



***Economics, Ecology and Values;
Where the World and India Meet***

Annual Conference of the Club of Rome

9th November, 2011

***Taj Mahal Hotel
New Delhi, India***

Presentation Schematic

- **Introduction to Club of Rome**
- **Economics & Ecology – A Paradigm Shift**
- **Back to the Future - India's Natural Inheritance**
- **Inspired by India's Natural Inheritance – Case Studies**
- **Where the World and India meet**
- **Welcome to India**

The Club of Rome – International Charter

Mission

- To identify problems and find sustainable resolutions for issues of vital public concern;
- To champion and promote adoption of solutions to problems that threaten the well being of people or health of life support systems of the planet;
- To Focus on the issues of the nations and the world as a whole;
- To Address emerging issues through root-cause analysis

Objectives

- To collaborate and forge strategic alliances with other institutions and networks that contribute towards the objectives of the trust;
- To discuss global issues such as poverty, pollution, conflict, north south digital divide, illiteracy, the inequitable world economic, financial order and others which ail the world in a perpetual and/ or recurring manner

Thought Leadership

A Needle's Eye as Large as a Camel

Blue Economy

Factor 5

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- Dr. Ashok Khosla, Co-President
- Dr. Eberhard von Koerber, Co-President
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- Prof. Roberto Peccei, Member

The Club of Rome – India National Association

Mission

- To identify emerging problems and find sustainable resolutions for issues of vital public concern in the Indian subcontinent.
- To promote adoption of solutions related to sustainable management of land, energy, water, waste, energy, air and carbon (LEWWAC)
- To develop an Indian paradigm for sustainable solutions for an equitable and peaceful world

Objectives

- To create a think-tank to address emerging issues through root-cause analysis and nature –centered solutions
- To discuss issues such as poverty, pollution, malnutrition, skills development, illiteracy, gender and loss of biodiversity and others which ail the world in a perpetual and/ or recurring manner

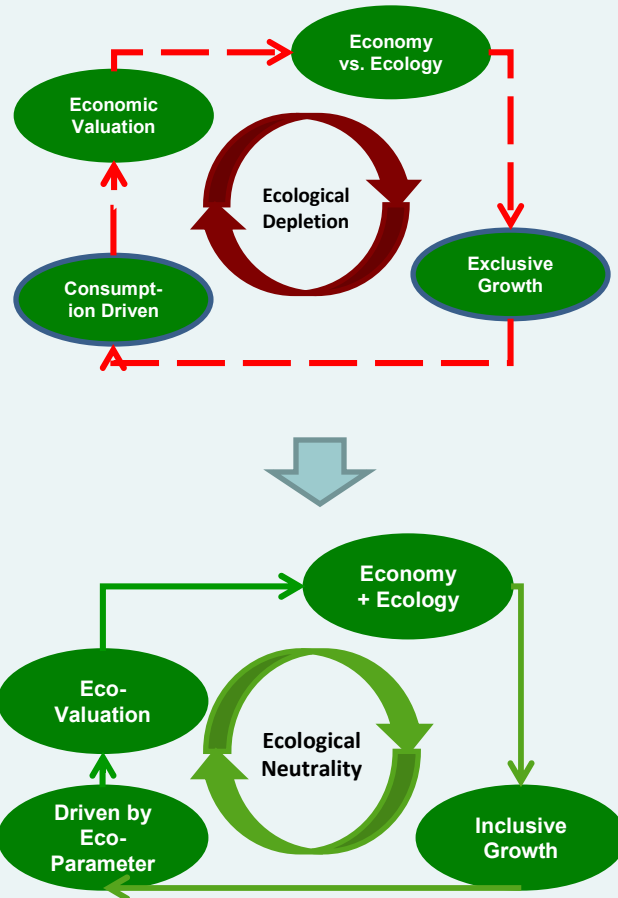
- S. Ramadorai – Chairman
- Ranjit Barthakur, Secretary
- Ajay S. Mehta
- BG Verghese
- Deepak Mukarji
- Dhruv Sawhney
- Harpal Singh

- JG Krishnayya
- KP Nyati
- Lalit Mansingh
- Leena Srivastava
- Narendra Kumar
- Naresh Trehan
- Nitin Desai

- Omkar Goswami
- Romi Khosla
- Shyam Saran
- Suhel Seth
- Sumant Damija
- VM Trehan
- Vikram Lal
- Vikram Mehta
- Vibha Dhawan

