



I N W E P F

International Network
for Water and Ecosystem in Paddy Fields

*For sustainable use of paddy fields and paddy water
in Asia Monsoon region*

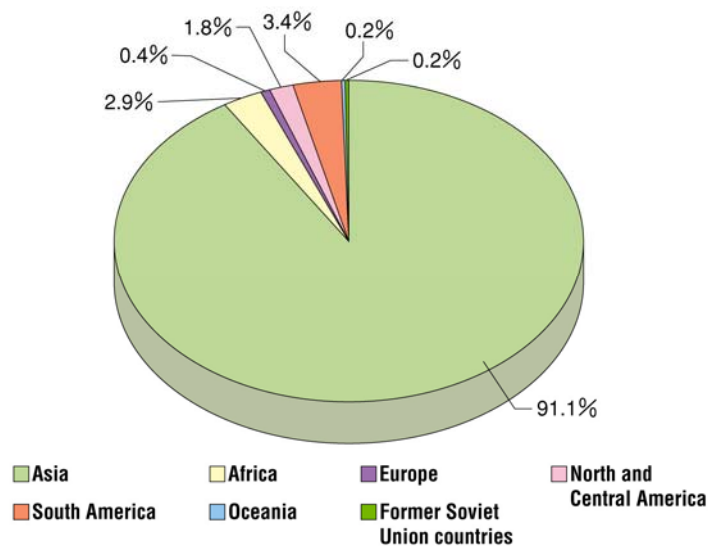


(scenery of rice terrace in Japan)

I Asia monsoon region and paddy field farming

The Asia monsoon region generally has a lot of precipitation and main crops produced in countries in the region is rice.

Ratio of rice production by region (2000)



Source: Statistical Databases (FAO)

Top 10 rice production countries (2000)

Rank	Country	Ratio to world production (%)	Production (unhulled) (mil. tons)	Harvested area (mil. ha)
1	China	32	190	30
2	India	22	129	45
3	Indonesia	9	52	12
4	Bangladesh	6	38	11
5	Vietnam	5	33	8
6	Thailand	4	26	10
7	Myanmar	4	21	6
8	Philippines	2	12	4
9	Japan	2	12	2
10	Brazil	2	11	4
	Sub-total	87	524	132
	Other	13	76	22
	Total	100	600	154

Source: Statistical Databases (FAO)



Reservoir

Annual precipitation is rather high in the most of the Asian monsoon region. However, many reservoirs for paddy water have been developed and maintained to overcome the fluctuating characteristics of the rainfall and to expand the production period a year.

(photo: Malaysia -Bukit Merah Dam)

Irrigation canal

Water taken from rivers or reservoirs is delivered to each paddy field through the irrigation canals.



(photo: Bangladesh)



Food production

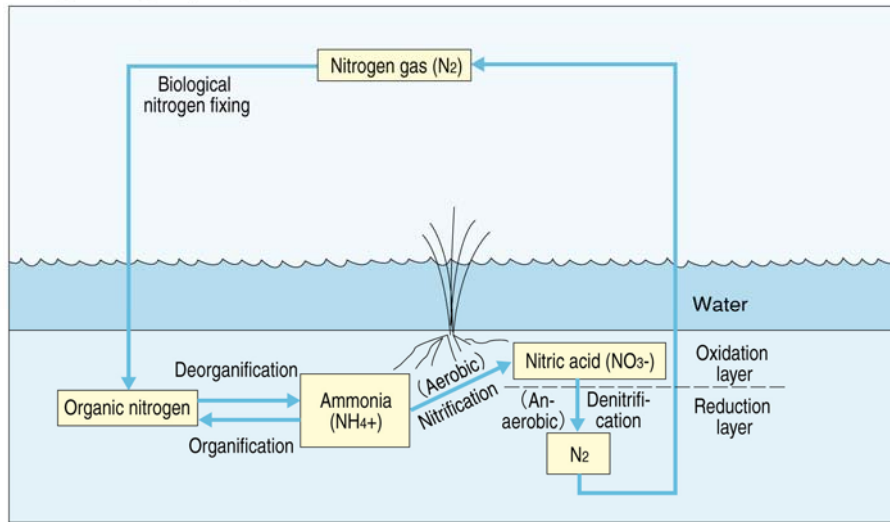
The high population in the Asian monsoon region has been supported by rice production which has been done in paddy field for long years.

