
How to balance between agricultural productivity and environmental protection
March 15, 2012
INWEPF Korean Committee.

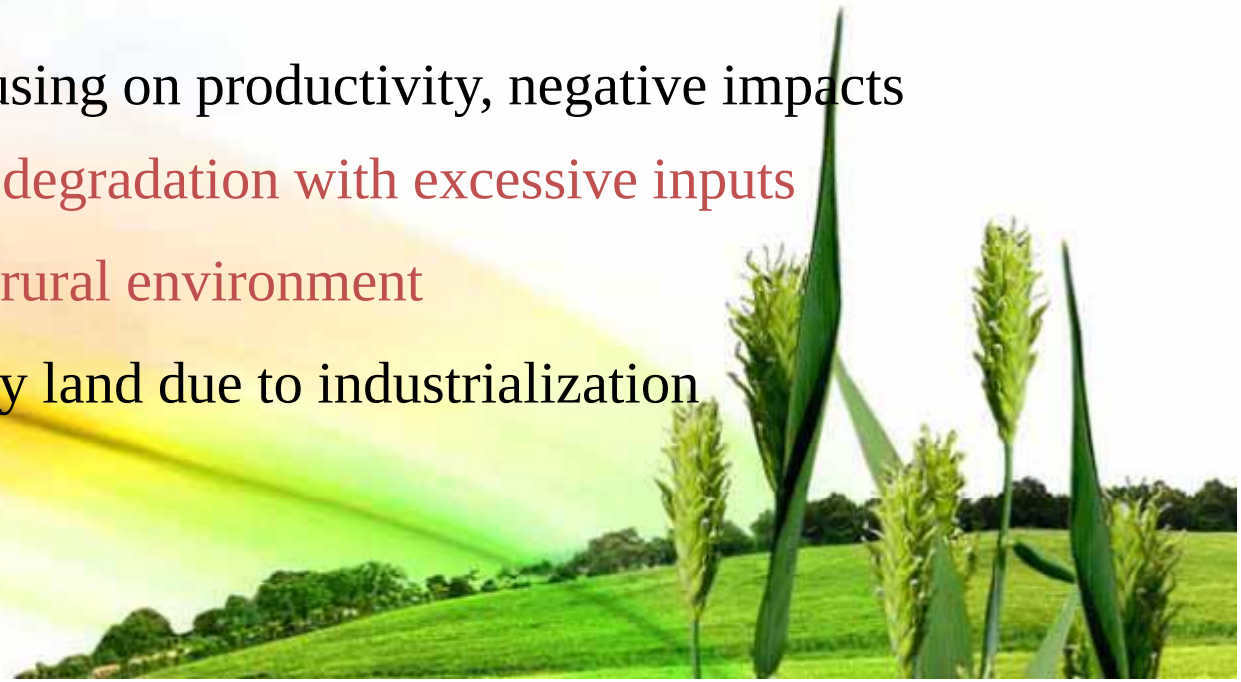
Korea Rural Community Corporation

Structure of presentation

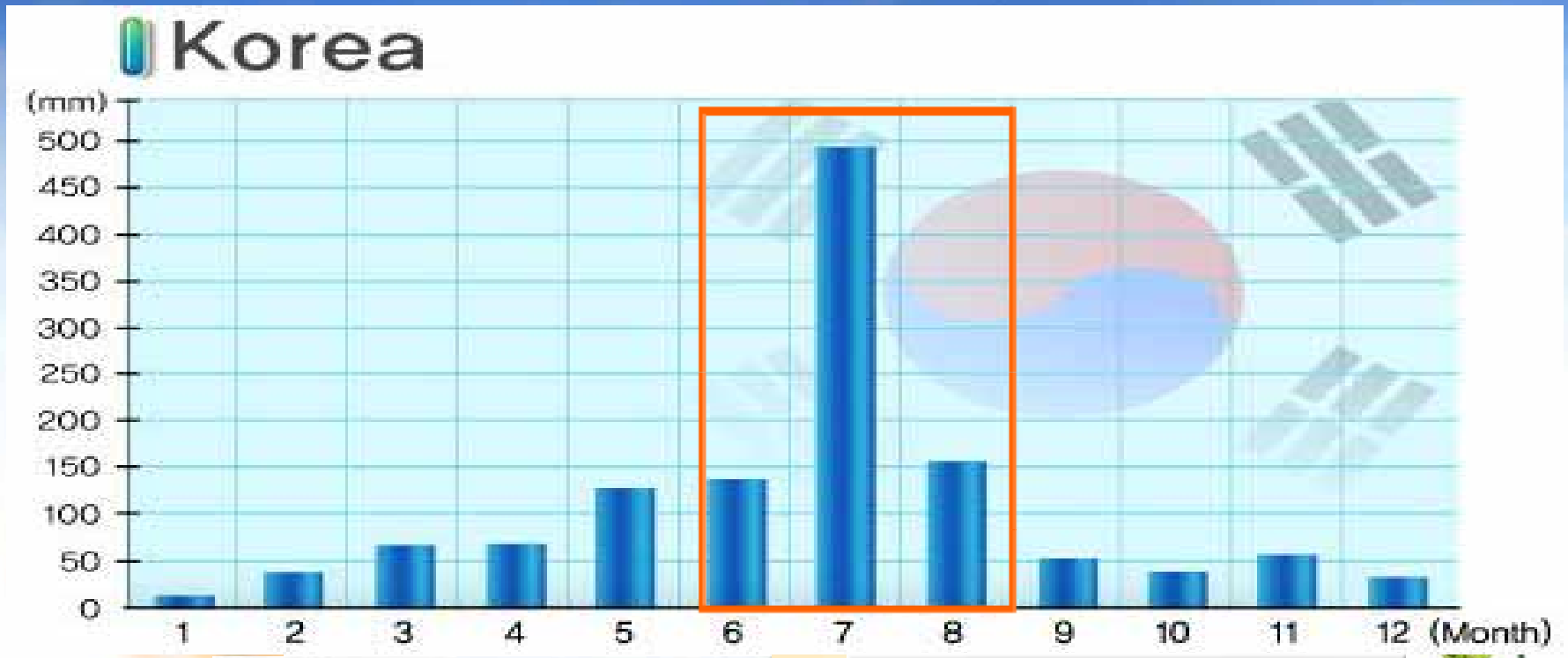
1. Background
2. What is equilibrium/balance the productivity and environmental protection?
3. Why balance ?
4. How to balance? Case studies of member countries
5. Recommendations for sustainable agriculture

1. Background

- 70% of available freshwater is used for agriculture in the world
- Paddy and water are interrelated with society and people life (main nutrient source in Asia)
- Challenges
  1. Water policy focusing on productivity, negative impacts
     - Water quality degradation with excessive inputs
     - Unbalance of rural environment
  2. Decrease of paddy land due to industrialization



