

# Land Management and Adaptation Imperatives

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# Organization

1. Adaptive Imperatives- issues and questions
2. Environment and Economy- contextualizing adaptation imperatives
3. Adaptation imperatives arising from land management, with special reference to agricultural land
  1. Land-utilization
  2. Land Degradation
  3. Access to Land
4. Climate Change: Debates and Opinions (short films-2)
5. Adaptation Issues (short films-3)
6. Interactive group workshop

# Adaptation Imperatives

- Adaptation:
  - Biological
  - ***Social***
- The capacity and potential for humans to adapt is called adaptive capacity.
- This is unevenly distributed across different regions and populations

# Some Questions

- What do you need to adapt to?
  - Changes in environment...both natural and social?
  - Both slow and drastic changes?
  - Were we adapting to various kinds of changes before climate change became a known phenomenon?
  - If yes, have we developed and built on adaptive capacities at various levels- Government, community, individual?
- At what spatial scale can adaptation strategies be devised?
  - Macro, meso, micro?
  - If micro, how micro?
- Who has more adaptive capacities?
  - Economic capacities- individual and public
  - Social capacities-collective

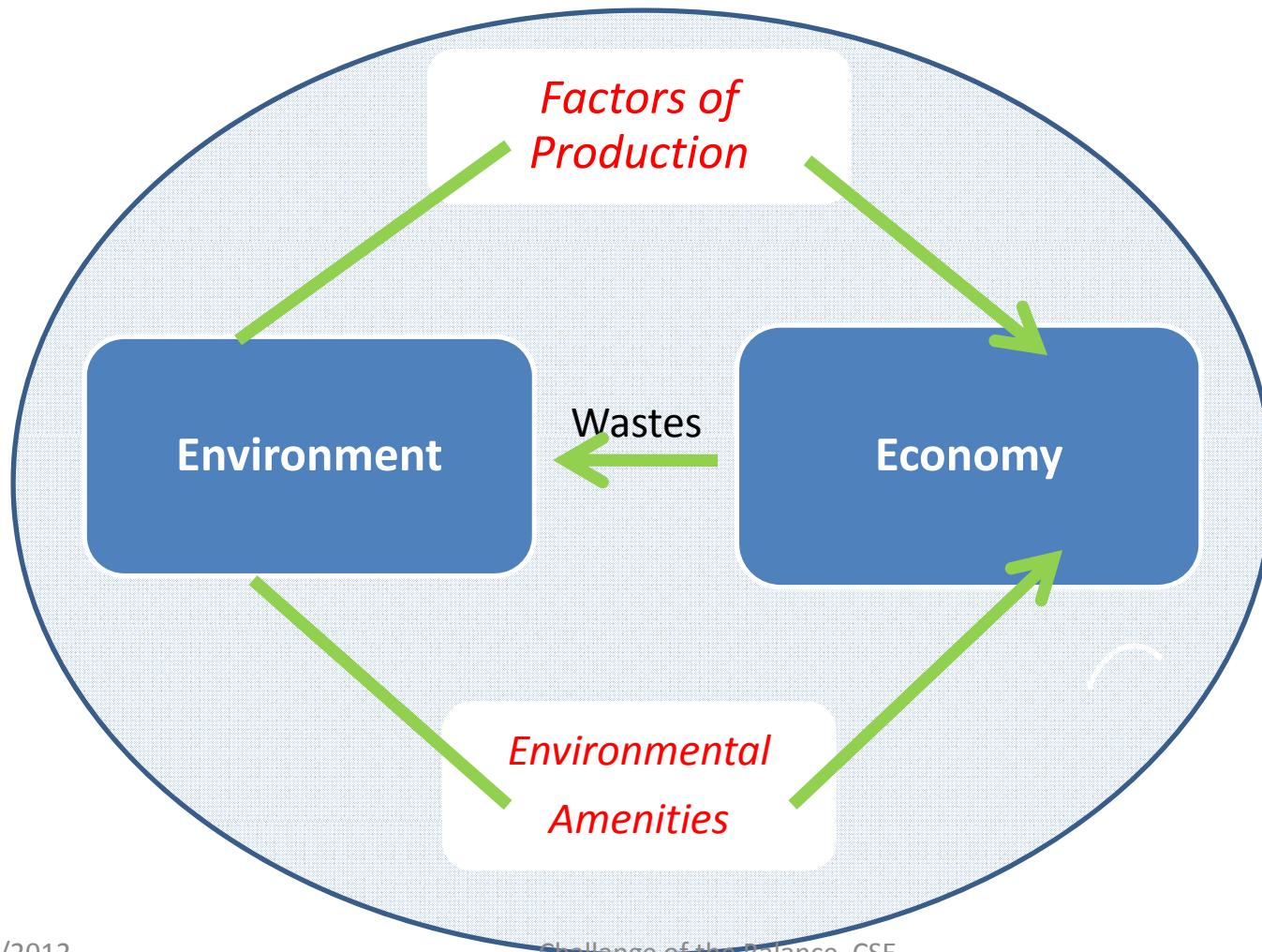
# **ENVIRONMENT AND ECONOMY- CONTEXTUALIZING ADAPTATION IMPERATIVES**

# Economic Notion of Resources

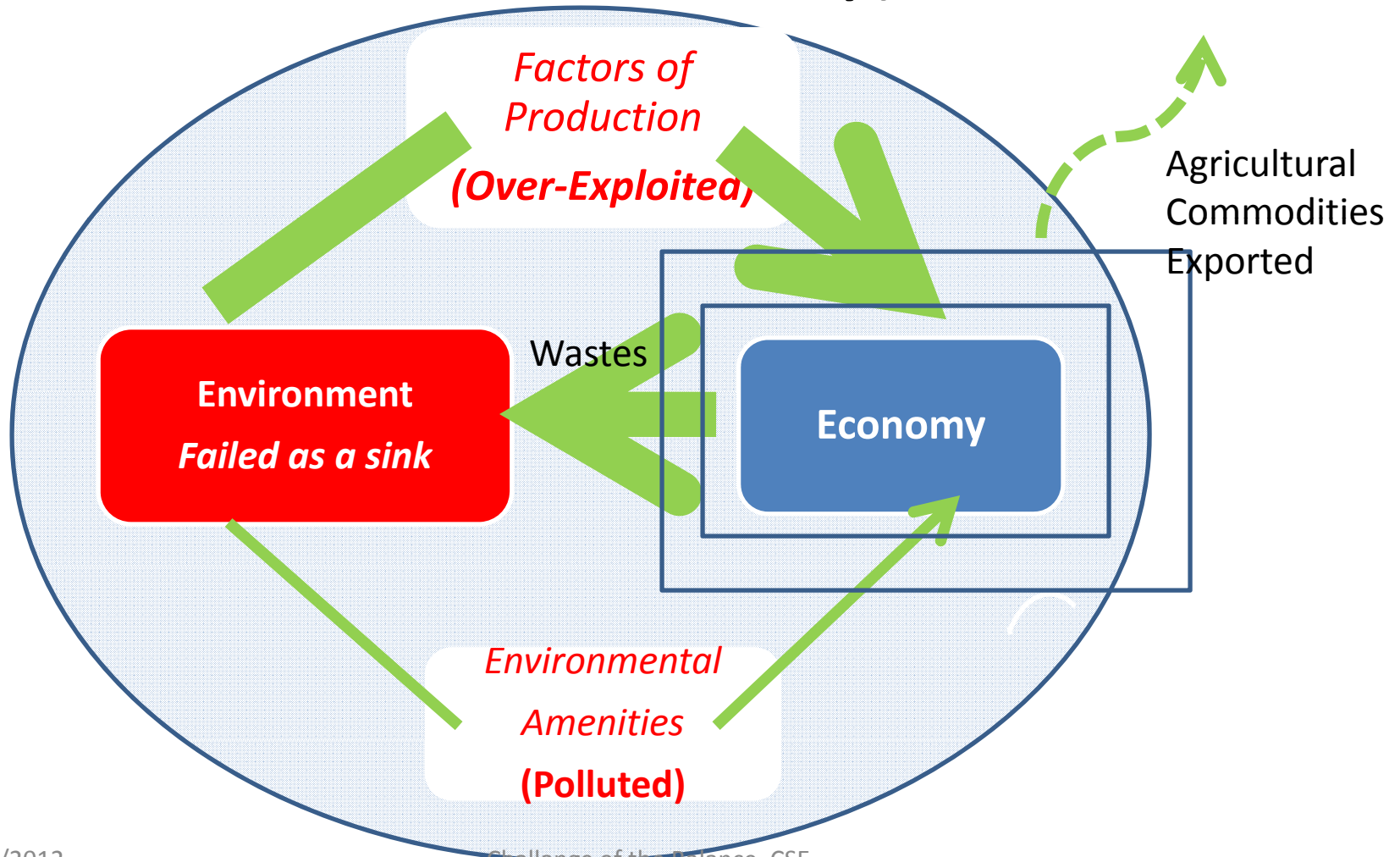
Types: **Land (Natural Resources), Labour, Capital**  
*Characteristics*

- Factors of Production
- Anthropocentric Value- no intrinsic value of its own.
- Scarce and hence priced.
- Fungible- exchangeable with other resources to a large extent.
  
- The Flow and the Stock concept of resources.

