



Awareness Workshop for Forest Officers

M. P. State Biodiversity Board



Biodiversity - Meaning and Levels

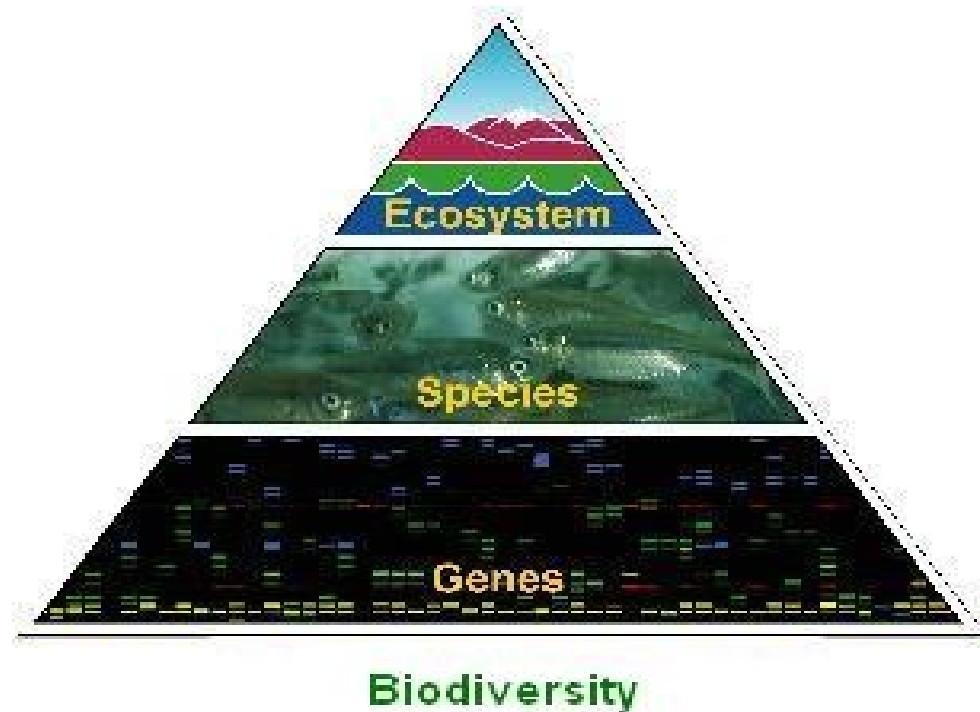
- It is the variety of “Life on earth”.
- Biodiversity is the variety of all living things, including plants, animals, microorganisms and their interrelationships.
- The biodiversity found on Earth today is the product of 4 billion years of evolution.



Biodiversity - Meaning and Levels

Levels of Biodiversity:

1. *Genetic Diversity*
2. *Species Diversity*
3. *Ecosystem Diversity*



Biodiversity - Meaning and Levels

Levels of Biodiversity:

1. Genetic diversity:

- ❑ Variations of genes within a species.



**Chinnor, Kalimoonch,
Vishnu Bhog, Basmati,
Jeerashankar**

**Jersey, Holstein-Friesian,
Sahiwal, Malwi,
Nimari, Kenkatha**

**Neelam, Langra,
Totapari, Dusscheri,
Alphanso**

Biodiversity - Meaning and Levels

Levels of Biodiversity:

2. Species diversity:

- ❑ It refers to the variety of species within a region.

