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Launching the new development and climate agenda
5-6 December 2015

Re-Thinking the Economics of Agriculture:
Fiscal and Valuation Frameworks.

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AGRICULTURAL FISCAL POLICIES

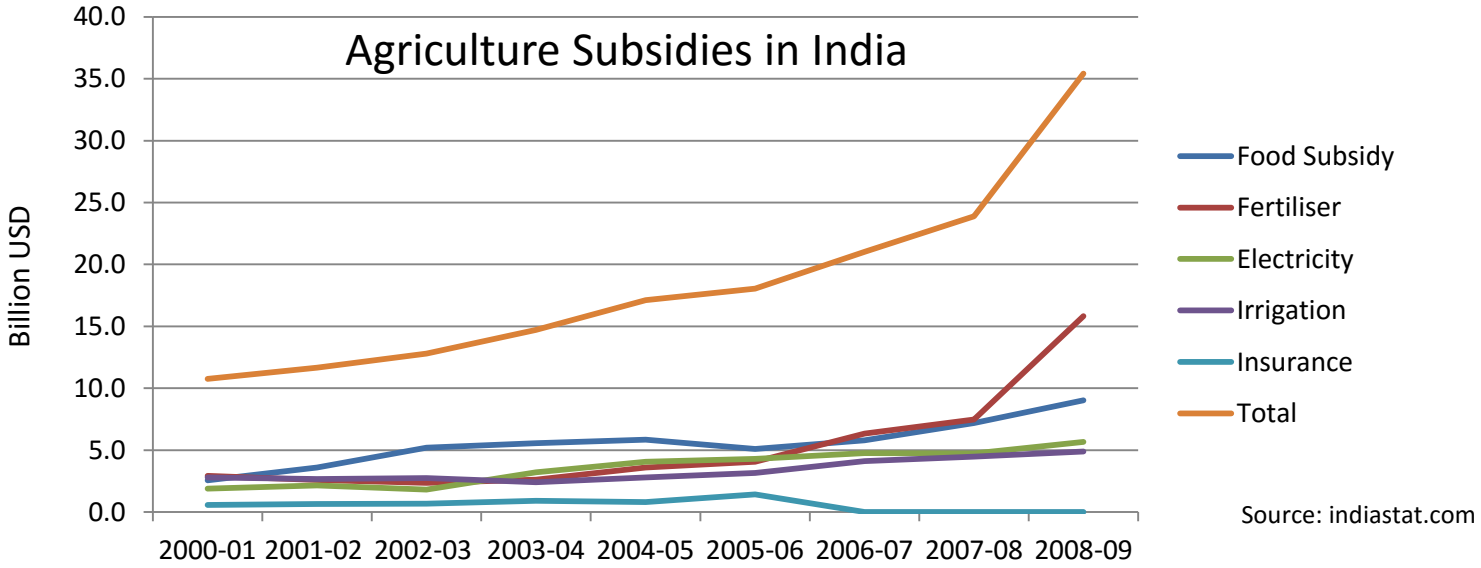
Global agricultural subsidies

Farmers in the world's top 21 food-producing countries, mostly being developed countries (2/3 consisting of OECD countries) are responsible for nearly 80 percent of global agricultural markets, received about USD 486 billion as agricultural subsidies in 2012 (worldwatch.org, 2014)

Country	Agricultural GDP (in billion USD)	Agricultural GDP as % of Total GDP	Total Support Estimates (in billion USD)	Total Support Estimates as % of Agricultural GDP
China	949.50	9.16%	327.53	34.50%
European Union	280.71	1.52%	140.77	50.15%
United States	251.84	1.45%	93.07	36.96%
Indonesia	121.94	13.72%	32.00	26.24%
Turkey	64.23	8.03%	18.20	28.34%
Japan	55.56	1.21%	56.10	100.97%
Korea	33.02	2.34%	26.31	79.67%
Colombia	25.18	6.67%	6.54	25.99%

Source: OECD 2015, World Bank Data 2014

Agricultural subsidies in India



Source: indiastat.com

Agriculture Subsidies in India
(Rs. in Crore)

Year	Total	USD Billion
2000-01	50,771	10.8
2001-02	56,747	11.7
2002-03	59,679	12.8
2003-04	66,625	14.7
2004-05	75,542	17.1
2005-06	81,752	18.0
2006-07	86,943	21.0
2007-08	103,936	23.9
2008-09	171,508	35.4

