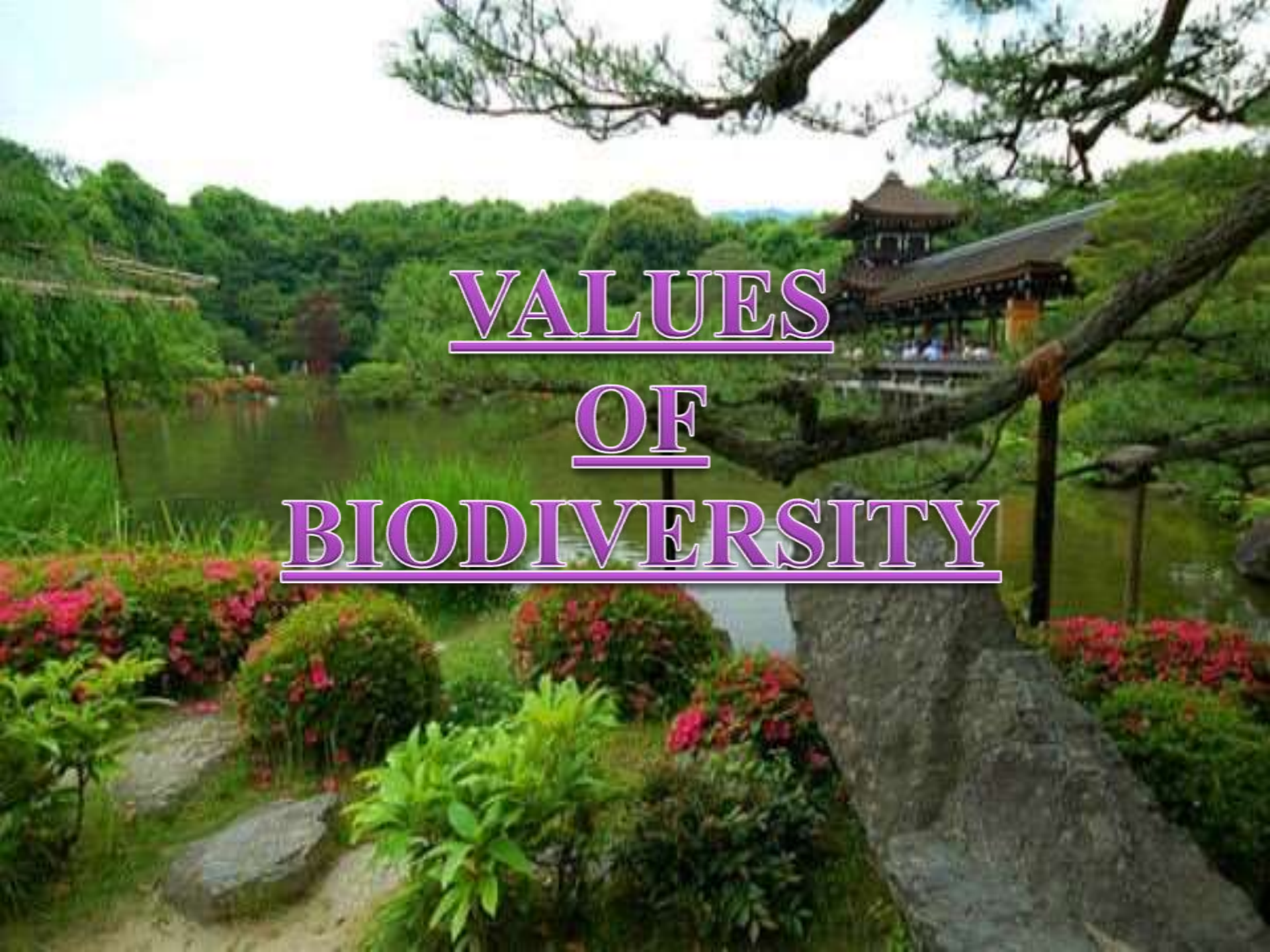


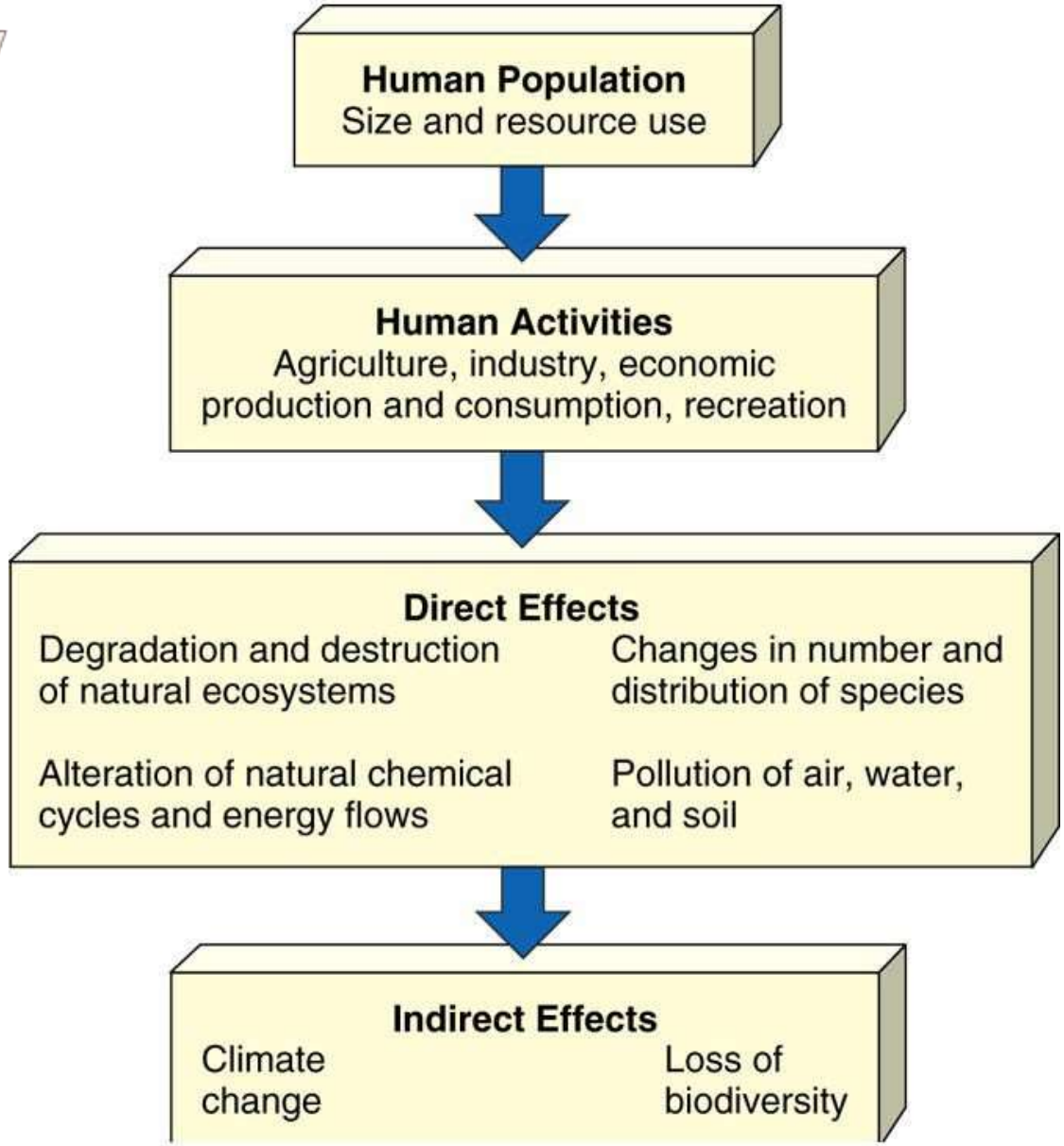
VALUES OF BIODIVERSITY

Biodiversity

- Biodiversity or biological diversity , refers to the range of life forms on Earth.
- The biosphere comprises of a complex collection of innumerable organisms , known as the ***"Biodiversity"***
- Which constitutes the vital life support for the survival of human race
- Includes millions of plants animals and micro organisms ,the genes they contain and the ecosystems of which they are a part.

Source: slideshare

HUMAN ACTIVITIES AND BIODIV



LOSS OF BIODIVERSITY

- Everyday around the globe species are being lost others are being pushed towards extinction.
- The Earth's biodiversity is more threatened today than any other time in the past
- During last 200 million years ,100 to 1000 species became extinct in each century.
- But evolution also brought forth new life forms, replacing species that were lost.
- Today we are losing about 1500 species every two months.

