




# **Ecosystem valuation Conditions and challenges**

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New Delhi, February 25, 2009

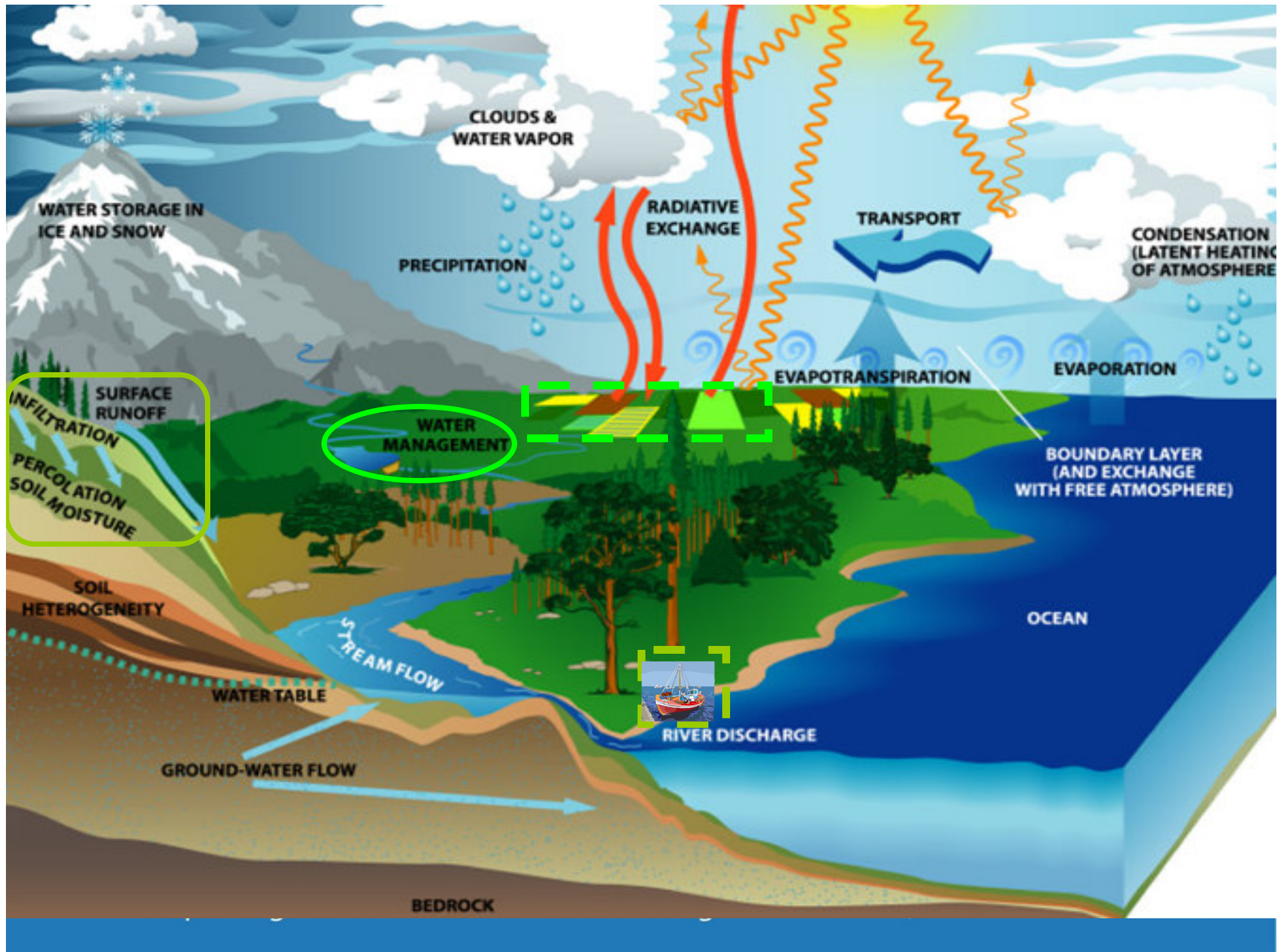
CPWF-IWMI Basin Focal Project for the Indus-Gangetic Basin

[www.iwmi.org](http://www.iwmi.org)

A close-up photograph of a drip irrigation emitter. The emitter is a metal device with a black plastic body, attached to a black hose. It is spraying water in a fan-like pattern. The background is a blurred green field under a clear sky. The text "Water Use- Agriculture" is overlaid in the center.

