Complex Rice Systems; Putting Ecosystem Restoration into Practice

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Outline

• Global rice production and the importance of ecosystem function restoration

• CRS project to restore ecosystem functions in rice production systems

• Challenge at mainstreaming CRS, solution and recommendation
Indonesian rice position

The top three rice consuming countries

- China
- India
- Indonesia

(Million metric tons per year)

Major rice producers

- China
- India
- Indonesia
- Bangladesh

(Million metric tons per year)

Major rice importer countries

- China
- Nigeria
- EU-27
- Saudi Arabia
- Indonesia
- Philippines

(FAO, 2016)
Rice ecosystems

- Upland to lowland
- Rainfed to irrigated
- Deepwater to marsh tidal

Links:
- [Upland to lowland](http://asiamonsun.blogspot.nl/)
- [Rainfed to irrigated](http://www.indonesiapanen.com/2301/nasib-petani-sawah-lebak-di-tengah-madu-hti-dan-sawit/)
- [Deepwater to marsh tidal](http://budidayatanamanpadi-sawah.blogspot.nl/2016/01/teknik-pengelolaan-padi-sawah-pada.html)
Green revolution on rice

Great benefit at early development, BUT later
- Widespread environmental pollution through water flow
- Kill beneficial organisms
- Increase biodiversity loss → Ecosystem dysfunction
- External input dependency
- Vulnerable to environmental and market changes

Ecosystem restoration → to reduce agro-chemical costs, pollution and improve smallholders and human livelihood

Complex rice system project

- A collaboration IORC, UB and FSE, WUR
- Initially conducted in East Java, but will be replicated in Sumatera
- Using three-step method: experiment, workshop and FFS
Experiment with CRS to restore ecosystem functions
Workshop on CRS

- Participated by farmers. Researchers and provincial and district authorities of agricultural and food security bureau
- To present initial results of tested prototype in four districts of East Java and participatory to improve the design
Participatory learning through FFS

- To disseminate knowledge on CRS
- To provide training for farmers to grow diverse plants and raise animals
- To get feedback from farmers on the design based on the local practice and knowledge
Barriers/ challenges to mainstreaming the activities

• Initial capital outlay: building facilities e.g. fencing, duck housing, fish pond: initial inputs (fish, ducklings, diverse plant seeds)

• Illiteracy and lack to information access impede knowledge transfer on agro-ecology when the local knowledge has lost

• Lack of immediate benefits of CRS at first rice cropping cycle
Coping the challenges to mainstreaming the activities and recommendation

- Adopting a step-by-step approach to implement CRS across two to three rice-growing cycles
- Starting with the construction of the fish pond
- Cooperation with duck farmers
- Provide appropriate training e.g. FFS
- Using pictures and videos to address the illiteracy of FFS participants
- Include elements that can immediately add farmer income in an easy way e.g. vegetables as border plants
Thank you