# Relationship: Environment (Natural Resources) and Economy

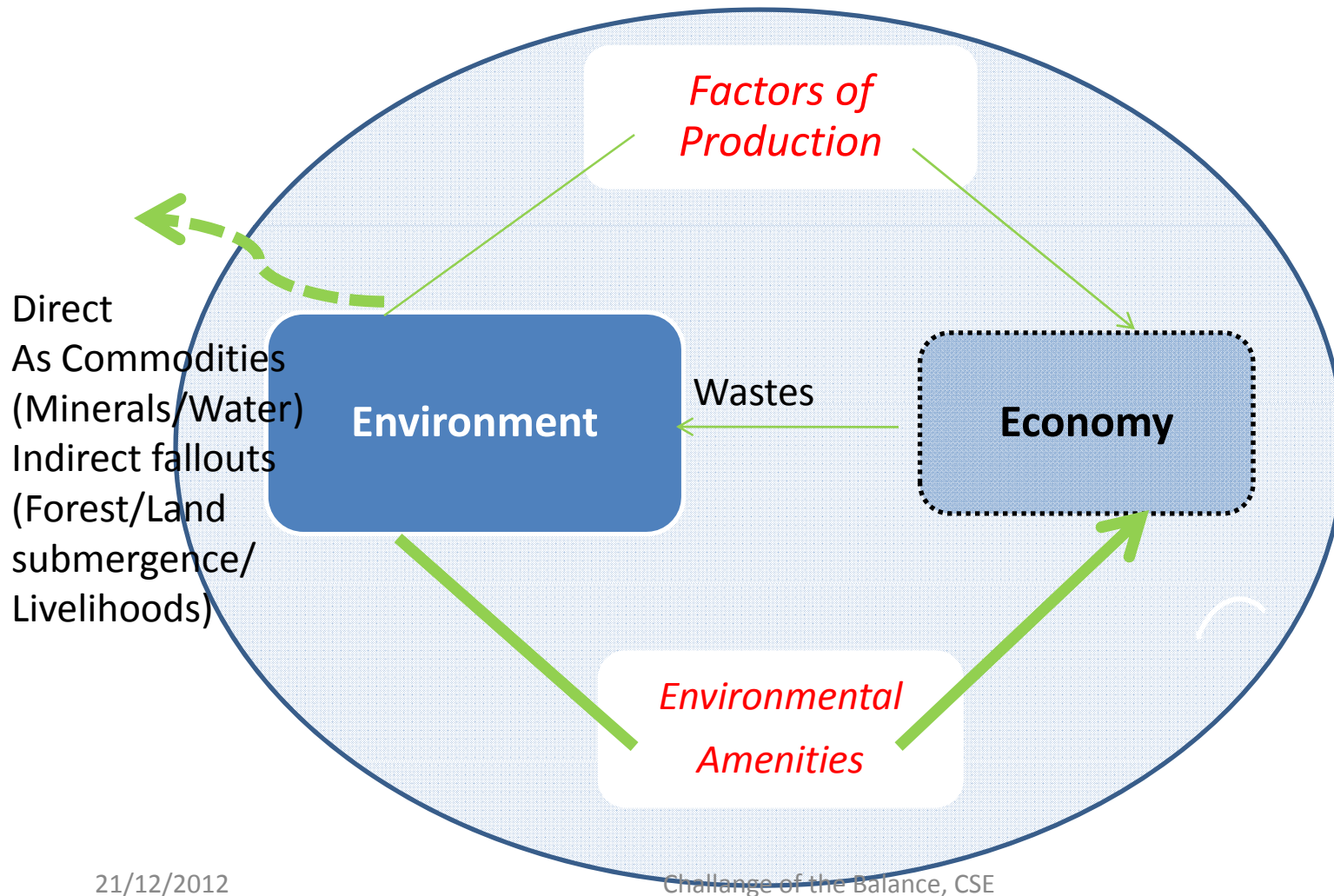


# Relationship: Environment and Economy (Growing Economy and sustainability)





# Relationship: Environment and Economy (Natural Resources exported)



# Difference between Natural Resources and Other Resources

1. Relative finiteness of factors of production
2. Natural environment acts as a sink for the wastes of the economy.
3. Natural resources provides environmental amenities to economy.
4. Value of its own over and above the direct value to human beings.

# Contextualization of Adaptation Imperatives

- Natural resource context as opposed to other resources (functions and vulnerabilities).
- Resource scarcity context as opposed to relative resource abundance.
- Variability as opposed to slow uni-directional change.
- Socio-natural ecosystems as opposed to natural ecosystems.