Source: indiastat.com

- During the period 2004-05 to 2008-09 while agricultural GDP grew by 70%, (from USB 108 billion to USD 160 billion), while subsidies grew at double the pace at little more than 140%

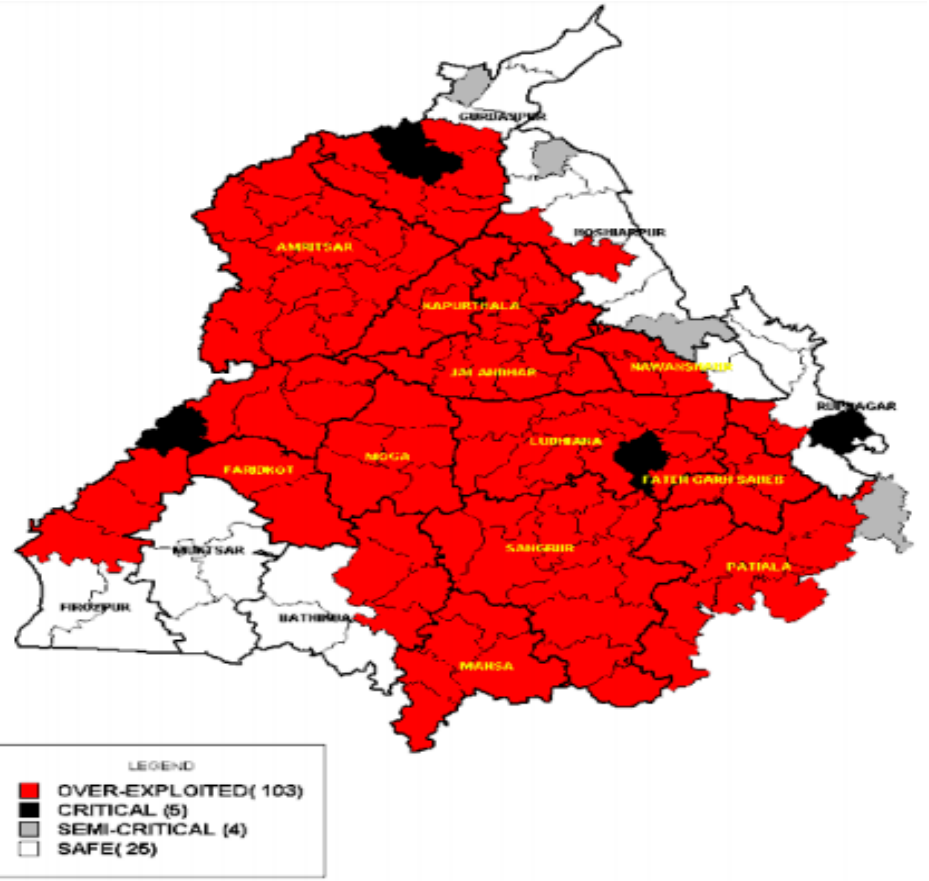
Negative consequences of 'Green Revolution' in India

Depleting ground water	• In 1960 135,000 ha was irrigated by tube wells this has risen by 213 % to 28,948,000 ha in 2010 in India • Groundwater tables are falling in many areas of the country, from around 20 cm per year in Punjab to 3 to 5 metres per year in parts of Gujarat
Eutrophication	• Fertilizer use in Punjab increased from 38.7 kg/ha to 241.6 kg/ha in 2010-2011 • Water quality of major rivers are degrading. Beas - B, Satluj- B , Ghaggar - D.
Monoculture	• The Diversification Index (DI) for the state as a whole declined from 0.707 in 1970-71 to 0.591 in 2001-02 • Higher risk of pest attacks
Pesticide Use	• 1955-56 the pesticide consumption was about 15 gm/ha72, which increased to 90 gm/ha in 1965-66, and in 1990-91 it reached a peak of 405 gm/ha before declining to 265 gm/ha in 1998-99 • High instance of poisoning from pesticide in Punjab