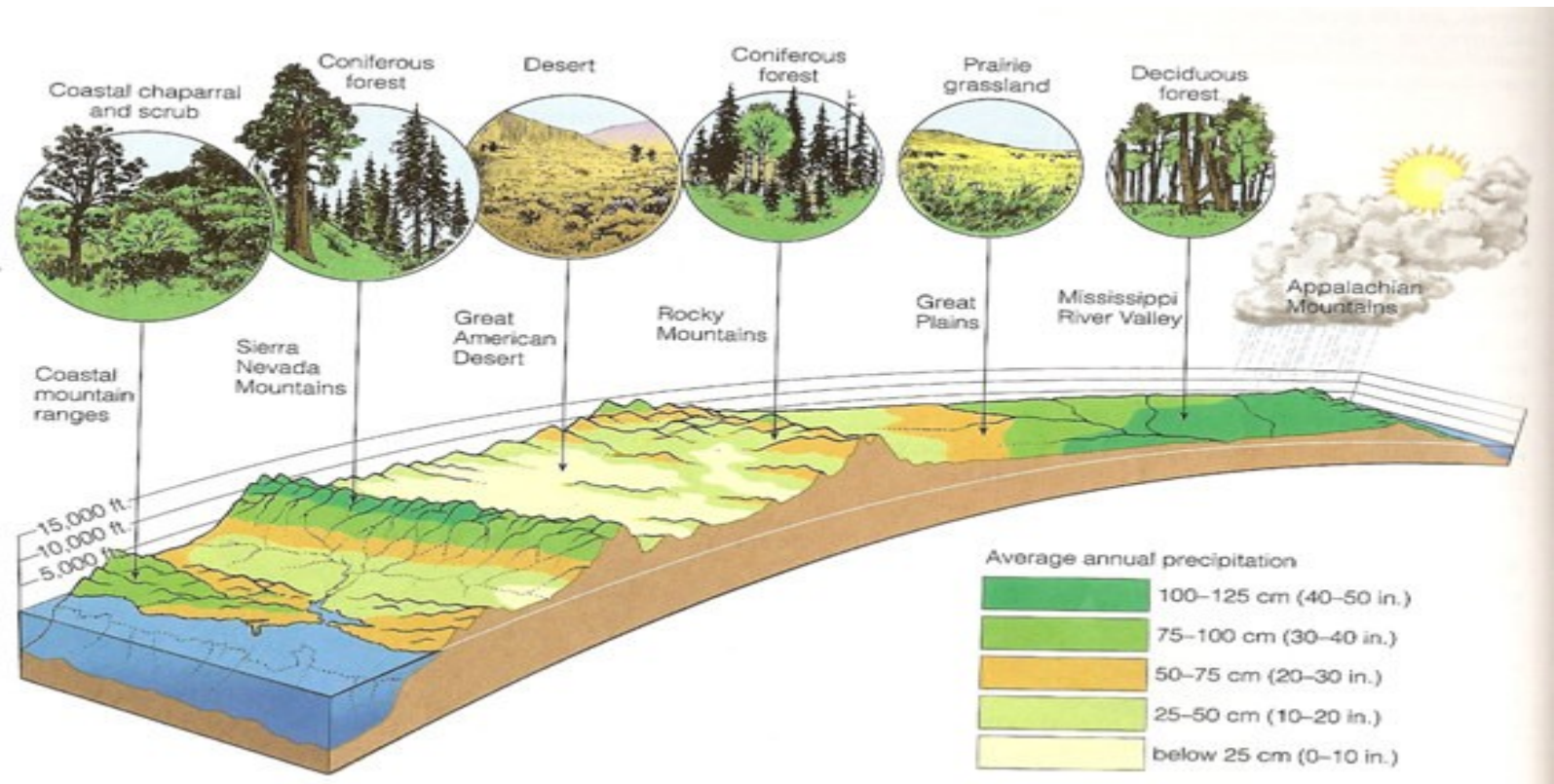


Biodiversity - Meaning and Levels

Levels of Biodiversity:

3. *Ecosystem diversity*

- ❑ Variety of ecosystems within an area.



Biodiversity - Types

- **Floral Biodiversity,**
- **Faunal Biodiversity,**
- **Agro Biodiversity,**
- **Horticultural Biodiversity,**
- **Domesticated Biodiversity,**
- **Aquatic Biodiversity.**