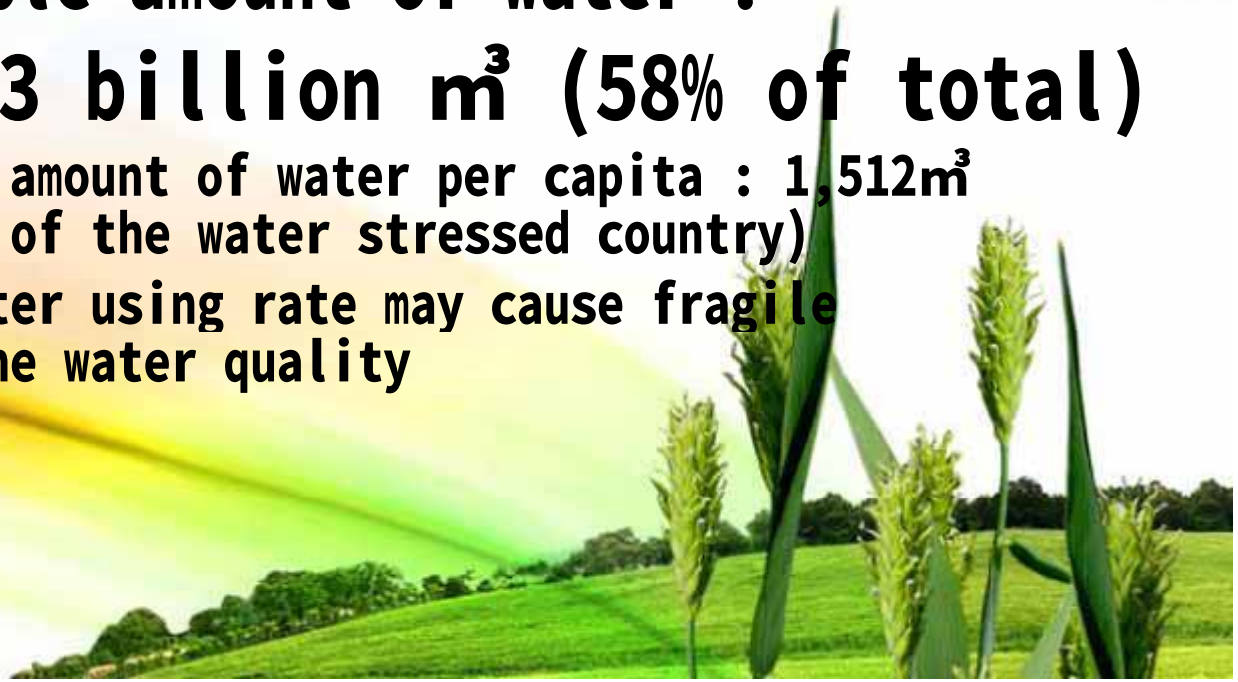
1.1 water resource in Korea



Water resource characteristics in korea

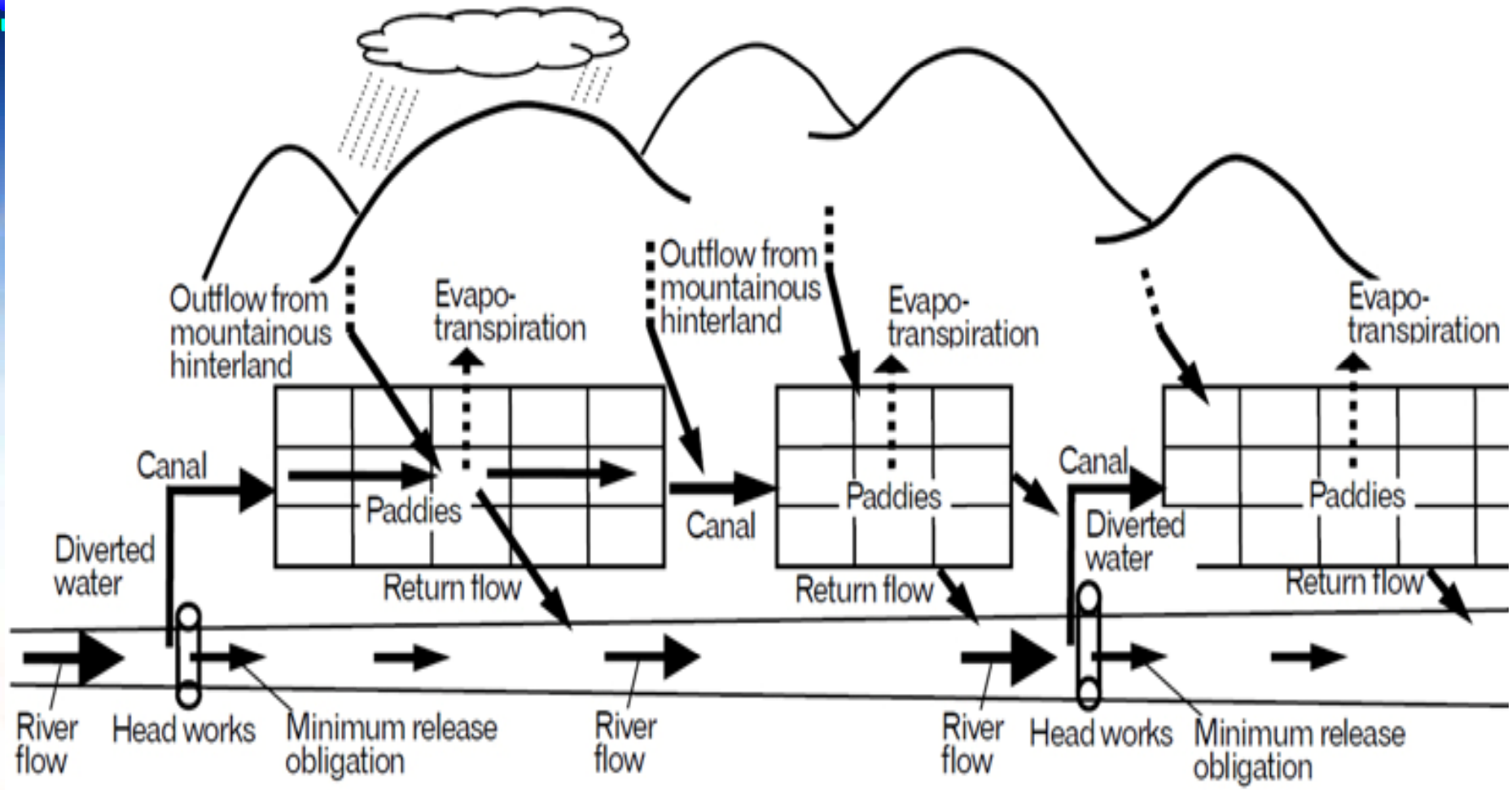
- **Precipitation**
  - Annual precipitation : 1,245mm (average between 1974~2003)(about 1.4 times of world average 880mm)
  - Annual total amount of water from precipitation : 124 billion m^3
  - Annual amount of water per capita : 2,591m^3 (Only about 1/8 of world average 19,635m^3)
- **Actually available amount of water :**

