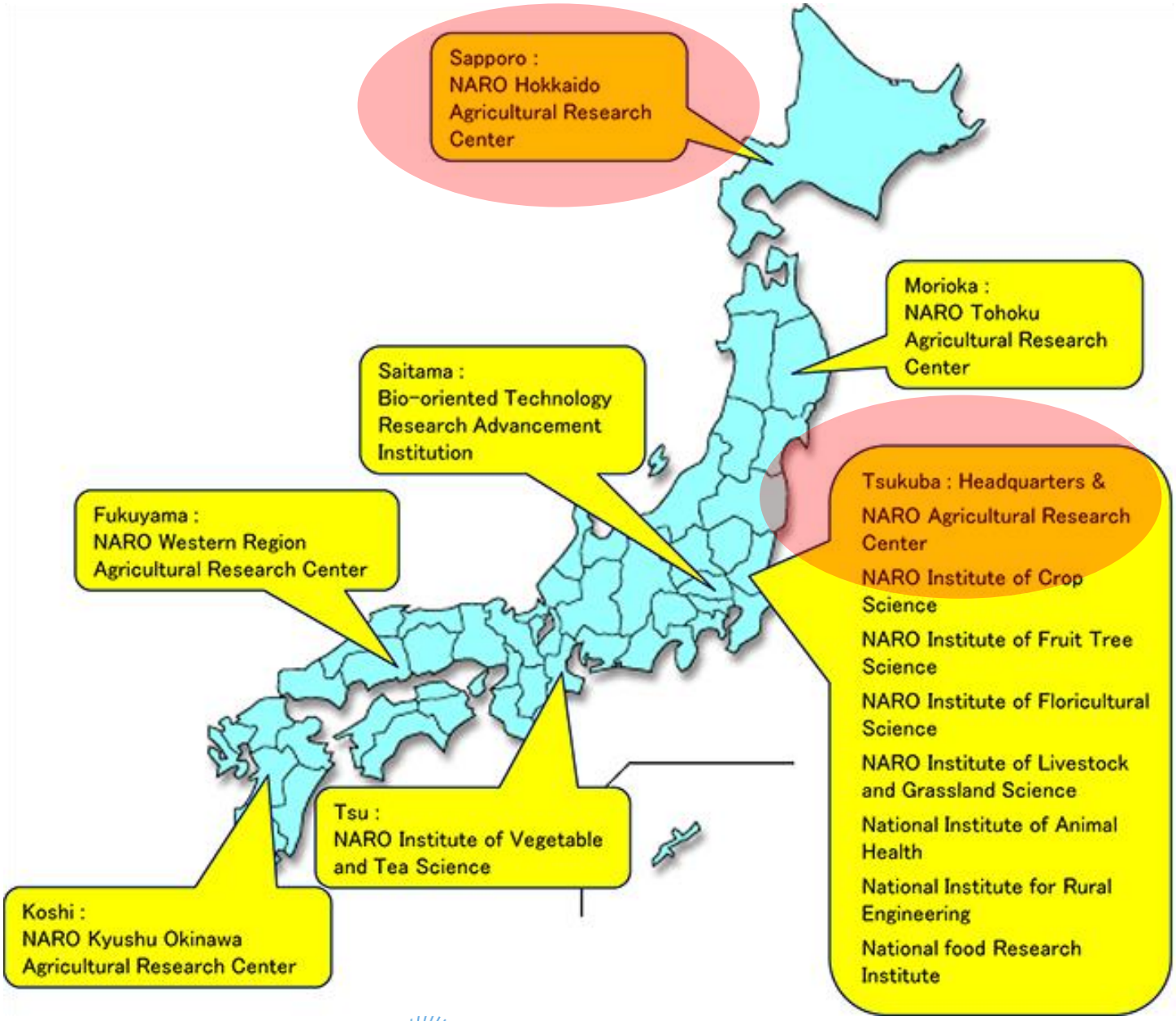
Organisation
Min. BuZa (NL)
NARO (Japan) / WUR (NL)
Tolsma-Grisnich (NL)
NAK Emmeloord (NL)
Kverneland Group (NL)
Agrifirm (NL)/Nu Science (Japan)
Bayer CropScience (NL)
GMV/ FME (NL)
HZPC (NL)
University of Tokyo (Japan)
Murata (Japan)
NTT Data (NL & Japan)
NARO seeds seedling (Japan)
NARO field station drones (Japan)
NARO post-harvest research (Japan)