(photo: Viet Nam)

II Water and ecosystems in paddy fields

Paddy field irrigation is an excellent and highly sustainable agricultural method, and contributes to the formation of healthy water cycles. Thus, paddy field farming is “Environmental –harmonious” agriculture.

Nitrogen fixing in paddy field

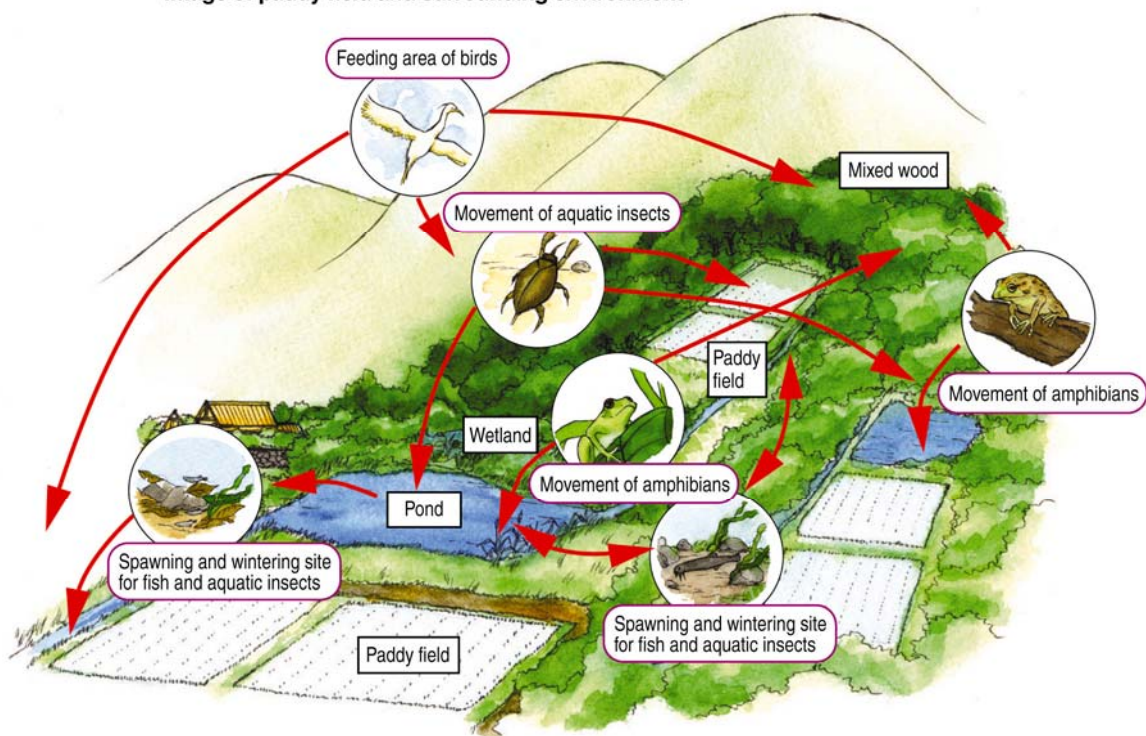


(Reference)

Atmospheric nitrogen is fixed (biological nitrogen fixing) by blue-green algae in inundated paddy field in an amount that is considered to be 3-4kg per 10ha on average during the rice growth period. This corresponds to the application of fertilizer capable of producing a rice harvest of 150-200kg.

