April 26, 2024
Tokuron-1/IPADS Development Studies(2024)

Agricultural Engineering

-Production system, Infrastructure, Irrigation-

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What is this?

TOYOTA is leading Japan ?

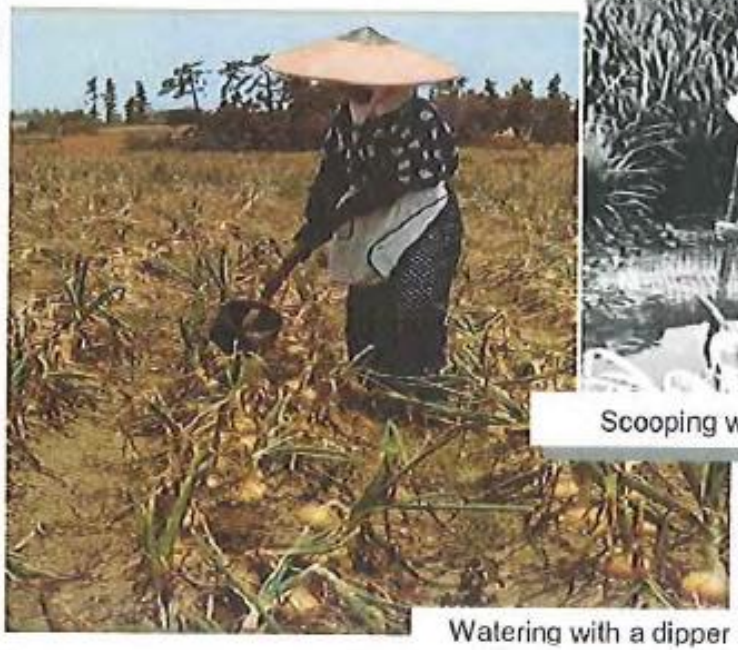
Before the Project

1）Frequent droughts

With no perennial river to draw water from, farmers would depend on unpredictable rainfall and numerous ponds.