Where the World and India meet

Economy & Ecology – The Paradigm Shift



Back to the Future - India's Natural Inheritance

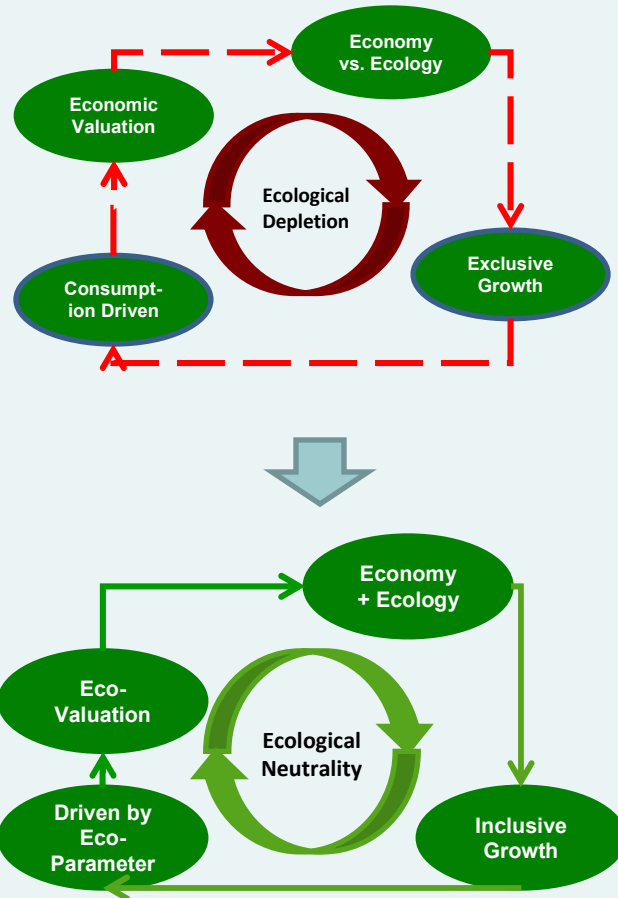


Indian Case Studies Inspired by Nature



Where the World and India meet – Economics & Ecology – The Paradigm Shift

Economics & Ecology – The Paradigm Shift



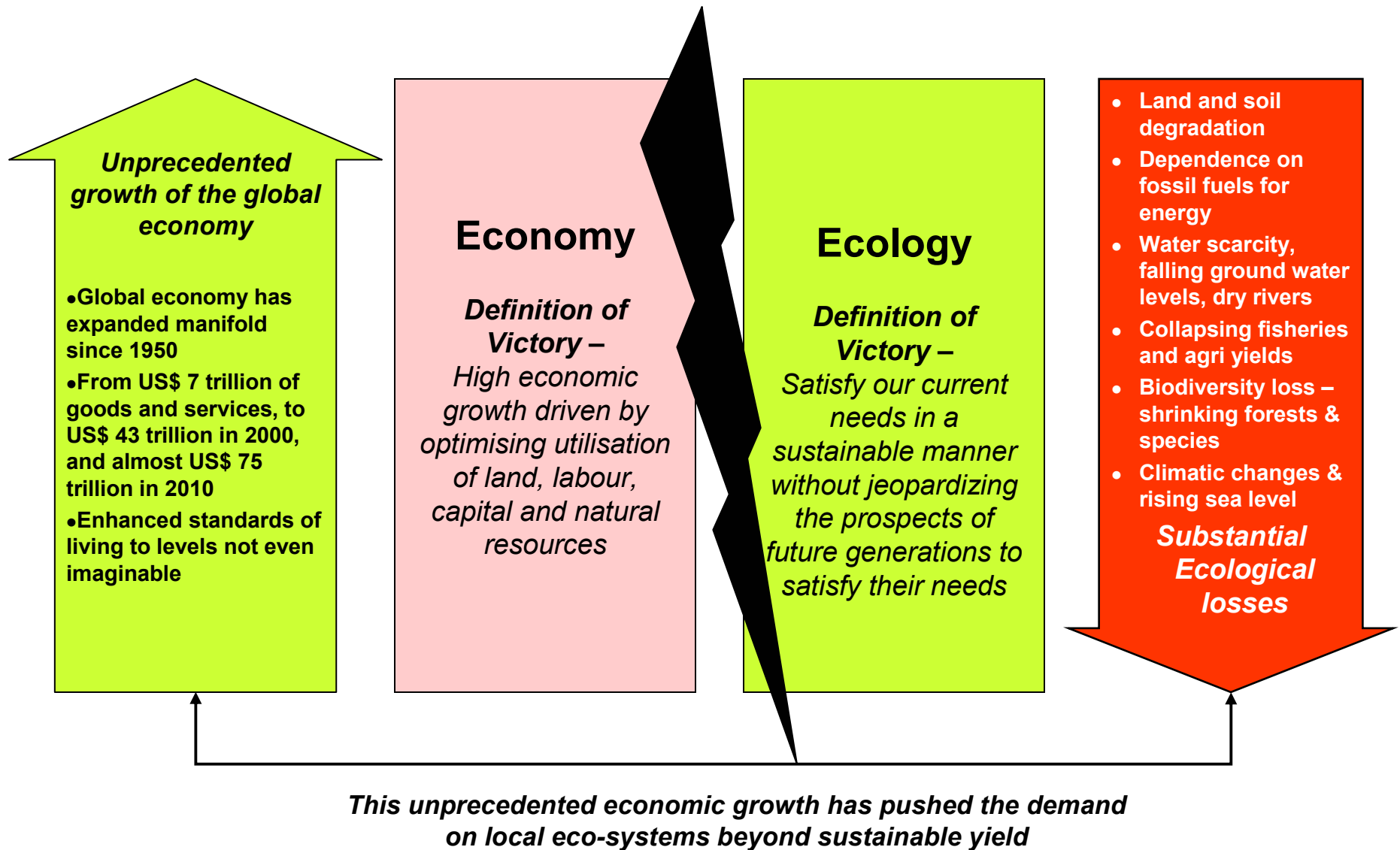
Back to the Future - India's Natural Inheritance