ECONOMIC TERMS

- Economically there are main two types of values of biodiversity
- They are
- Use value
  - Direct values
  - Indirect values
  - Option values
- Non use value
  - Bequest value- willing to pay for its existence
  - Existence value – knowing its existence

DIRECT VALUES

- Direct values are concerned with the enjoyment or satisfaction received directly by biological resources
- They can be relatively easily observed and measured ,often by assigning prices to them
- There are two types
  - Consumptive use (non-market value)
  - Productive use (commercial value)

CONSUMPTIVE VALUE

- The value of Nature's Products that are consumed directly such as firewoods , fodder and meat.
- In other words the products which are consumed directly without passing through the market
- Consumptive use value seldom appear in National income accounts.

Consumptive use Values:

- The most important point of consumptive use is that some rural communities closest to the forests or other natural areas can prosper through the sustainable harvesting of wildlife species.

- Hunting, direct-consumption (e.g. collection of berries, mushrooms, herbs, plants) are all "consumptive uses"

PRODUCTIVE USE

- Products that are commercially harvested for exchange in formal markets
- Each species is valuable to humans.
- The global collection of genes , species , habitats and ecosystems is a resource that provides for human needs now.
- It is also essential for human survival in the future.
- This is often the only value of biological resources that is reflected in the income accounts

PRODUCTIVE USES

- Products such as animal skins,ivory, medicinal plants,honey,beewax,fibers, gums,ect…..,

INDIRECT VALUES

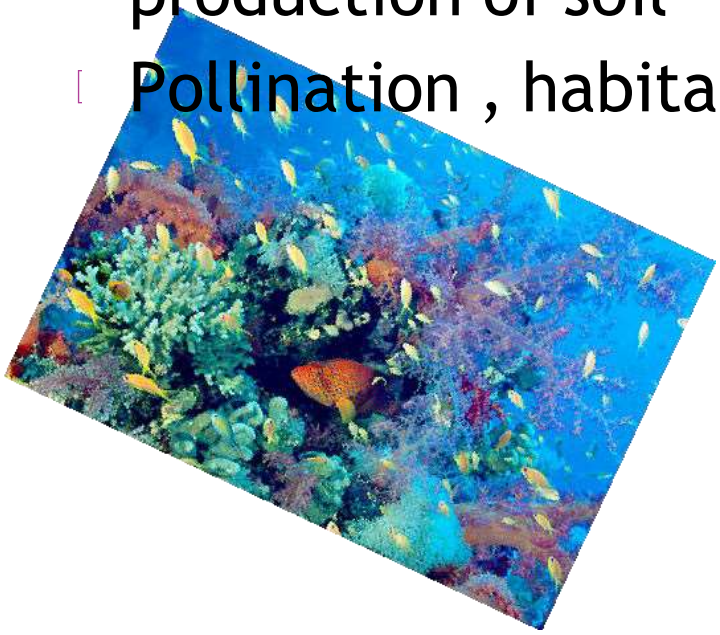
- It deals primarily with the functions or ecosystems
- Do not normally appear in national accounting systems , but they may outweigh direct values when they are computed
- Reflects the value of biological diversity to society locally or at large rather than to individuals or corporate entities.
- Direct values often derive from indirect values because harvested species of plants and animals are supported goods and services provided by their environment

TWO TYPES OF INDIRECT VALUES

- Non consumptive use
  - Social values
  - Ethical values
  - Aesthetic values
- Option values

NON - CONSUMPTIVE VALUES

- These are the indirect values of ecosystem functions.
- Such as the watershed protection, photosynthesis,regulation or climate and production of soil
- Pollination , habitat for other species



SOCIAL VALUE

- Biodiversity in INDIA, particularly ,is important for its religious,spiritual and other cultural uses.
- Many plants and animals have ritual significance
- The entire ecosystem is utilized for cultural and spiritual purposes.