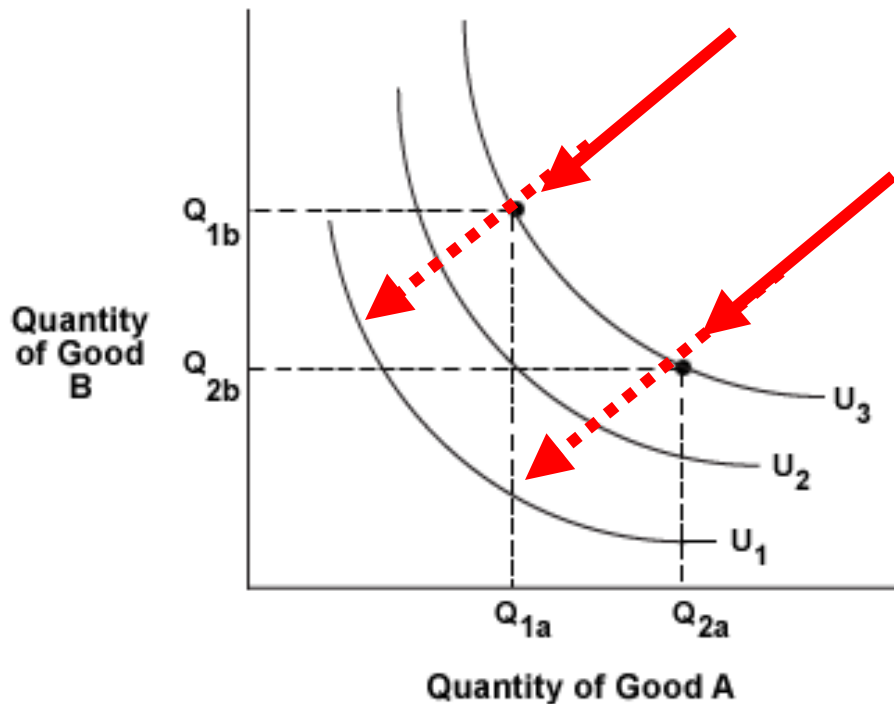
# Water Use- Agriculture





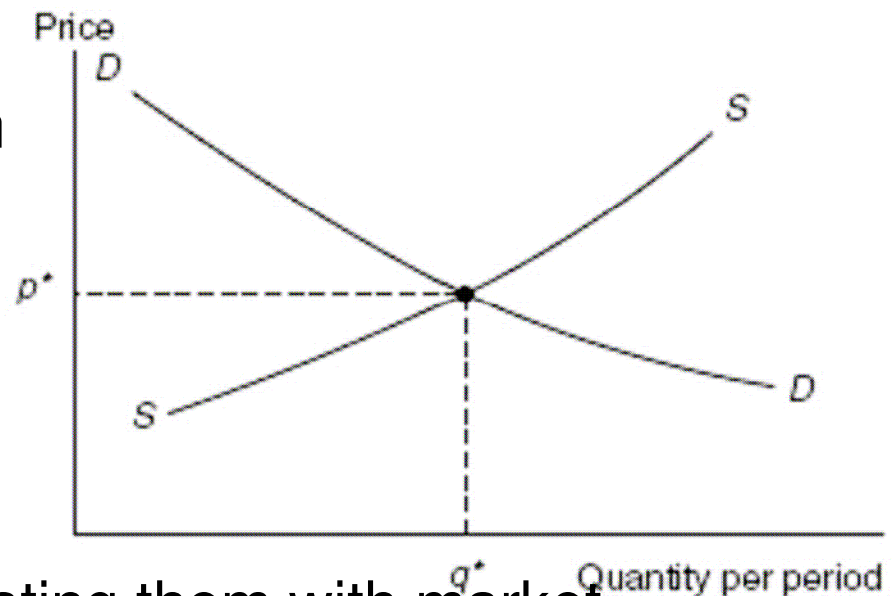
## How to count these uses in economic terms ?