Case Studies Inspired by Nature

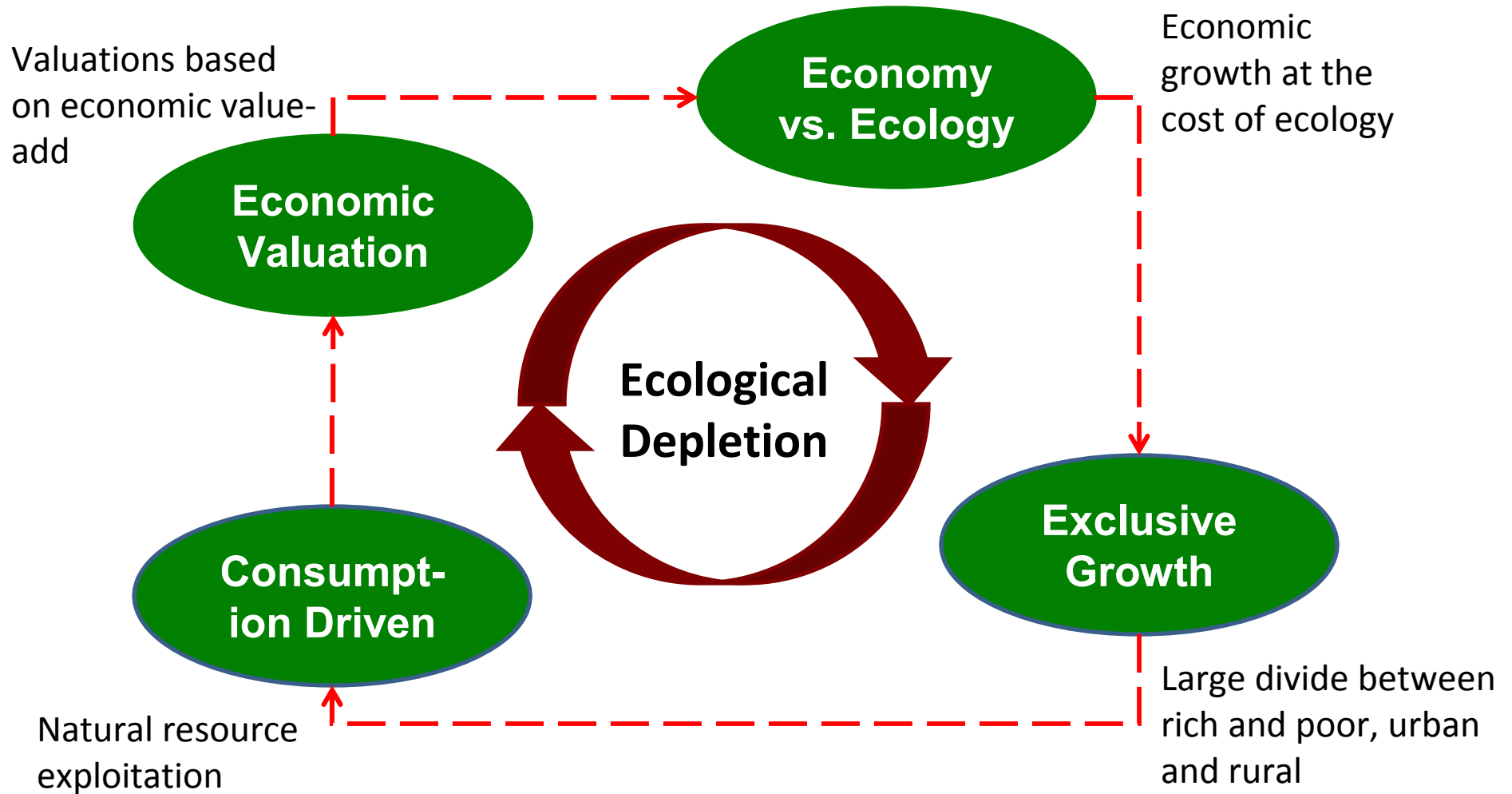


Economics & Ecology – A Stressed Relationship

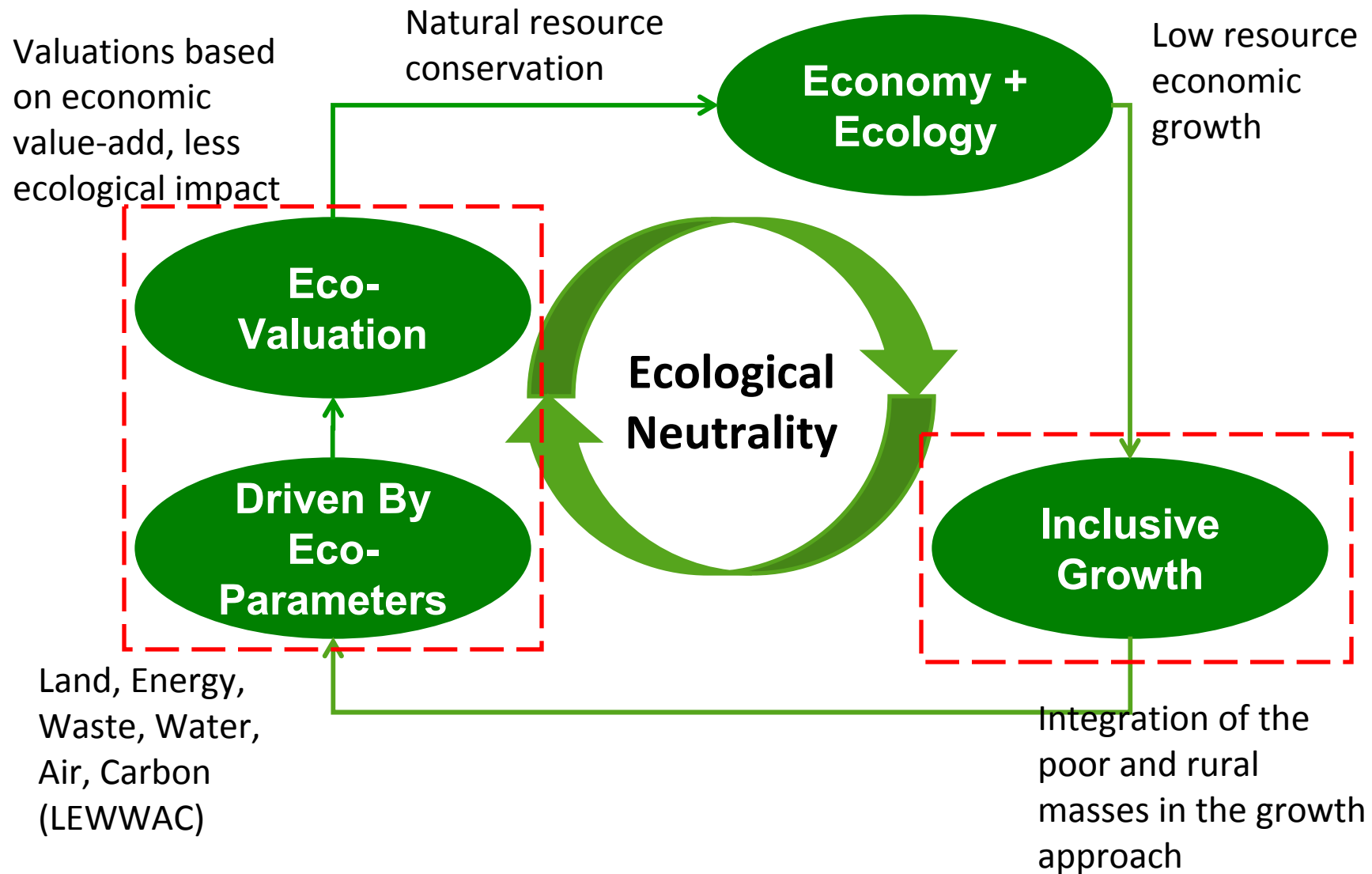


Adapted from Eco-Economy, Building an Economy for the Earth – Lester R. Brown

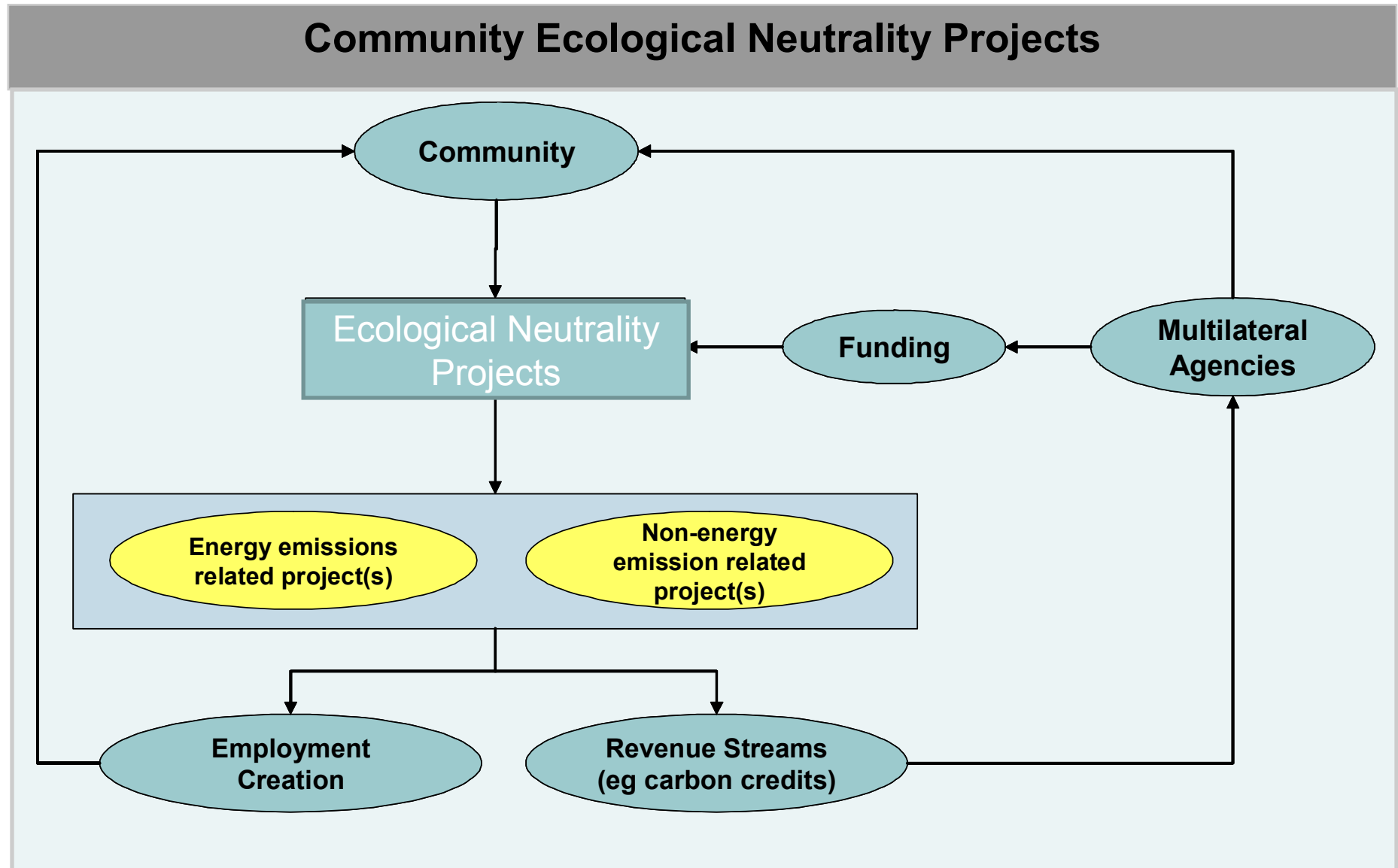
The Current Economic Model leads to Ecological Depletion