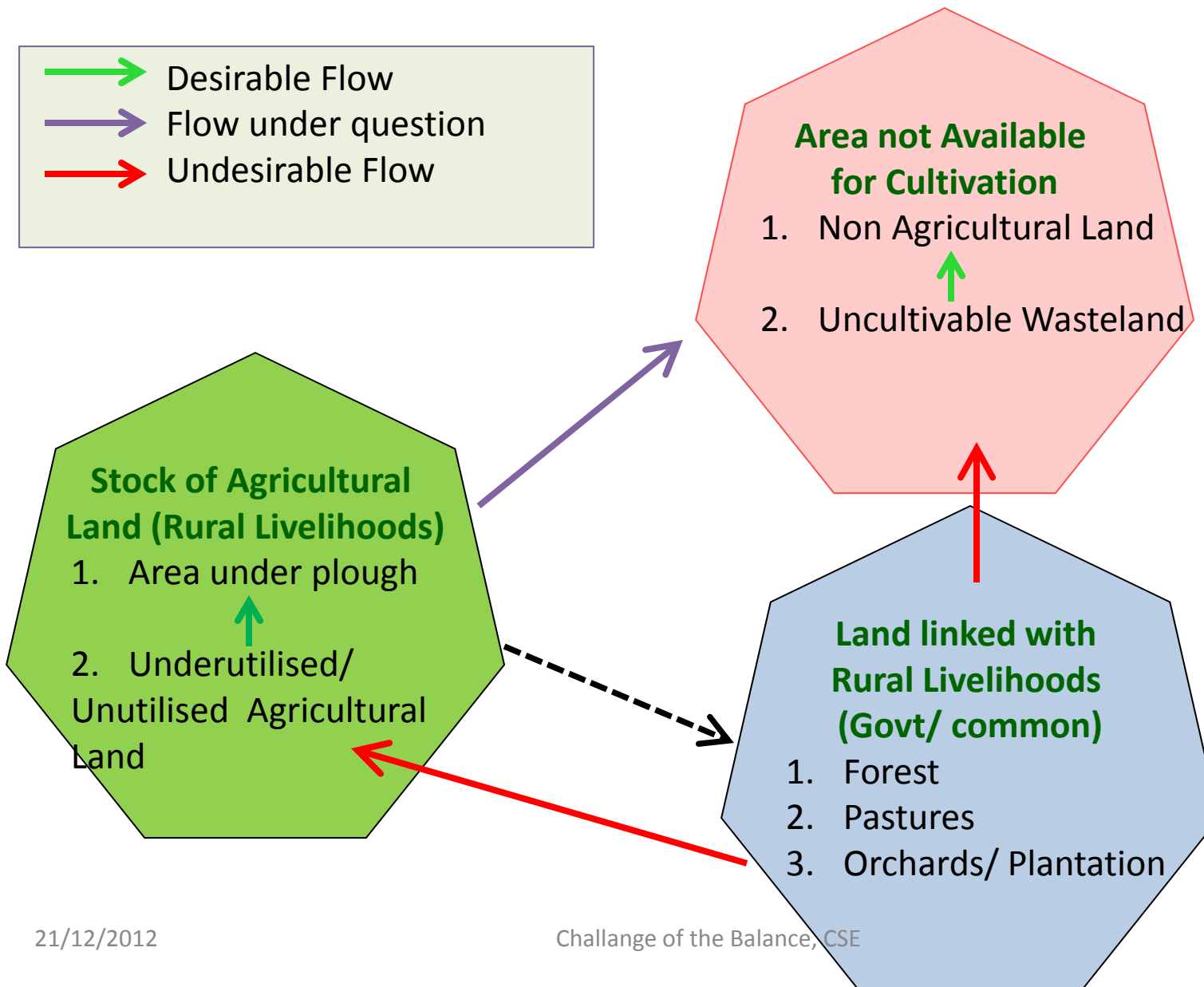
Adaptation is needed for Changes in

1. Land-use
2. Land Degradation
3. Access to land

# **LAND MANAGEMENT ISSUES**

# **LAND USE WITH SPECIAL REFERENCE TO RURAL LAND**

# Framework for Understanding Land-use Categories and their Interactions



## The Critical States: Growth rates bt 1961-62 and 2008-09 for Selected Categories of Land-use

States	Total cultivable land	Net Area Sown	Pastures and Tree Crops	Area not available for cultivation
Orissa	-0.38	0.07	0.25	0.41
Bihar	-0.11	-0.37	0.21	0.17
Tamil Nadu	-0.09	-0.26	-1.60	0.32
Maharashtra	-0.08	-0.02	-0.02	0.12
West Bengal	-0.04	-0.01	-5.47	0.50
Punjab *	-0.04	0.06	2.81	0.19