SOME EXAMPLES

- Among auspicious flowers offered in temples are *HIBISCUS offered to the goddess Kali*
- *Datura flowers to siva*
- *Gujarat Sami (Prosopis spicigera)is used in sacrificial fires*
- *Sacred value was attached to patches of forest believed to be the abode of gods and ancestors, and utilized only for prayer and related rituals.*
- *A network of such sacred groves is still in evidence in some parts of India*

ETHICAL VALUES

- Although economic arguments can be advanced to justify the protection of biological diversity, there are also strong ethical arguments for doing so.
- Protecting biological diversity can be justified on ethical grounds as well as on economic grounds.
- Ethical arguments assert that humans have a duty to protect species based on their intrinsic value, unrelated to human needs

- People do not have the rights to destroy species and should take action to prevent their extinction
- The loss of one species have far-reaching consequences to biological community and human society.
- People must learn to live within the ecological constraints of the planet.
- Must learn to minimize the environmental damage and take responsibility for their action
- People also have responsibility to future generations of humans to keep the Earth in good condition.

AESTHETIC VALUES

- Regardless of our own material self-interest , we should treat nature respectfully.
- Enlightened self interest, arguing that preserving biodiversity and developing our knowledge of it will make us better and happier people.
- Nearly everyone enjoys wildlife and joy makes our lives good lives.
- A loss of biodiversity could very well limit the creative energies of people in the future and thus restrict the development.

SOME EXAMPLES

- The beauty of wildflowers in Glacier National Park .
- Hiking , canoeing and mountain climbing are physically intellectually and emotionally satisfying.
- People spend tens of billons of dollars annually in these pursuits, proof enough of their value.

OPTION VALUE

- The intangible Values of biodiversity .
- That is keeping options for the future and simply knowing that certain species exist .
- A species potential to provide an economic benefit to human society at some point in the future is its option value.
- As the needs of the society change , so must the methods of satisfying those needs.
- The option value of species could be only recently utilized by human beings

SOME EXAMPLES

- Health agencies and pharmaceutical companies are making a major effort to collect and screen species for compounds that have the ability to fight cancer.
- In some cases well known species have been found to have exactly those properties needed to deal with a significant human problem

VALUING NON-USE VALUES

- Non-use values – including Bequest and Existence values, are usually always measured using some form of CVM (contingent valuation). Cultural values may be very important in non-use values (e.g. Lake Sevan in Armenia)
  - Values may be small per person (a few dollars), but large when aggregated (as in Armenia)
  - Note:
- Non-use values are usually harder to "sell" to decision makers, but
- For some types of biodiversity (e.g. the panda, the blue whale) non-use values account for almost ALL of the economic value measured in a TEV calculation.

ECONOMIC VALUES

- Assessing benefits and costs of protecting biological resources provides a basis for determining the total value of any protected area or other system of biological resources
- The value of conserving biological resources can be considerable , conservation should be seen as a form of economic development.
- Biological resources have economic values, investments in conservation should be judged in economic terms.
- Valuation is easiest for Direct-use values, quite difficult for Indirect-use values, and very difficult for Non-use values

THE VALUE OF A TREE

- The tree that lives for 50 years generates Rs 5.3 lakhs worth of oxygen , recycles Rs 6.4 lakhs worth of fertility , facilitates Rs.6.4 lakhs worth of soil erosion control , creates Rs 10.5 lakhs worth of air pollution control , and provides Rs 5.3 lakhs worth of shelter for birds and animals . Besides , it provides flowers , fruits and timber .So when one tree falls or is felled something worth more than Rs.33.9 lakhs is lost

THINK BEFORE CUTTING A TREE

THE TOTAL ECONOMIC VALUE (TEV) APPROACH AND BIODIVERSITY

- The TEV is the sum of all of these values but in the case of biodiversity, much of the value may lie in the Indirect Use or Non-use portion Includes both Use Values and Non-Use Values

- Use values include direct use (both consumptive and non-consumptive), indirect use, and option values
- Non-use values include bequest values and existence values

Economic values are people-dependent!

- Remember, there are few or no economic values that are NOT directly linked to human uses or desires, and
- People often do not understand what the real question is.
- Therefore, market-values may be poor reflections of ecosystem values or pure biological uniqueness!
  - But…
- Markets and prices often drive government and private actions!

"VALUING" THE NON-MEASURABLE

- Some uses or values associated with biodiversity are impossible to measure. These may include the following:
  - Unknown genetic material
  - Global life support services (an infinite value)
  - Cultural or religious values (e.g. in Hawaii, the native Hawaiians "value" the sea and the "aina", the land, very highly)