Source : Watanabe et al, 1987 (Shougakukan)

Image of paddy field and surrounding environment





Conservation of ecosystems

The semi-natural ecosystem which provides a rich habitat for various wild plants and animals has been formed and maintained over the millennia by the farming in the paddy field.

(photo: Thailand)

Diversification of production

Diversification of production including fish culture, duck raising are plied in the semi-natural ecosystems with paddy fields and irrigation systems.

(photo: Philippines)



Formation of aquatic environments

Paddy fields and irrigation systems provide the habitats for freshwater fish, insects and birds with surrounding forests.

(photo: China)

III Multi-functional roles of agricultural water in paddy field

With paddy field irrigation in humid regions, agricultural water has the nature of a public asset, besides that of an asset of producing agricultural products. It also plays a wide range of roles connected with environment protection, traditional culture, local society, and so on. To ensure the materialization of healthy water cycles, it is important that we appropriately evaluate these multi-function roles inherent in agricultural water.

Valuation amount of the multi - functions of agriculture

The following are examples of monetary assessment of the multi - functions of agriculture in Japan.

Item (function)	Assessment method	Valuation amount
Flood control function	Substitution method	3,498.8 billion Yen/yr
River flow stabilization function	Substitution method	1,463.3 billion Yen/yr
Fostering of water resource function	Direct method	53.7 billion Yen/yr
Prevention of erosion	Substitution method	331.8 billion Yen/yr
Landslide prevention function	Direct method	478.2 billion Yen/yr
Organic waste treatment function	Substitution method	12.3 billion Yen/yr
Climate mitigation function	Direct method	8.7 billion Yen/yr
Health care, recreation and rest function	Travel cost method	2,375.8 billion Yen/yr

Notes: 1) The monetary assessment of a portion of the multi - functions of agriculture, especially physical functions, that can be monetarily assessed was carried out by the Mitsubishi Research Institute, Inc., taking into account the content of debates by a special committee of the Science Council of Japan.
2) The aggregate total is not indicated since the assessment method differs depending on the function and the assessed functions are merely one portion of the overall multi - functions.
3) In the assessed value of the flood prevention, river flow stabilization, soil erosion (runoff) prevention and other functions by the substitution method, dams, etc., were assessed as the substitution goods. It is necessary to be aware, however, that, due in part to the fact that the functions of agriculture and those of dams, etc., are different, they do not have an equal effect.
4) Only a small portion of the health care, recreation and rest function was subject to estimation.
5) The figures for all of the assessment methods remain within a given hypothetical framework and do not go beyond the realm of estimation.

Source: Mitsubishi Research Institute, 2001

Land conservation and flood mitigation

Paddy fields in the Asian monsoon region have multi-functions, such as land conservation, flood mitigation and river flow stabilization.

(photo: Nepal)





Tradition of culture

Traditional events in rural areas have been inherited among many generations as typical cultures of rice farming.

(photo: Republic of Korea)

Bathing in a canal

Irrigation water is essential to daily life in rural areas, such as bathing, washing products and clothes, recreation and fire control.

(photo: Sri Lanka)



Boating in irrigation canal

Canal networks in paddy field area provide transport for residents.

(photo; Myanmar)

IV Participatory irrigation management in paddy fields

Since agricultural water accounts for the larger part of all water use, it is an important element in aiming for sustainable water use and the formation of healthy water cycles. For this reason, agricultural concerns that use and manage agricultural water are expected to play the most central and positive roles within these self-determined efforts by everyone involved with water in each region.

Examples of traditional water management systems by the collectives

Country (organization)	Summary
Indonesia, Bali (Subak)	• Their name was originated from the word "seuwak," which means the water distribution. Each has a water management office and small shrine. • They were first organized about 1,000 years ago and there are currently about 1,600 of them throughout the island of Bali. • Members of collective hold meetings to decide policies for planting time, schedule for religious ceremonies, facility repairs, etc. • Each collective manages 2 - 500ha of paddy field.
Northern Thailand (muangfai)	• These collectives maintain and manage water distribution and irrigation facilities, procure labor and funding, act as mediator in water supply disputes, etc. • There is one collective for each small river intake • They function based on the principle of impartiality in accordance with regulations known as "sanya."
Sri Lanka (kanna)	• These collectives manage more than 10,000 reservoirs in the country. • The responsibilities of the member are stipulated by common law regulations known as "shirisu." • Those who violate "shirisu" are no longer permitted to use the water supply.

