Livestock Water Productivity:
Lessons relevant to the BFPs

CPWF International Forum on Water & Food

Addis Ababa, Ethiopia, 9-14 November 2008

(A CPWF PN37 output)

CGIAR Challenge Program on WATER & FOOD

Livestock are important water users in drier CPWF basins

- Livestock production covers more area than crop production.
- More water depleted through livestock systems.
- Livestock consume more food than people.
- Livestock largely ignored in water management.
- Livestock and crop water productivity low
  - Especially in rainfed areas.
- Major livestock water productivity increases possible.
- Gains: Food, livelihoods, poverty reduction, ecosystem services.

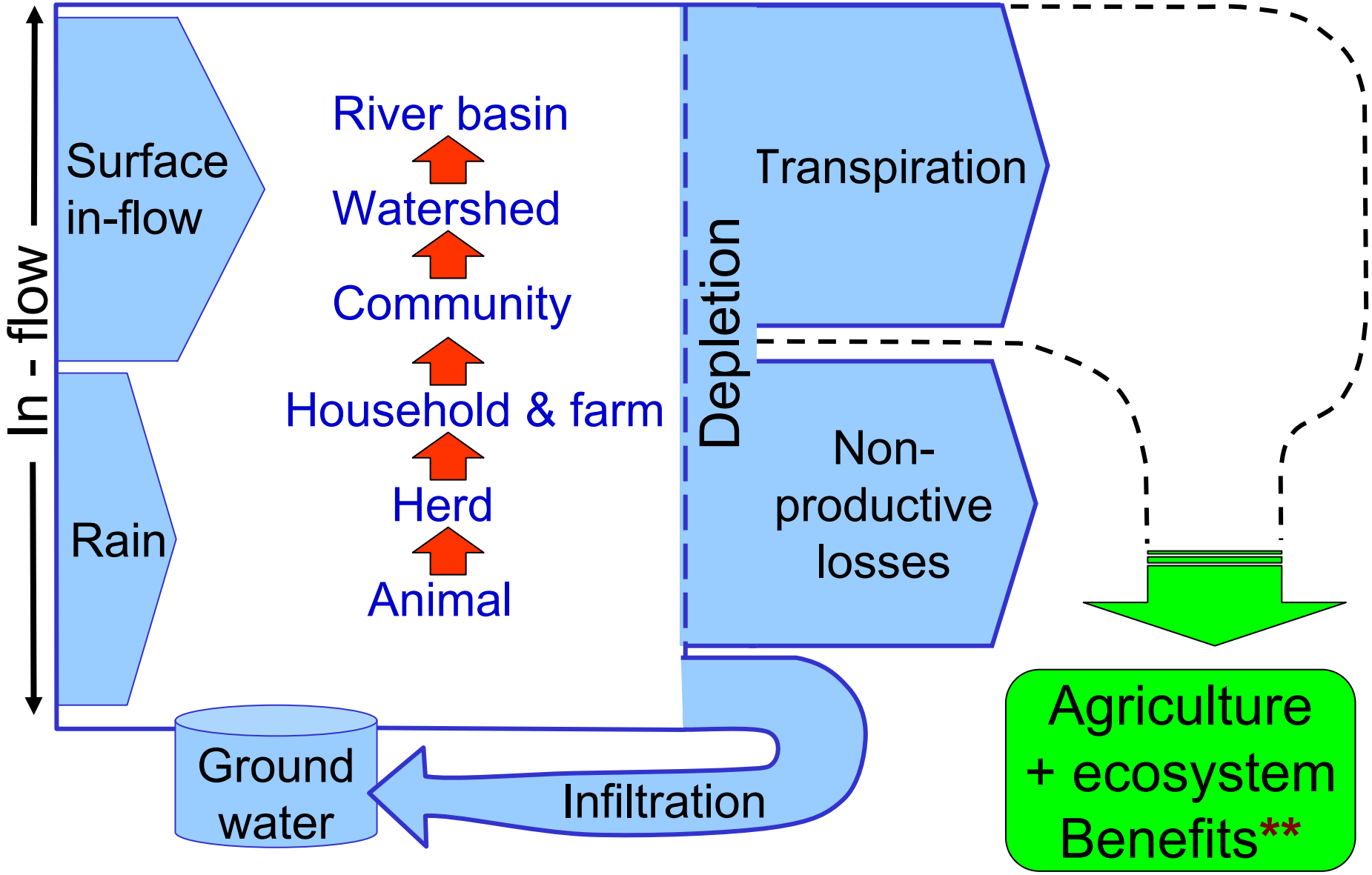
What is livestock water productivity

(An entry point for INRM, IWRM & IRBM)