# LAND DEGRADATION

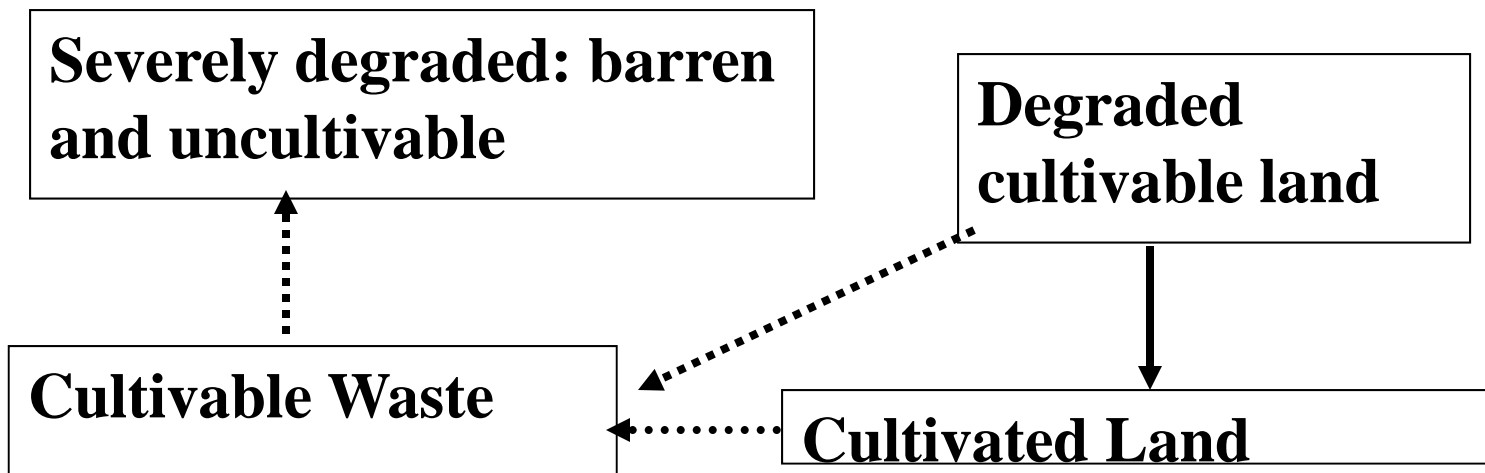
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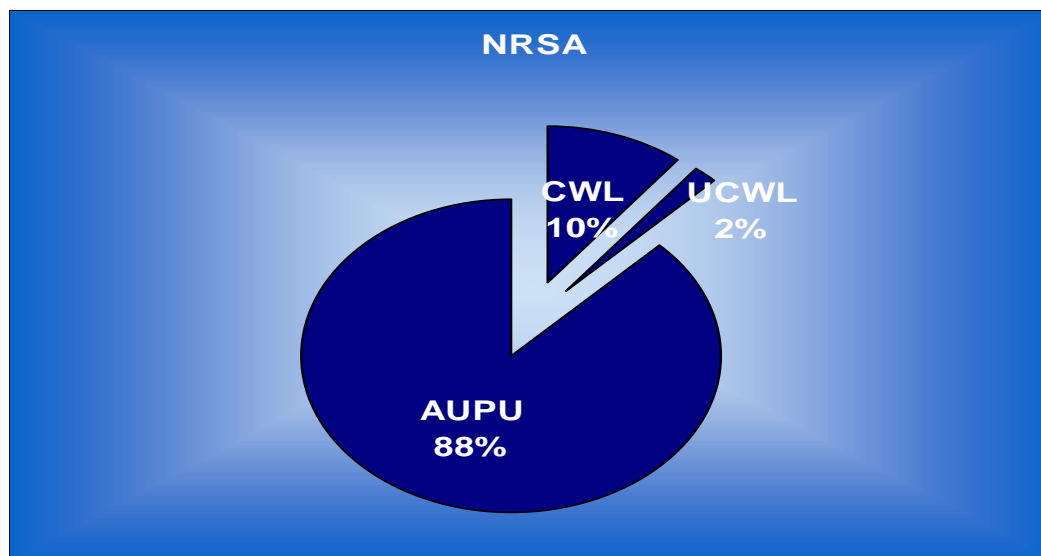
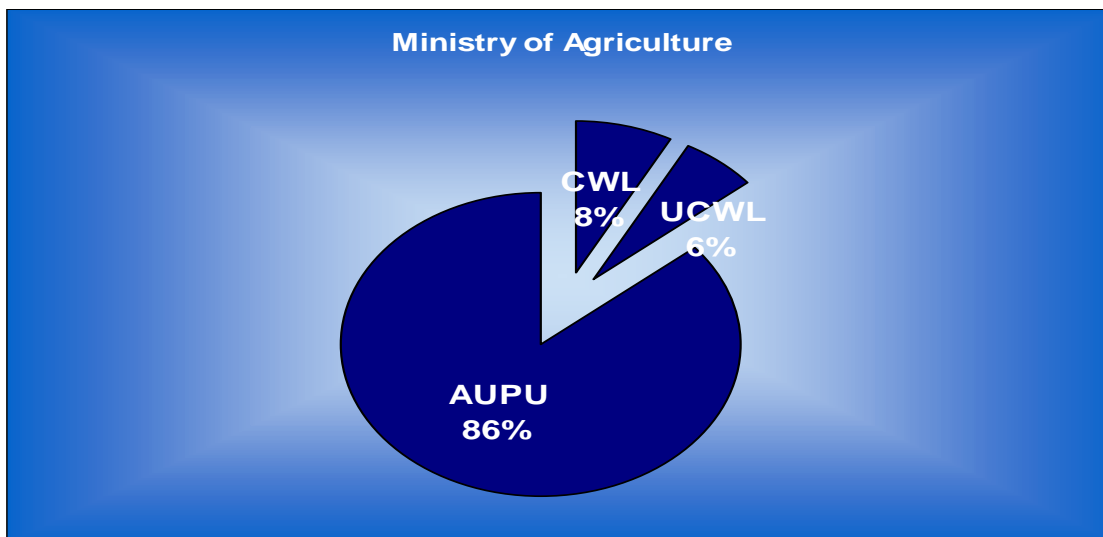
Challange of the Balance, CSE



# Under-utilisation and Land Degradation

**All underutilised/unutilised land may not be degraded. The relationship between the two may be conceptualised as below:**





AUPU: Area under productive use (includes forest and pastures)

CWL: Cultivable waste land

UCWL: Uncultivable waste land

# ***Land degradation, Poverty and Development***

## ***Two strands of theoretical arguments:***

- **poverty-environment nexus:** Carrying capacity and MSY arguments.
- **Counter-argument:** Given the very fact that the poor depend on bio-mass based resources for their sheer survival, they would not overexploit such resources.
- **Development-degradation nexus:** Short term profit motive;  
**Counter-argument:** Possibility of land development investments higher in richer regions.

# Who is impacted the most?

- Poor, in rural areas are most dependent on natural resources, in general, and land in particular.
- The gender division of labour skews use of different kinds of land resources.
  - Privately owned land.
  - Common property land resources.