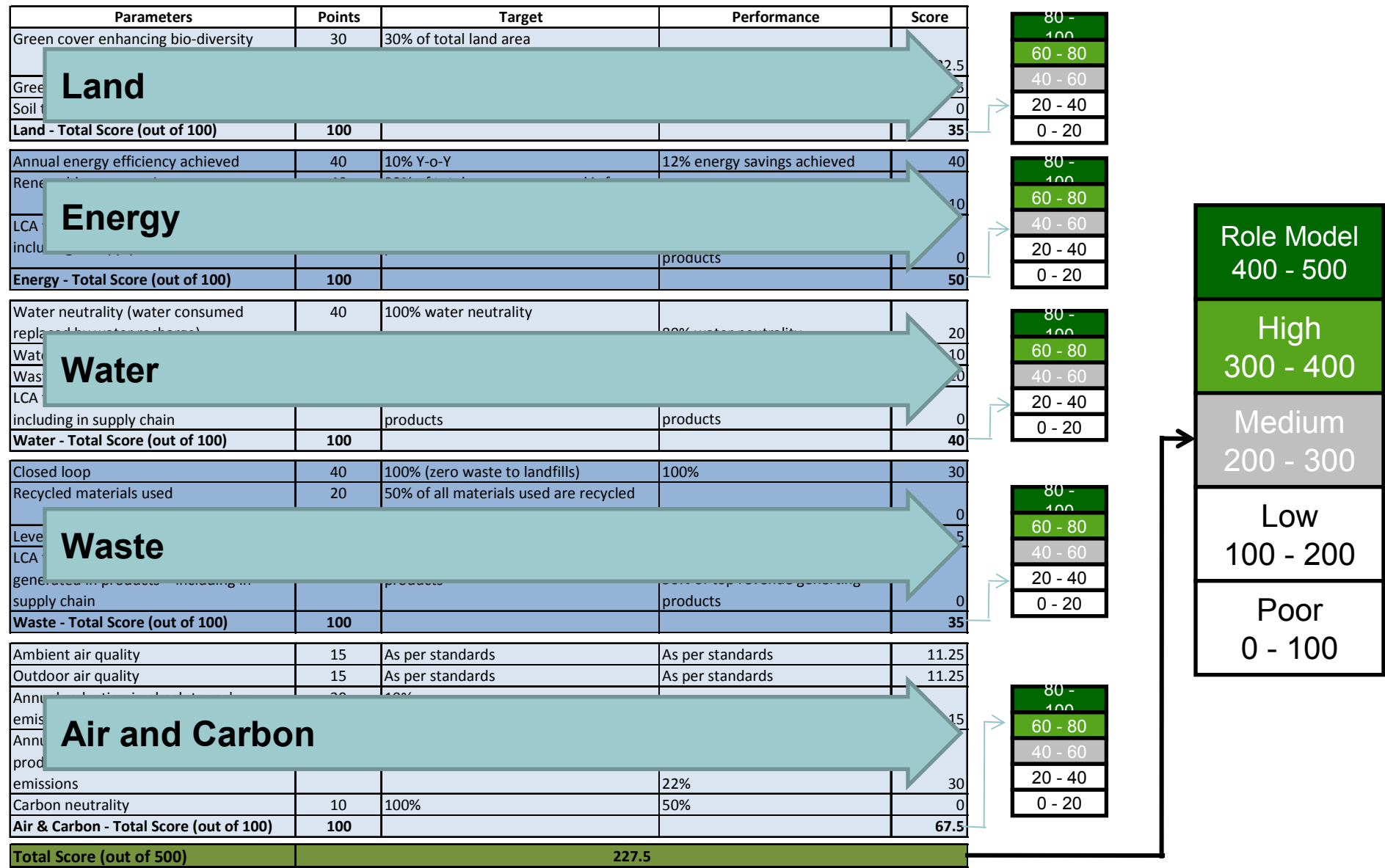
Emerging Model for Ecological Neutrality



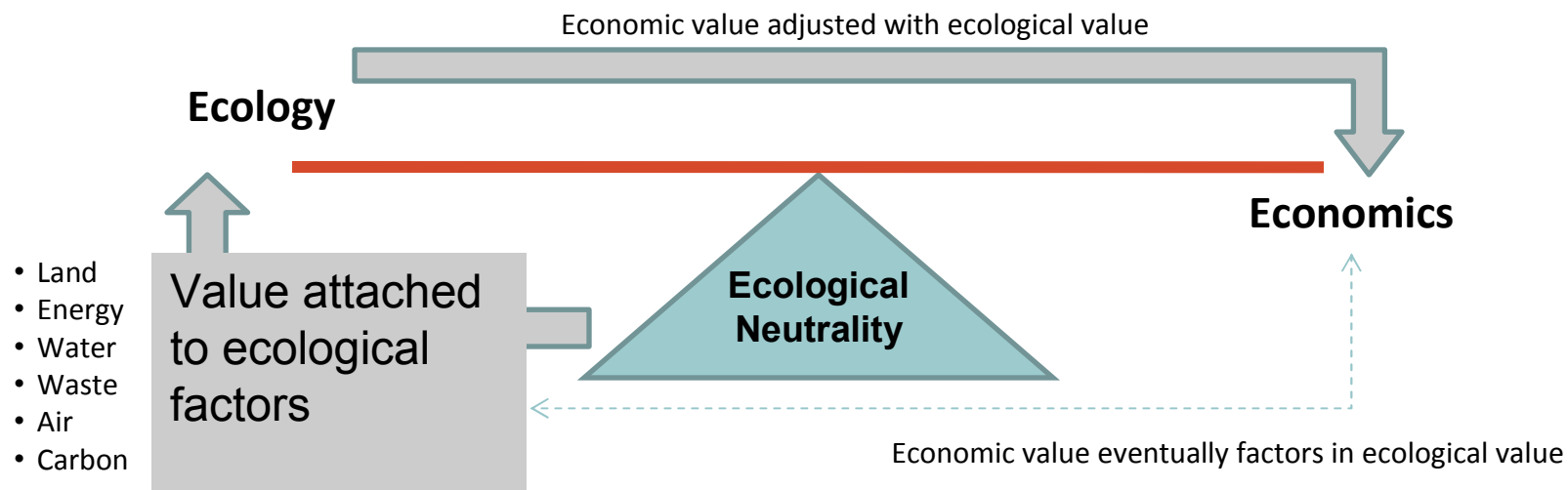
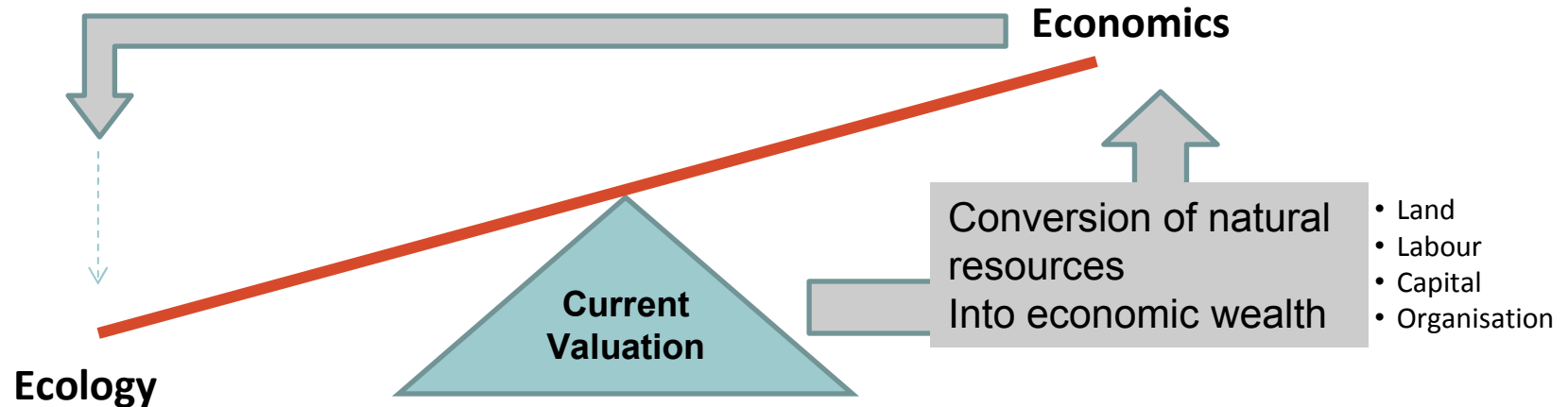
Inclusive Growth Approach