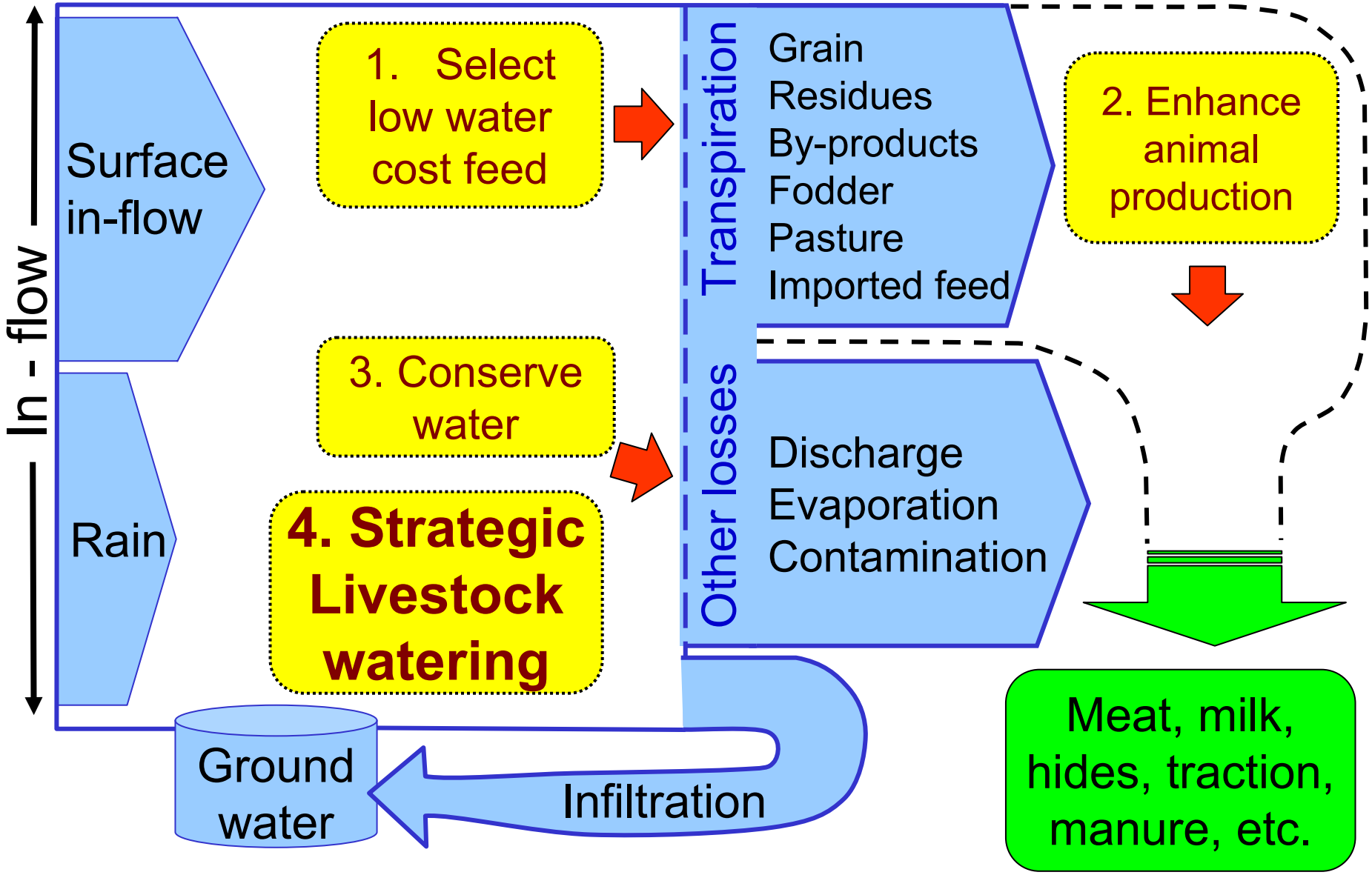
$$\text{LWP} = \frac{\sum(\text{Net beneficial outputs})}{\sum(\text{Depleted water})}$$

- **Benefits:** Meat, milk, hides, traction power, manure, eggs, whole animal sales, drought security, wealth savings, etc.
- **Depleted water:** Transpiration, evaporation, discharge & contamination.
- **Units:** US$/m^3
  - Better alternatives?

Basic water accounting framework



Four LWP improving strategies: Watering sites



Example LWP estimate

Mixed crop-livestock farms

Blue Nile highlands: (Curtis 2007)

- Net-back analysis
- Economic price for water
- Activity's economic revenue and cost
- Does activity benefit exceed water cost?
- Addresses water-use tradeoffs
- Is activity economically viable?

Example LWP estimate

Mixed crop-livestock farms

Blue Nile highlands: (Curtis 2007)

Net Back Value of Water		Mean (USD/m^3)
Livestock	Irrigated	0.33
	Rainfed	0.19
	Total	0.27
Crop	Irrigated	0.09
	Rainfed	0.08
	Total	0.09

Other examples in LWP session next Wednesday

CPWF experience:

- **LWP**
  - Useful communication tool.
  - Helps systematic thinking about livestock & water.
  - Useful within systems to compare management practices and intervention options.
  - Suggests limits to system improvement.
  - Huge increases possible
- **But**:
  - Cross system comparisons questionable.
  - Need to disaggregate animal species.
  - Trends more important than numbers.
  - LWP: Only a *partial* WP.

What next? R&D challenges

- Move from LWP to MUWP.
- Start at system scale – not livestock scale.
- Standardize definitions & methods within scales.
  - Manure, crop residues, roots – To partition or not?
  - Spatial & temporal boundaries
  - Denominator – price? volume? or?
  - Numerator – monetary units? Kg? DW? or?
  - Gender disaggregation.
  - Production vs productivity?
- Split ET into E and T
- Coherent methods across scales.
- Institutional and policy research.

Evidence suggests:

- 100 to 1000% LWP increases possible.
- Simultaneous adoption of LWP strategies.
- Potential contribution high:
  - Rainfed & irrigated systems
  - Multiple uses of water
  - Benefit sharing
  - Adapting to and mitigating climate change.
- LWP related to poverty, land tenure, markets & land degradation, use, and potential.

CGIAR Challenge Program on
WATER & FOOD

Thank you!