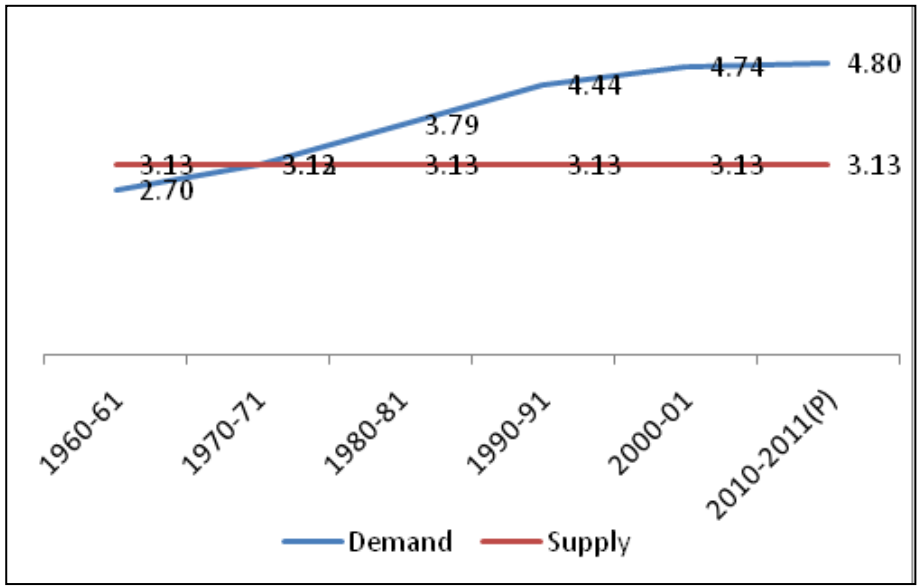
Source: GIST Advisory, 2013; en.wikipedia.org/wiki/Subsidies_in_India

Negative consequences of 'Green Revolution' in India

Status of ground water in Punjab



Water Demand and Supply in the state of Punjab (Million hectare meter)



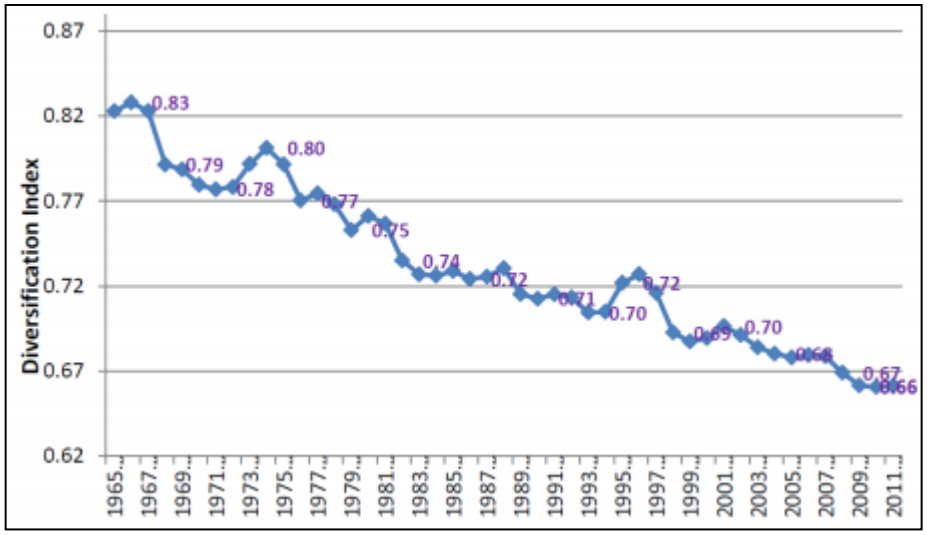
Source: GIST Advisory, 2013

Negative consequences of 'Green Revolution' in India

Pesticide contamination of different food and feed commodities in Punjab

Commodity	Year	No of samples	No of samples contaminated	Nature of residues
Cereals	1984-85	30	30	DDT,HCH
Rice grain	1990-98	99	99	HCH
Vegetables	1990-98	96	73	DDT,HCH
Animal feed	1984-89	15	15	DDT,HCH

Trends in crop diversification Index in Punjab



Source: GIST Advisory, 2013

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AGRICULTURAL VALUATION FRAMEWORKS

Four "Valuation Approaches" supported by One Universal "Valuation Framework"