  72.3 billion m^3 (58% of total)
  - Actually available amount of water per capita : 1,512m^3 (Classified as one of the water stressed country)
  - Relatively high water using rate may cause fragile circumstances on the water quality



1-2 Paddy farming in the Asian monsoon

- Sustains more than thousands year because cultivation suits to rainy climate in the Asia monsoon region
- Free from salt accumulation and soil erosion comparing with upland farming.
- Provides wide range of environmental service and social benefit

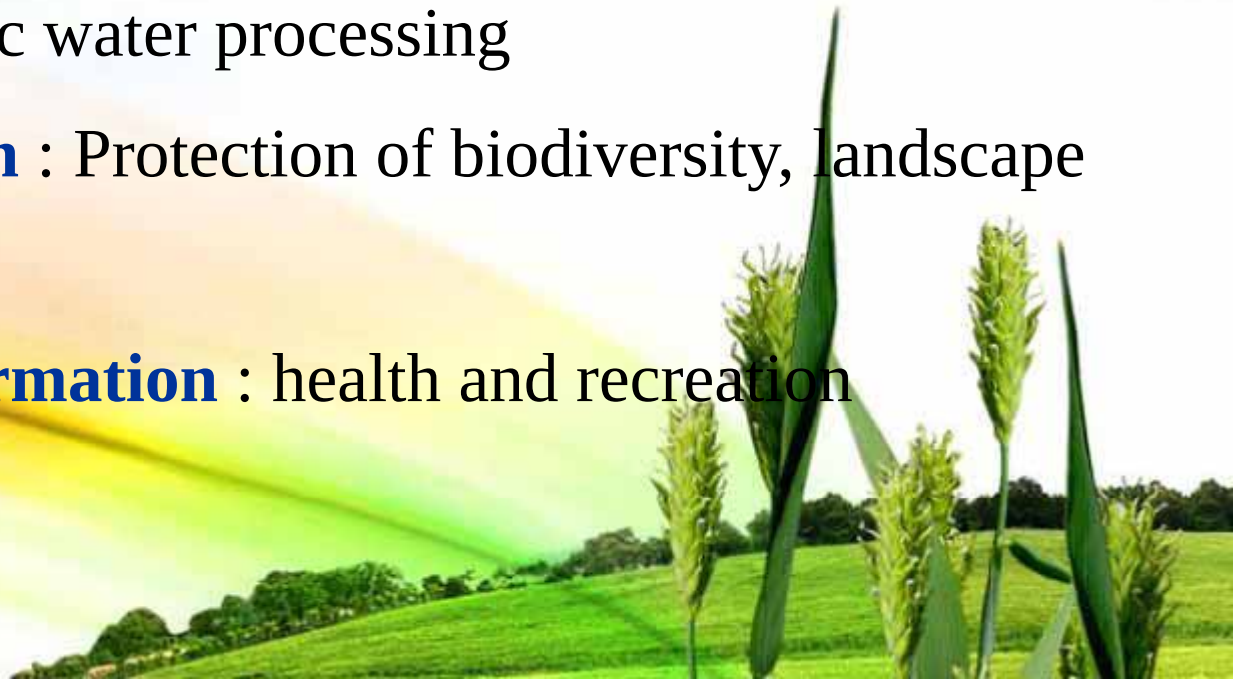


Courtesy by Kazumi Yamaoka

The water is not used only for production

1-3 Multiple Functions of Paddy Fields

- **Water cycle control** : Flood prevention, groundwater recharge, prevention of soil erosion, sediment collapse and landslides
- **Environmental load control** : water purification, climate mitigation, organic water processing
- **Nature formation** : Protection of biodiversity, landscape formation
- **Social culture formation** : health and recreation