- $TEV = \text{Direct Use} + \text{Indirect Use} + \text{Non Use}$
- In economics this means



## And how to capture the values?

- However, a big question remains: how do you commodify goods and services with indirect or non use in the market?
- You don't! Just a) associating them with market commodities (safe but capture less) b) creating pseudo-market mechanisms adapted to revealed or state individuals' preferences
- BUT, things cannot be only utility/monetary. Multicriteria, safe minimum standards etc. are also alternatives



# The valuation through production side: Functions

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- In case of valuating an aquatic ecosystem, primarily looking through the Production side

$$f(P) = (CF, A, ES) \quad (1)$$

where

F= Fish Productivity

A= Agriculture Productivity

ES= Ecological Services (Habitat, Biodiversity)

- Fish and Agriculture products are in the market except ES
- Capturing them through the foregone benefits recorded in aquatic types with good, moderate and poor status

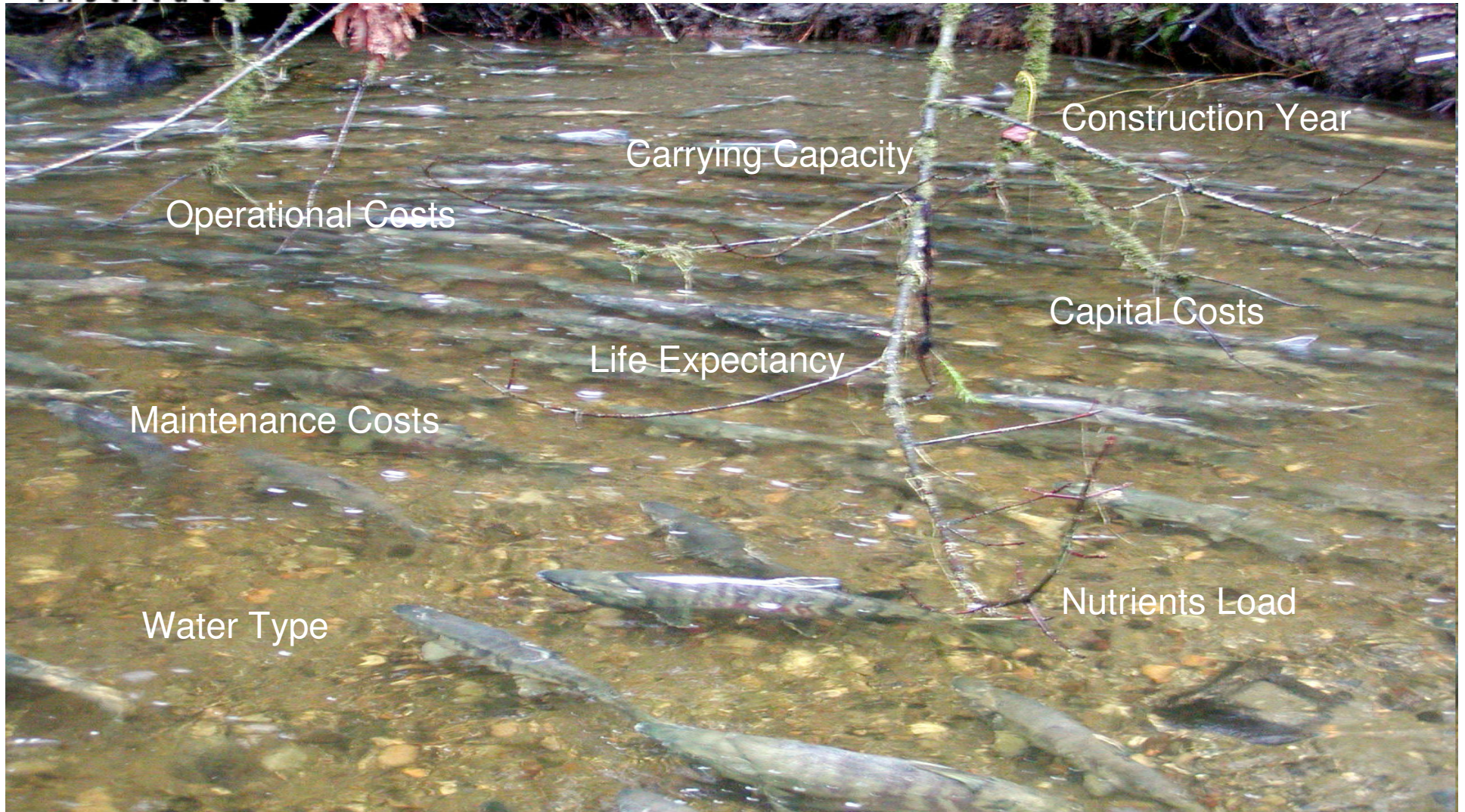
# Ecological Status through criteria-indicators

Parameters	Water Sufficiency		Water Transparency		Nutrients	
	(m3/acre or cm if inundation depth)	1/Excellent- 7/ Minimum Tolerance Levels	Turbidity units (suspended particles)	1/Excellent- 7/ Minimum Tolerance Levels	Nitrates, Phosphates in water (mg/l)	1/Excellent- 7/ Minimum Tolerance levels
Selected Key fish species						
Selected vegetation key species						

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# The valuation through production side: Restoration/Replacement





## The valuation through demand side: State Preferences (hope as well straight!)

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- Willingness to Accept yearly minimum reimbursement for
  - Abandoning fishery of key/commercial fish species
  - Replace HYV rice cultivation
  - Reduce polluting activities
- Involvement and Representation as stakeholders, why and where?

