



# VALUING NATURE FOR SUSTAINABILITY IN THE AGRICULTURE AND FOOD SECTOR OF INDIA

## WEBINAR

19 June 2020

3:00 p.m. Indian Standard Time

Duration: 90 minutes

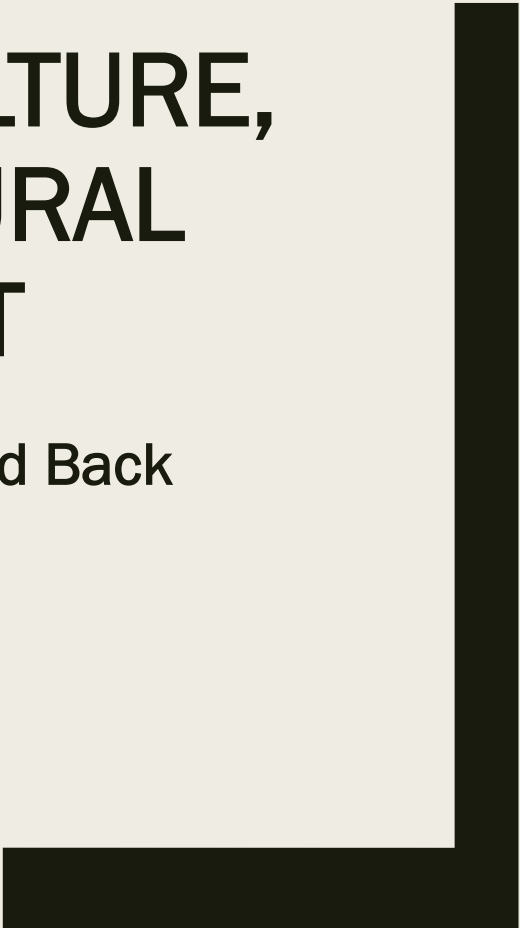




# **COVID19 & AGRICULTURE, FOOD & THE NATURAL ENVIRONMENT**

**Contain, Cope, Restart and Build Back  
Better**

**Professor Anil Markandya,  
Basque Centre for Climate Change, Spain  
University of Bath, UK**



# COVID-19 is hurting peoples' livelihoods and harming their diets.

- COVID-19 is an economic and health global crisis like no other. The economic downturn is the deepest in living memory.
- There will be a global decline in output in 2020 for 3-8% and only a small recovery in 2021.
- The economic contraction will push 48 million to 135 million of people to poverty worldwide, with the estimates depending on the poverty line used. Between 70 and 100 million could go into extreme poverty (< \$1.9/day)
- The WFP says that the number suffering acute hunger could double from 135 million at present, to 265 million by the end of the year.
- More than 50 million children in sub-Saharan Africa are missing school meals. As hardship bites, many families switch to less nutritious diets, cutting out items like fruit and vegetables, or eating less.

# The global food supply system has generally been functioning well so far - but there are severe problems in some places

- While prices of staples have not increased on average, there are pockets where they have gone up along with the prices of other food commodities.
- Fortunately government restrictions on international trade in food have been relatively limited but some of the ones imposed are raising prices.
- Some supply chains are being negatively impacted due to a lack of workers and transportation.
- Prohibitions on migration of seasonal farm workers will impact crop output this year, threatening future food demand and potentially raising prices.
- The food security crisis in most countries is not from food prices going up, but rather incomes going down.



# COVID-19 is impacting health of people, especially women. Mostly, but not in all cases, the effects are adverse

- The improvement in ambient air quality has reduced the incidence of respiratory and other health burdens associated with pollutants such as PM<sub>2.5</sub> and NO<sub>x</sub>.
  - *India has seen a 43% fall for PM<sub>2.5</sub> and 16% for NO<sub>x</sub> compared before lockdown*
- COVID has also been associated with an 8% drop in GHG emissions.
- Other effects of COVID-19 on the health status of the population, however, are predominantly negative.
- Pathways by which health is being impacted include:
  - *accessing safe water under restrictions on movement;*
  - *accessing medical care from overburdened health systems;*
  - *disruption to mass polio vaccination campaigns;*
  - *limitations on ability to socially distance where required;*
  - *an increase in stunting due to poor diet*

# Loss of Life Due to COVID-19

- The reported loss of life in developing countries from COVID-19 has been relatively low compared to the richer countries.
- Developing countries represent 85% of the global population, but only 21% of the pandemic's death toll.
- However, this may be because developing countries are still at an early stage in the spread of the virus.
- Simulations suggest that the developing country share in global fatalities could rise by a factor of three.

# Most impacts of COVID control measures are negative on the environment

- Reduced public budgets and tourism revenues for protected areas and compliance with environmental regulations, with the associated loss of incomes and livelihood options inducing human-wildlife conflict.
- Restrictions on movement making access to sanitation and safe water more difficult
- Postponement, and in some outright cancellations of many sustainable forest management activities
- Increased poaching and search for food from forests, partly in response to income loss
- Where bans on wild meat consumption are effective, pressure to clear land to increase livestock

# Massive investments are taking place to bring the economy back but developing countries still lack the resources needed

- The global economy has witnessed an injection of more than 9 Trillion USD in the form of relief packages in response to COVID. India's 260 billion USD relief package is one of the largest in the world, amounting to roughly 10 per cent of the country's GDP.
- Fiscal recovery following previous crises has tended to be carbon-intensive. To restart the economy, governments turn to sectors where investments can be made easily and often these are carbon-intensive, such as construction and airlines.
- To avoid this, specific attention needs to be paid to dimensions of the recovery other than increase in economic output, especially the environmental goals.
- There is a risk that recession could reduce investment in innovation for sustainability, and increased poverty could prioritize cheapest, short run benefits.
- Policies perceived to be desirable in having both a long-run multiplier and strongly positive impact on climate include: clean connectivity infrastructure (e.g. low carbon mobility), general R&D spending, education investment, clean energy infrastructure, and clean energy R&D spending.



# Preventing Future Pandemics

- While the world's attention is focused on controlling COVID-19, evidence points at the biodiversity crisis as one of the factors in its emergence, and the outbreak of many past emerging infectious diseases.
- Agriculture is a major driver of biodiversity loss globally. Diseases such as COVID-19 and Ebola, which are transmitted from animals to humans and then from person to person, are exacerbated by deforestation and forest degradation.
- Feeding a growing human population in ways that maintain habitats and minimize harm to biodiversity is thus imperative to prevent another coronavirus outbreak.

# Measures to Address the Agri-food Crises

- Food systems contribute up to nearly a third of all greenhouse gas emissions and have contributed to substantial biodiversity loss.
- There is an urgent need to rethink how we produce, process, market, consume our food and dispose of waste.
- Countries must ensure that relief and stimulus packages reach the most vulnerable, including meeting the liquidity needs of small-scale food producers.
  - *India's relief package provides INR 300 billion for small and marginal farmers to meet post-harvest Rabi and current Kharif requirement*
- An important part of the recovery need so include restoration of degraded forests and lands that support agriculture and make a shift from tightly controlled value chains to more flexible business models.
  - *India has allocated INR 60 billion for employment under forest management, soil and moisture conservation works.*
- Given the inherent uncertainty about how food systems evolve, it is also critical that developments in this area are closely monitored

# We Can Build Back Better

- *The recovery from the COVID-19 crisis must lead to a different economy. Our roadmap is the 2030 Agenda and the 17 Sustainable Development Goals. Everything we do during and after this crisis must be with a strong focus on building more equal, inclusive and sustainable economies and societies that are more resilient in the face of pandemics, climate change, and the many other global challenges we face.*
- *We have an opportunity to build a more inclusive and sustainable world. Let us build food systems that better address the needs of food producers and workers. Let us provide more inclusive access to healthy and nutritious food so we can eradicate hunger. And let us rebalance the relationship between food systems and the natural environment by transforming them to work better with nature and for the climate.*

**Statement from the UN Secretary-General, Antonio Guterres.**



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# The Economics of Ecosystems and Biodiversity TEEB for Agriculture & Food – India

**EU Partnership Instrument project on TEEBAgriFood Initiative**

*19<sup>th</sup> June 2020*

*Dr. Salman Hussain, TEEB Coordinator*



*Image credit: Anup Deodar*

[teebweb.org](http://teebweb.org)



# I. What is TEEBAgriFood?



CONVENTION  
ON  
BIOLOGICAL  
DIVERSITY

GORDON AND WARRILL

OXFORD

**ECOSYSTEMS  
AND HUMAN  
WELL-BEING**

Robert E. Howarth

WILEY-INTERSCIENCE

Ecol./Env.  
Economic  
s  
literature

<b>G8+5</b> Potsdam 2007	<u>"Potsdam Initiative – Biological Diversity 2010"</u> The economic significance of the global loss of biological diversity.... Importance of recognising, demonstrating & responding to values of nature...
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## Importance of recognising, demonstrating & responding to values of nature...

## Climate Issues Update



THE UNIVERSITY OF  
CHICAGO PRESS

9780226064000

## TEEB Synthesis

THE UNIVERSITY OF CALIFORNIA  
Environmental Record  
2006-2007

University of California, Berkeley  
Environmental Record  
2006-2007

**National  
TEEB  
Work**

## Sectoral TEEB Work

## Business Externalities Work

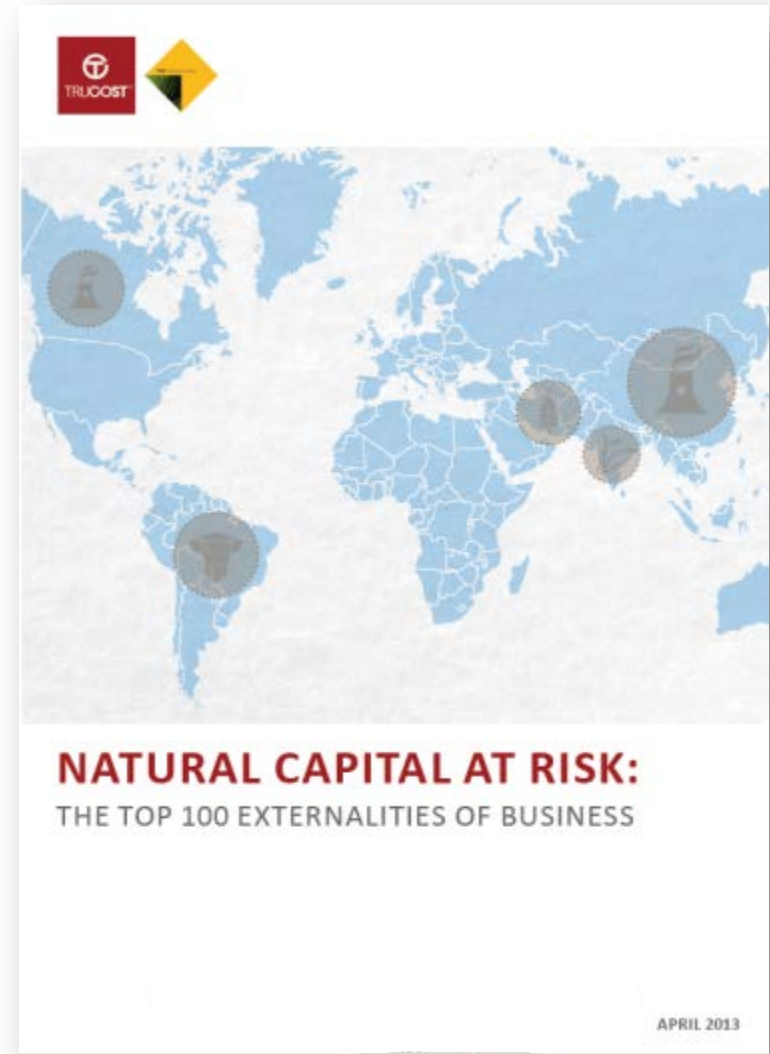
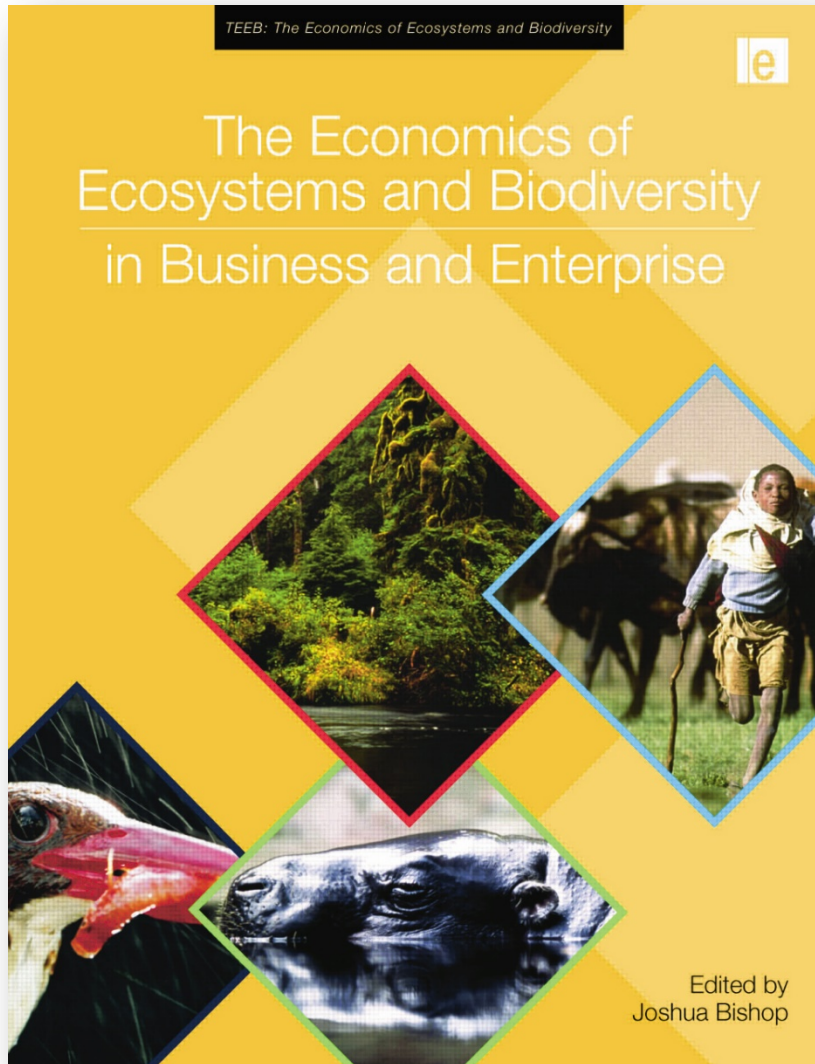
**Rio+20  
Brazil**

BD COP 10 Nagoya, Oct 2010





# TEEB for business





# Why select the agriculture sector?

## 7.1.2 THE GLOBAL 20 REGION-SECTORS

Ranking of the 20 region-sectors with the greatest total impact across the 6 EKPIs when measured in monetary terms.