Source: 1) Toshio Tabuchi, 1999 (Yamazaki Agriculture Research Institute)
2) le-no-hikari Association, 1995

Maintenance done by farmers

Operation and maintenance of paddy irrigation systems is conducted by farmer water user associations as cooperative activities.

(photo: Indonesia)





Collaboration among farmers and non-farmers

Multi-functionality of paddy irrigation systems should lead to participation of non-farmer residents into operation and maintenance of irrigation systems.

(photo: Japan)

Awareness of water conditions among farmers

Awareness among a group of farmers about existing condition of water and its problem is essential in order to achieve fair and proper distribution of irrigation water.

(photo: Cambodia)



Training for farmers

Training for farmers should be combined with construction of irrigation facilities to achieve proper water use, operation and maintenance.

(photo: Lao PDR)

V What is “INWEPF”?

International Network
for Water and Ecosystem in Paddy Fields

On the occasion of the 3rd World Water Forum, the Ministry of Agriculture, Forestry and Fisheries of Japan and the Food and Agriculture Organization of the United Nations co-organized the Ministerial Meeting on Water for Food and Agriculture on March 21, 2003. The Ministerial Recommendation highlighted three challenges, "Food Security and Poverty Alleviation", "Sustainable Water Use" and "Partnership".



Ministerial Meeting
on Water for Food and Agriculture in the WWF3
– Ohtsu Japan, March 2003

The INWEPF is established to provide a forum to realize the three challenges by promoting dialogue, exchanging knowledge and experiences, creating synergy among existing forums and strengthening capacity building in agricultural water management in paddy fields with due consideration for environmental aspects.

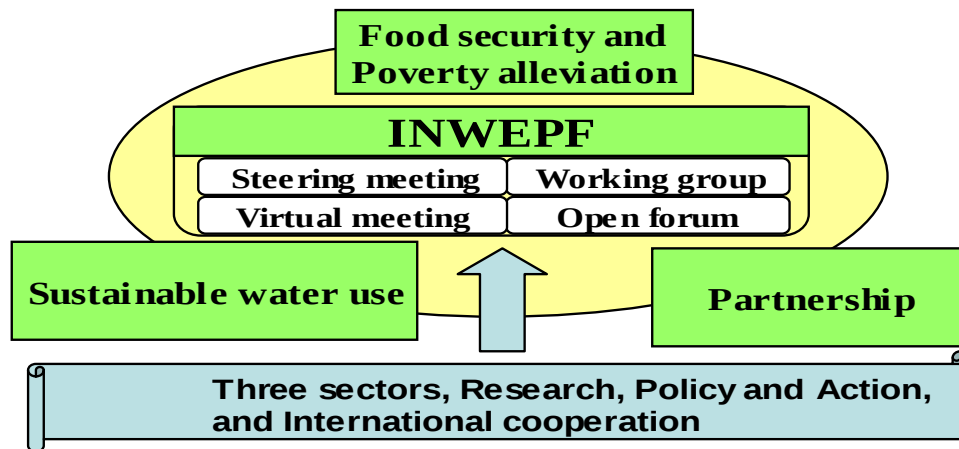


Meeting of INWEPF
– Tokyo Japan, November 2004



Symposium
on the water and environment in paddy field
– Seoul Korea, November 2005

**Flexible platform to exchange information on water use
In paddy fields**



Members of INWEPF

Countries:

Bangladesh, Cambodia, China, Egypt, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Viet Nam

