

プロジェクト概要

統合的水資源管理のための「水土の知」を設える  
Designing Local Framework of  
Integrated Water Resources Management



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Second Phase of RIHN (2010~)

“Designing the future society”

- Beyond analyzing the relationship between humanity and nature
- Going to challenge to establishing the new paradigms of environmental thoughts, or designing the “furable” society
  - Development of methodology
  - Humanics; consilience for futurability
  - Public and academic communications

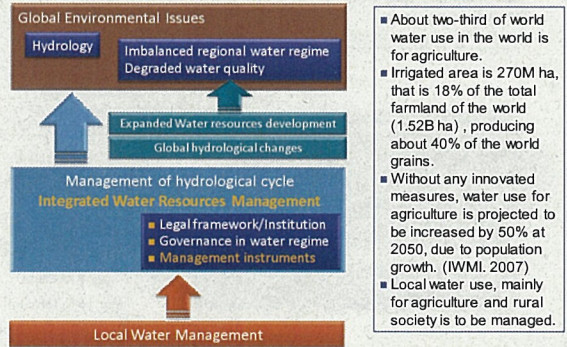
Furable Society

- maintaining “circulation”
- developing “diversity”
- creating “relatedness”

Questions

- Are three elements, “circulation”, “diversity”, and “relatedness”, essential to the “furable society”?
- What are their desirable conditions and contents?

Global Water Management Issues and IWRM as key measure to them



Goal of the Project

Goal of Project C-09



Outcomes of the completed and on-going RIHN Projects

- Designing “Local Water Management Framework”
  - For the development of an infrastructure for efficient and resource-saving food production, and
  - For the provision of possible measures to solve the global environmental problems induced by lack of water management.
- Local water management
  - key for solving problems of imbalanced regional water regime and degraded water quality. (C-03, R-01, R-02, E-01)
  - Major aspects for further researches
    - Impacts of local water management on regional environment (C-01, C-03, C-04, R-01, R-03, H-01)
    - Hierarchical structure of management organization for basin water resources management (E-01, C-03)
    - Well function of water management organization for adapting to the global changes (C-01, R-01)

Local Water Management System

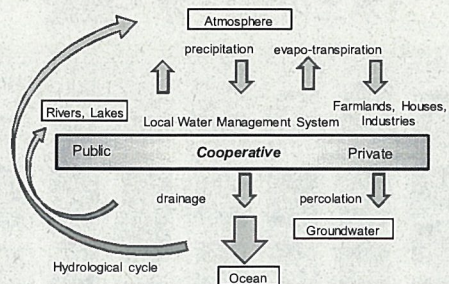


Fig. Conceptual Diagram of Local Water Management System

Furable system of local resources management  
“cooperation” “commons”

## Questions of the Project

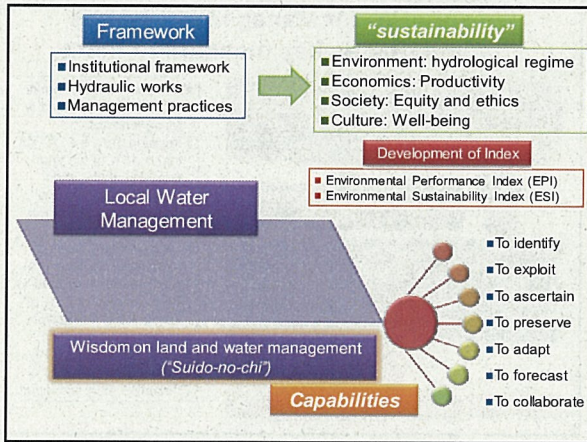
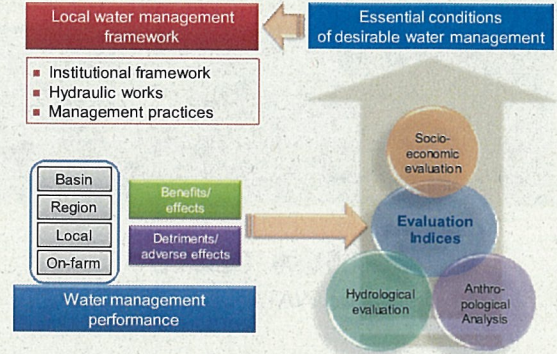
### Central Questions

- What are essential conditions or requisites of local framework of water management?

### Research Questions

- What is the desirable water management?
- How can we evaluate appropriateness of irrigation?
- What is the convivial cooperation for water management?
- Does convivial cooperation improve water management and perform primary role for desirable water management?