RANK	SECTOR	REGION	NATURAL CAPITAL COST, US\$ BN	REVENUE, US\$ BN	IMPACT RATIO
1	COAL POWER GENERATION	EASTERN ASIA	452.8	443.1	1.0
2	CATTLE RANCHING AND FARMING	SOUTH AMERICA	353.8	16.6	18.8
3	COAL POWER GENERATION	NORTHERN AMERICA	316.8	246.7	1.3
4	WHEAT FARMING	SOUTHERN ASIA	266.6	31.8	8.4
5	RICE FARMING	SOUTHERN ASIA	235.6	65.8	3.6
6	IRON AND STEEL MILLS	EASTERN ASIA	225.6	604.7	0.4
7	CATTLE RANCHING AND FARMING	SOUTHERN ASIA	163.0	174.0	0.8
8	CEMENT MANUFACTURING	EASTERN ASIA	147.0	5.8	23.0
9	WATER SUPPLY	SOUTHERN ASIA	111.7	14.1	7.9
10	WHEAT FARMING	NORTHERN AFRICA	100.1	7.4	13.6
11	RICE FARMING	EASTERN ASIA	99.3	91.2	1.1
12	WATER SUPPLY	WESTERN ASIA	86.7	18.4	4.7
13	FISHING	GLOBAL	86.1	136.0	0.6
14	RICE FARMING	NORTHERN AFRICA	84.2	1.2	69.6
15	CORN FARMING	NORTHERN AFRICA	80.4	1.7	47.8
16	RICE FARMING	SOUTH-EASTERN ASIA	79.7	41.0	1.9
17	WATER SUPPLY	NORTHERN AFRICA	76.4	3.4	22.2
18	SUGARCANE	SOUTHERN ASIA	75.6	6.0	12.5
19	PETROLEUM AND NATURAL GAS EXTRACTION (excludes water and land use)	EASTERN EUROPE	72.6	371.6	0.2
20	NATURAL GAS POWER GENERATION	NORTHERN AMERICA	69.4	122.7	1.0





# The visible and invisible flows of agricultural production

ZAKIR HOSSAIN CHOWDHURY/ANADOLU AGENCY/GETTY



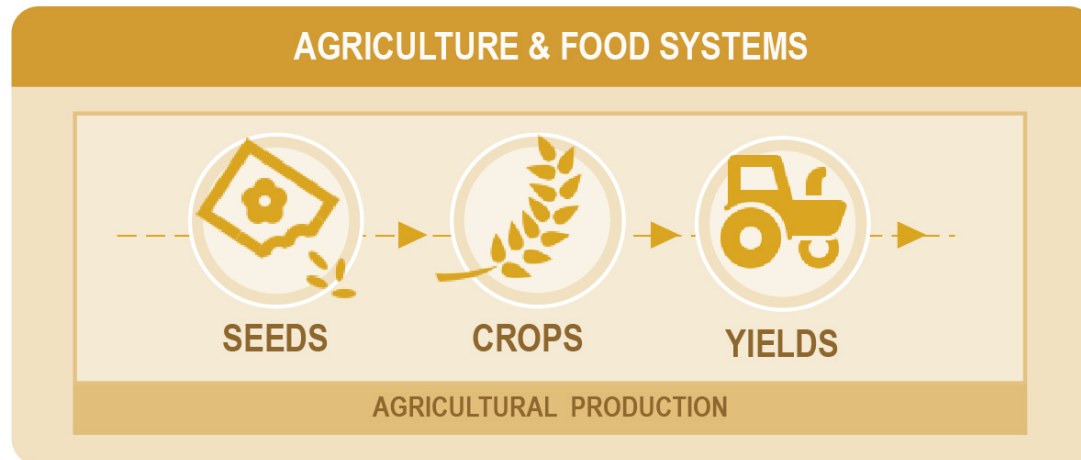
Drying red chillis under the sun provides one of the few sources of employment for women in an area of Bangladesh.

## Fix food metrics

For sustainable, equitable nutrition we must count the true global costs and benefits of food production, urge **Pavan Sukhdev, Peter May and Alexander Müller**.

# The visible and invisible flows of agricultural production

**TEEB** for Agriculture & Food



# The visible and invisible flows of agricultural production

**TEEB** for Agriculture & Food



**HUMAN SYSTEMS**



**AGRICULTURE & FOOD SYSTEMS**



**SEEDS**



**CROPS**



**YIELDS**

AGRICULTURAL PRODUCTION



**BIODIVERSITY & ECOSYSTEMS**



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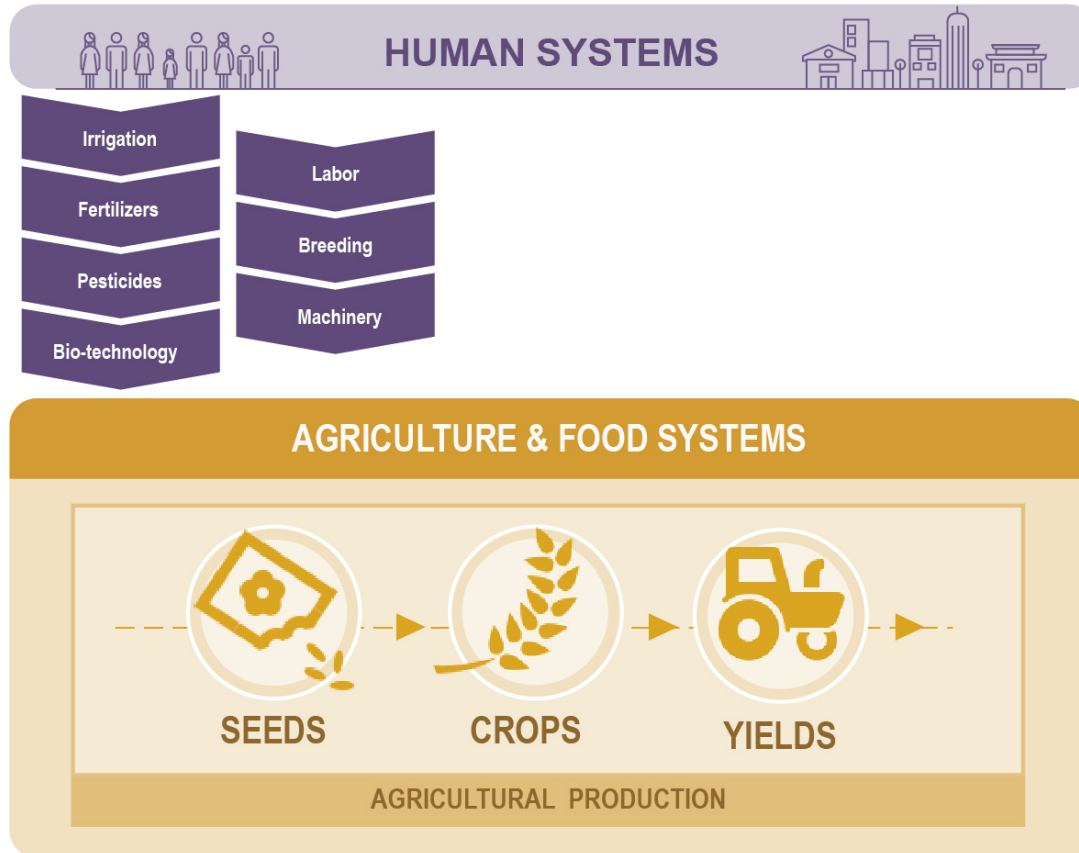


# The visible and invisible flows of agricultural production

**TEEB** for Agriculture & Food

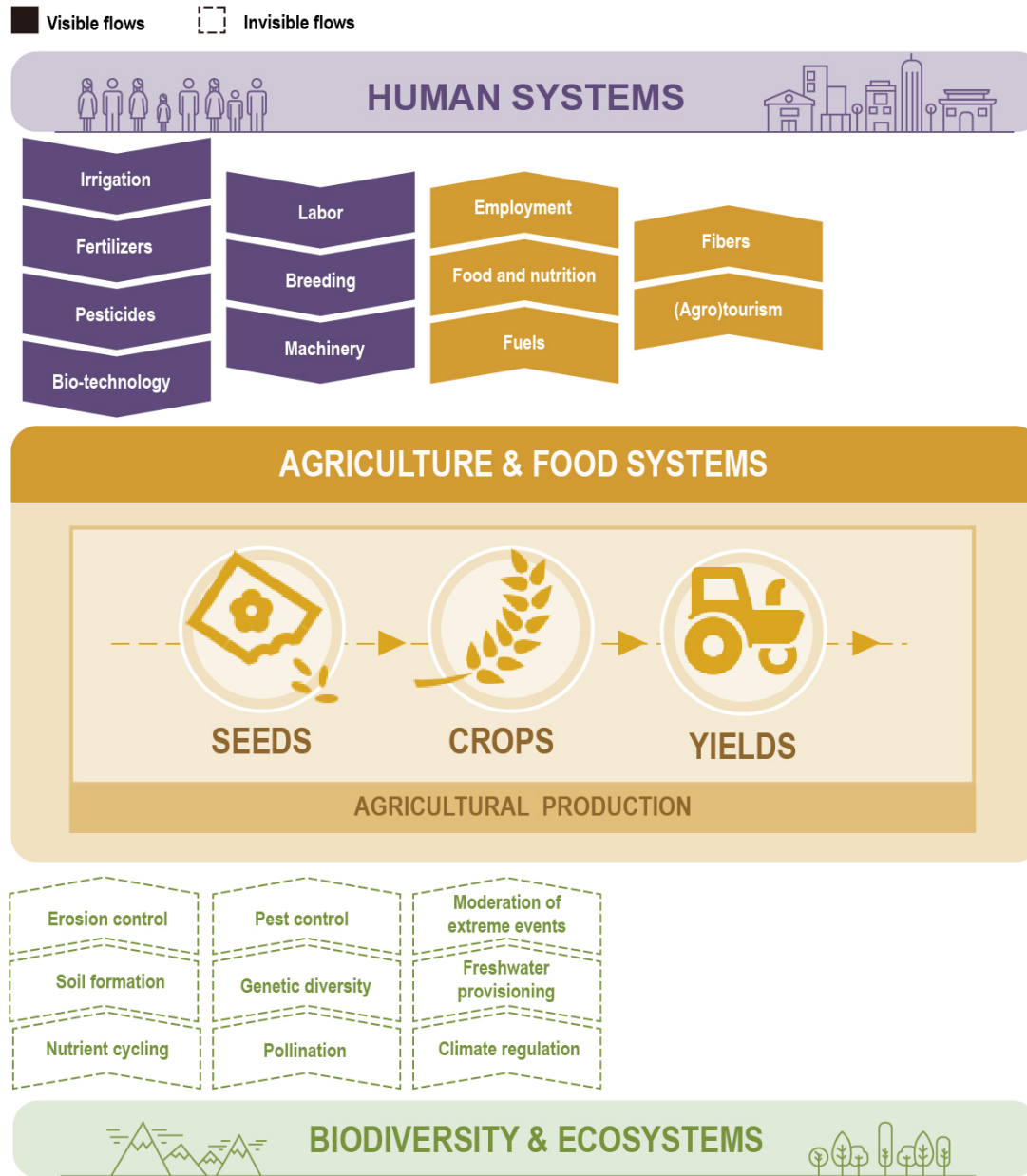


Visible flows



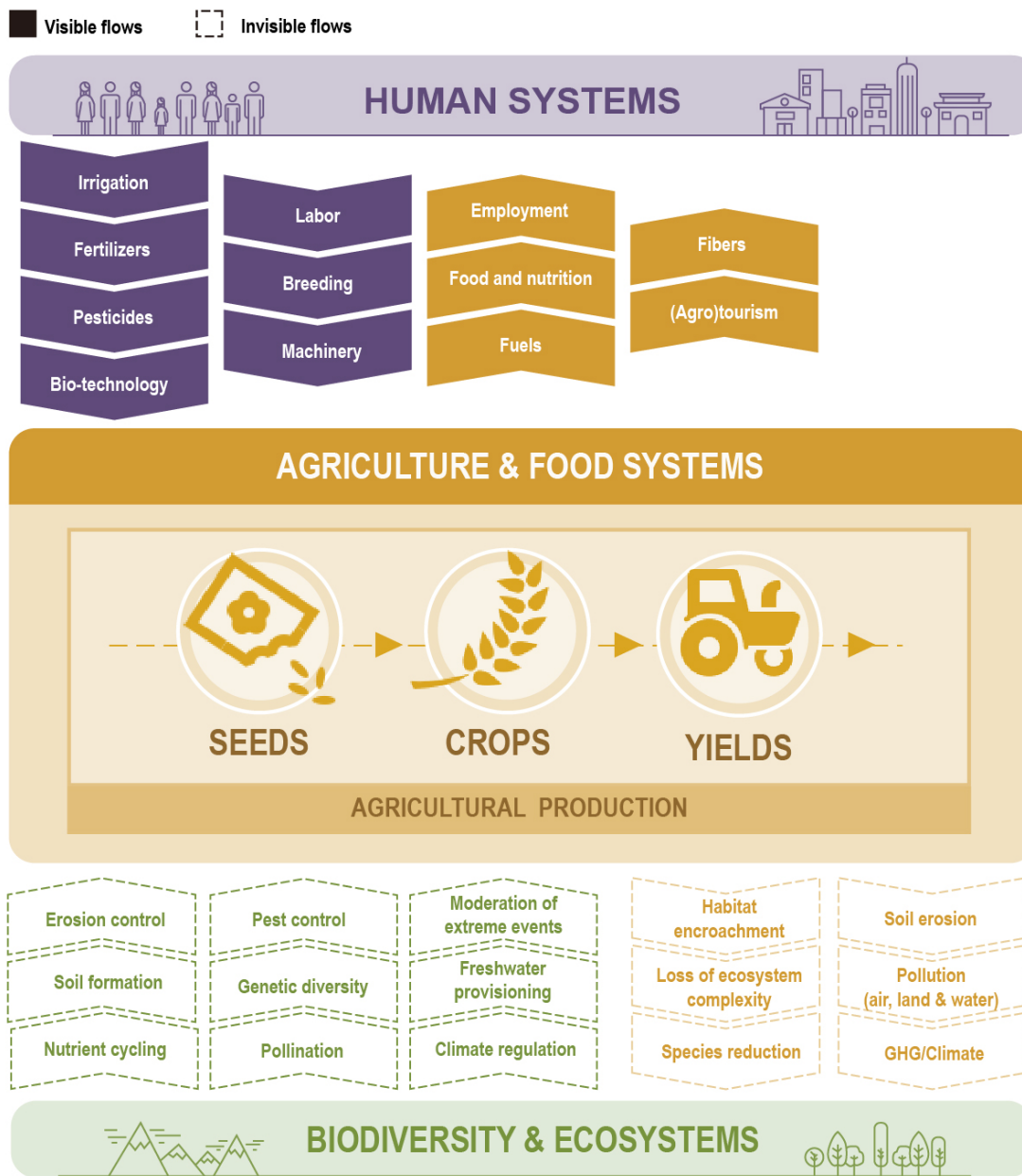
# The visible and invisible flows of agricultural production