(i) Business Analysis
Product X
vs
Product Y

(ii) Typology Comparison
System A
vs
System B

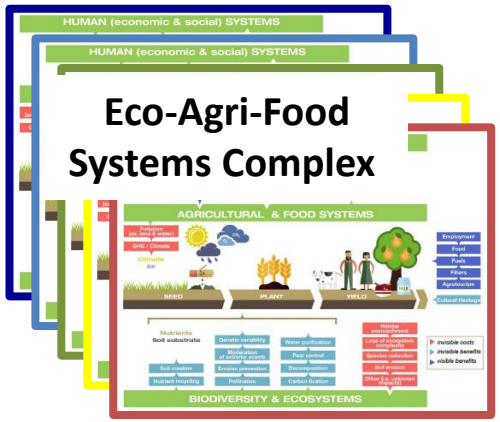
(iii) Policy Evaluation
Policy Scenario 1
vs
Policy Scenario 2

(iv) National Accounting
Unadjusted GDP
vs
Environmentally Adjusted GDP

Valuation Framework

Parameters, Data, & Questions

Analysis, Valuations & Answers



Principles

- Holistic View of "Agriculture"
- Anthropocentric Perspective
- Indicators of Value: Economic, Social, Resilience

Components

- Accounted Values (GDP components)
- Unaccounted Values (Externalities)
- Typology of Systems & Practices
- Value Chain Boundaries
- Scope of Evaluation

Valuation Framework – Externalities and Value Chain Boundaries

"VALUE- ADDITION"	Production			Processing & Distribution			Consumption	
Visibles & EXTERNALITIES	**Natural Land-scape**	**Infra & Mfg**	**Farm**	**Wholesale**	**F&B**	**Retail**	**Industry/ Household/ Hospitality**	**Waste Mngmt**
Visibles (Profits, Wages, Taxes net of Subsidies, etc)								
Provisioning (Materials, Energy, etc)								
Regulating (Soil, Water, etc)								
Cultural (lifestyle, heritage…)								
Health (Accidents, Diseases, Antibiotic Resistance, etc)								
Pollution (Nitrates, Pesticides, Heavy metals, etc)								
Climate (CO_2 ; CH_4 ; etc)								
Social Values (food security; women's empowerment; etc								
Risks & Uncertainties (Resilience; Health; etc)								

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ATMOSPHERE/CLIMATE

PHYSICAL - CHEMICAL

CLIMATE

Air

CO_2

O_2

Human (Economic & Social) systems

Breeding
Fertilizer
Machinery
Irrigation
Pesticides
Bio-technology
Labor

Pollution externality
GHG/climate externality

Energy Appropriation
Health externalities

= Invisible costs
= Invisible benefits
= Visible benefits
= Inputs (science & Technology)