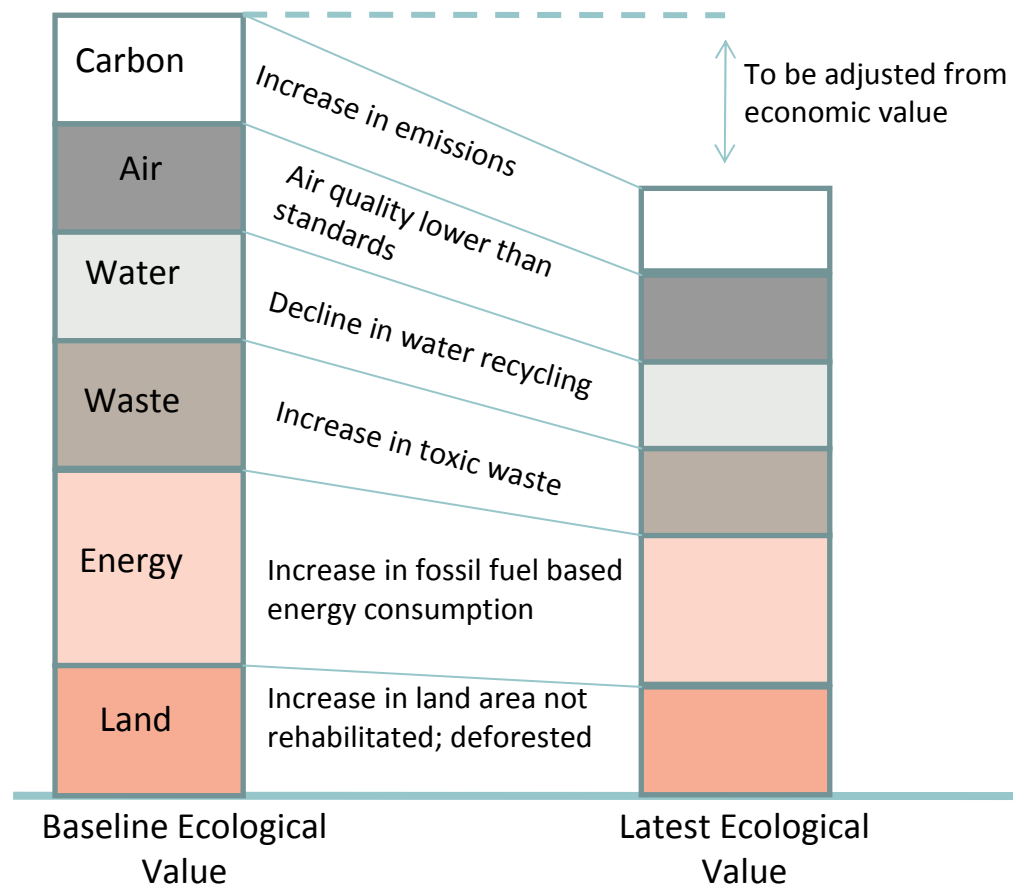
NatureSecure – Redefining Green Ratings



Naturenomics - Changing the valuation paradigm



Adjustments to Economic Valuations



Countries

Country valuation will need **develop economic models to capture the main externalities from unaccounted flows of non-marketed ecological services and valuation of ecological assets**

Corporations

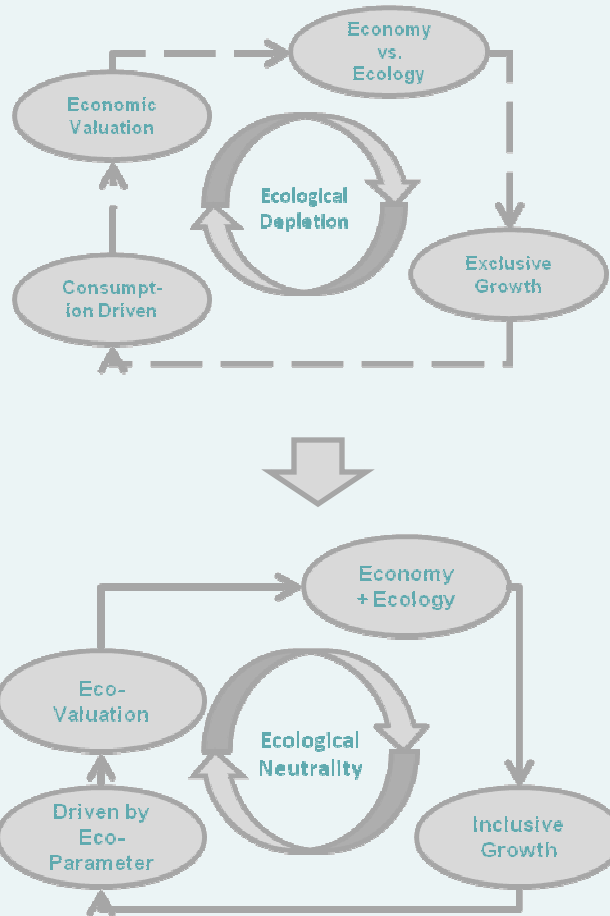
Corporate green re-valuation will emerge where corporations are measured and re-valued, **over and above their financial performance, on ecological quantitative parameters** related to land and biodiversity management, energy security, water neutrality, waste management, air quality and carbon neutrality

Where the World and India meet – India's Natural Inheritance



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Economy & Ecology – The Paradigm Shift



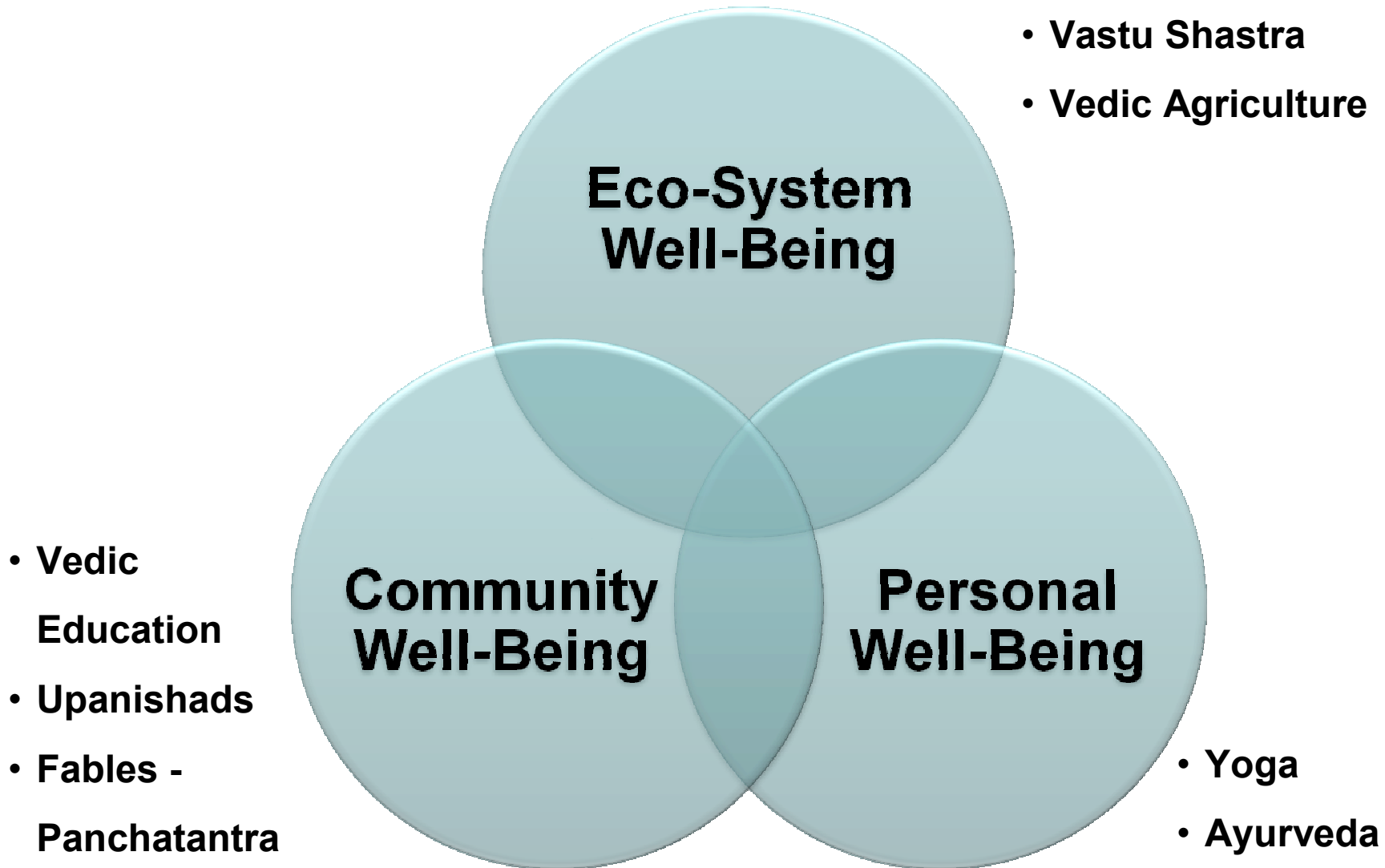
Back to the Future - India's Natural Inheritance