13,000 ponds in 33,000 ha of the project area

Watching on the night



Watering with a dipper

Scooping water from a well

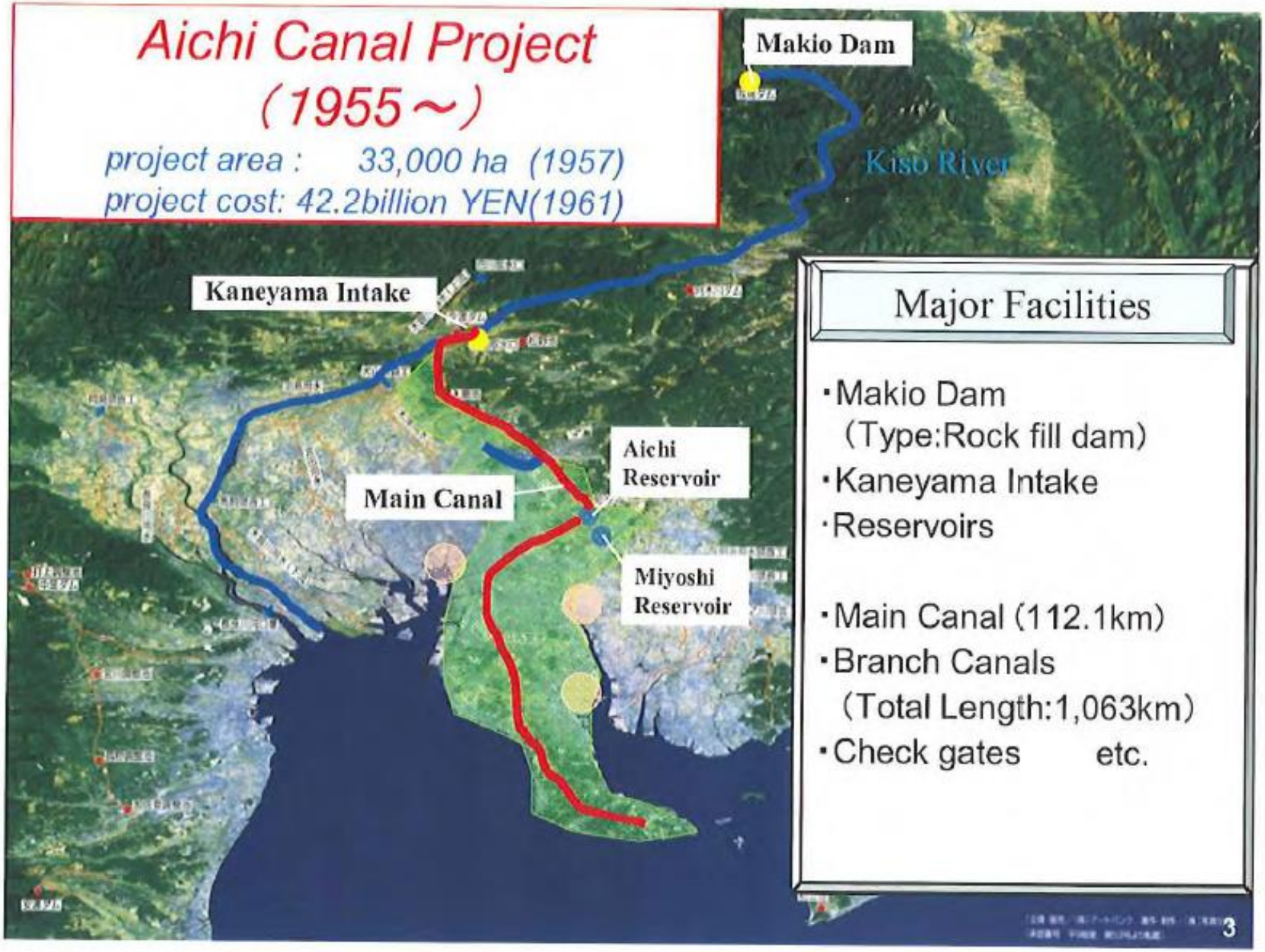
After the web page of 愛知用水総合管理所

Question-1

Why did this area develop?
Who developed this area?

- Group discussion (5 min)-

- Decide on a captain
- Introduce each other
- Discuss
- Summarize the discussion points



After the web page of 愛知用水総合管理所

See Movie (20')

Question-2

What is the most interesting point for you? Discuss and share in your group and report it 15 min later.

- Group discussion (15 min)-

- Discuss
- Summarize the discussion points

Important points of agricultural development project

- Integrated knowledges are required
  - Not only individual knowledge
  - Team work of politics, economy, technology
- Time and space
  - Learn from history
  - Effective use of local resources (soil and water)
- Combination study of public policy and technology
  - What should we do with social capital now?

Land Improvement Projects
（土地改良事業／農業農村整備事業）

JSIDRE (1995)

Definition of land improvement projects in Japan

- MAFF(Ministry of Agriculture Forestry and Fisheries) is responsible for projects to cultivate virgin land, develop agricultural land, consolidate agricultural land plots or construct irrigation and drainage facilities
  - including reservoirs, barrages, pump stations, canals, etc. for improving agricultural productivity
  - constructing infrastructures in rural areas as community roads, domestic water supply systems, sewerage systems

- Such projects are called
  - （土地改良事業）“Tochi Kairyo Project Systems“= “Land Improvement Project Systems”
  - （農業基盤整備事業）“Nogyo Kiban Seibi Project Systems“= “Agricultural Infrastructure Improvement Systems"
  - （農業土木事業）"Nogyo Doboku Project Systems" = "Agricultural Civil Engineering Project Systems"

Land Improvement Project (1)
（土地改良事業）

- Land improvement projects are carried out under a law called the Land Improvement Law. （土地改良法）
- This law was initially enacted and enforced in 1949.