**TEEB** for Agriculture & Food



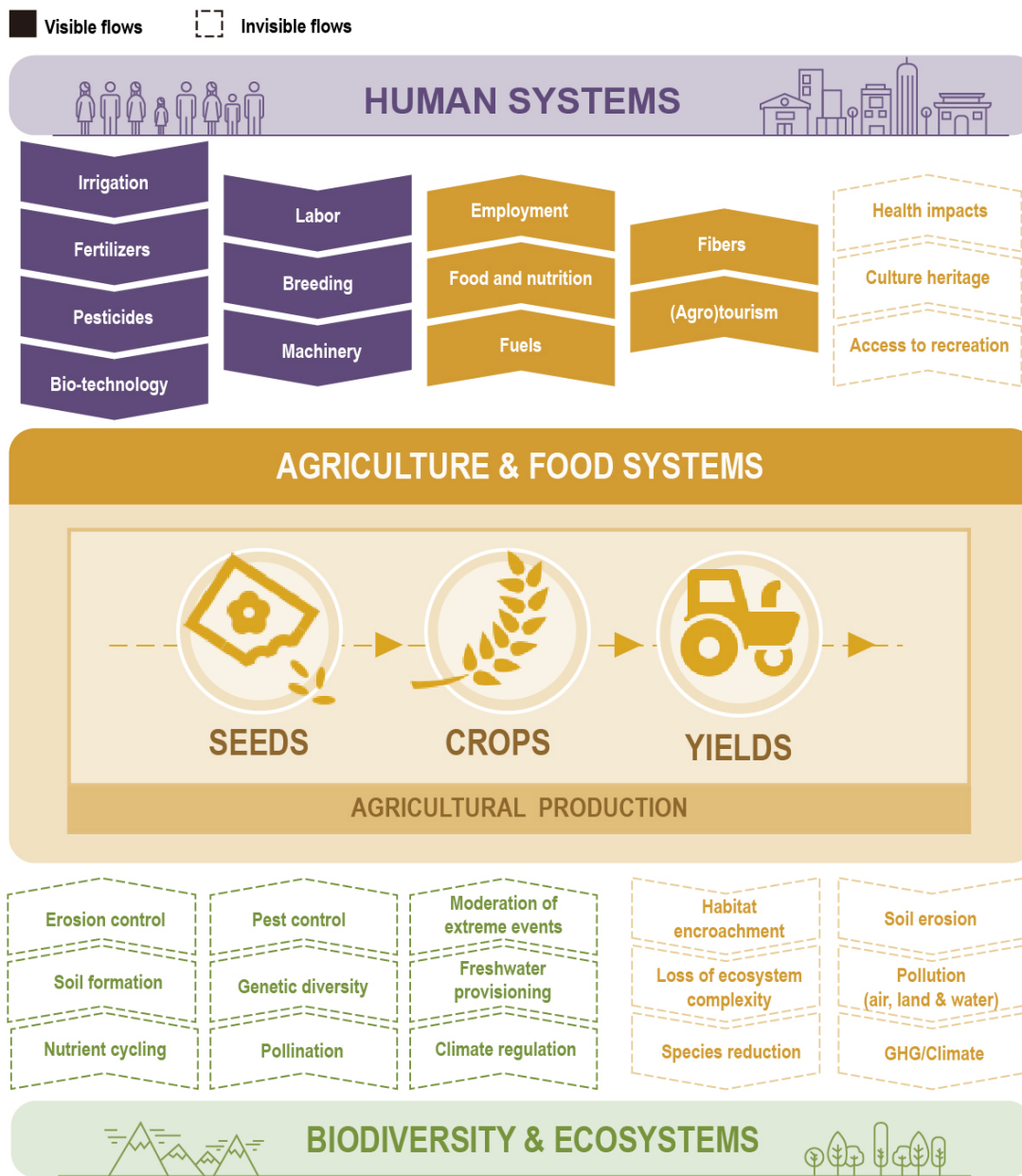
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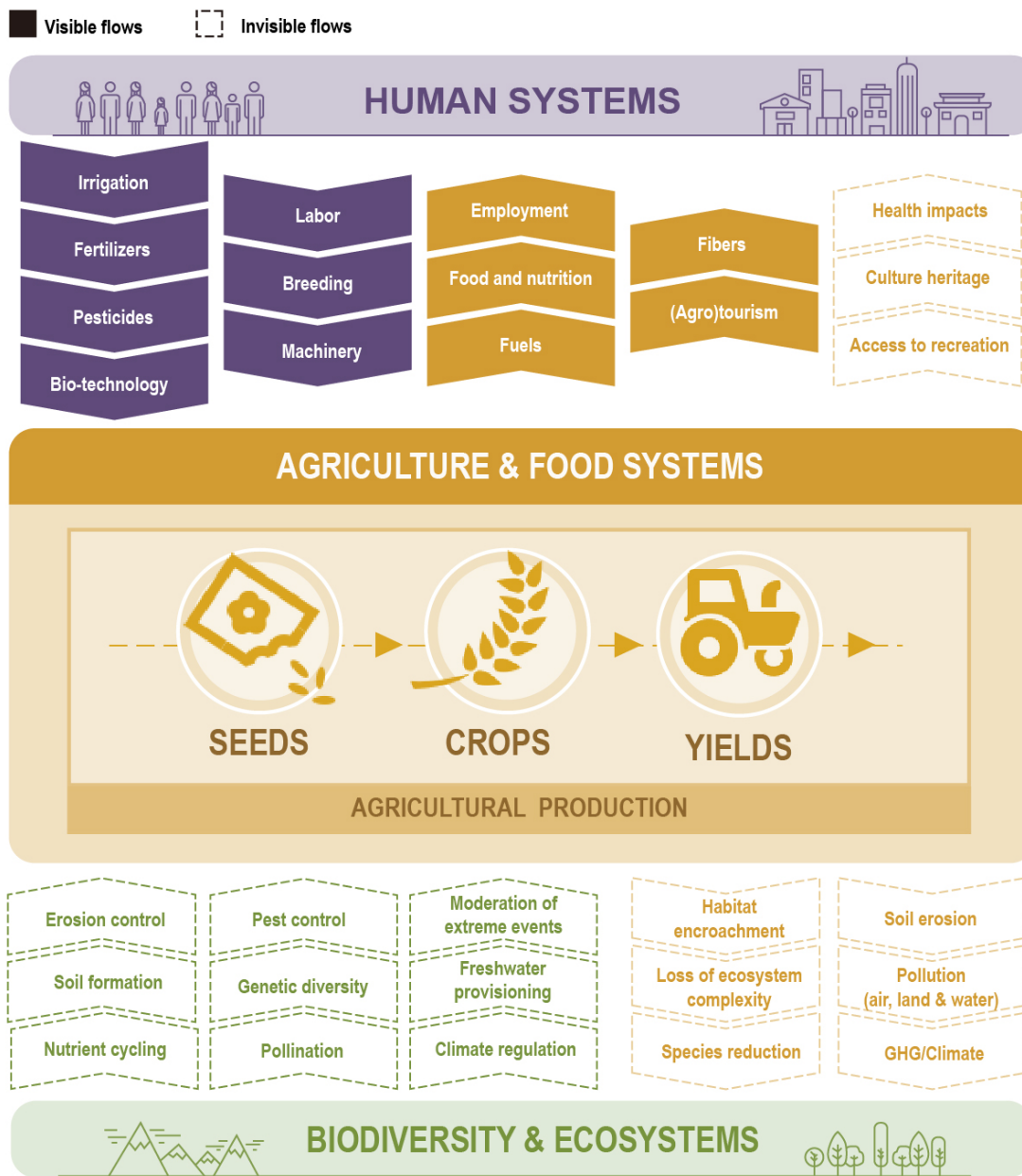
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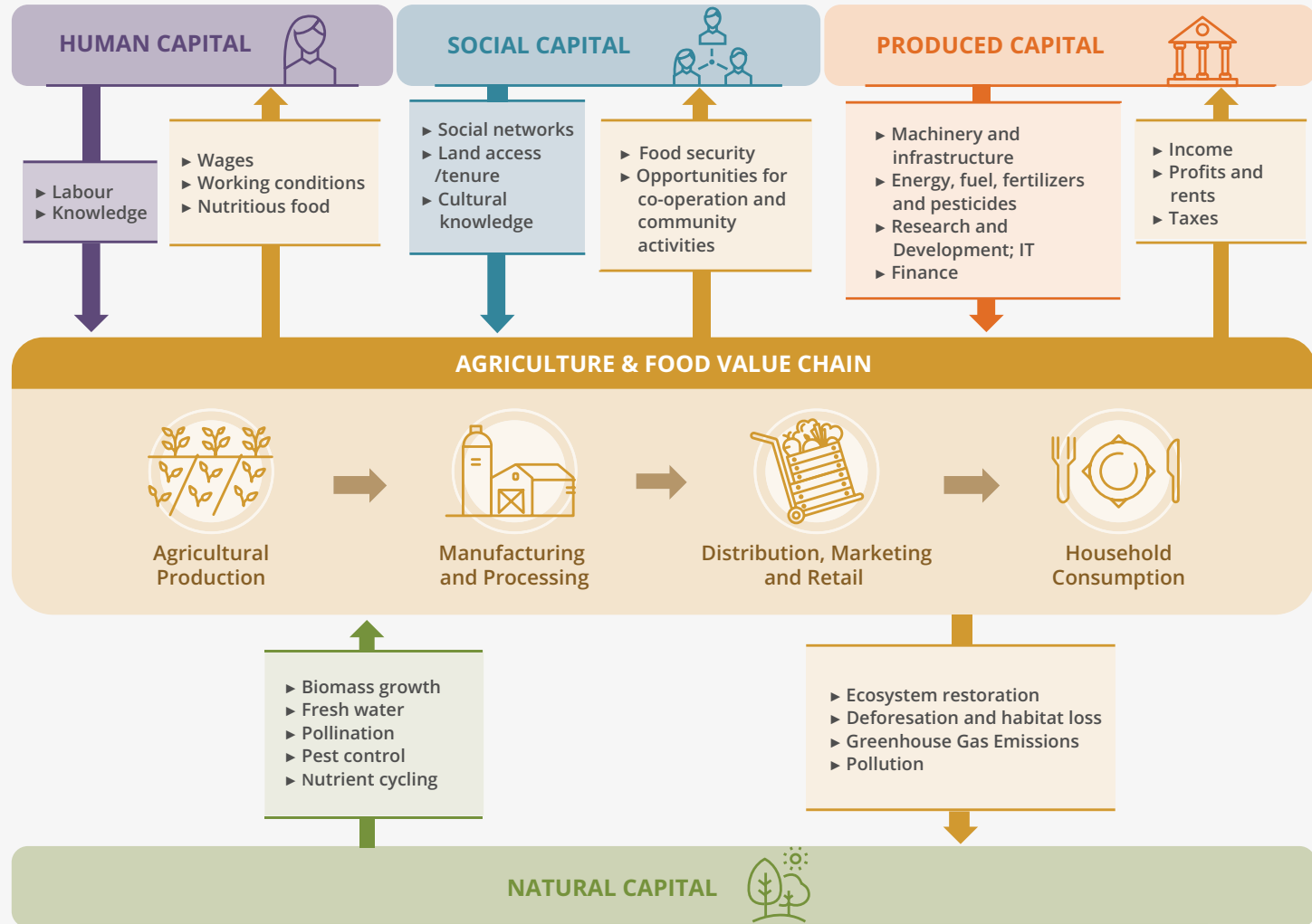
# The visible and invisible flows of agricultural production

**TEEB** for Agriculture & Food





**Figure 2.1** Capital stocks and value flows in eco-agri-food systems (Source: Hussain and Vause 2018)





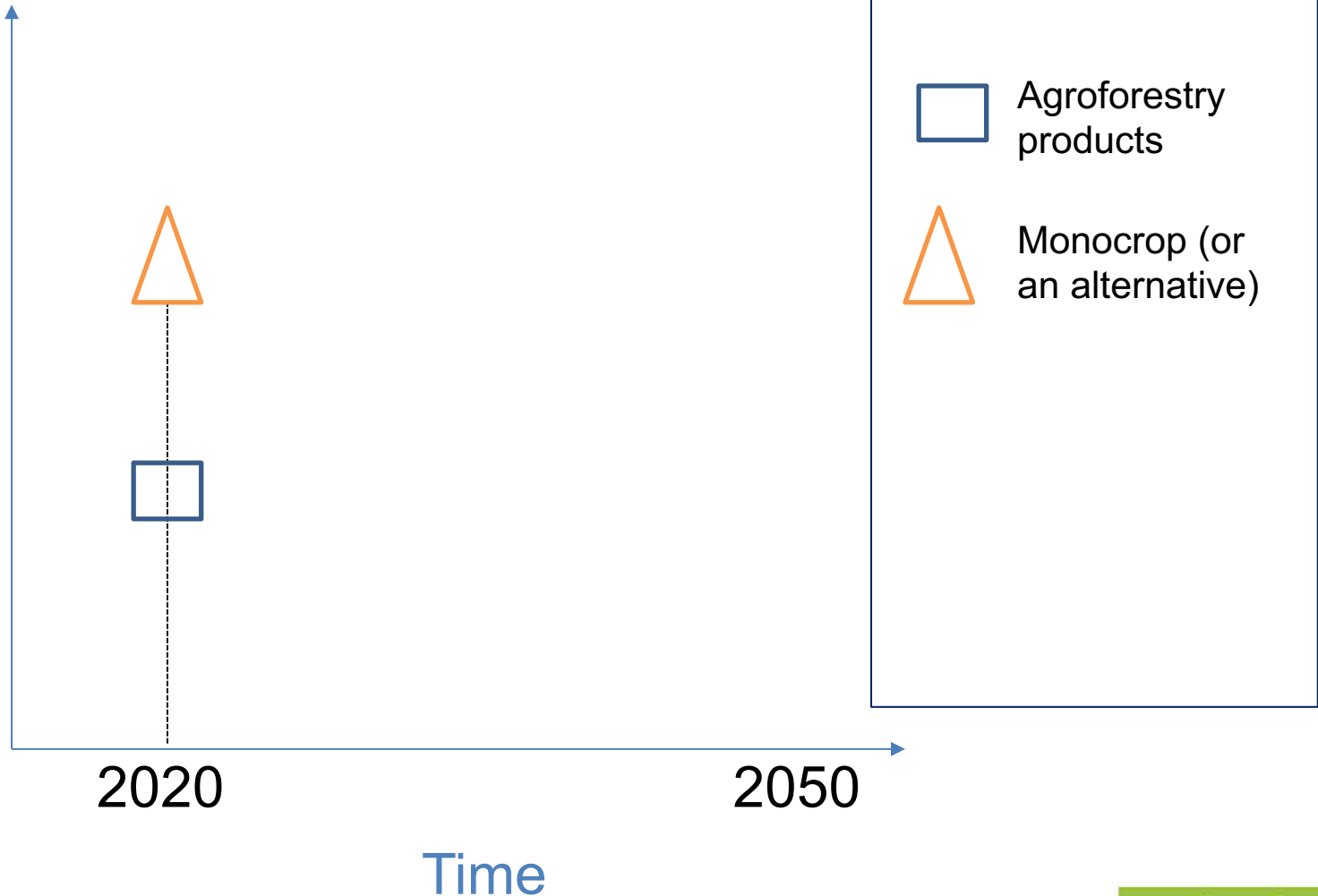


**II. Why should the Indian government and private sector be engaged with the project?**



## Agro-forestry [or ZBNF, or organic production, or agro-ecology, or a multi-use landscape...] versus monoculture: *current assumption*