Floral Biodiversity



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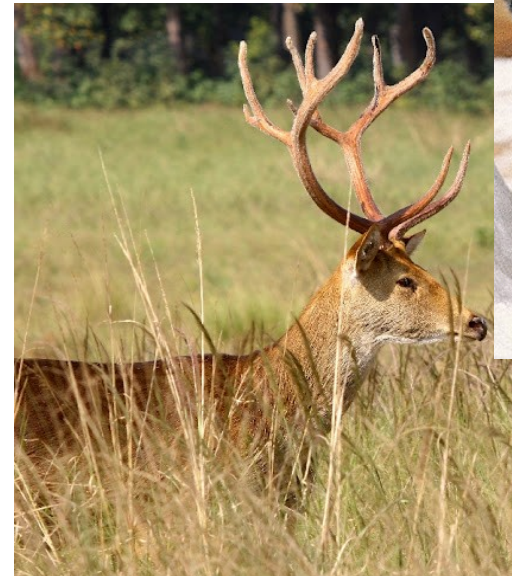
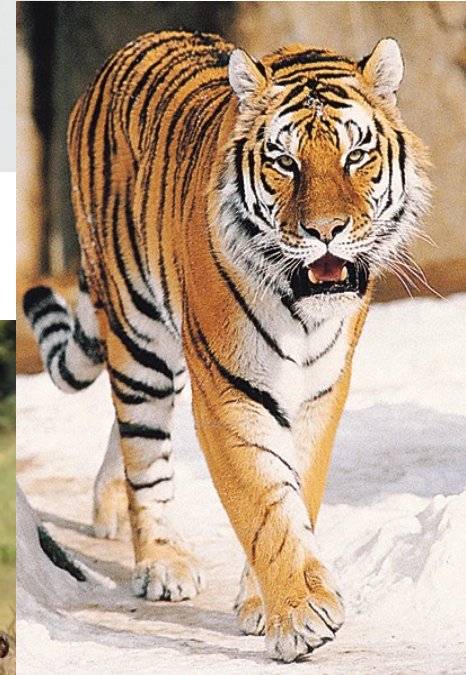
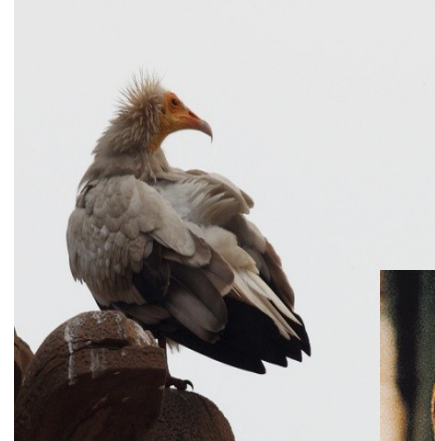