Agricultural & Food systems

SOIL STRUCTURE

SEED → PLANT → YIELD

Food
Raw Materials
Agro-tourism
Cultural Heritage

Soil creation
Nutrient recycling

Genetic variability
Water purification

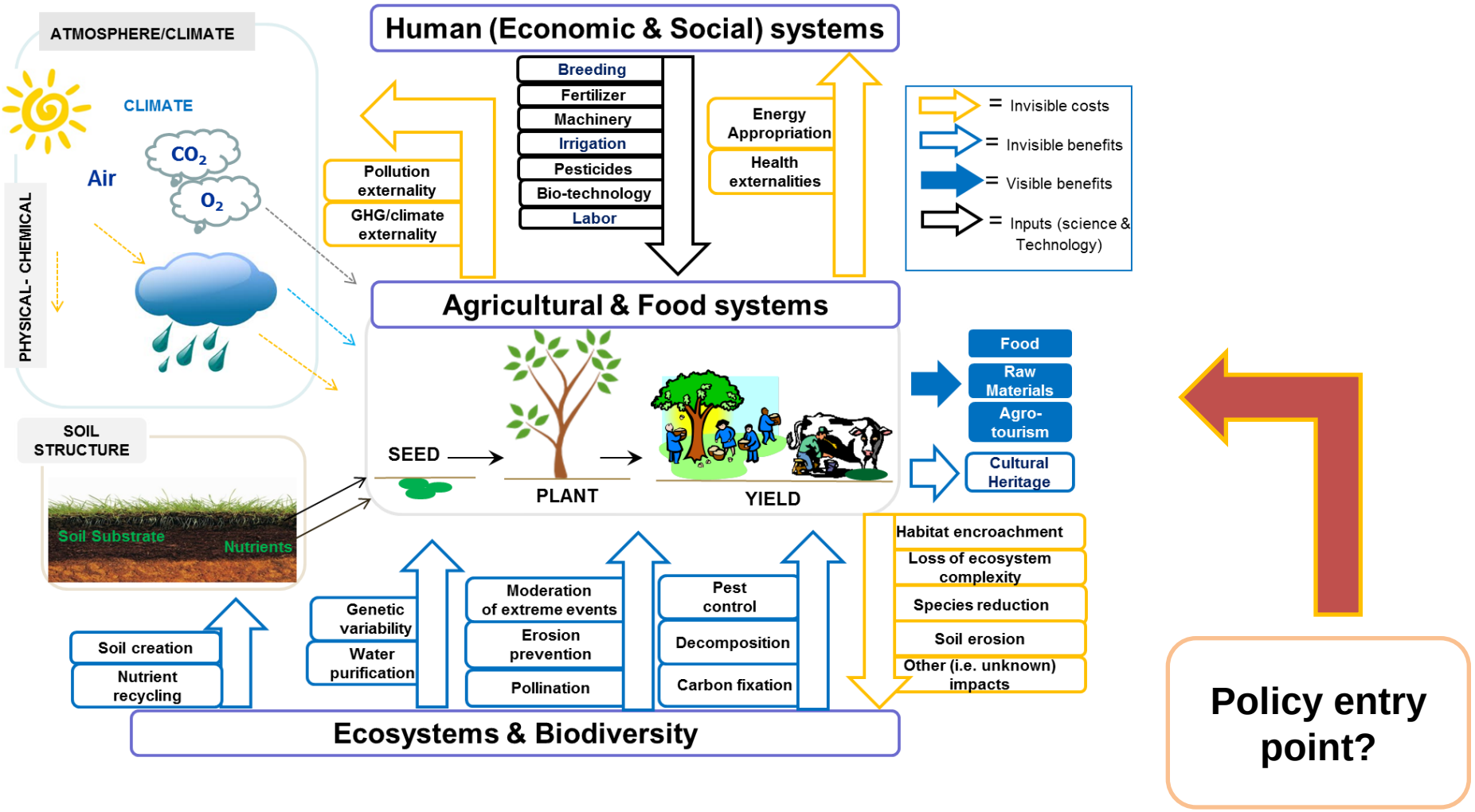
Moderation of extreme events
Erosion prevention
Pollination

Pest control
Decomposition
Carbon fixation

Habitat encroachment
Loss of ecosystem complexity
Species reduction
Soil erosion
Other (i.e. unknown) impacts

Ecosystems & Biodiversity

Policy entry points



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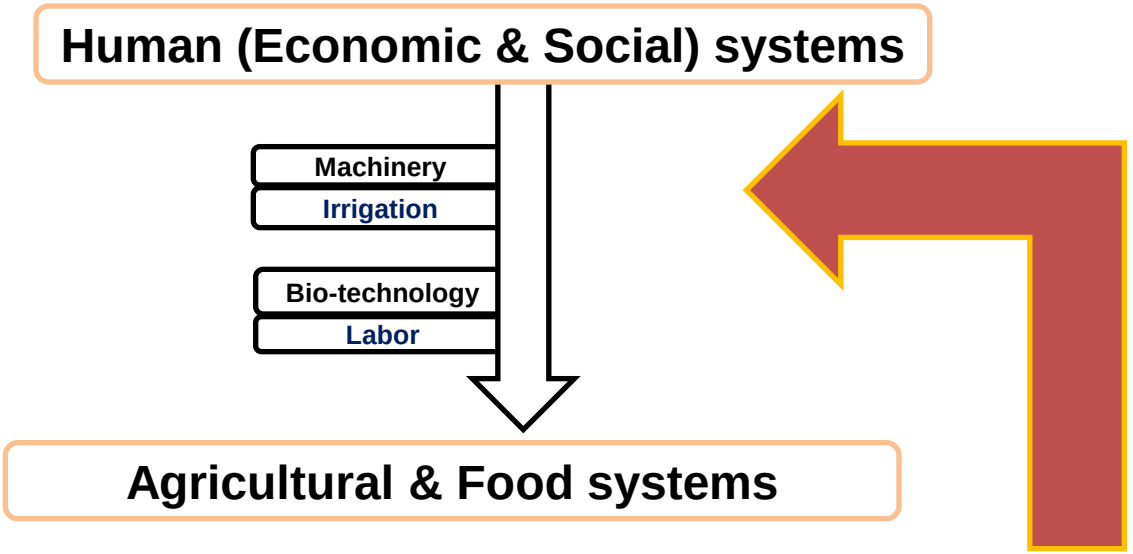