# **ACCESS TO LAND**

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# Importance of Access to Land

- **Access to land** is of fundamental importance in rural India and has an inherent link with rural poverty.
- In India as a result of Green Revolution, the **gains from technological innovation remain unequally distributed** between those with access to land, water and inputs, and those without.
- **Different and more important in rural areas than in urban.**

# Types of Land Access

- Individuals' rights, claims or interests in land according to three parameters:
- (i) whether or not they may legally be upheld, under prevailing legislation (***strict legality***);
- (ii) whether or not they are socially perceived to be legitimate, irrespective of their strict legality (***social legitimacy***);
- and (iii) whether or not they are actually exercised in practice, and therefore translate into effective control over land (***effective control***).

		<b>Socially perceived to be legitimate?</b>	
		<b>Yes</b>	<b>No</b>
<b>Strictly legal?</b>	<b>Yes</b>	<p><b>Ownership rights</b>, acquired through inheritance or sale/ purchase market</p> <p><b>Customary use rights over village commons</b></p> <p><b>Legally protected tenancies under liberalized land-lease market</b> (social legitimacy may be ambiguous)</p>	<p><b>Women's right to own land independently</b></p> <ul style="list-style-type: none"> <li>• <b>Legally protected tenancies?</b></li> </ul>
	<b>No</b>	<p><b>Concealed tenancies</b> under oral contracts</p> <p><b>'Illegalised', customary use rights</b> (e.g. cultivation rights of tribal communities on forest land, forbidden under 1980 Forest Conservation Act)</p>	<p><b>Encroachment on commons</b></p> <ul style="list-style-type: none"> <li>• <b>Alienation of tribal land</b> (loss of effective control over land owing to indebtedness/ land mortgage)</li> </ul>



Is there climate change?

Is it surely for anthropogenic reasons or is it part of a climatic cycle?

# **CLIMATE CHANGE: DEBATE AND OPINIONS (FILMS)**

### **Group Discussion**

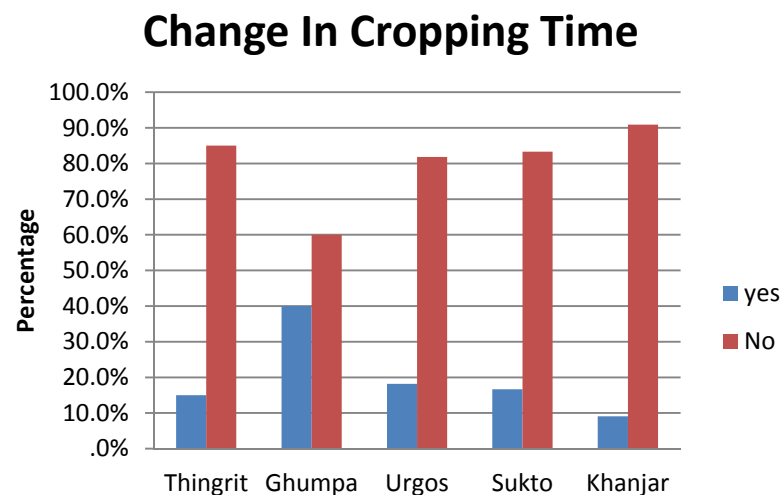
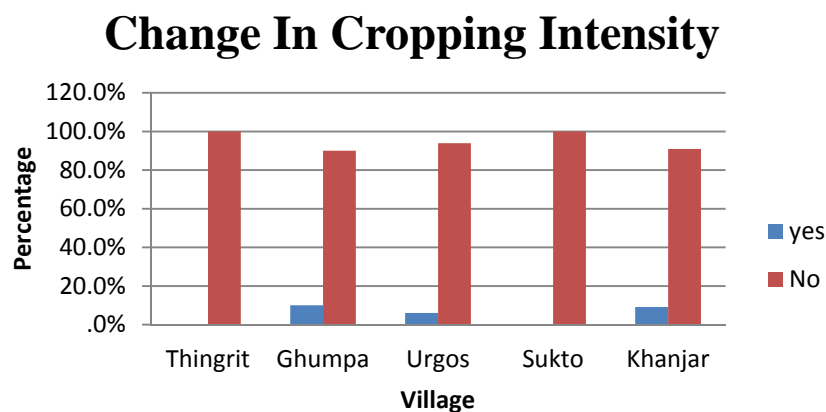
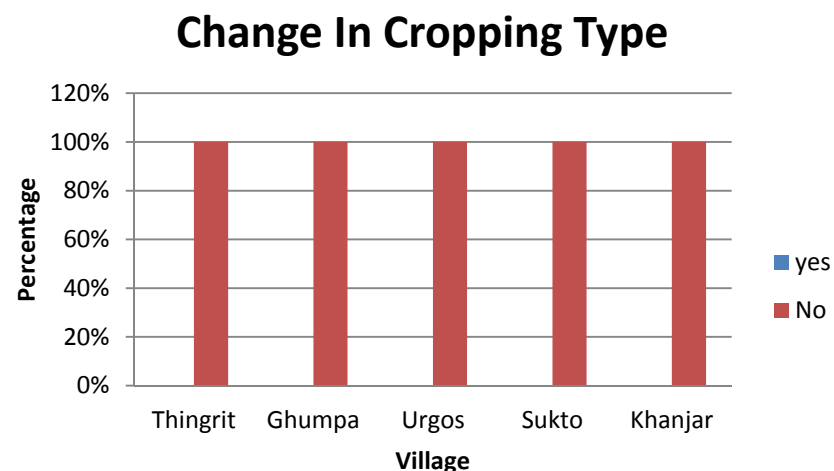
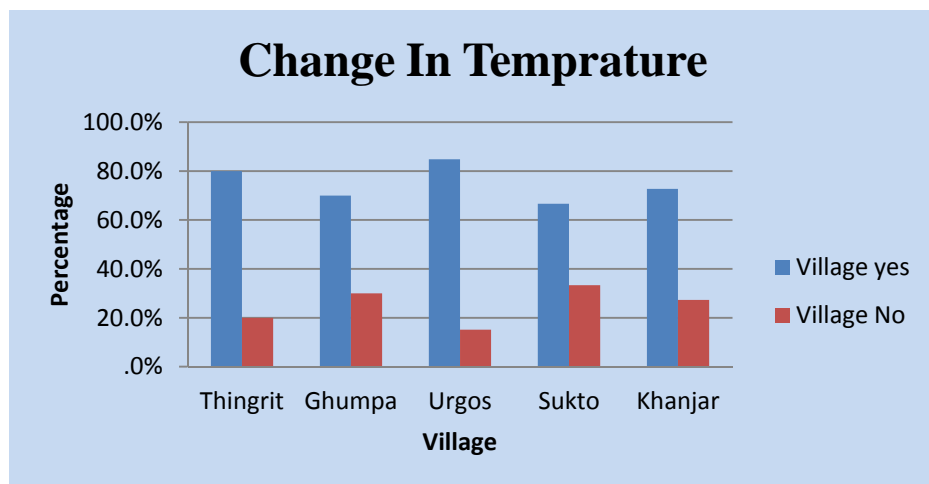
People will not adapt unless they see threats or opportunities in the change that they perceive, if at all they do.