Project timeline

- April/ Mai – telephone interviews with Dutch partners
- July – Visits/ interviews Japanese partners in Tokyo and Hokkaido, Japan.
- Sept - Feedback/ discussion Dutch partners
- Innovation mission 15-18 October 2018, Hokkaido, Japan) *organized by Dr. E.J. (Evert Jan) Krajenbrink, Agricultural Counsellor, Embassy of the Kingdom of the Netherlands in Japan*
- Nov/ dec - Reporting/ preparation next phase project proposal

Innovative solutions/ insights

- WUR can have a pivoting role in the coordination of knowledge and technology exchange between Japan and The Netherlands to boost cooperation.
- In collaboration with experts/ network on the Japanese research institute NARO funded by Ministry of Agriculture (MAFF) to access Japanese agricultural community
- Need for automation is in Japan of utmost importance to at least keep yield levels stable and to attract next, young generation of Japanese farmers.



NARO

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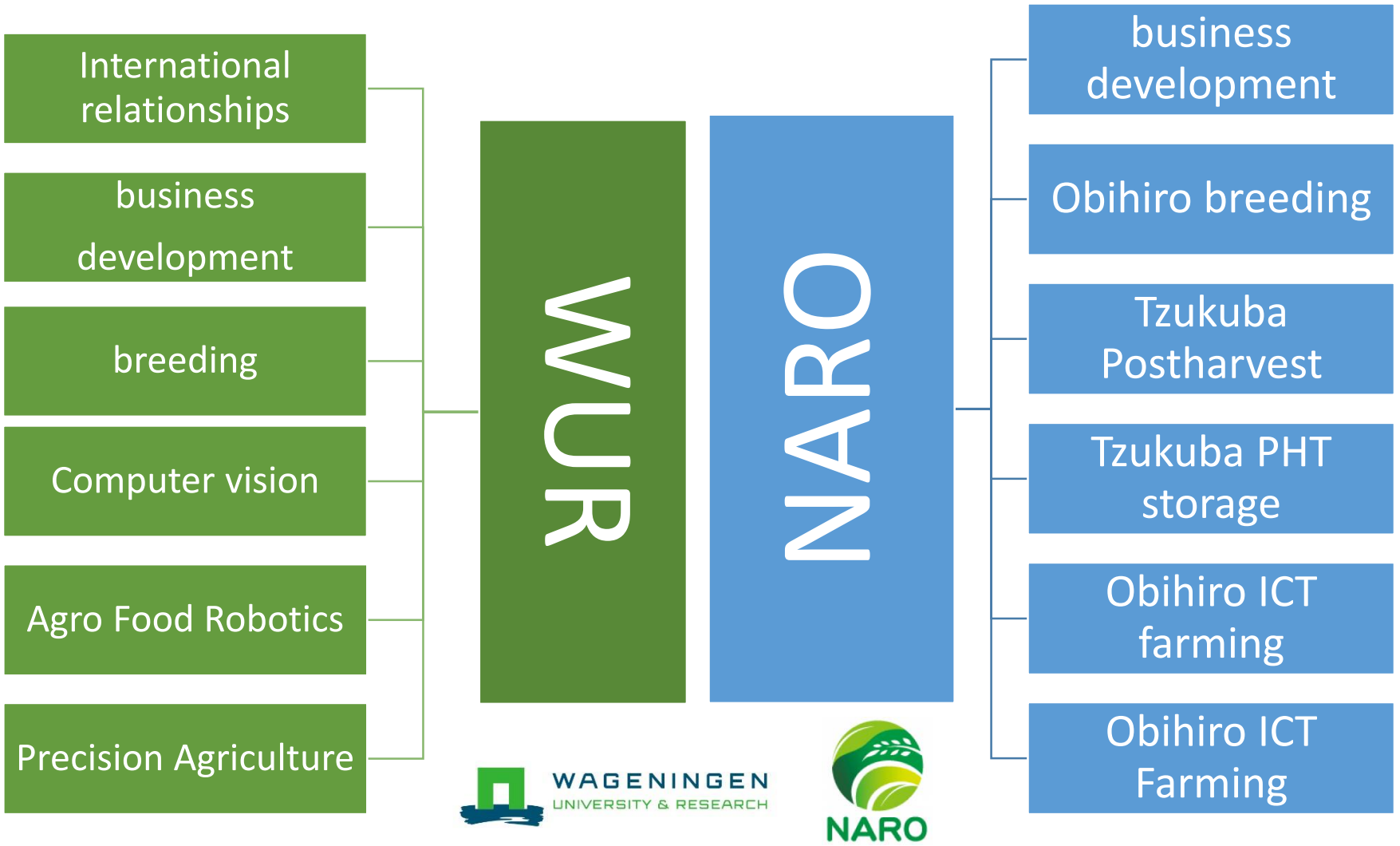
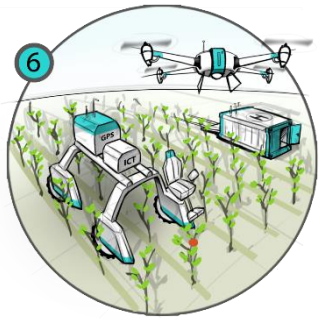
WUR- NARO links and profile