Purposes and Benefits:

(1) increase land and labor productivities （土地･労働生産性）

(2) increase total agricultural production（収量）

(3) improve the agricultural structure by diversification

（多様化による農業構造改善）

Land Improvement Project (2)

Menu of land improvement:

1. Irrigation and drainage（かんがい排水）
2. Agricultural land consolidation（圃場整備）
3. Farm and rural roads（農道）
4. Comprehensive development of non-paddy agricultural land（水田以外の農地総合開発）
5. Comprehensive development of rural areas（農村総合開発）
6. Disaster protection（防災）
7. Reclamation of agricultural land（開拓）
8. Reclamation from sea or lake bottom（干拓）

Characteristics of Land Improvement Project in Japan

- Various menus are provided in term of contents and benefits of facilities
- The main body to implement a land improvement project is either the national government, a prefecture, or a Land Improvement District （土地改良区）
- The costs of land improvement projects are paid by the beneficiaries （受益者）
  - Part of the costs is paid by the farmers who are the direct beneficiaries
- Facilities to be constructed by projects of the same type have to be standardized throughout the country
- "Cost Benefit Ratio" (BC Ratio) is used as the criterion to judge the economical feasibility of land improvement projects

Conclusions on land improvement

- Agricultural Infrastructure Improvements are public work projects　農業基盤整備は公共事業
  - Application projects　申請事業
  - Need Consensus building　合意形成
  - Take a long time　時間がかかる
- The Spirit of Agricultural Engineering　農業土木の神髄
  - Comprehensive agricultural development technology 総合的な農業開発技術
  - Management of soil and water　水土の管理
  - Improvement of QOL supported by the technology　生活の質の向上
  - Interaction between urban and rural areas　都市と農村の交流

There are a lot of human dramas behind our improved land.

An application of agricultural engineering for Fukushima reborn

I continue to go to Fukushima for 13 years!

Challenge to solve the problems that lie in front of us

- What is the problem?
  - Find and set the right question
- How do we solve the problem?

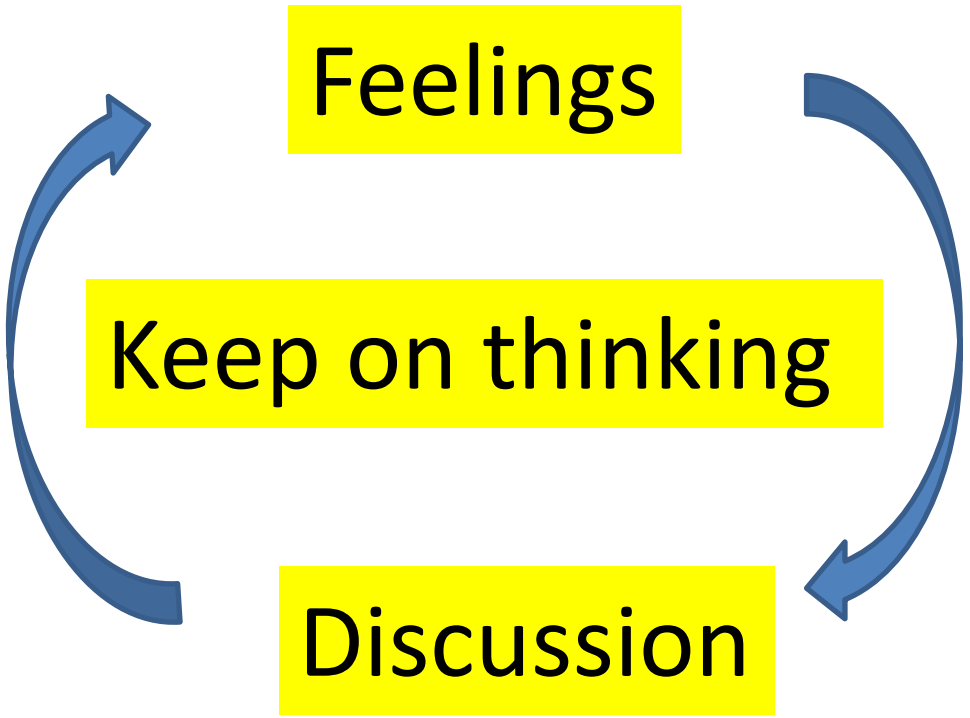
Project-Z by Mizo

Theory and Practice

- Notice the gap between theory and practice
- Understand the theory (Science)
  - Mathematics, physics, chemistry, biology, ecology,,,
  - Sociology, economics, political science,,,
- Know the practice (experience)
  - Field survey, interview, job training, internship,,,,

Where does the idea come from?