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Faunal Biodiversity



Agro Biodiversity



Barley



Cotton



Soyabean



Maize



Sugarcane



Pulses

Horticultural Biodiversity

FRUIT CROPS



VEGETABLE CROPS



SPICE CROPS



AROMATIC CROPS



FLOWER CROPS



Domesticated Biodiversity



Aquatic Biodiversity



Cyprinus carpio



da ranga



Chela



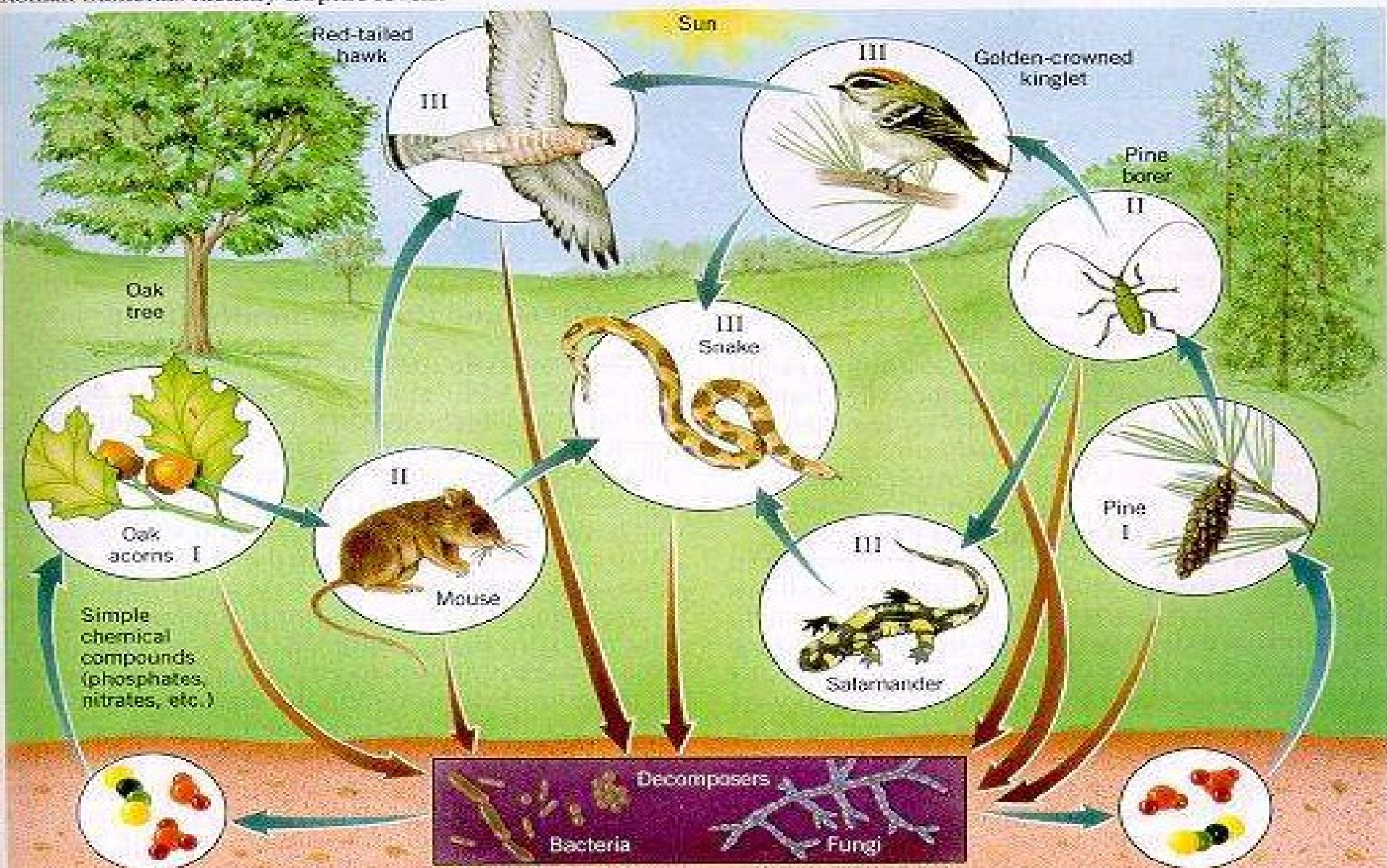
Clarias batrachus



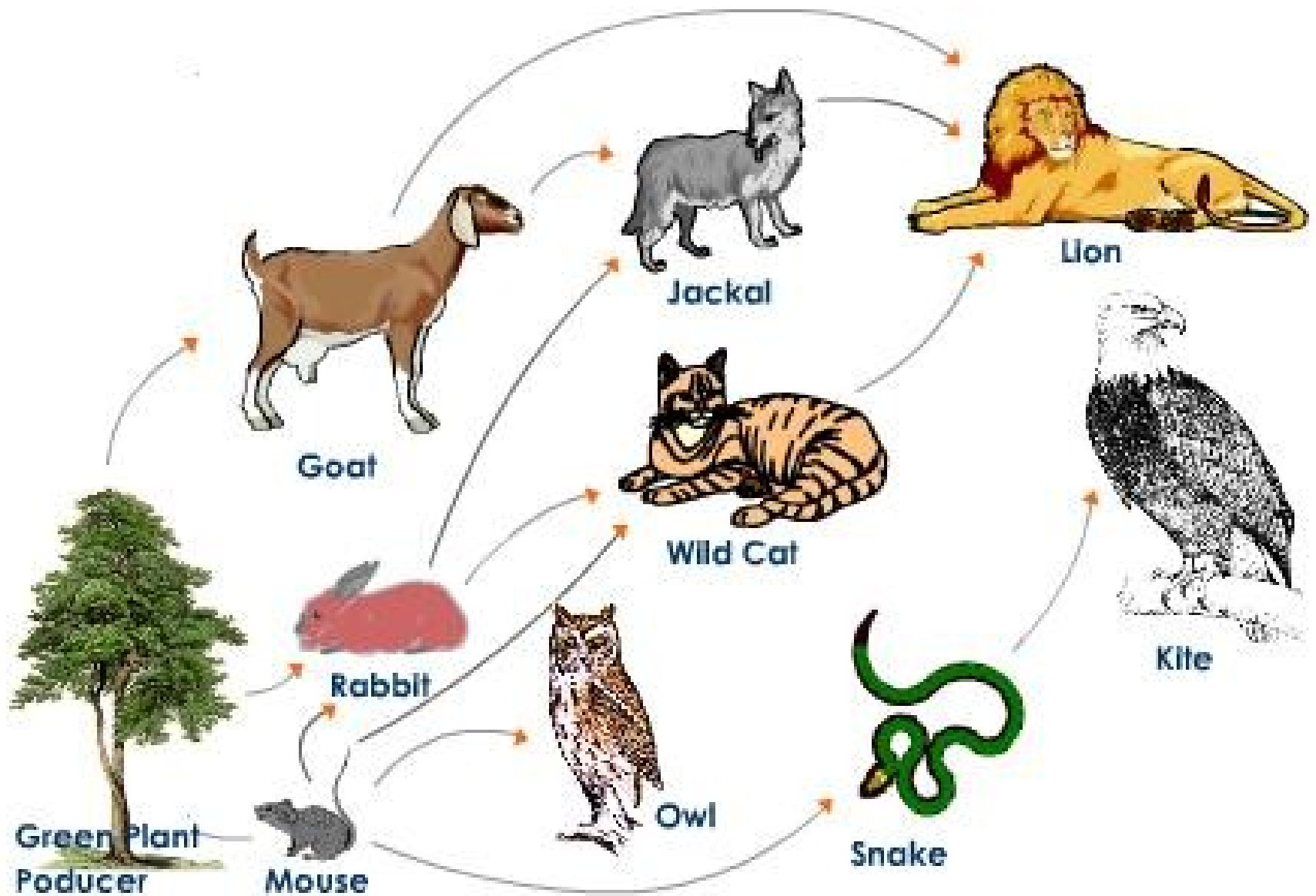
Xenentodon cancila

Food Web

FIGURE 6.5 Food webs: (a) a typical terrestrial food web. Roman numerals identify trophic levels.



Food Web



Food Web in a Forest

India – A Treasure Trove of Biodiversity

- With 2.5% of the land area, India accounts for 7-8% of the globally recorded species.
- India is one of **the 17 Mega-diverse** countries of the world.
- India ranks among the **top ten species-rich nations** and shows high endemism.
- Over 46000 species of plants, 91000 species of animals recorded in the country.
- 04 hot spots of Biodiversity – (Eastern Himalaya, Indo-Burma, Western Ghats and Sundaland).
- One of the world's **8 Vavilovian centres of origin** (with 167 species of agri-horticultural crops and 320 species of their relatives known to have originated here).

Biodiversity in Madhya Pradesh

- Situated at the cross junction of the 02 hot spots of Biodiversity i.e. the **Eastern Himalayas and the Western Ghats.**
- **10 National parks and 25 wildlife Sanctuaries.**
- **5000 plant species including 1000 medicinal plants, 500 bird species and 180 fish species.**
- **Thousands of rice cultivars including local varieties like chhinor, vishnu bhog, kalimoonch etc.**
- **A rich diversity of minor millets - Kodo, Kutki, Sawan etc.**
- **Largest producer of oilseeds and pulses.**