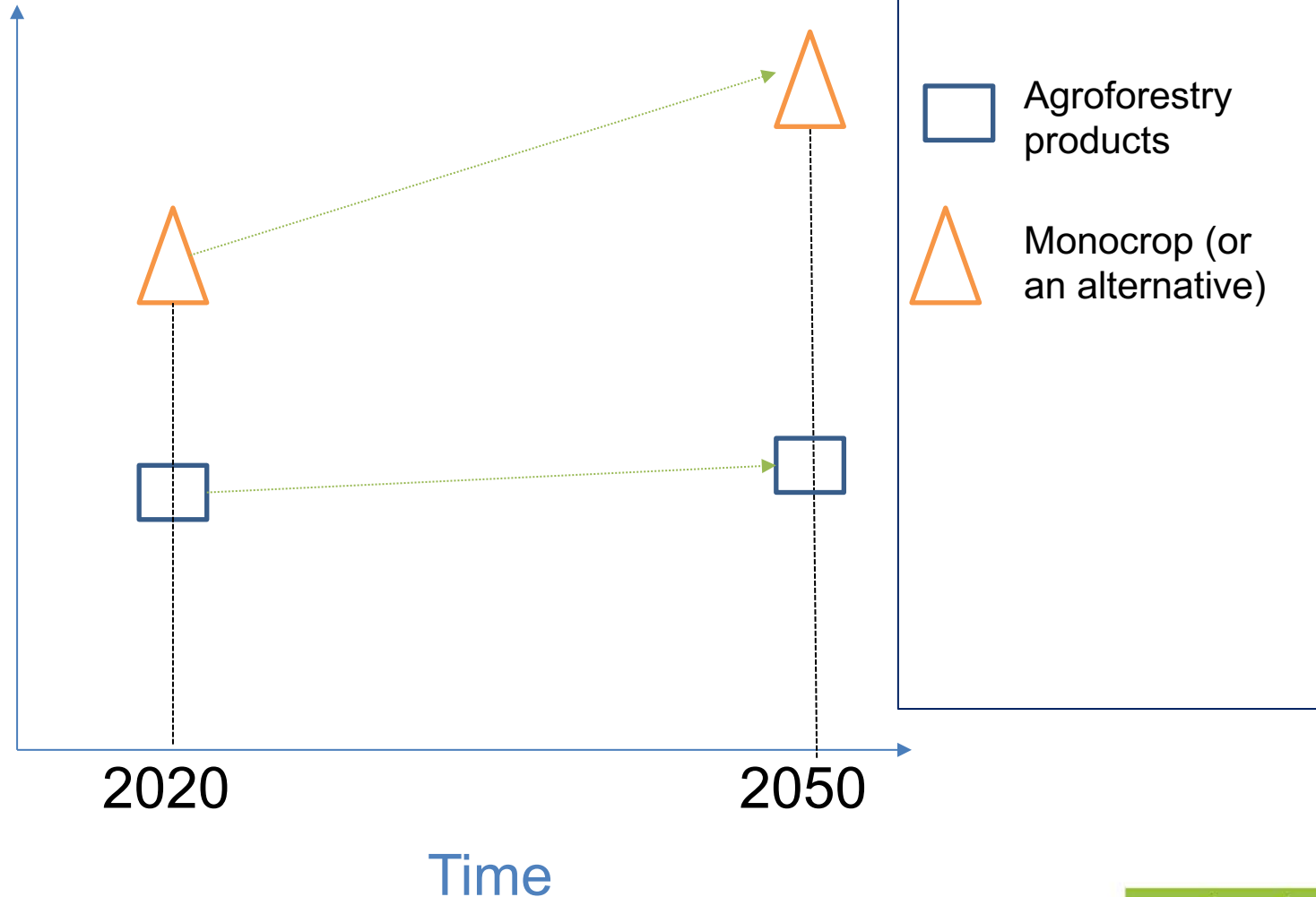
Financial flows





## Agro-forestry versus monocrop: Assumption about changes over time

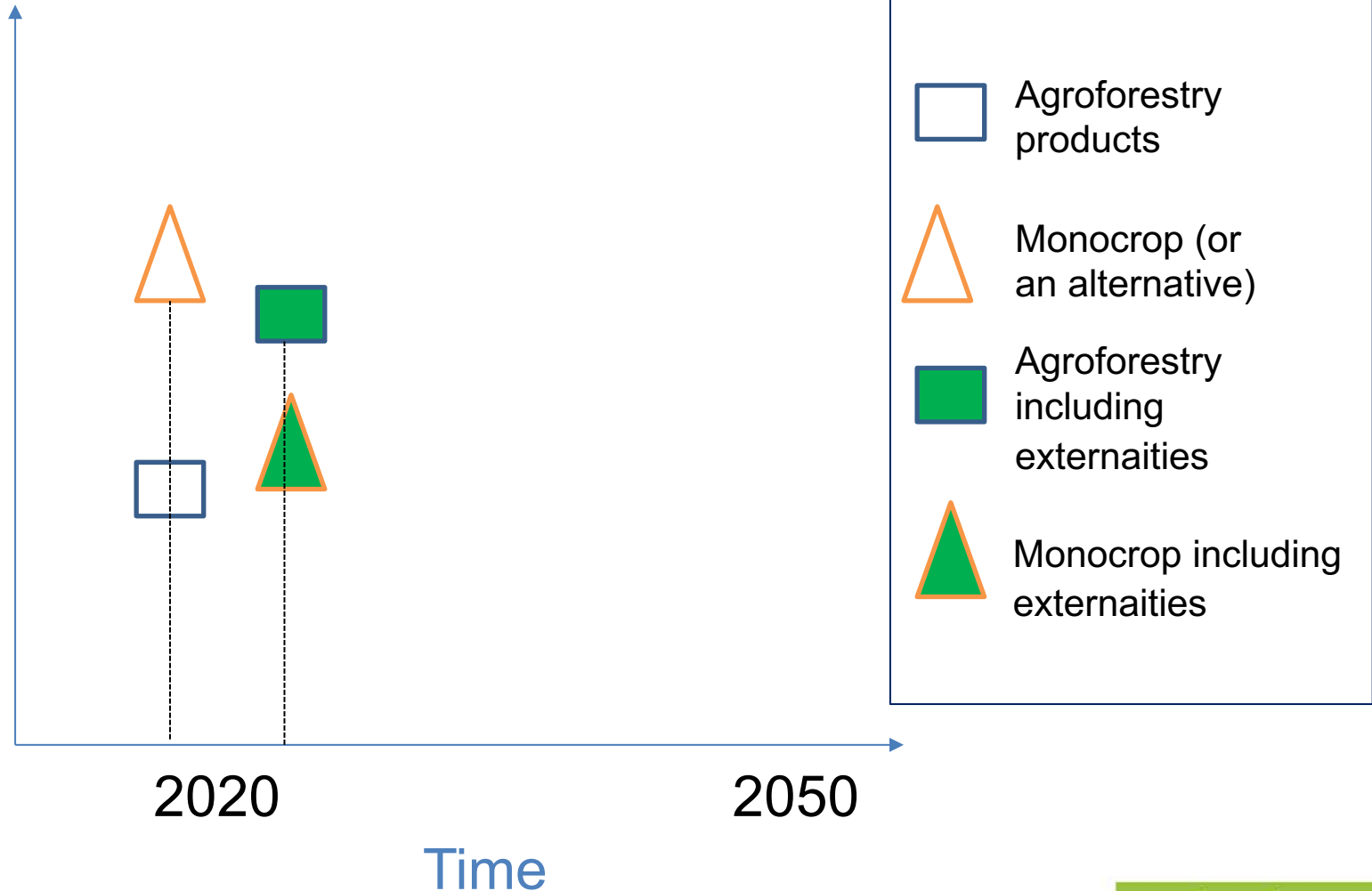
Financial flows





## Agro-forestry versus monocrop: 2020 including externalities

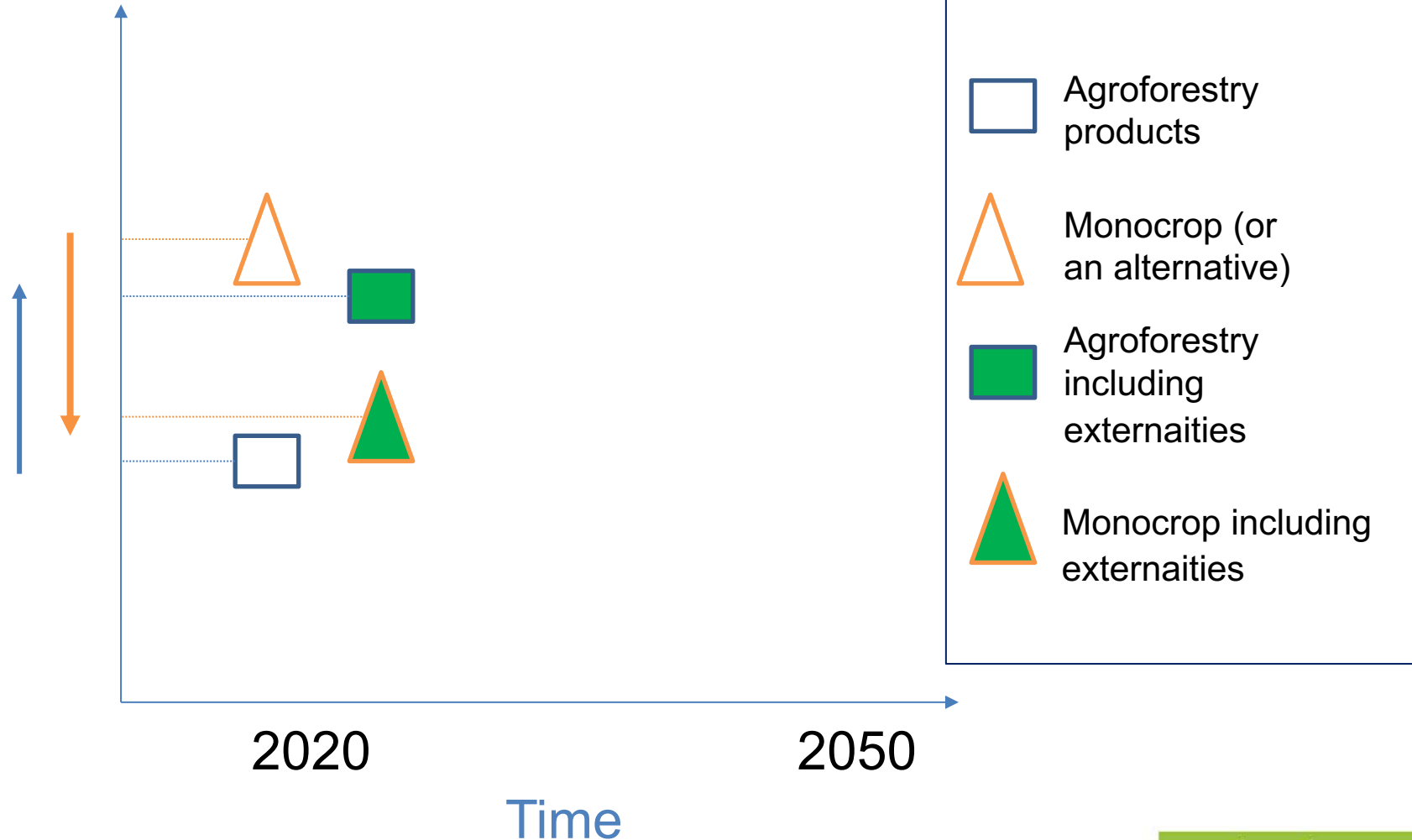
Economic flows (including externalities)