- Lecture?
- Book?
- TV?
- Internet?
- Practice?



To see real fields by myself is most important!

Let’s watch movies and discuss!

- Made in Fukushima
  - https://www.madeinfukushima.com/
  - https://www.iai.ga.a.u-tokyo.ac.jp/mizo/lecture/noukoku-1/2024/Made_in_Fukushima.pdf

- **FUKUSHIMA REBORN**
  - https://www.metergroup.com/environment-case-studies/fukushima-reborn/

- The Rebirth of Fukushima
  - http://www.iai.ga.a.u-tokyo.ac.jp/mizo/edrp/fukushima/media/The%20Rebirth%20of%20Fukushima-HD.mp4

Question-3

If you go to Fukushima as a member of group work of this lecture, what do you want to investigate?

- Group discussion (15 min)-

- Discuss
- Summarize the discussion points

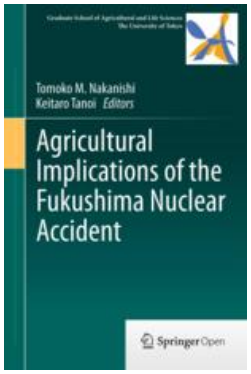
Homework
レポート課題

- Submit a written plan of what you would like to investigate by actually going to Fukushima, referring to reference literature and web pages, such as http://www.iai.ga.a.u-tokyo.ac.jp/mizo/publec/201119Harvard.pdf.

- 参考文献やWebページを参考にして、福島に実際に行って調べたいことを計画書として提出しなさい。

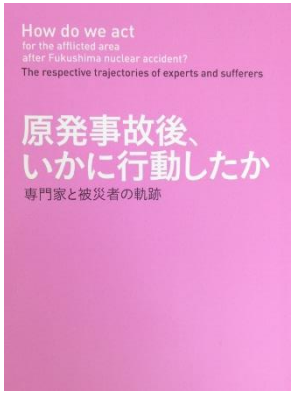
Deadline: May 10, Friday

To: UTOL



References on Fukushima Projects by Mizo

http://www.iai.ga.a.u-tokyo.ac.jp/mizo/edrp/fukushima/Fukushima_articles.html



References on Land Improvement

- http://www.water.go.jp/chubu/aityosui/a(jyouhou-sub)/06(english)/a_06.html
- IRRIGATION AND DRAINAGE IN JAPAN (3rd Edition), International Affairs Commission of The Japanese Society of Irrigation, Drainage and Reclamation Engineering (1995)
- IRRIGATION AND DRAINAGE IN JAPAN PICTRAL(3rd Edition), International Affairs Commission of The Japanese Society of Irrigation, Drainage and Reclamation Engineering (1995)
- http://suido-ishizue.jp/

Agricultural engineering for Reconstruction

- Prof. Hidesaburo Ueno
  - Owner of Hachiko dog
  - Professor at Univ. of Tokyo
    - Law of Land consolidation(1900)
    - Lecture of Land consolidation (1905)
- Agricultural engineering
  - Infrastructure of food production
  - Barren land to fertile farmland
  - Land reclamation
  - Irrigation and drainage
  - Farmland decontamination
- Land use after decontamination
  - Rural plan after villagers return

(2015.3.8)

Thank you for your attention

https://forms.gle/EGwdd9iTYgYh38dN6

Let’s go to Jingu stadium to OUEN on May 5, Sunday!