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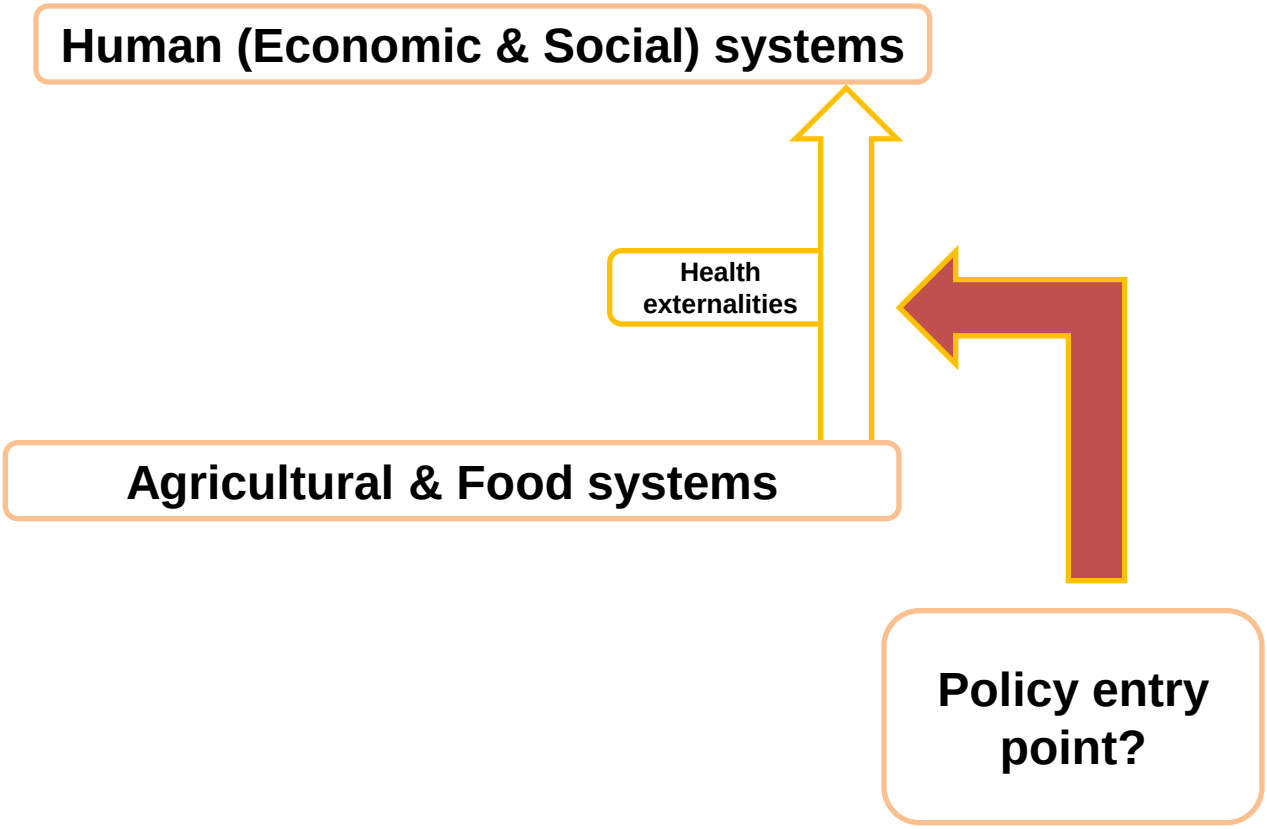