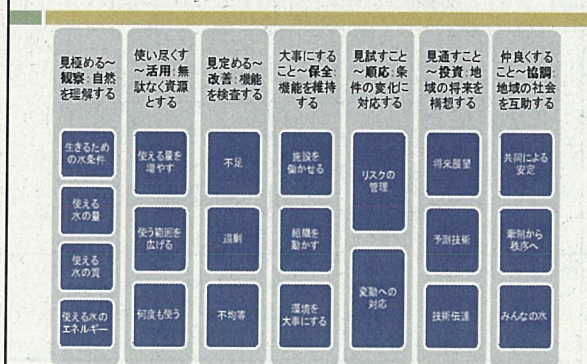
## Methodology



## 《水土の知》

- 水とどのようにつきあうのか、自然の水の循環をどのように調整するかは、地域における人と自然の関わり、すなわち社会や文化の根幹を築く。
- 水に限らず、地域の自然環境と、それに適応し、積極的に働きかけていく人間の営みがつくり出す「環境の総体」を《水土》ということにする。 cf.「風土」
- 営みや結果としてできあがる土地利用、施設や装置とその配置、これらを築き運用管理していく技能や技術、担う体制や組織、人材育成なども含む体系である。
- 水条件を調整する技術と組織の体系としての「水利」は、《水土》を構成する「知」と認識できる。《水土の知》

## 《水土の知》～水～機能



## Main Case Study Areas

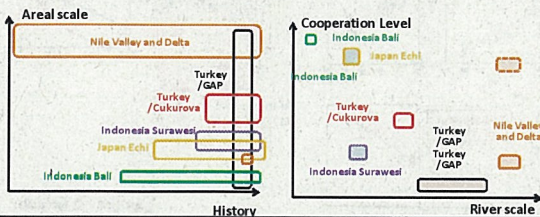


- GAP Region of southeast Turkey
- Çukurova Region of Turkey
- Nile Valley and Delta of Egypt
- Bali Island of Indonesia
- South Sulawesi or Sumatra Islands of Indonesia
- Echigawa Region of Japan
- Zhanghe Region of China

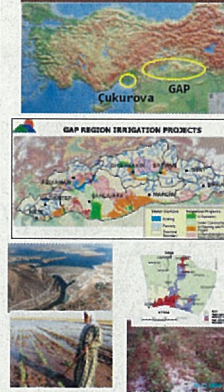
- Topography
- Hydrology
- Meteorology
- Area scale
- History of the system
- Recent development progress

## Main Case Study Areas

- Focusing on different aspects of water management systems, including the establishment process, spatial scale, and other background circumstances.
- The major case study areas are selected according to the conditions of topography, hydrology, meteorology of the region, scale and history of the system, and recent development progress:

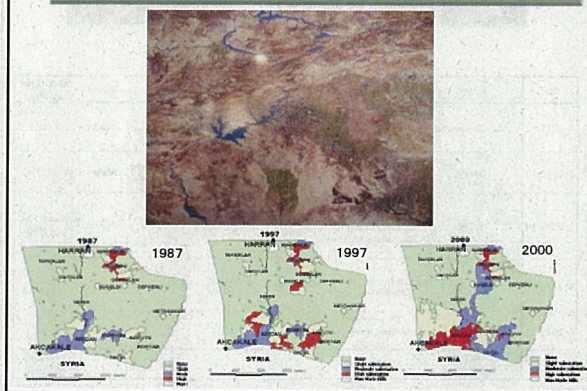


## GAP Region of Southeast Turkey



- Southeast Anatolia Development Project
- Annual Precipitation: 300-1000mm
- On-going large-scale water resources development and expansion of irrigation
  - 22 large reservoirs
  - Irrigation for 1.8Mha
  - 270,000ha irrigated
- Changes in cropping system according to expansion of irrigation
- Expansion of area with soil salinity
- Traditional water use and impacts of irrigation
- Possible comparative studies in the project area
- Development of water management organizations
- Future plan of land and water management (GAP authority)

## Soil Salinization in the GAP Region



## Nile Valley and Delta of Egypt



- 2.9M ha of irrigated areas
- No/Zero effective rainfall
- Long history of use of the Nile water with more than 5000 years
- "Sustainable" basin irrigation
  - Changes in the long history
  - Influences of variable discharge
- Modernization from 19C
  - Diversion and perennial irrigation
  - Construction of the Aswan High Dam and artificial regulated river flow
- Changes of flood damage and expansion of soil salinity
- Reconstruction of hydrological regime and farmland conditions
- Long-term water management vision of NWRC

Bu Hiroshi KATOH

Sub-surface drain

## Bali and South Sulawesi of Indonesia

### Bali

- Subak: traditional water use system
- Annual precipitation: 2,300mm
- Paddy: 90,000 ha, harvested :170,000ha
- Agriculture and society adapting to climate and topography
- Culture and governmental policy
- Detailed studies in 1990s by Mizutani and Kayane, and recent changes
- Proto type of cooperative irrigation system
- Collaboration with Udayana University