## Agro-forestry versus monocrop: 2020 including externalities

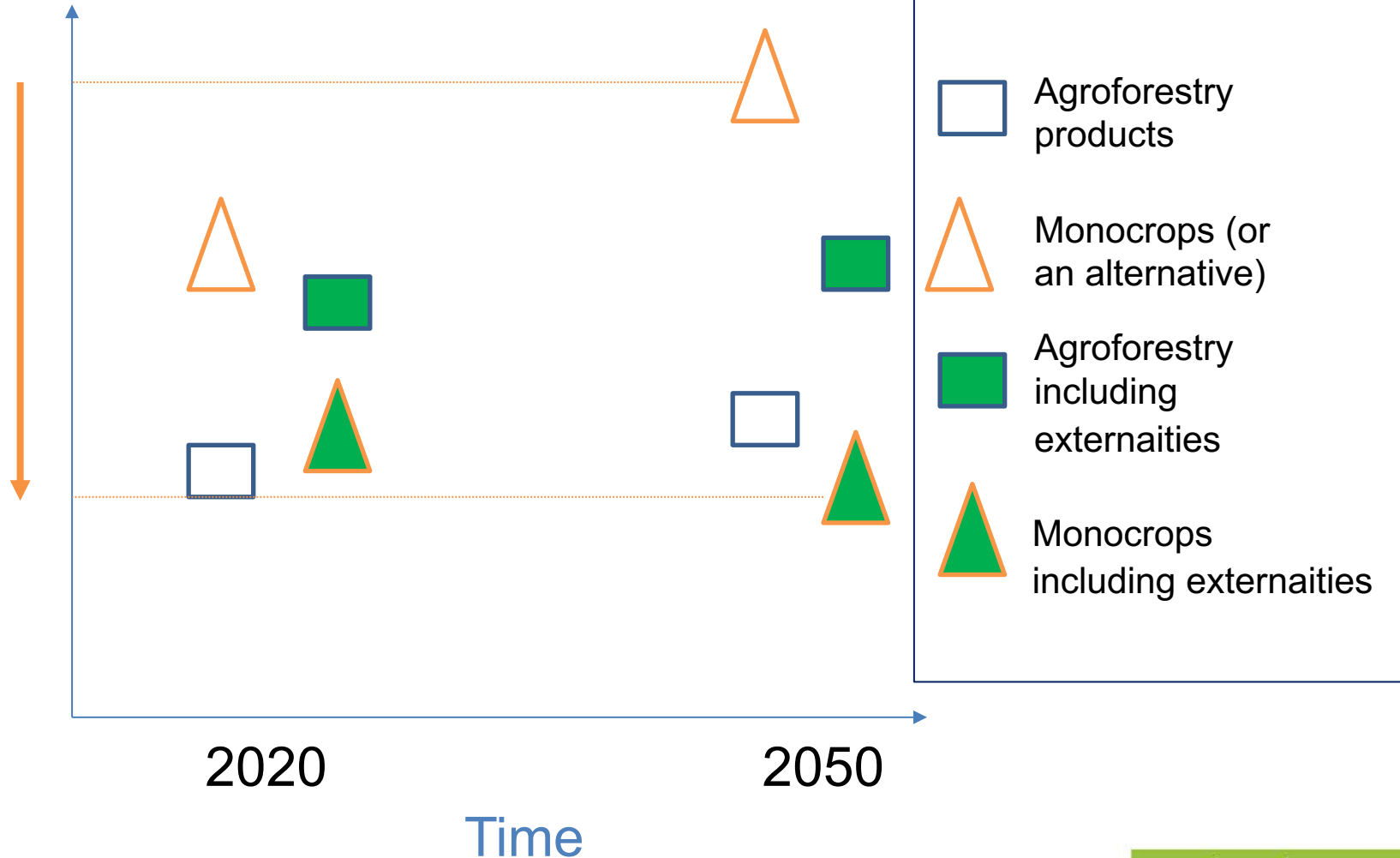
Financial/Economic flows





## Agro-forestry versus monocrops: *2050 for the monocrop*

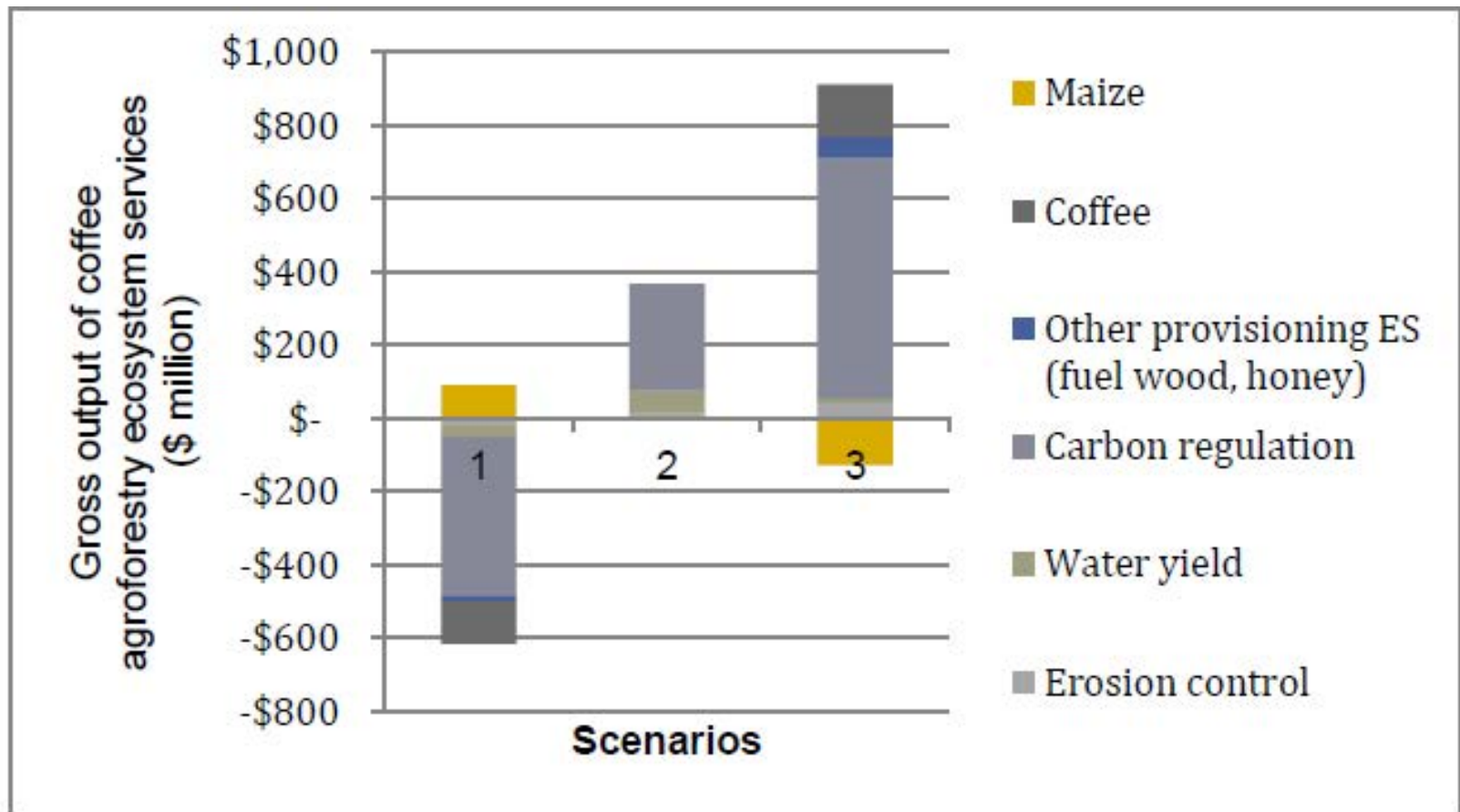
Financial/Economic flows







# Agro-forestry Scenario analysis





# III. The EU Partnership Instrument Project specifics



## Project Objectives

- The core project goal is to **stimulate biodiversity conservation and ecosystem service provisioning** for agricultural landscapes for the seven countries in scope (Brazil, China, India, Indonesia, Malaysia, Mexico, Thailand)



# Potential solutions – work package 4

Opportunities	Change agents				
	National Government	Local Government	Farmers	Agri-Business	Civil Society
1. agricultural extension					
2. peer-to-peer learning					
3. macro accounting					
4. sustainability standards and certification					
5. Payment for Ecosystem Services					
6. UN-REDD					
7. banking sector					
8. reforms to taxes and subsidies					
9. land tenure					
10. Intra-government jurisdictions of line ministries					



# Project log frame (overview)

Year		Year 1				Year 2				Year 3				Year 4			
	Work Packages and activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
WP 1	Country specific analysis – lessons learned from previous interventions																
WP 2	Policy mapping																
WP 3	Determine and refine the case studies																
WP 4	Engaging agri-business with NCP																
WP 5	Scenario Analysis																
WP 6	Develop a roadmap of concrete steps to implement a change																
WP 7	Deliver the change and ensure project sustainability																
WP 8	Communicating biodiversity benefits and mainstreaming																



# **IV.** Circling back – what has this project got to do with COVID19 Recovery?



## Developing scenarios

- Selection of **which policy interventions to test/apply** using the TEEBAgriFood Framework will be determined by government priorities
- In carrying out the **scenario analysis**, Business-as-Usual and the policy-on scenarios includes known changes
  - Urbanization
  - Population demographics
  - Changing dietary patterns
  - Climate change scenarios
  - Covid19 responses





The Economics of Ecosystems & Biodiversity

**Dr. Salman Hussain**  
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**UNEP TEEB Office**



# VALUING NATURE FOR SUSTAINABILITY IN THE AGRICULTURE AND FOOD SECTOR OF INDIA

**WEBINAR**







DR. VB MATHUR,  
Chairman, National Biodiversity Authority

TEEB Agrifood India WEBINAR

# POLICY PRIORITIES

UN  
environment  
programme



TEEB





**DR. ALKA BHARGAWA**  
**ADDITIONAL SECRETARY**  
**MINISTRY OF AGRICULTURE AND FARMERS WELFARE**

**TEEB Agrifood India WEBINAR**

# **POLICY PRIORITIES**







# VALUING NATURE FOR SUSTAINABILITY IN THE AGRICULTURE AND FOOD SECTOR OF INDIA

**WEBINAR**



# Sustainable Agriculture through the lens of Environment Accounting

June 19, 2020



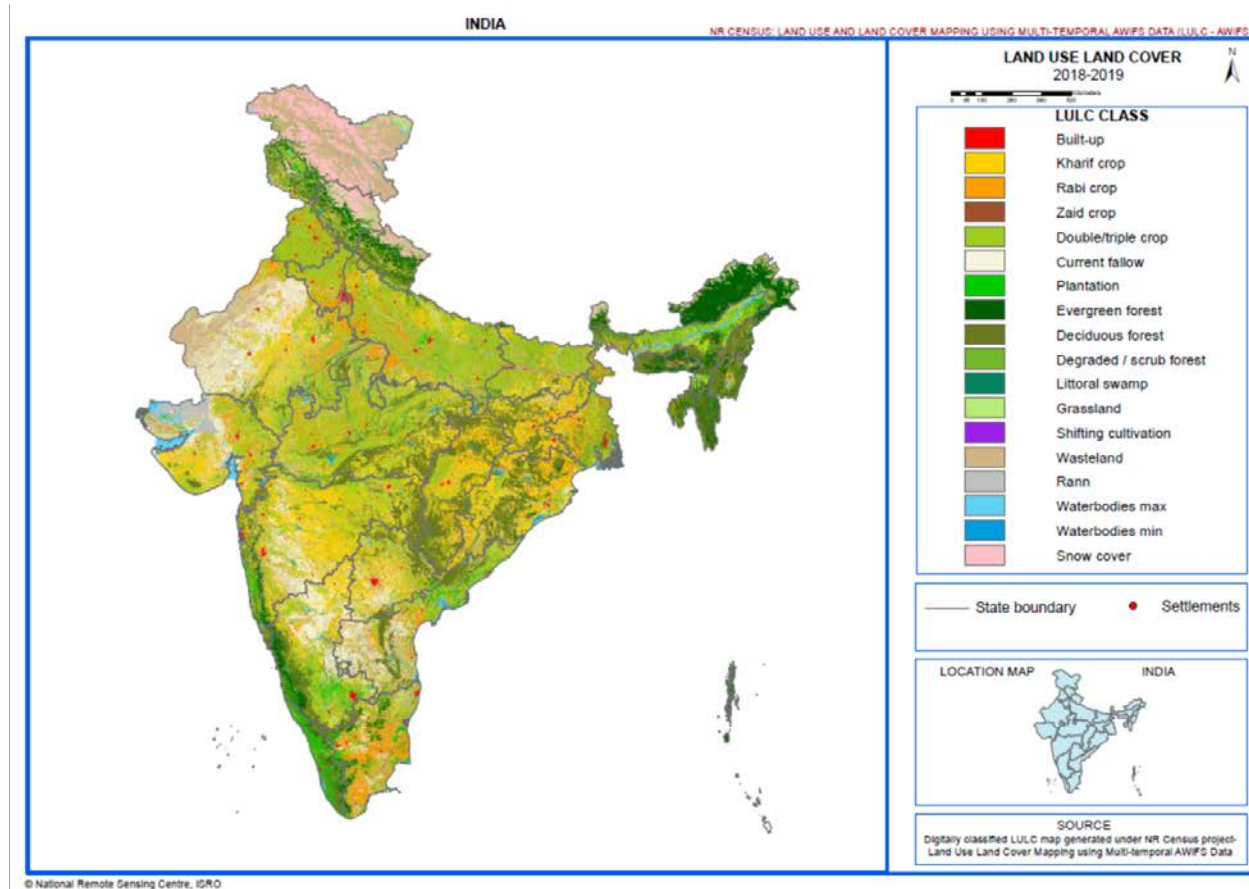
***Ministry of Statistics and Programme Implementation (MoSPI)***

***Government of India***





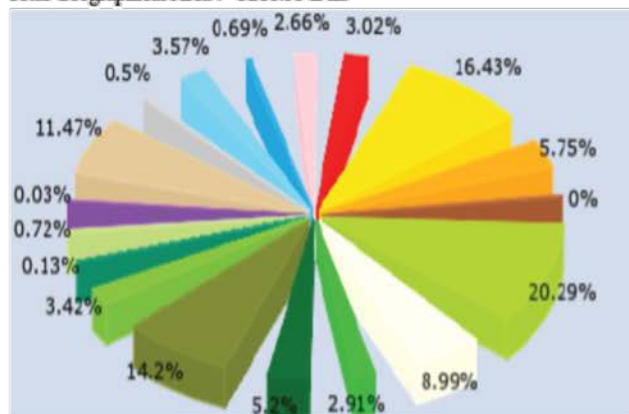
# Land Use Land Cover in India



# Land Use Land Cover in India

LULC Information (2018-19) for INDIA

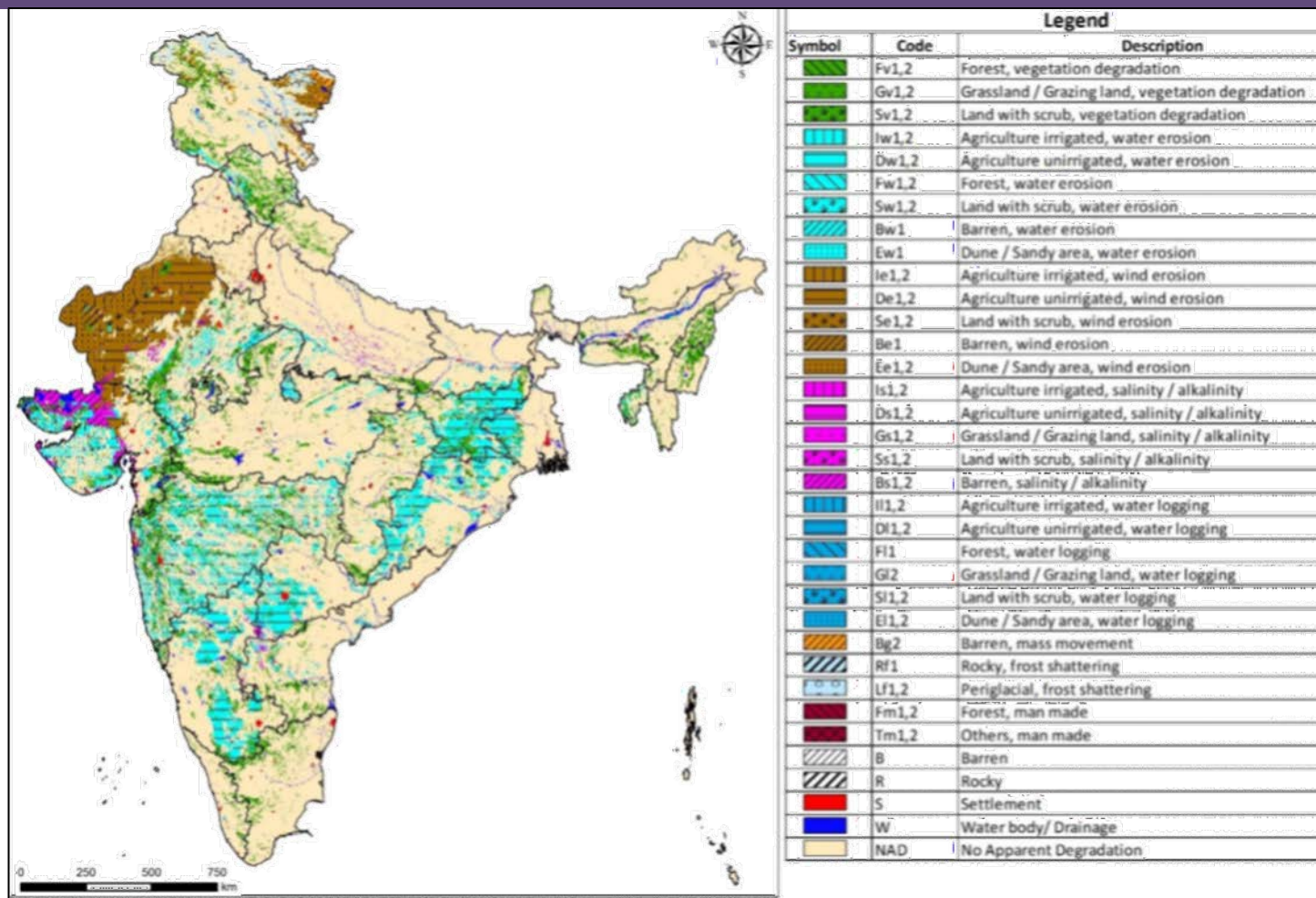
Total Geographical Area : 3281.55 L ha



LULC Class	Area (L ha)	LULC Class	Area (L ha)
Built-up	99.04	Kharif Crop	539.09
Rabi Crop	188.66	Zaid Crop	0.14
Double/Triple Crop	665.75	Current Fallow	295.12
Plantation	95.61	Evergreen Forest	170.73
Deciduous Forest	466.06	Degraded/Scrub Forest	112.32
Littoral Swamp	4.42	Grassland	23.49
Shifting Cultivation	1.07	Wasteland	376.53
Rann	16.51	Waterbodies max	117.09
Waterbodies min	22.6	Snow Cover	87.32
<b>Total</b>			<b>3281.55</b>