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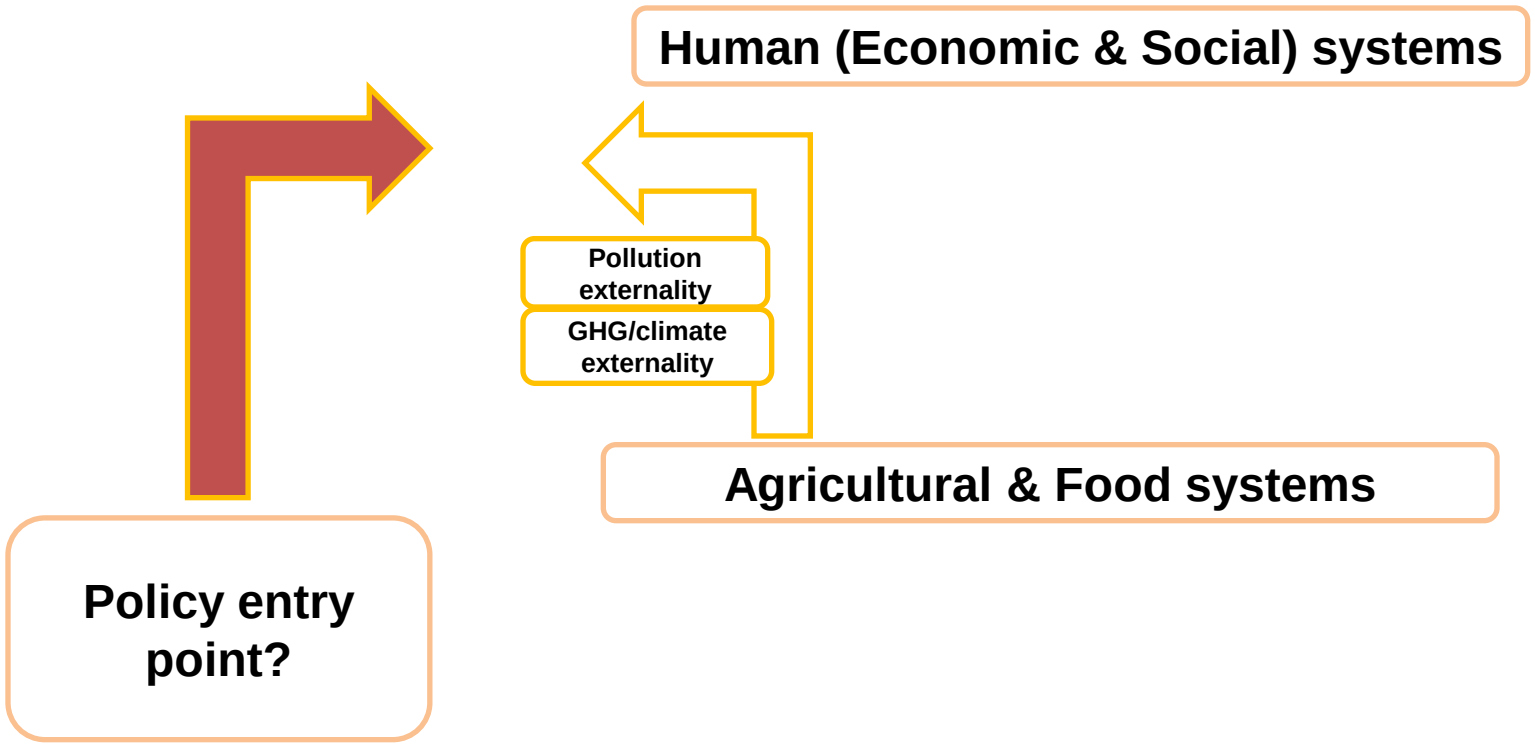

Forge compatibility of agricultural Fiscal incentives with REDD+

- Conversion of forests to cropland and pasture is the leading cause of deforestation (Mattern, 2009)
- Fiscal policies and incentives greatly influence land use behavior and changes.
- Fiscal policies have not been systematically examined as part of REDD+ readiness. Public policy and related fiscal policy and incentives must seek coherence across sectors, in order to overcome inherent conflicts between sectors, and to send the right signals.
- REDD+ will help rethink fiscal incentives for agricultural commodities as part of Countries National REDD+ Strategies and Actions Plans.

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Thank You!

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