Outline topics follow-up project



- Setup a multi year agricultural 'challenge' with field trials in Hokkaido Japan:

Potato test fields in Hokkaido

(at NARO field station?)

Dutch/ Japanese varieties supplied by partners

Potato & sugar beet

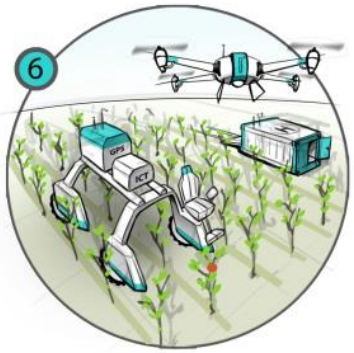
Monitoring with precision agriculture technology from parners

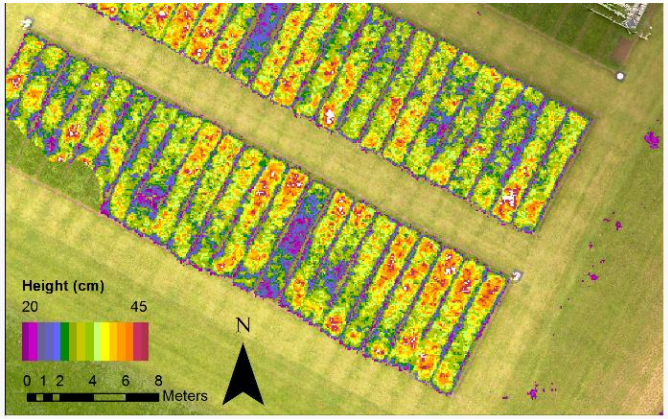
Yield comparison, novel sensors, labour costs, software tools, storage tech

Field trials & precision agriculture

Example: To automatically collect large scale field performance: Plot height (RGB/ LIDAR), plant stress (thermal) & diseases (hyperspectral).

Unmanned aerial and ground vehicles:





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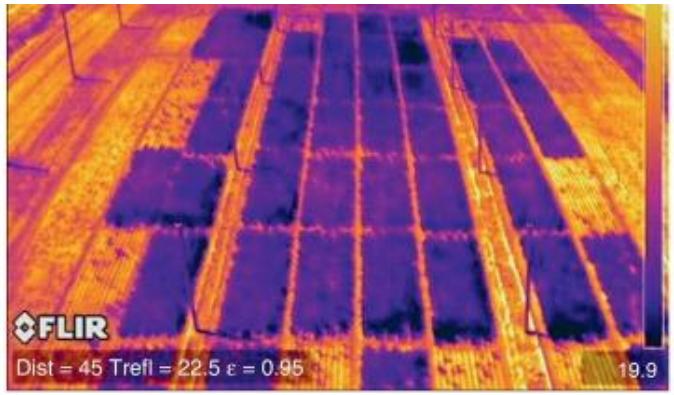