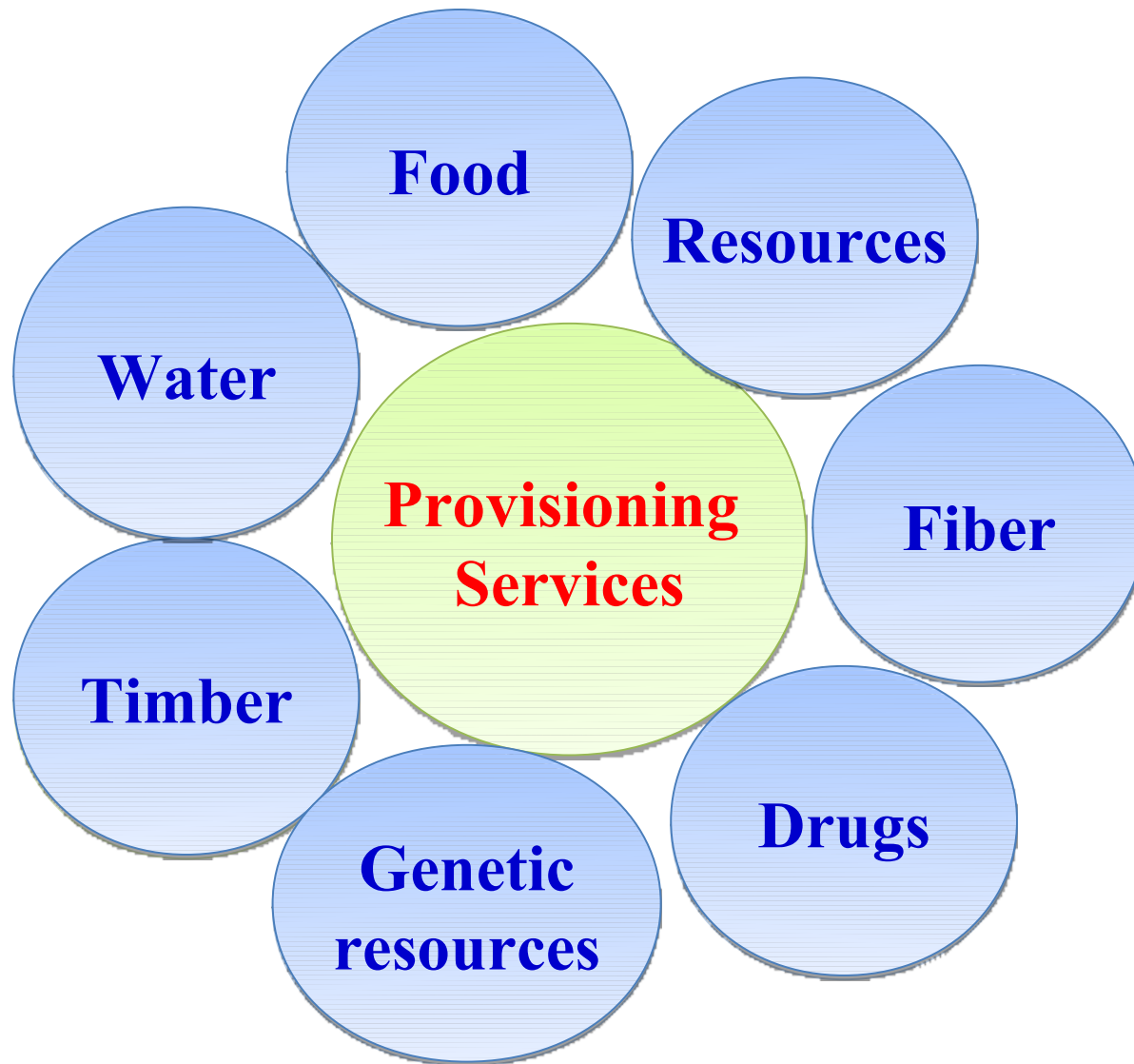
Biodiversity in Madhya Pradesh

- **Native breeds of cattle - Malwi, Nimari, Gaolao and Kenkatha.**
- **"Bhadhawari" native buffalo breed with highest fat content in milk.**
- **"Jamunapari" native breed of goat.**
- **"Kadaknath" native breed of poultry famous for its black meat found in Jhabua District.**