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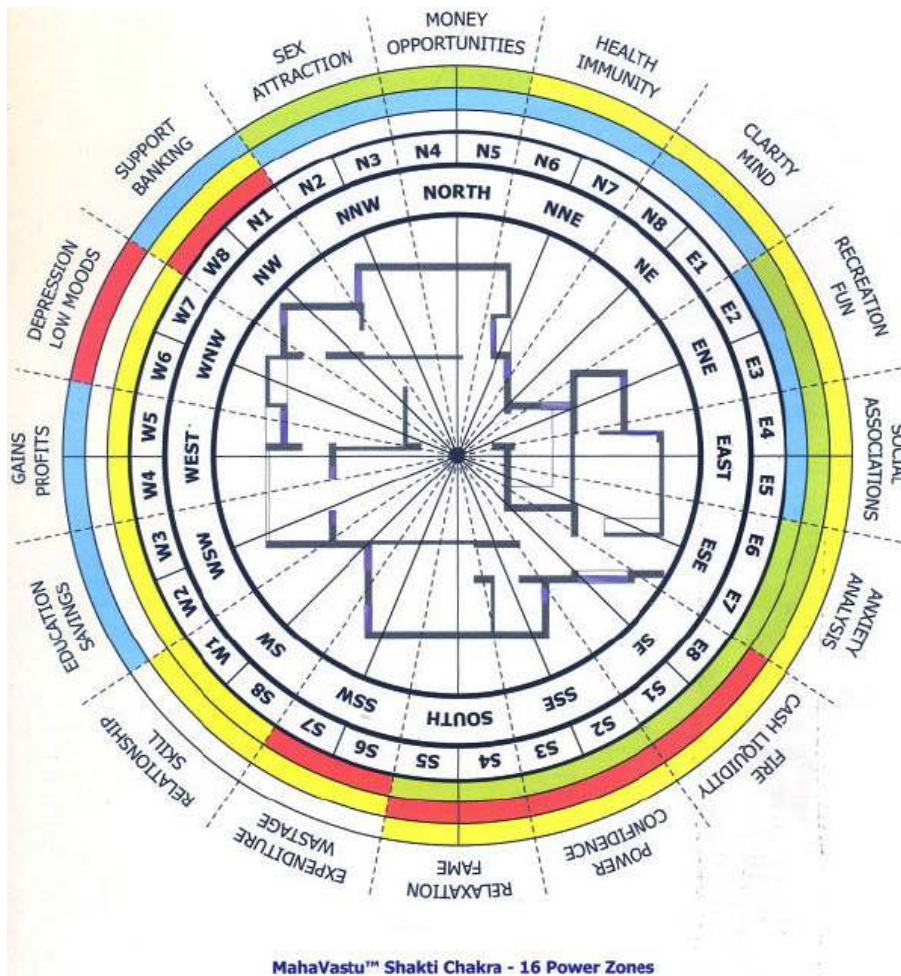


Back to the Future - India's Natural Inheritance



Eco-System Well Being – “Vastu Sastra”

Vastu Sastra : An ancient doctrine on how the laws of nature affect human dwellings in alignment with the 5 elements



Earth (Bhumi)

Earth, the third planet in order from the sun, is a big magnet with North and South poles as centers of attractions. Its magnetic field and gravitational force has considerable effects on everything on the Earth, living and non-living.

Water (Jal)

This is represented by rain, river, sea and is in the form of liquid, solid (ice) and gas (steam, cloud). It forms part of every plant and animal. Our blood is mostly water

Air (Vayu)

As a life supporting element, air is a very powerful life source. Human physical comfort values are directly and sensitively dependent on correct humidity, air flow, temperature of air, air pressure, air composition and its content.

Fire (Agni)

Represents light and heat which account for day, night, the seasons, energy, enthusiasm, passion and vigour.

Space (Akasha)

The akasha provides shelter to all the above elements. It is also considered the primary conductor of all energy sources within the universal context

Eco-System Well Being – Vedic Agriculture

Vedic Agriculture is based on the principles of harmony with nature

Sources of Knowledge	Harmony with Nature	Eco-System Benefits
<ul style="list-style-type: none">• Rigveda• Krishiprasara• Manusmriti• Agni Purana• Vriksha Ayurveda	<ul style="list-style-type: none">• Philosophy of harmony with nature• Utilizing the five basic elements of earth, water, fire, air and ether in agriculture• Recycling matter	<ul style="list-style-type: none">• Avoidance of chemical pesticides and fertilizers• Use of organic, biological and natural farming, vermi culture, with crop rotation• Bio intensive nutrient management• Ecological pest management eg. neem for pest control• Complete harmony with nature and cosmic consciousness

Community Well Being – Vedic Education

Education Systems

- **Gurukul**
(*residential schools*)
- **Takshila**
(*university*)

Principles

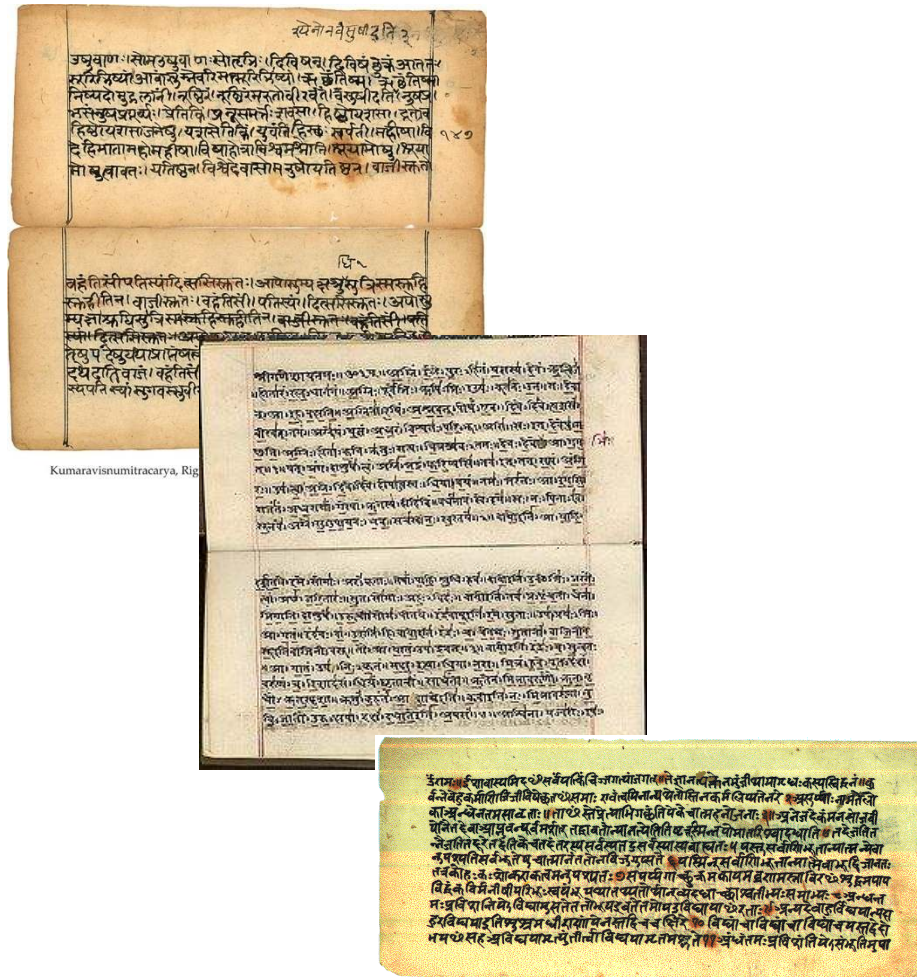
- Proper pronunciation & recitation of the Veda
- Rules of sacrifice
- Grammar and derivation
- Composition
- Secrets of nature and living in harmony with nature
- Reasoning and logic
- Sciences
- Herbal medicine
- Skills necessary for an occupation