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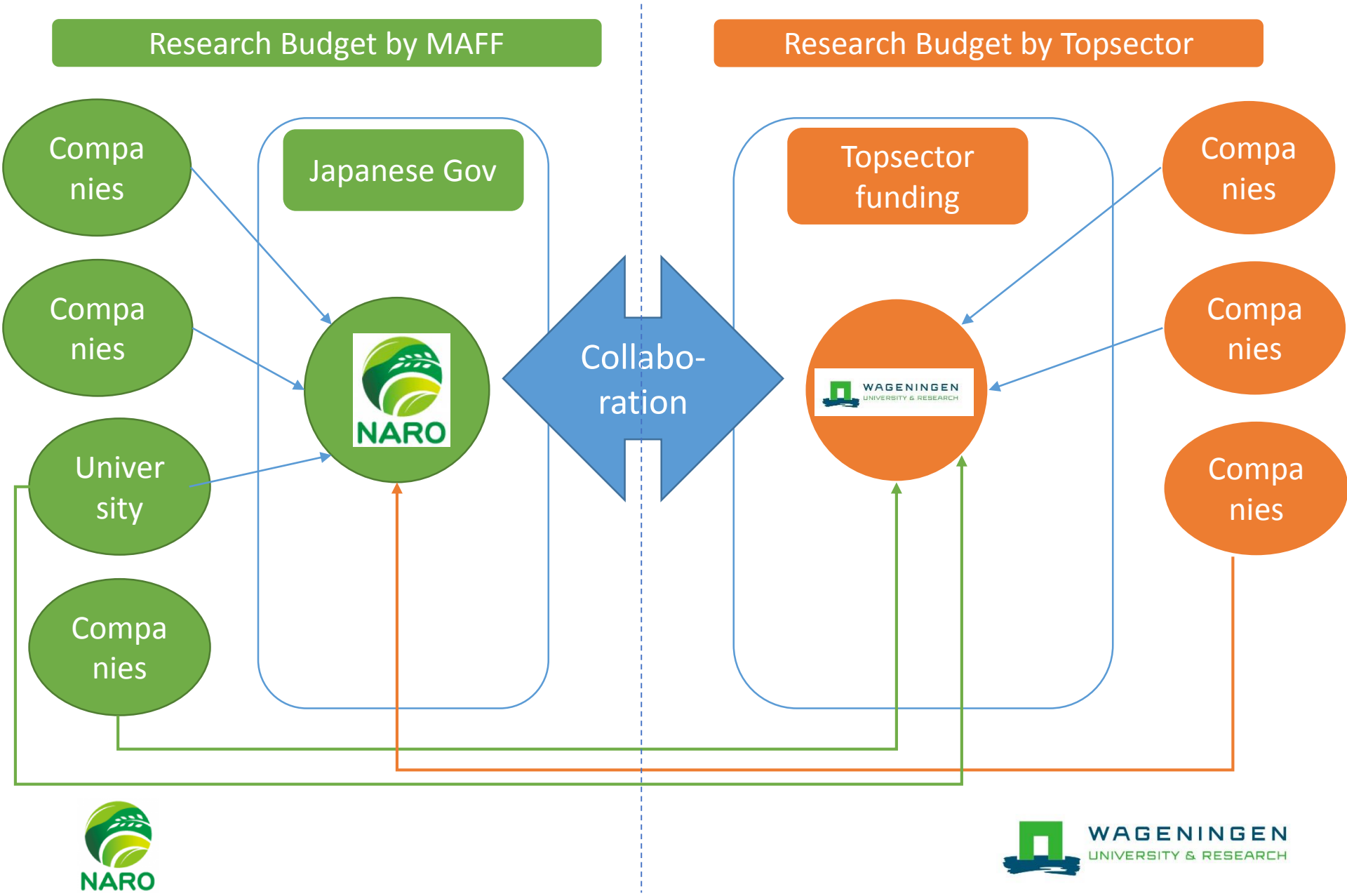
Project management specifics:

- Remaining SMP budget in 2019 will be used to develop the follow-up consortium/ research proposal.
- List of contributors/ potential partners of follow-up project has been extended during the project.
- NARO as research partner in Japan to enable field trials/ links with local industry partners.