### South Sulawesi

- Governmental Projects
- Japan's ODA
- Modern system development on the traditional system
- Empowerment of water users association
- Activities of NGO
- Proposal of water management improvement
- Collaboration with Hasanuddin University

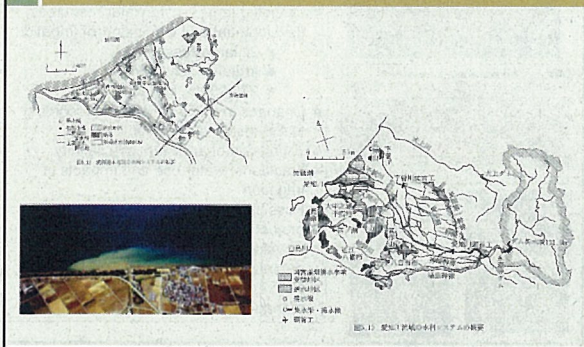


## Koto Region of Shiga Prefecture, Japan

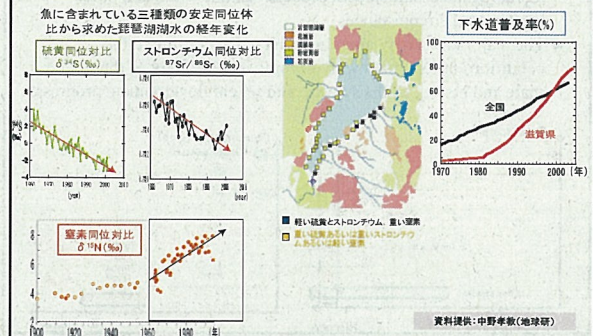


- 愛知川地域中心
- 年降水量1400mm
- 歴史的農地拡大・灌漑施設整備
- 国営農業水利事業・琵琶湖総合開発事業
- 水管理範囲の広域化、広域管理組織形成、複雑な水源・送配水系統
- 琵琶湖との関係
- 地球研プロジェクトE-01(PL谷内)の成果
- 長期(ダム建設中止後)水管理計画の検討(水土里ネット愛知川)

## Koto Region of Shiga Prefecture, Japan



## Koto Region of Shiga Prefecture, Japan



## Outcomes Dissemination

Output	Contents	Targets	Media
Extended knowledge	<ul style="list-style-type: none"> <li>Evaluation model on local water management and regional environment indices</li> <li>Map showing implication of local water management</li> </ul>	World water experts	<ul style="list-style-type: none"> <li>Academic paper</li> <li>Book</li> <li>Atlas</li> </ul>
Management Instrument	<ul style="list-style-type: none"> <li>Model for assessing management performances</li> <li>Indices for water management practices</li> </ul>	<ul style="list-style-type: none"> <li>World water experts</li> <li>Local stakeholders</li> </ul>	
Standard framework model	<ul style="list-style-type: none"> <li>Indices for water management practices</li> <li>Basic structure and function</li> </ul>	<ul style="list-style-type: none"> <li>Local communities</li> <li>Local and national GO/NGO</li> </ul>	<ul style="list-style-type: none"> <li>Collaborative works</li> <li>Workshop</li> </ul>
Guideline	<ul style="list-style-type: none"> <li>Requirement of institutional framework, hydraulic works and management practices</li> </ul>	<ul style="list-style-type: none"> <li>International organizations including IWMI, FAO and ICID</li> </ul>	<ul style="list-style-type: none"> <li>Collaborative works</li> <li>International conference</li> <li>Joint Workshop</li> </ul>

## Time schedule

Year	Period	Notice	Field work	Models	Indices	Report	International activity
1: 2011-12	Immediate startup	Refining the objectives and Method Strengthening	Organizing and implementation	Improvement	Development	Kick-off	6th WWF
2: 2012-13	Gaining	Acquisition of basic information	Intensive works	Calibration	Development and analysis	Interim	WWF2012
3: 2013-14	Analysis	Drafting framework, Communicating with international societies	Intensive works	Application	Analysis	Progress	WS with FAO and IWM
4: 2014-15	Integration	Crafting framework, Drafting final report	Following-up	Outputs analysis	Improvement	Advance	7th WWF ICID 2014
5: 2015-16	Conclusion	Disseminating satandard model and guideline				Final	REN Int. Symposium
2016-	Following-up and handing over	Publications					8th WWF ICID 2017

## Thank you for your attention

Designing "Local Water Management Framework" based on re-organized local "wisdom" on land and water

Not only distributing water but also gathering wisdom

**Convivial Cooperation for Water Management**  
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