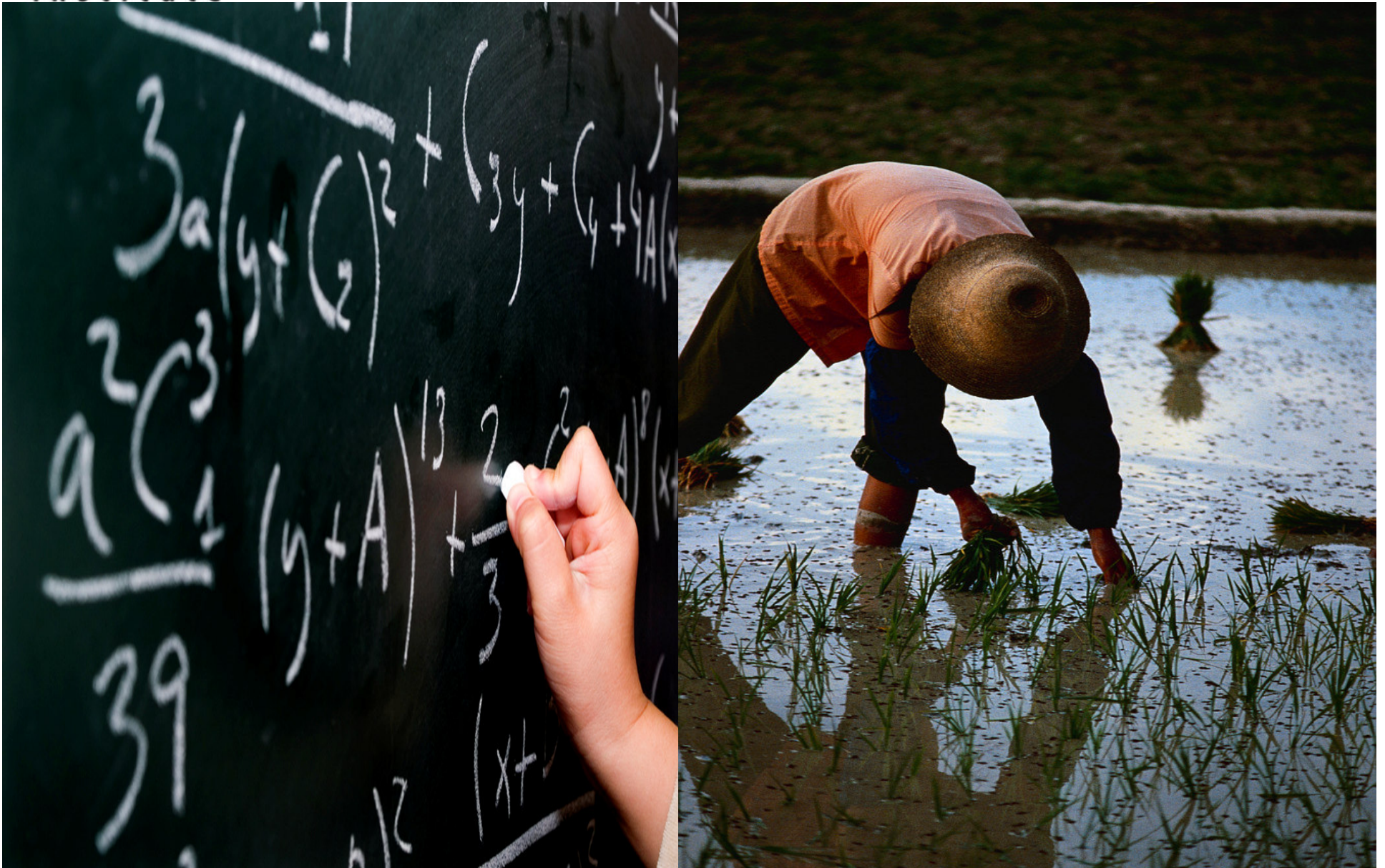


## Data Provision (1) : Published sources





## Data Provision (2) : Experts – Simple Users





## Challenges to be considered

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- Ecological thresholds-irreversibilities
- Trade-offs and reductionism
- Welfare measurement and ultra poverty