1. How important is climate change as a factor for peoples' adaptation?
2. What are people's perspectives about climate change? Can they be different living in the same region/ecosystem?
3. Do they see a significant change? What kind of changes?
4. If communities perceive change, do they adapt to the change?
5. Does climate change offer only threats, or some opportunities as well?
6. What can be the nature of these adaptations?
7. If they do not adapt, do they have adaptive capacities?
8. What determines adaptive capacities? (Wealth, good governance, local institutions?)

# **ADAPTATION TO CLIMATE CHANGE (PERSPECTIVES FROM PAKISTAN, BANGLADESH AND INDIA)**

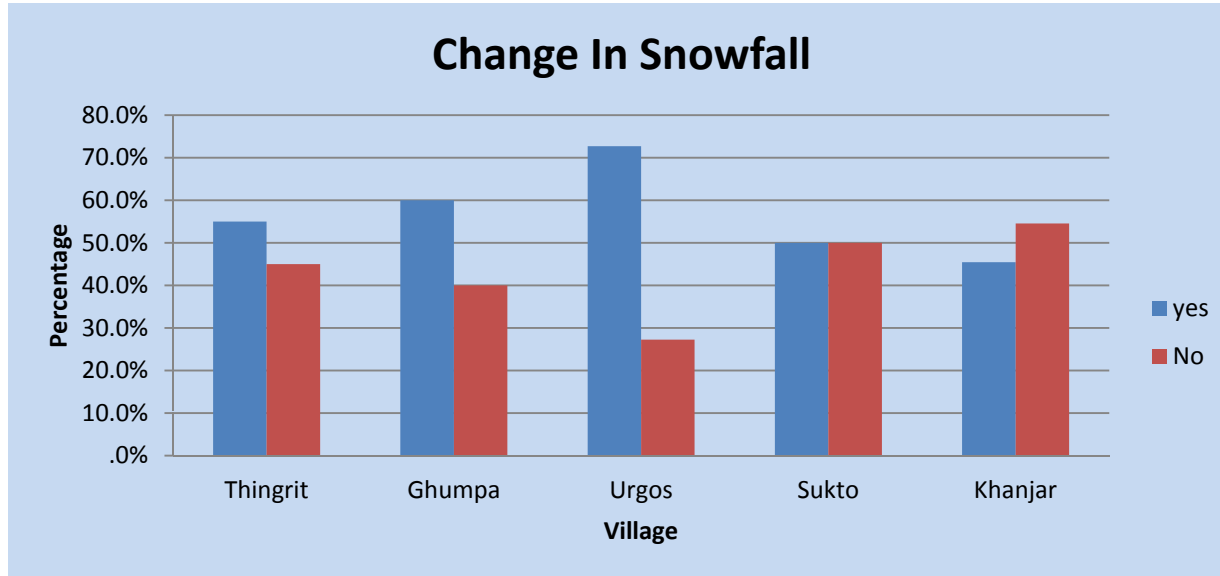
# **SOME FIELD OBSERVATIONS FROM LAHAUL HIMALAYAS**