# Desertification/ Land Degradation Map of India 2011-13



# Agriculture and the Indian Economy

## Situation Assessment Survey of Agricultural Households, 2013

- 90.2 million agricultural households
- 58% of rural or 40% of total households
- Rajasthan has 78.4% of agricultural households
- Avg gross cropped area per agricultural household of 0.9 hectare



# Accounting for Agriculture

- **Ecosystem Accounts for Croplands**
  - **Extent and Condition Accounts**
- **Flows of Ecosystem Services related to “Provisioning of Crops”**



# Extent Accounts for Croplands

Indicator	Unit
Net area Sown	Thousand Hectares
Total Cropped Area	Thousand Hectares
Area sown more than once	Thousand Hectares
Agri. Land/ Cultivable land/ Culturable land/ Arable land	Thousand Hectares
Cultivated land	Thousand Hectares
Un-cultivable land	Thousand Hectares
Un-cultivated land	Thousand Hectares
Total Area under Desertification (%)	%





# Pressure Indicators for Croplands

<b>Fragmentation</b>	Unit
<b>Operational holdings</b>	
Number	'000
Area	'000 Hectares
<b>Gini Index of Land Concentration</b>	
<b>Percentage distribution of area operated by operational holdings</b>	
Marginal	%
Small	%
Semi-medium	%
Medium	%
Large	%



# Condition Indicators for Croplands

## **Irrigation Related**

**Percentage of Gross Irrigated Area to Total Cropped Area**

**Area Irrigated more than once**

**Cropping Intensity**

## **Crop Diversity**

**Effective Number of Species**

## **Land Capability Classes**

**Percentage of Land not suited for cultivation**

## **Soil Nutrient Indices-Macro Nutrients**

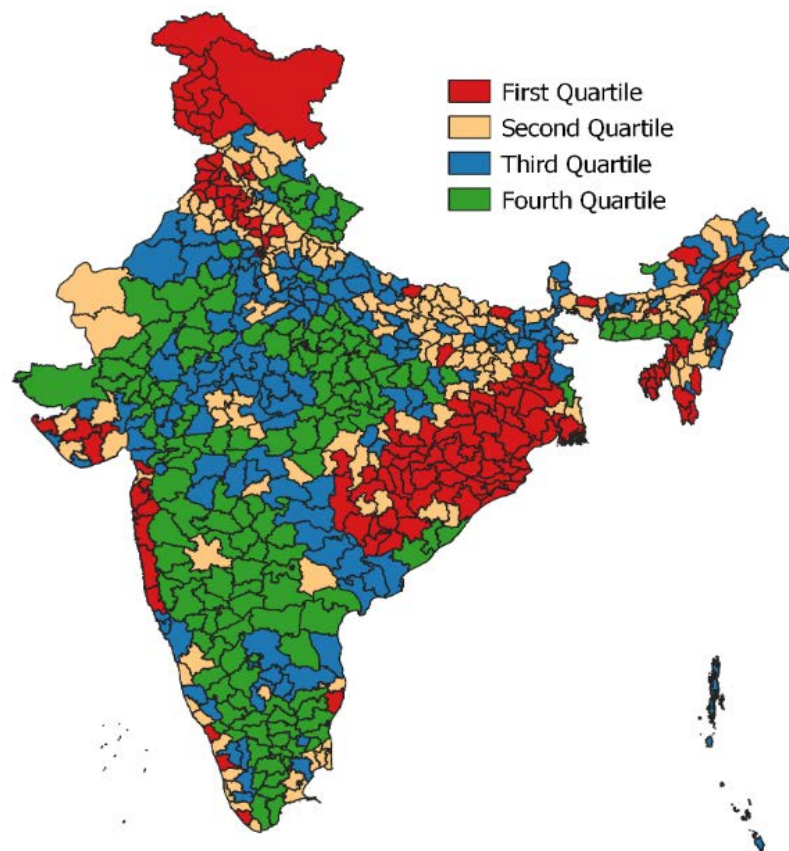
**Nitrogen (N); Phosphorus (P) Potassium (K); Organic Carbon (OC)**

## **Soil Nutrient Indices-Micro Nutrients**

**Boron (B); Copper (Cu); Iron (Fe); Manganese (Mn); Sulphur (S); Zinc (Zn)**



# Crop Diversity Indices



*FROM*

**Extent and Condition**

*TO*

**Flows of Ecosystem Services**



# Provisioning of Crops

- **Ecosystem service - The contribution of the ecosystem to crop production**
- **Depends on supporting services, such as**
  - **nutrient and water cycling, i.e., infiltration of water, holding capacity of soil, absorption and resupply of plant nutrients by soil particles**
  - **pest regulation, and**
  - **maintenance of soil quality and biodiversity**
- **Influences regulating services that provide benefits external to the farm**
  - **Regulating water and air quality,**
  - **Storing soil carbon (C) and supporting biodiversity**



# Measuring “Provisioning of Crops”

- **SEEA prescribes the use of ‘resource rent method’**
- **Appropriation method - Actual payments made to owners in terms of rental value of owned land or rent paid for leased-in land**

## **Sources of information in India:**

- **Cost of Cultivation Studies**
- **Information on Area, Production and Yield (APY) of major crops**
- **Land Use Statistics**





# Measuring “Provisioning of Crops”

- **Cost of Cultivation Studies**

- Crop-wise and State-wise Information compiled on cost of cultivation and production in respect of principal crops
- Costs include value of hired labour, hired machinery charges, material inputs used, depreciation charges, irrigation charges, cesses and taxes, rent paid on leased-in land, rental value of owned land, imputed values of family labour
- Scheme implemented through 16 Agricultural/Central Universities/ Colleges
- Implemented in 20 States

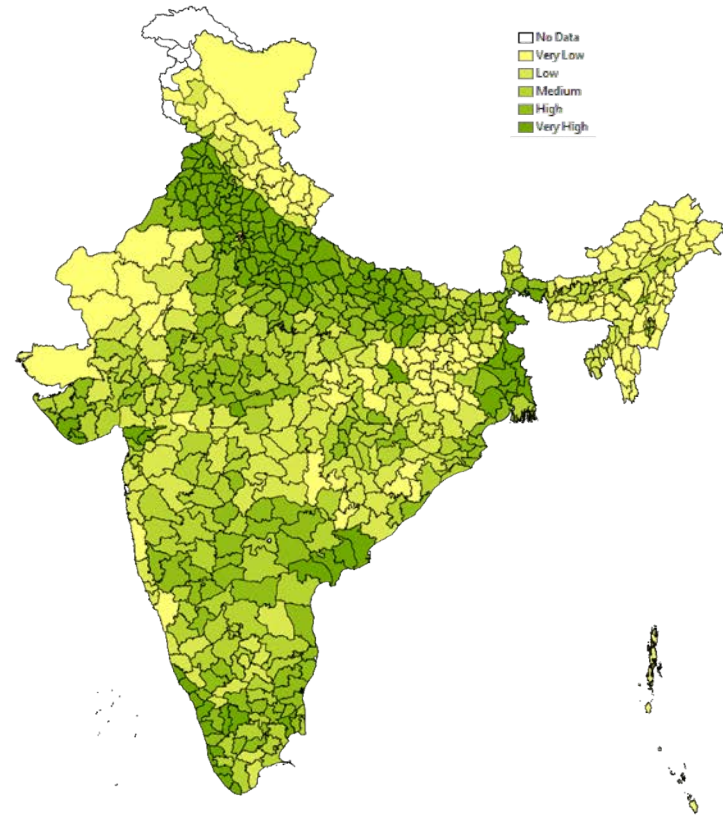
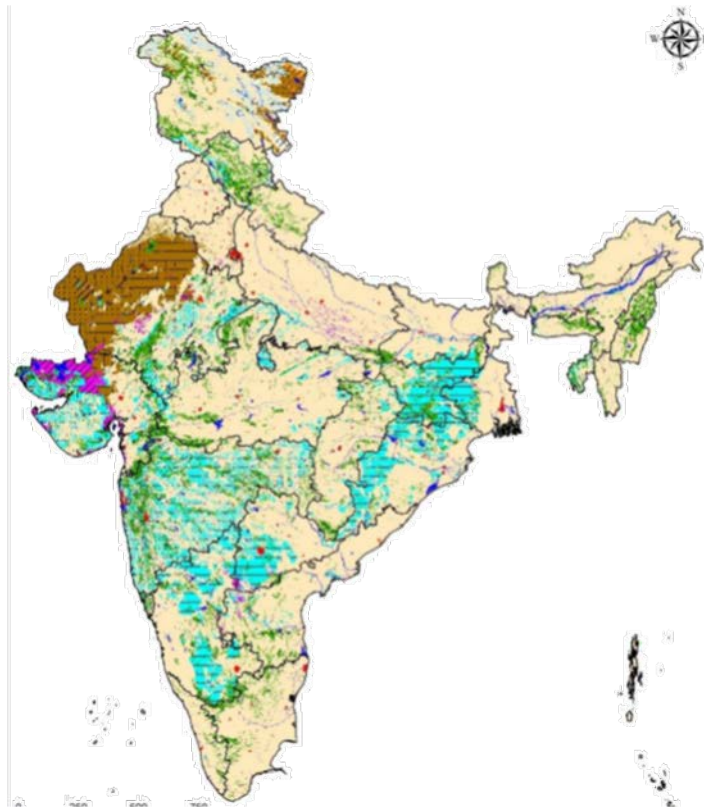


# Measuring “Provisioning of Crops”

- **Special Data Dissemination Division of M/o Agriculture**
- **Land Use Statistics – District-wise information on land use giving nine-fold classification of land, irrigated area (source-wise and crop-wise) and total area under crops**
- **District-wise Information on Area, Production and Yield (APY) of major crops**
- **Data available from 1998-99 onwards on <http://aps.dac.gov.in>**
- **Value of Ecosystem Service = “Rent per unit quantity of crop” X “Production”**



# Effect of Land Degradation?



**Thank You**





WORLD  
RESOURCES  
INSTITUTE

# **ADOPTING TEEB FRAMEWORK IN PRACTICE : EXPANDING AGRICULTURAL INCOME CALCULUS BEYOND FOOD AND EMPLOYMENT**

*Madhu Verma, Chief Economist, WRI, India*

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# WHAT IS THE CONTEXT?

- India has set an ambitious target of ‘**Doubling Farmers Income**’ (DFI) by the year 2022 by **shifting** the strategy from **agricultural output** in terms of food production to **income** to directly address the core issue of poverty in the rural sector.
- **DFI** : *7 sources of income growth* - improvement in crop productivity; improvement in livestock productivity; resource use efficiency or savings in the cost of production; increase in the cropping intensity; diversification towards high value crops; improvement in real prices received by farmers; and shift from farm to non-farm occupations
- More than a **quarter** of the population living in rural areas of India is below the poverty line (RBI, 2019)
- **National Food Security Act (2013)**: provides legal entitlements for food and nutritional security.

# WHAT IS THE CONTEXT? ....

- **National Mission for Sustainable Agriculture (2014):** promotes Sustainable Agriculture & organic farming, through climate change adaptation measures, enhancing agriculture productivity in rainfed areas, integrated farming, soil health management, & synergizing resource conservation.
- **National Mission for Clean Ganga-** integrated elements of sustainable agriculture in its Arth Ganga Initiative
- **Rebuilding Agriculture :** onsite & offsite (landscape) by investing in Natural capital, using Nature based Solutions & strengthening forward linkages ....entire value chain to be addressed
- **Covid19 Response :** Farm Sector Reforms through special economic package to overcome the economic and livelihood issues to improve the wellbeing of the farmers
- **NITI Aayog ( May, 2020) :** reiteration of Agroecology and Natural Farming /regenerative Agriculture including biodiversity : Food, Employment & Ecosystem Services





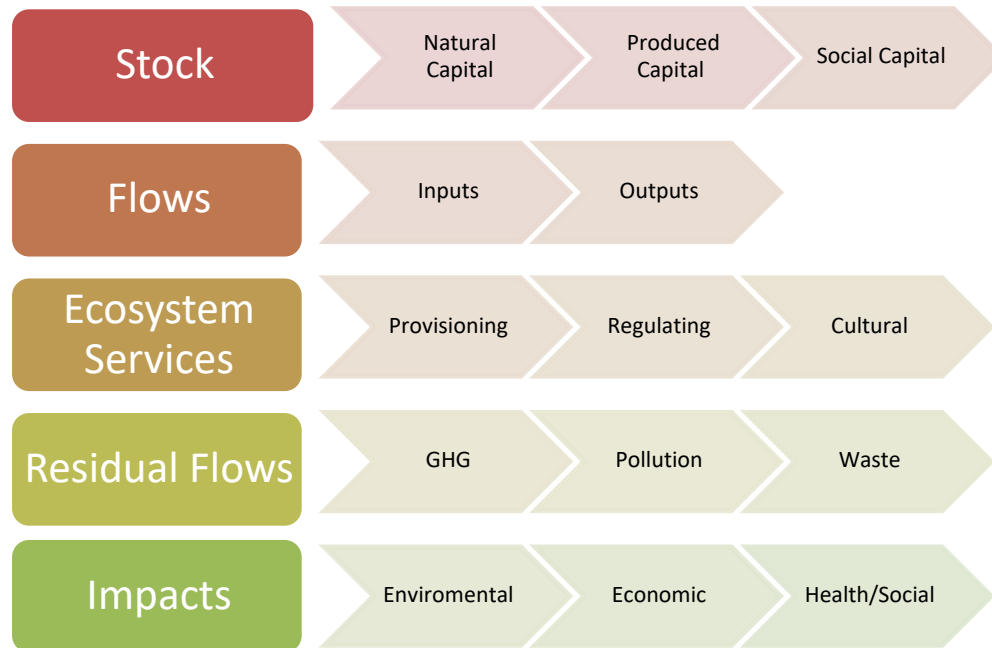
# THE APPROACH

- *In order to achieve the target, it is important to measure the contributions made by such **multi-pronged, Agroecological-landscape (Agriscape)** approaches, involving the dimensions of society, ecology, culture and economy and internalise them in our accounting system for sustainable management of agro-ecological and its linked systems : Total contribution of the system (the full value chain) and accordingly seek finances to maintain the sector and incentivise the farmers contributing to its conservation*
- *To also estimate the value of natural and other capitals which are build during the process*
- *To also assess its contribution to attaining various SDGs(10 out of 17 SDGs can be addressed through agricultural value chain) and the achievement of Paris Targets (NDC)*
- *To shift the approach from **Per Hectare Productivity** to **Systems Approach***
- ***TEEB Agri Food provides such framework of analysis***