Objectives

- To share experiences of sustainable agriculture to balance productivity and environment
- To highlight the importance of paddy farming in resilient of rural community

2. What is equilibrium ?

- **Sustainability** is a concept broadly defined as ensuring that the needs of the present are met without compromising the ability of future generations to meet their own needs.
- **Sustainable water use in agriculture** might be possible when productivity and environmental protection are equilibrium within the extents that enable society to meet its current and future demand for food, energy, environmental quality etc (Wichelns and Oster, 2006).

3. Why balance the productivity and environmental protection?

- Government and many international organization invest lots of money for installing irrigation facilities for last decades
- Productivity increases dramatically with other inputs like pesticide, fertilizer , etc
- Most of agriculture policy, technical solution, infrastructure, more inputs
- But still need more water structures…..

→ Current demand-oriented water policy needs shift to sustainable management

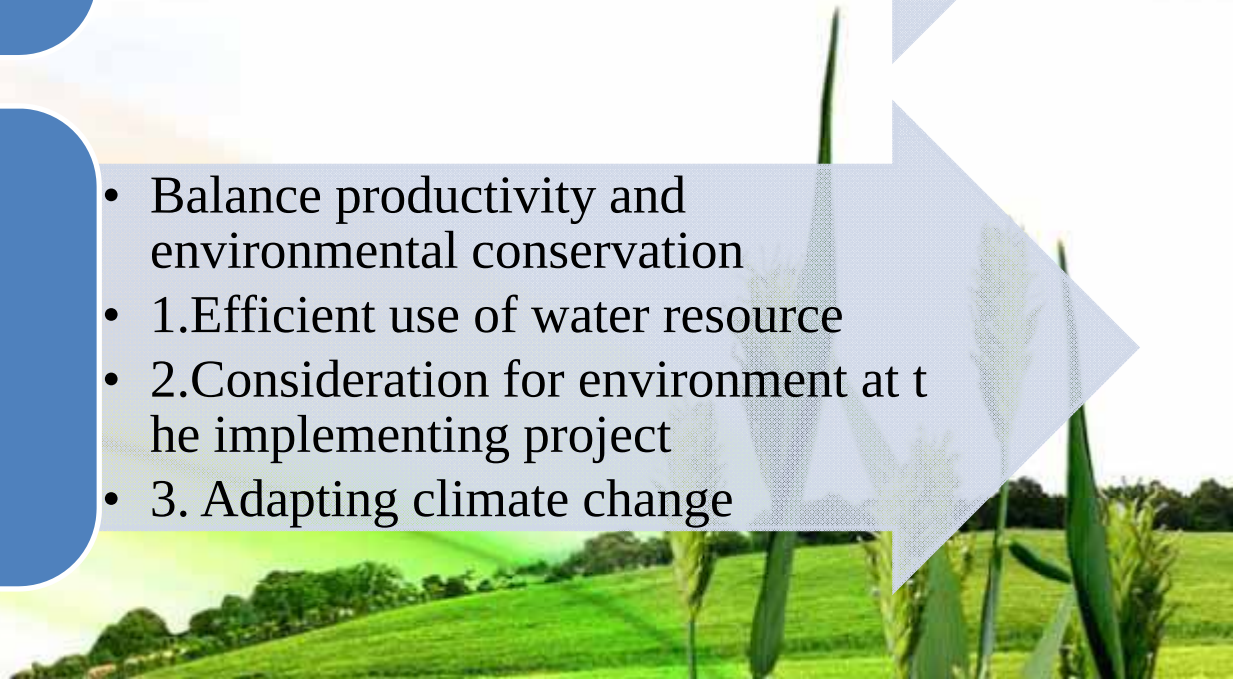
Drivers and direction

Continuous needs of productivity increase

- Shift from hard to soft approach (technical solution → PIM)

Changing demand of sustainable agriculture

- Balance productivity and environmental conservation
- 1.Efficient use of water resource
- 2.Consideration for environment at t he implementing project
- 3. Adapting climate change



Korea Rural Community Corporation

4. How to balance them?

4.1 Case of efficient agricultural water use

Korea Rural Community Corporation

Jeju island is surrounded by water