International Organizations:

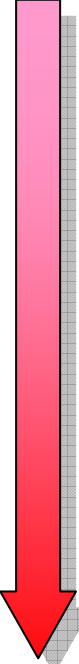
Food and Agriculture Organization (FAO), International Water Management Institute (IWMI), Mekong River Commission (MRC), International Commission on Irrigation and Drainage (ICID), International Society of Paddy and Water Environment Engineering (PAWEES), World Bank (WB), International Rice Research Institute (IRRI), International Network on Participatory Irrigation Management (INPIM), Asian Productivity Organization (APO), Asian Development Bank (ADB)

Objectives

The ultimate goal of the INWEPF is to realize the three challenges endorsed at the Ministerial Meeting on Water for Food and Agriculture on 21 March 2003, namely "Food security and poverty alleviation", "Sustainable water use" and "Partnership".

In order to achieve these goals, the INWEPF is established to provide a framework for promoting better management of water for paddy fields toward rural development with due consideration for the environment through a variety of activities including Virtual Meeting, workshops, symposiums and other knowledge exchange and capacity building activities.

INWEPF in Events

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- 11/1 2004, Tokyo**
INWEPF 1st steering meeting and Symposium
 - 3/27 2005, The Hague**
The FAO-Netherlands conference "Water for Food and Ecosystems"
 - 4/11-22 2005, New York**
The 13th session of the Commission on Sustainable Development
 - 9/7-8 2005, Kyoto**
PAWEES International Conference
 - 9/11 2005, Beijing**
Asian Regional Working Group (ASRWG), ICID
 - 11/2-4 2005, Seoul**
INWEPF 2nd steering meeting and Symposium
 - 3/16-22 2006, Mexico City**
The 4th World Water Forum

Message from the INWEPF to the 4th World Water Forum

“Water systems for rice are a keystone to sustain life and ecosystems”

1. We, the International Network for Water and Ecosystem in Paddy Fields (INWEPF), assert that water systems for rice are essential to sustaining human life and natural ecosystems in many rural watersheds in the Asian Monsoon region, and thereby contribute to solving global water issues. We request the official/private delegates who will participate in the 4th World Water Forum to be held in Mexico, March, 2006, to consider the following INWEPF statement and recommendations:
2. Agriculture is the biggest user of freshwater, accounting for 70% of all water withdrawals worldwide and more than 80% in Asia. Water is essential for broad-based agricultural and rural development and its management must be improved in order to meet the Millennium Development Goals by improving food security, alleviating poverty and conserving environment, under rapidly increasing/changing demand for food in the world.
3. In the Asian monsoon region, where more than half of the world's population lives, rice is the most important staple crop. The most important water system for rice is the flooded or paddy-based system which provides multiple benefits and it depends on agricultural water infrastructure and integrated water management systems, some of which have been developed through long-term traditional wisdom and experiences of local communities and their participation since the start of human history.
4. Water for rice in paddy systems is not only vital for food production, but also provides a broad range of services related to society, culture and the ecosystem (e.g. fish cultivation, flood control, ground water recharge, biodiversity conservation, culture heritage, etc.). Thus paddy-systems can be defined as wetlands which have good potential for maintaining both human cultures and natural ecosystems in a sustainable manner.
5. In order to pursue sustainable water development and use, considering the above aspects of paddy fields, we strongly advocate the following policy recommendations:
 - 1) The multiple use, roles, values, services and other aspects of agricultural water in paddy farming regions should be recognized, evaluated and incorporated into water resources development plans and management strategies.
 - 2) The traditional wisdom and experiences of local communities and the value of their participation in water planning and management should be fully acknowledged.
 - 3) It should be recognized that governmental assistance (e.g. policy, legal, financial and educational services and capacity building) is important and often necessary for adequate investment, modernization and management of rice water systems, in order to achieve food security, to alleviate poverty and to conserve ecosystems.

INWEPF Japan Secretariat

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