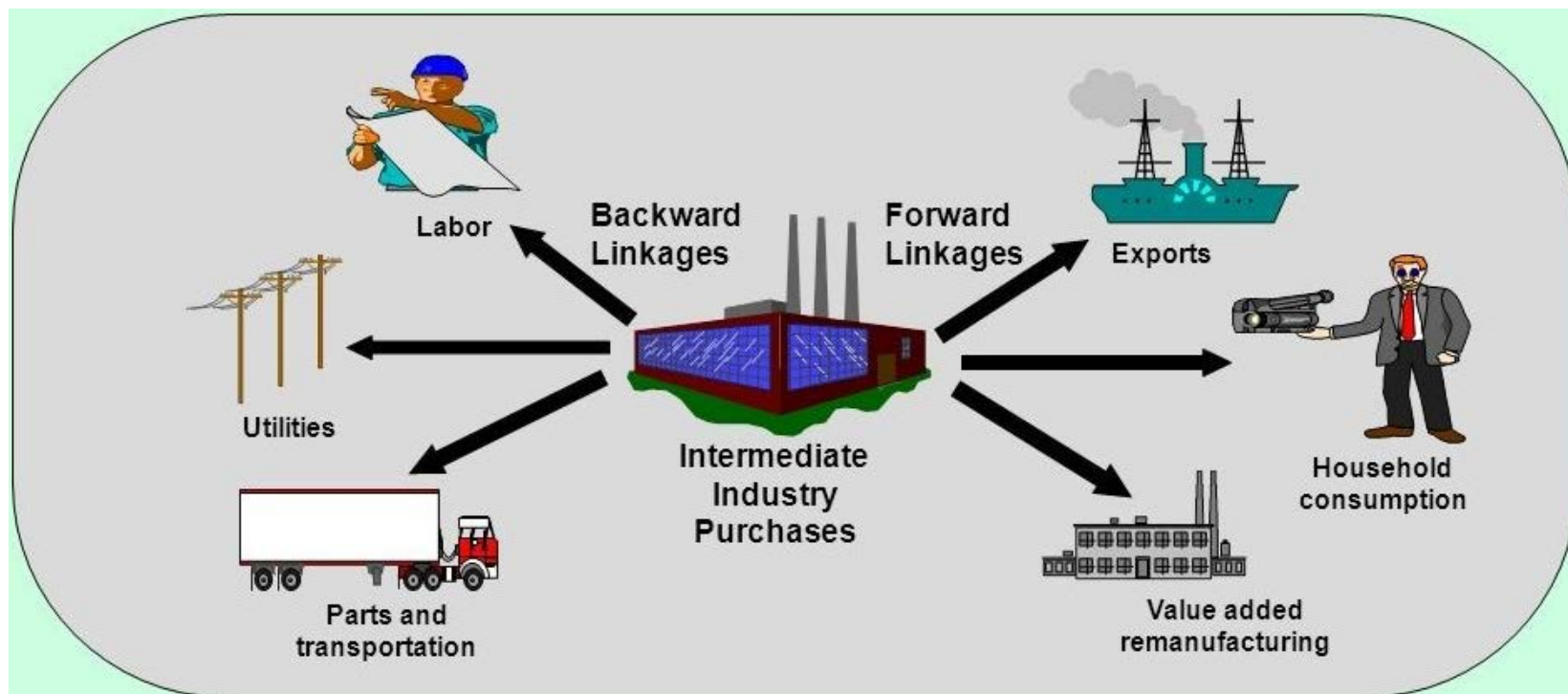
# TEEB FOR AGRI FOOD ASSESSMENT FEATURES

- Broad and systemic in nature
- Reflect the contributions of all four capitals
- Examine connections along the full value chain, including assessing the impacts of food consumption on human health

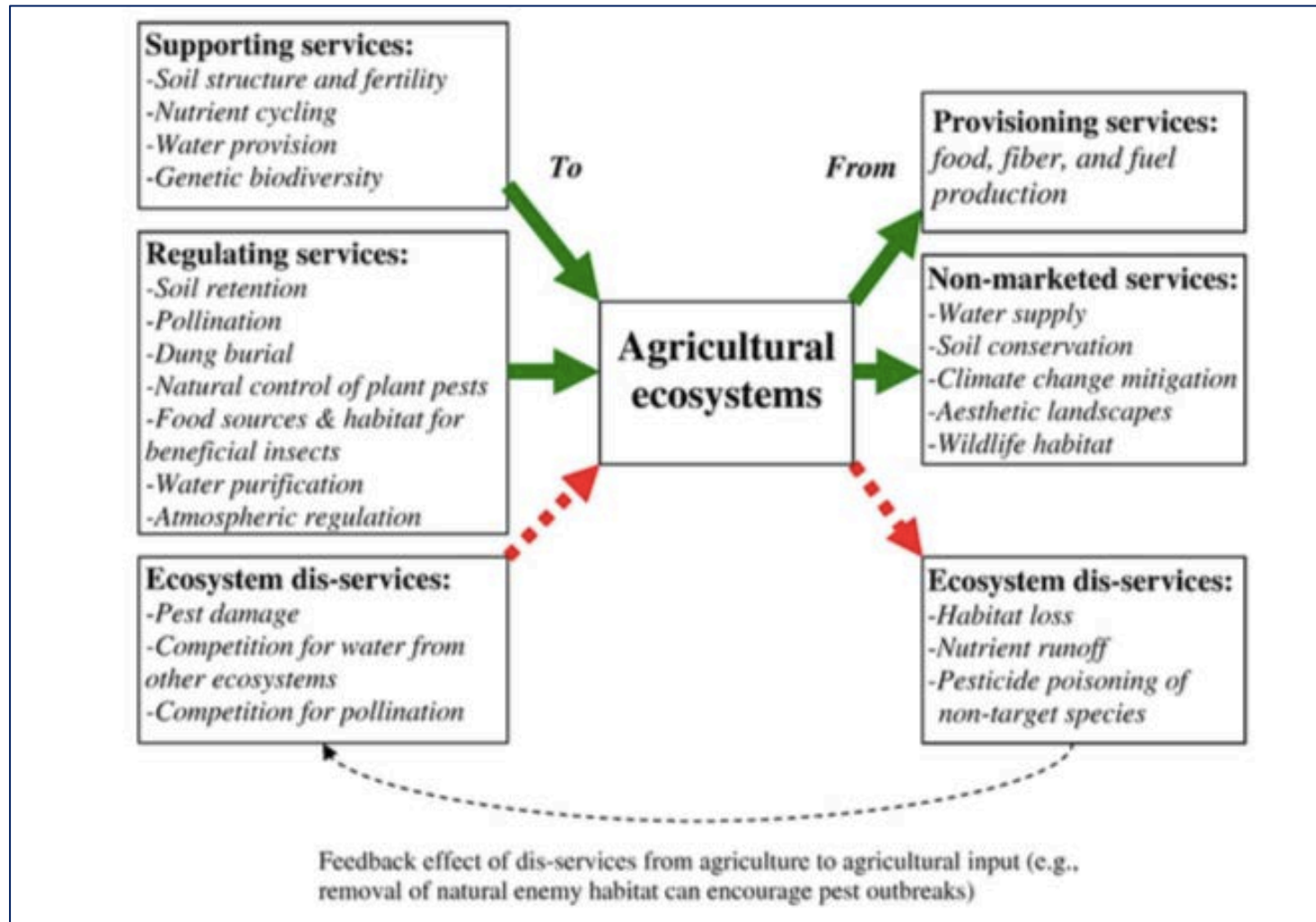


# WRI'S FLAGSHIP STUDY

- Approaches for Doubling Farmers Income in India : Agro-Ecological System-Based Considerations
- Using TEEB Agri Food Framework



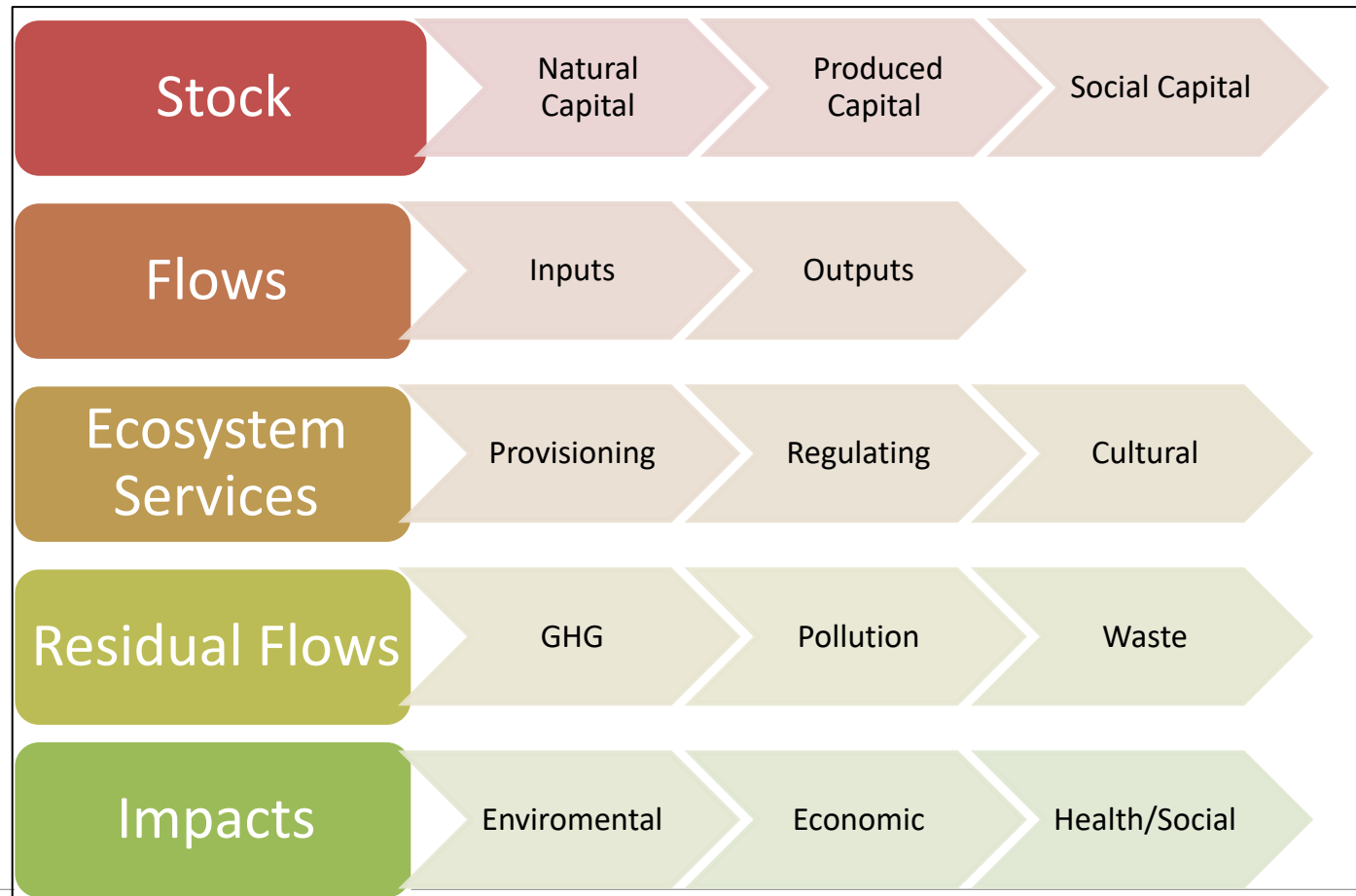
# LANDSCAPE-BASED APPROACH



# TREATING AGRICULTURAL SYSTEMS AS NATURAL CAPITAL (WHY DOES IT MAKE SENSE TO INVEST IN AGRICULTURAL SYSTEMS)

- Need to conserve agricultural biodiversity for resilience
- Disruptions happened the way we have destroyed our biodiversity
- Pandemics, biodiversity and Climate change are inextricably linked
- Monetizing total contribution of Agroecological systems
- *We cannot manage if we do not measure* (TEEB 2009) & TEEB for Agriculture & Food (2018)
- Need to account for natural capital and create a balance sheet of ecosystem

# THE ECONOMICS OF ECOSYSTEMS AND BIODIVERSITY (TEEB) APPROACH BASED ON SEEA(SYSTEM OF ENVIRONMENTAL AND ECONOMIC ACCOUNTING) FRAMEWORK OF UNSD



# THE RESEARCH STEPS

- Meta analysis of studies done in the past to synthesize recommendations for DFI
- Identify landscape of Agroecological systems for enhancement of agricultural ecosystem services which shall include (i) agriculture & regional land use planning (ii) crop diversification (iii) water conservation (iv) climate resilient agriculture (v) integrated and ecosystem-based approaches including agroforestry
- Use a geography for detailed research & generate and enter the values in TEEB Framework
- To document case studies for replication/scaling/improvement
- To develop framework for Payment for Agricultural Ecosystem Services/ Incentive Based Mechanisms



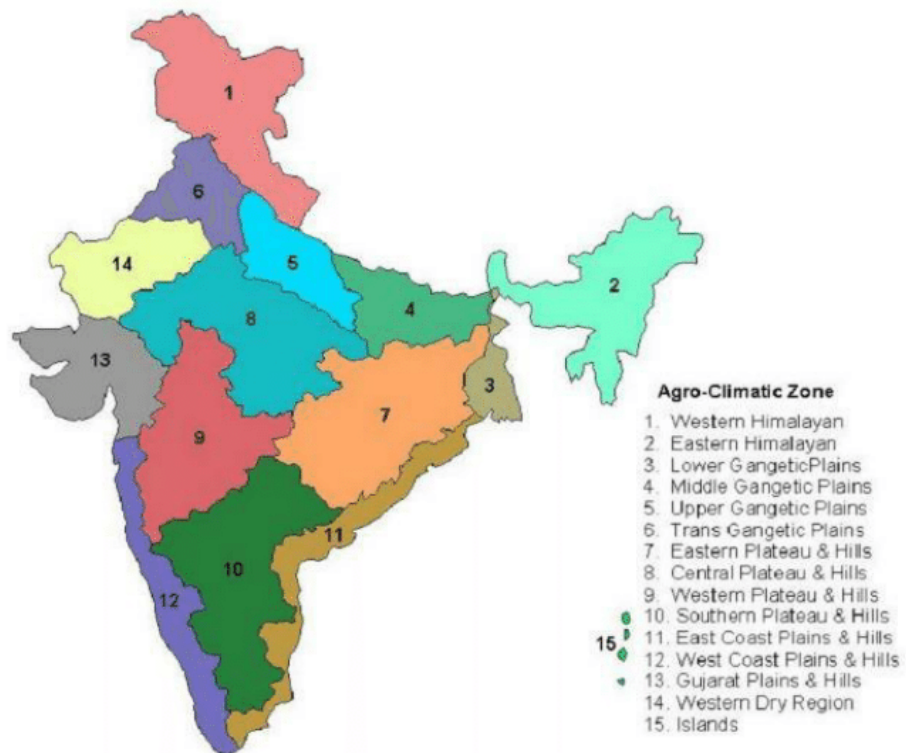


# WHY IS IT WORTH ADDRESSING?

## Various Agro Climatic Zones

- based on their physiographic, climate, length of growing period (LGP) and soils

Agro-climatic zones of India



# PUNJAB-STATUS OF AGRICULTURE

- Punjab state with only 1.5% of the country's area contributes to 13-14% towards the total food grain production of the country.
- Called the Granary of India, it contributed to 27 % of rice and 46% of wheat to the central pool in 2015-16
- High nutritional requirement of paddy and wheat has exhausted the soils of vital nutrients
  - With higher input costs, current practices are ecologically unsustainable and economically unviable
- Current Ecological Issues
  - Water erosion in Shivalik foot-hills
  - Low water table in central districts
  - Water logging problem leading to high salinity in south-western districts

# ESTIMATING ECONOMICS OF SUSTAINABLE AND NATURAL FARMING : NATURE BASED SOLUTIONS IN AGRO-ECOLOGICAL SYSTEMS & AGRISCAPE IN INDIA

1. Sikkim 'the first fully organic state'
  - Achieved it through strong political will and policy coherence, along with well-defined targets and implementation plans
2. Bringing Back Ancient Grains-Millet
  - Untapped potential of millets, climate resilient crops to contribute to food security, nutrition and productivity in drought-prone and poor soil areas- Uttarakhand Model
3. Traditional Knowledge & Practice
  - Traditional 'water tank' system of moisture conservation : Tamil Nadu
  - Old varieties of crops, requiring less inputs, esp for smallholder farmers
4. Community Managed Food Forests (Tamil Nadu, West Bengal)
5. Mixed & Relay Cropping
  - Better crop management with higher returns for farmers and advantages in space and time utilization
  - Crop Diversification & less water consuming : Haryana
6. Zero Budget Natural Farming-implemented by Govt. of Andhra Pradesh  
regenerative agriculture with 1,63,000 being roped in at 972 villages in 2017-18, the target is to cover 60 lakh farmers and 12,294 gram panchayats by 2024.
7. Agriculture Waste to Wealth Converting waste to energy/nutrients recycling/biodegradable packaging material etc.