# Farmers' Perception to Temperature Change and Responses

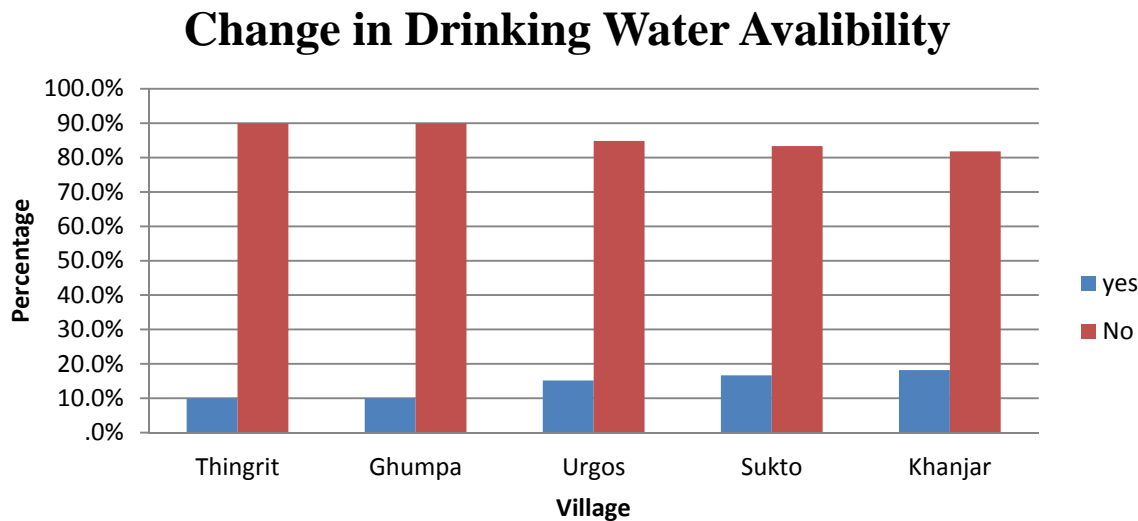


Perception in change in temperature (increase), but no response to it due to the uncertainties and suitability factors attached to it.

# Insulated by Snow-fed Water?



1. Fairly recent increases in snowfall perceived, though delay in the snowfall onset is also felt for a somewhat longer period of time.
2. Some drying of wells are evident, but the households easily transition to alternative wells.



<b>S No</b>	<b>Parameter</b>	<b>Communities Perception of Change</b>	<b>Impact on Livelihood</b>	<b>Communities Perception of Risk to Change</b>	<b>Coping &amp; Adaptation</b>
1	Temperature Change	Some Increase	No Significant Impact	No Risk	No Coping and Adaptation
2	Snowfall	Increased (somewhat recent)	Little Impact	No Risk	No Coping and Adaptation
3	Drinking Water Availability	Slight Change	No significant impact	No Risk (No risk, but requires time and effort to shift to alternative )	Diversion of the spring water system to the new source

# Indicators for Measuring the 5 Capitals

<b>Adaptive Capacity</b>	
<b>Sectors/ Resources</b>	<b>Proxy Indicators</b>
Human Capital	Family size, Education, knowledge, and skills.
Financial Capital	Income sources , savings, credits & loans
Physical Capital	House structure and materials, Road connectivity, local technologies and equipments.
Natural Capital	Natural resources (pasture land, forest, fresh water resources), Land holding per family.
Social Capital	Social structure and relationships, local governance, community support, trust, bonding and network.

# Farm size and 5 Forms of Capital

	Human	Financial	Natural	Physical	Social	Cumulative
Small	1.42	1.00	2.00	2.31	2.70	1.88
Medium	1.73	2.00	2.33	2.46	2.69	2.25
Large	2.15	2.19	2.46	2.58	2.23	2.32
Total	1.77	1.74	2.27	2.45	2.54	2.15



# Conceptualizing Social Capital and Its Application to Climate Change Vulnerabilities

## Capital- Stock

- **Structural (Networks and connections)**
  - patronage
  - neighbourhoods
  - kinship
- **Cognitive**
  - Norms
  - Values
  - Attitudes
  - Beliefs



## Benefits- Flow

- **Mutually Beneficial Collective Actions**
  - Rules
  - Sanctions
  - Acceptance of and adherence to Rules and Sanction
  - Individual Participation in terms of time , money etc.

1. Structural and Cognitive forms are INTERACTIVE - mutually reinforcing each other, not separate or simply parallel 2. However, they are *analytically* distinguishable.

# Local Institutions in Response to Resource Management

<b>Village</b>	<b>Mahila Mandal</b>	<b>Yuva Mandal</b>	<b>Community Grazing</b>	<b>Gram Panchayat Representation</b>
<b>Tingrit</b>	Yes	Yes	Yes	Yes
<b>Ghumpa</b>	No	No	Combined with Urgos Village	Yes
<b>Urgos</b>	Yes	Yes	Yes	Yes
<b>Sukto</b>	Combined with Khanjar Village			Yes
<b>Khanjar</b>	Yes	Yes	Yes	Yes

# Examples of Informal Institutions



**Labour Exchange:** Use of Social Capital to deal with financial and human capital constraints

**Kuhl Committee:** Use of Social Capital to deal with natural capital constraints