Subjects

- Religion
- Traditional Scriptures – Upanishads, Bhagwad Gita, etc
- Philosophy
- Literature
- Warfare
- Statecraft
- Medicine
- Astrology
- History

Community Well Being – Learning through the Upanishads

The Upanishads help reveal the true nature of the individual, the world and the cause of the world. The Upanishads have an evolved method to teach the vision of non-duality, that one thing, which is the ultimate reality of oneself and the world



- The Upanishads explain the life cycle, and how breaking this life cycle can lead to disruptions. The Upanishads summarise an important ecological principle:
 - Organisms are defined by the resources that they use and how they are themselves used as resources. Plants harvest energy from the sun, carbon dioxide from the atmosphere, and minerals from the soil. They emit the oxygen that sustains animal life. Animals eat plants, eat each other, expel carbon dioxide and excrete many other waste products. These waste products provide nutrients for plants and microbes. Using resources (energy and materials) to make new cells, to repair old ones, and to get rid of wastes requires the assemblage of biochemical pathways that we call metabolism. Metabolism is a universal feature of life that links organisms with their environment, and with each other

Community Well Being – Panchatantra Fables

Originally composed in the **2nd century B.C.**, Panchatantra is believed to be written by **Vishnu Sharma** along with many other scholars. The purpose behind the composition was to **implant moral values and governing skills** in the **young sons of the king**



- ‘Panchatantra’ is a combination of two words, ‘Pancha’ (five) and ‘Tantra’ (practice/ principle)
 - *Mitra Bhedha* (Loss of Friends)
 - *Mitra Laabha* (Gaining Friends)
 - *Suhrudbheda* (Causing discord between Friends)
 - *Vigraha* (Separation)
 - *Sandhi* (Union)
- The fables are based on community living in harmony with nature

Personal Well Being – ‘Yoga’ and ‘Ayurveda’

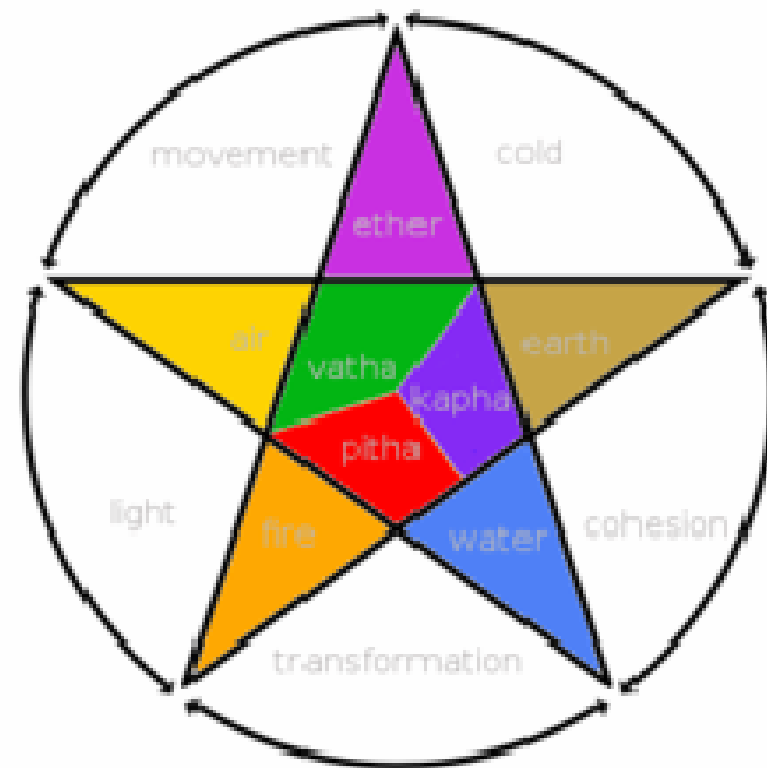
Yoga - physical, mental, and spiritual discipline

- The goal is the attainment of a state of perfect spiritual insight and tranquility, and could range from improving health to achieving moksha
- Brings together meditative practices in Hinduism, Jainism and Buddhism.

Ayurveda – traditional Indian medicine

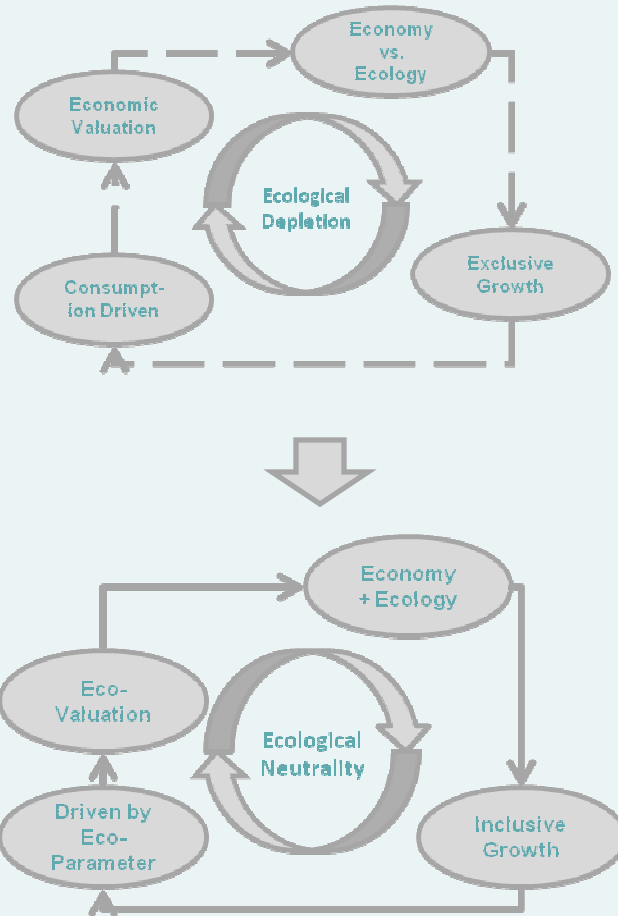
Atharvaveda (one of the four most ancient books of Indian knowledge, wisdom and culture) contains 114 hymns or formulations for the treatment of diseases

Yama	non-violence, non-lying, non-covetousness, non-sensuality, and non-possessiveness.
Niyama	purity, contentment, austerity, study, and surrender to god.
Asana	Literally means "seat", and in Patanjali's Sutras refers to the seated position used for meditation.
Pranayama	("Suspending Breath"): Prāna, breath, "āyāma", to restrain or stop. Also interpreted as control of the life force.
Pratyahara	("Abstraction"): Withdrawal of the sense organs from external objects.
Dharana	("Concentration"): Fixing the attention on a single object.
Dhyana	("Meditation"): Intense contemplation of the nature of the object of meditation.
Samādh	("Liberation"): merging consciousness with the object of meditation.