# INTERNALIZING THE FINDINGS IN WRI'S FOOD AND LANDUSE (FOLU) PROJECT

- FOLU India is planning initiatives towards bringing sustainability to the Indian agriculture sector, intending to work on ground for evidence building and coalition of evidences and information for policy level engagement. The economic evaluation of the agriculture biodiversity and overall trade-off between eh agriculture and biodiversity will enable us to mention the impact of present agriculture on biodiversity in economic terms.
- FOLU India is also working in the fronts of livelihood of the farmers and labourers in Indian Agriculture sector – as it is attempting to design tailor made solutions for sustainably improving the income from agriculture in India. An economic evaluation of the potentials of ecosystem services related with Indian agriculture sector and practical solutions for establishing mechanisms for financial rewarding the ecosystem service generation and conservation by farmers above BAU can be one of the key elements of the livelihood improvement programme intending to be conducted by FOLU India.

Thank you....  
(Contact : [madhu.verma@wri.org](mailto:madhu.verma@wri.org))





# VALUING NATURE FOR SUSTAINABILITY IN THE AGRICULTURE AND FOOD SECTOR OF INDIA

**WEBINAR**

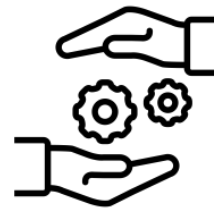


The Economics of Ecosystems and Biodiversity: promoting a sustainable  
agriculture and food sector

## TEEBAgriFood Framework Implementation



Public sector  
engagement



Private sector  
engagement



**CAPITALS  
COALITION**



Funded by the  
European Union



# Capitals Coalition

We are a **global collaboration transforming the way decisions are made** by including the value provided by nature, people and society.

We work through collaboration with **370+ organizations from across the entire system** at the core & thousands more engaged around the world.

This systems approach provides us with a **unique oversight of the gaps and challenges**, and also provides inspiration, ideas and resources to get things done. The Coalition shares a common belief that we can do more together than we can alone.



# WHAT WE DO

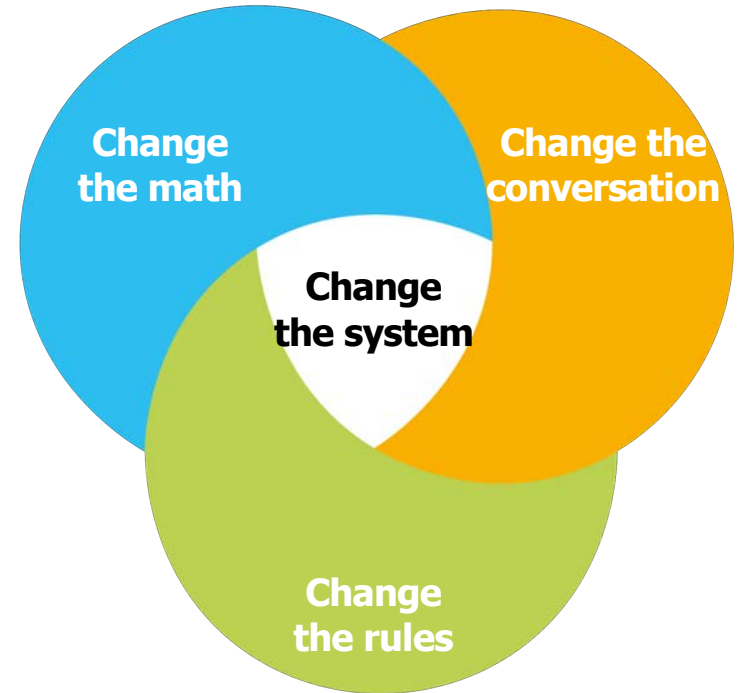
We curate collaborative action to:

**Change the math** by reshaping how business, financial markets and governments identify, measure and value the relationship between nature, people and the economy.

**Change the conversation** by developing influential communications and growing a dynamic and supportive community to create shared value for everyone.

**Change the rules** by reshaping motivations and incentives that drive decision making.

**Change the system** by reflecting the true value of nature, people and the economy in all decisions.



# TEEBAgriFood Implementation for business

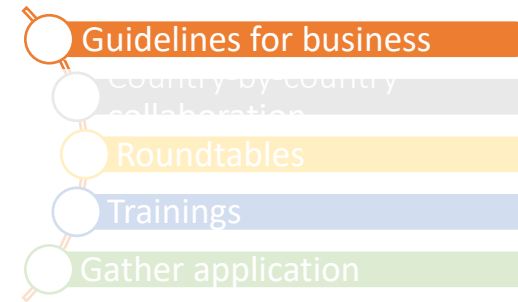
## WHAT?

Engagement with  
agri-business

## HOW?



# Guidelines for business



# Country by country collaboration



## India



Confederation of Indian Industry



## Global



cebds

Brazilian Business Council for Sustainable Development (BCSD-Brazil)



ibcsd

Indonesia Business Council For Sustainable Development

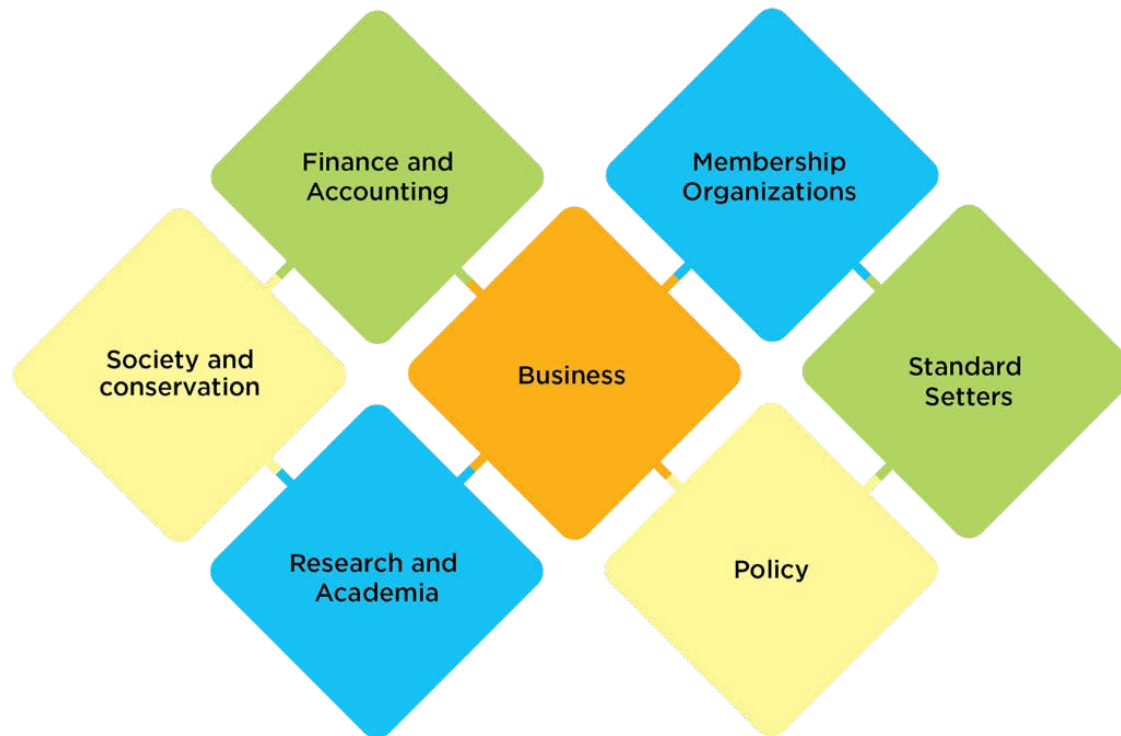
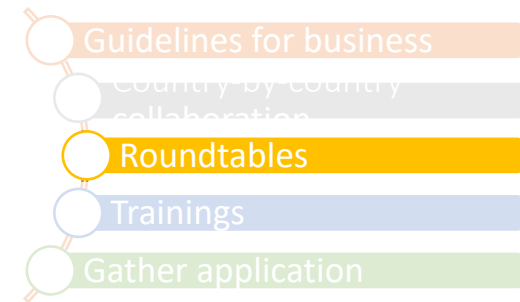


GoldenBee  
Corporate Social Responsibility Consulting



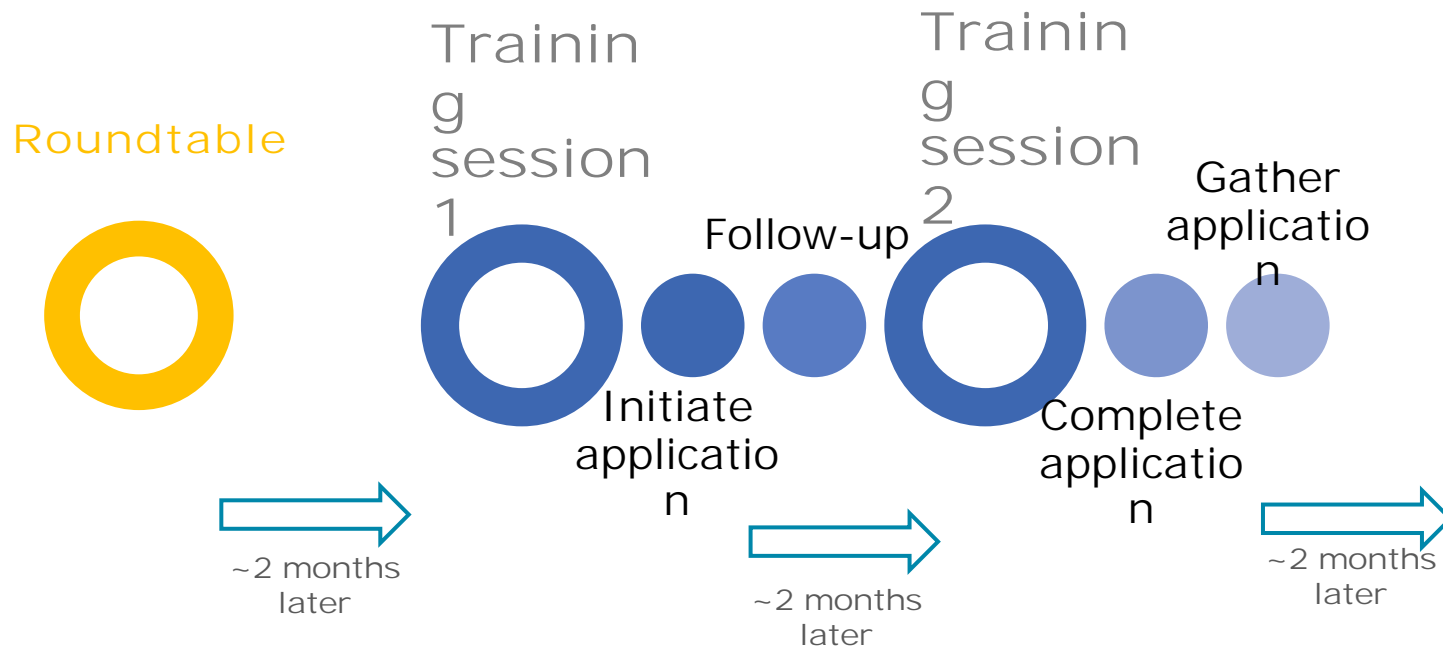
AMEBIN  
Alianza Mexicana de  
Biodiversidad y Negocios

# Roundtable discussions

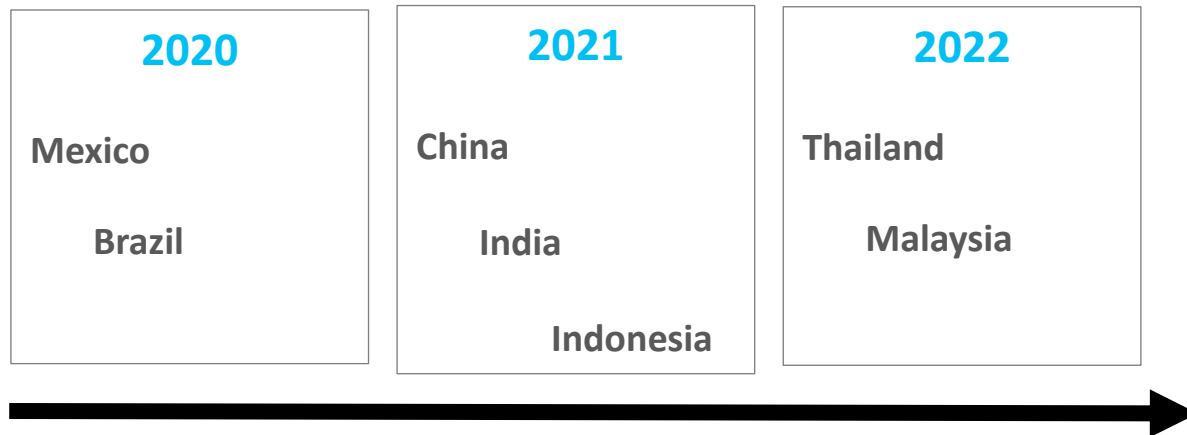
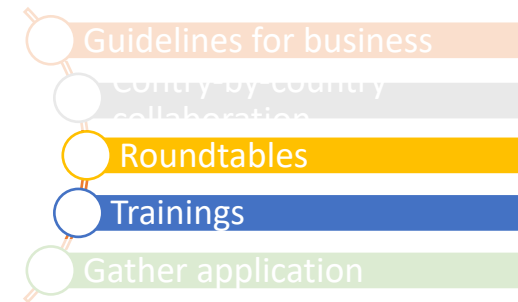




# Training and gathering applications



# Roundtable and training timeline





# Q & A







For more information about this UNEP TEEB Agrifood project:

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**TEEB**





# POLLING

**UN**   
environment  
programme

 **TEEB**





THANK YOU FOR YOUR TIME