AIJA-POTU project follow-up in 2019

- Goal: R&D to enable knowledge and technology exchange between the Netherlands and Japan.
- Setup consortium with Dutch/ Japanese partners in 2019 in a public-private partnership:
  - Scope: variety testing, precision agriculture, automation.
  - To introduce automation/ more data-driven software approach in agriculture in Japan
  - Adapt Dutch technology/ products to Japanese market
  - Training and education of high-tech equipment for Japanese farmers (focus on young and next generation)
  - Yearly exchange missions

Fundamental Frame work of NARO-WUR Collaboration



NARO

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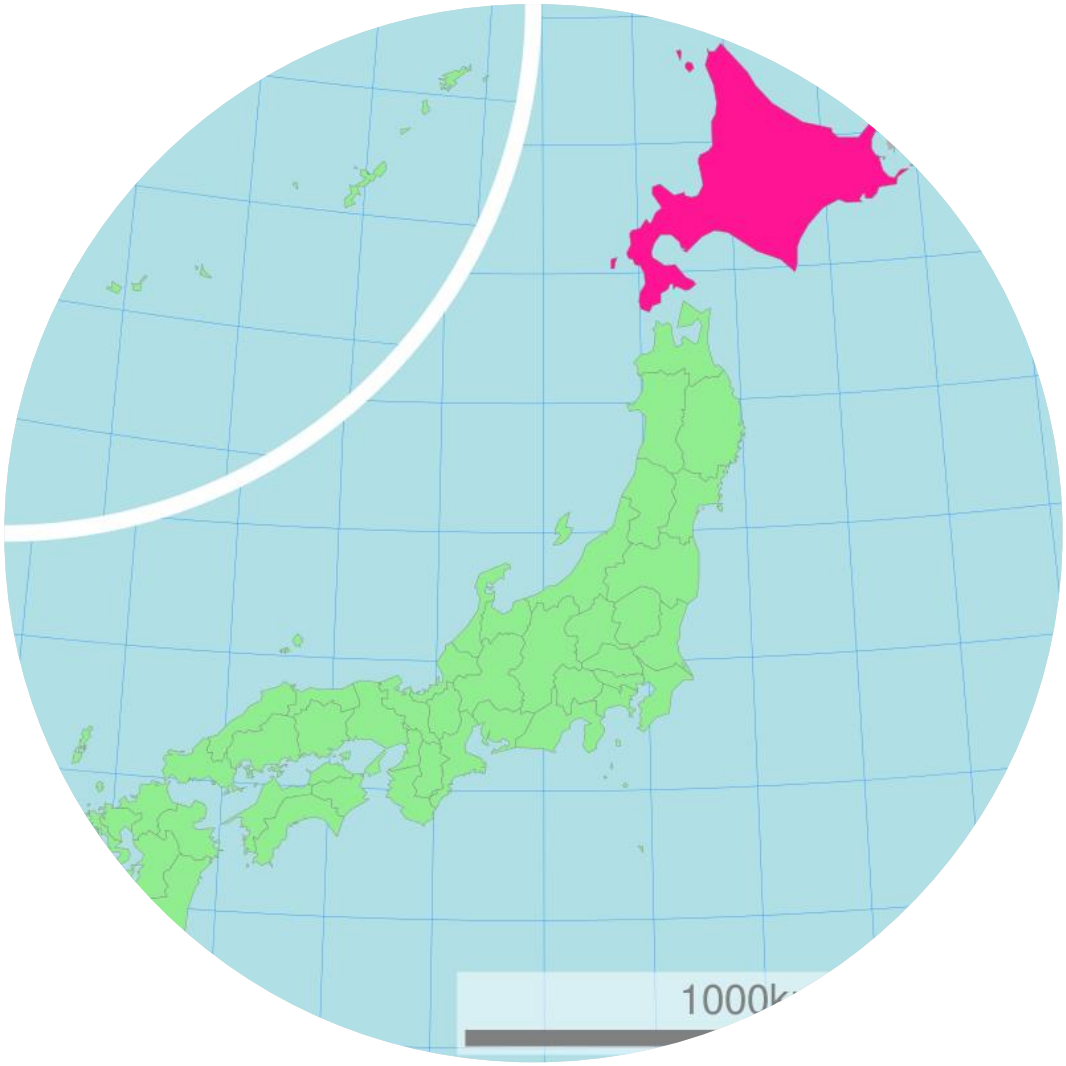
The end !

Thank you!

Questions?



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