Where the World and India meet – Case Studies inspired by Nature

Economy & Ecology – The Paradigm Shift



Back to the Future - India's Natural Inheritance




Case Studies Inspired by Nature



Inspired by India's Natural Inheritance – Food Security

Storage of Tomatoes through Air Hanging Stalkes

Profile	
Name	Mrs Sephali Debnath 
Address	Village Samrucherra, P.O Chebri, Khowai, District West Tripura, Tripura
Age	38 years
Education	7 std
Landholding	9 Kani
Crops grown	Tomato, ground nut, rice, long bean, potato, brinjal and papaya
Livestock	Cows
Recognition	Cashier of Sanhita Self Help Group

Description of innovation

- The technique involve is air hanging of stalked tomatoes on ceiling by tying with thread.
- Ropes with 1-2 cm diameter are tied on two side of bamboo pool.
- On the rope, tomatoes are tied with stalks is hanged keeping at least 6 feet. Height from the ground level and 2 feet below the roof with free air circulation.
- To protect direct light from the roof they kept ceiling of thick cotton cloth at a distance of 1.5 feet from the roof.
- This increases the shelf life of tomato upto 3- 4 months.

Practical utility of innovation

- This method involved less labour as well as time. Expenditure was only for thread and labour.
- Cost Benefit Ratio ranges was 1:30. Even though it is a new innovative approach, the adoption percentage is about 45%.
- The popularity is gaining very fast among the tomato growers of the West district of Tripura



Different way of storing vermi-compost

Profile	
Name	Smt Ruma Basak 
Address	Village Sadhuramgacch, P.O Chopra, District Uttar Dinajpur, West Bengal (Mobile : 09932350450)
Age	37 years
Education	7 th Std
Landholding	0.4 ha
Crops grown	Paddy and vegetables
Livestock	Backyard poultry
Recognition	Member of SHG

Description of innovation

- In this developed technique, ready vermicompost was sieved thoroughly and kept in plastic bags tied loosely for a period of 4-5 days for allowing to the cocoons present in the sieved compost to hatch. On the sixth day this compost is again sieved thoroughly to separate compost and worms.
- The separated worms are again put in composting pit to maintain the stock and the compost was sold.
- It was highly effective in avoiding the reduction in worm stock, wastage of cocoons in compost itself is avoided and the entire process requires very little time and energy.


Practical utility of innovation

- Households where vermicompost is produced and sold at a small scale often face the problem of depletion of stock of worm to regenerate the process.
- Worms being difficult to transport from other places during the need, prevented the farmers from producing vermicompost.
- The innovative way of maintaining stock can easily be done by the women without drudgery and additional cost.



Inspired by India's Natural Inheritance – Water Security

Micro Sprinkler

Profile	
Name	Shri M Avaran 
Address	Mannackkara House, Athavanad, District Malappuram, Kerala (Mobile : 09446840750))
Age	42 years
Education	Primary
Landholding	2 acres
Crops grown	Rice, banana, coconut, arecanut and Vegetables
Livestock	Back yard poultry, rabbit rearing and ornamental fish
Recognition	<ul style="list-style-type: none"> President of Haritha sangam, Athavanad and Secretary of Athavanad Padashekharam

Description of innovation

- The new micro sprinkler is from commonly available 3 mm diameter micro tubes, a kerosene lamp and an old razor blade.
- Micro sprinkler is developed by fusing one end of the 3 cm long micro tube and making an incision just below the fused end.
- Discharge rate of the 3 cm long micro sprinkler comes to 90 lph at the normal operating pressure of 1 kg/cm² which produce half circle jets of 1m diameter.
- Received certificate from Department of Agriculture, Government of Kerala and appreciation from Kuttippuram Block Panchayath..

Practical utility of innovation

- It is adaptable for all types of crops like plantation crops, fruits and vegetable.
- Water use efficiency increases with this micro sprinkler and thereby decreases the cost of irrigation. Clogging of drip emitters could be managed by this micro sprinkler.
- This sprinkler is economically viable because the cost comes to only Rs 2, while the drip emitters cost around Rs 18 (for 3 Nos.). Benefit - Cost Ratio is 3.29.




Spraying pattern of Avaran's micro sprinkler



Avaran's micro sprinkler laid out in banana field

Inspired by India's Natural Inheritance – Health Security

Home Made Aloe-Vera Soap

Profile	
Name	Smt Alemla 
Address	Village & P.O Naga United, 4th Mile, Dimapur, Nagaland (Mobile : 09436013537)
Age	43 years
Education	Graduate
Landholding	2 ha
Crops grown	Aloe vera, cabbage, tomato and pea
Livestock	Pigs, cows and poultry
Recognition	<ul style="list-style-type: none"> President of SHG fed. Medziphema, Dimapur. Project Director of Nagaland Mercy Mission

Description of innovation

- Major ingredients used by the farmer for home made aloe-vera soap are Aloe-vera gel 5 litres., crude oil- 5 litres, Lemon- 5 numbers, Neem leaves-500 gms and washing soda-1 kg.
- Aloe-vera gel is extracted, filtered and kept in plastic container 1 kg of soda is added to it.
- When it gets slightly solidified then it was poured in a wooden container lined with polythene and it is kept for 6 hours.
- After this it is cut into desired shape and size and stored for two weeks and sold in the market as Aloe-vera soap.
- Nearly 110 pieces of soap are prepared by using the above quantity of ingredients.

Practical utility of innovation

- Aloevera soap is having adaptability to the existing local condition as other soaps are sold at higher prices.
- As the soap is cheaper, villagers are also able to purchase it.
- The total cost of preparation of 1 piece of soap is Rs. 7.50 and sold in market at Rs. 10/- with a net benefit of Rs. 2.50 per piece.



Inspired by India's Natural Inheritance – Integrated Corporate Approach to Food Security



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Organic Conversion of Hathikuli Tea Estate (Amalgamated Plantations – A TATA Enterprise)

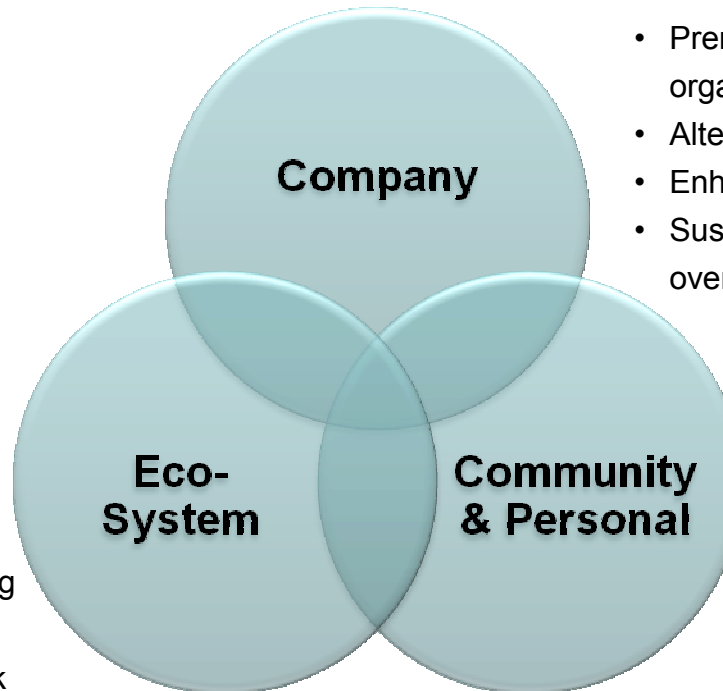
First year of conversion



Post certification



- Organic formulations for soil nutrition, foliage growth & pest management
- Significant improvements in soil quality
- Biodiversity enhancement restoring the local ecological balance – linkage to Kaziranga National Park



- Premium pricing being received for organic tea
- Alternate crops and fisheries
- Enhanced consumer branding
- Sustained yields and productivity over the long term

- Employment generation & livelihood enhancement
- Impact on other sectors in the local area – nature tourism, tea tourism
- Safer drinking water
- Cleaner air

Where the World and India meet – Conclusion