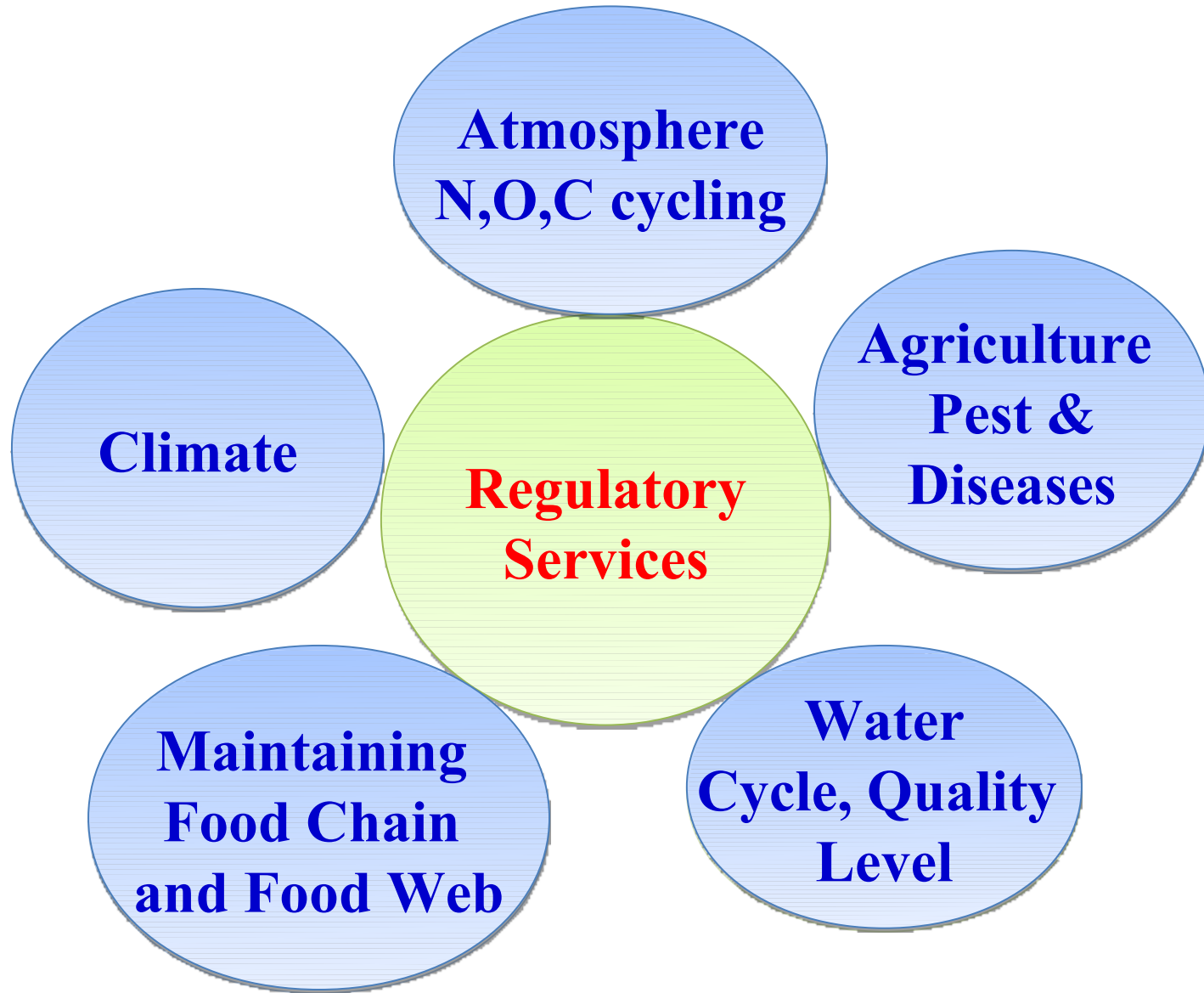
Importance of Biodiversity-Basis of Life on Earth

- **Provisioning Services**
- **Regulatory Services**
- **Supporting Services**
- **Cultural Services**

Importance of Biodiversity-Basis of Life on Earth



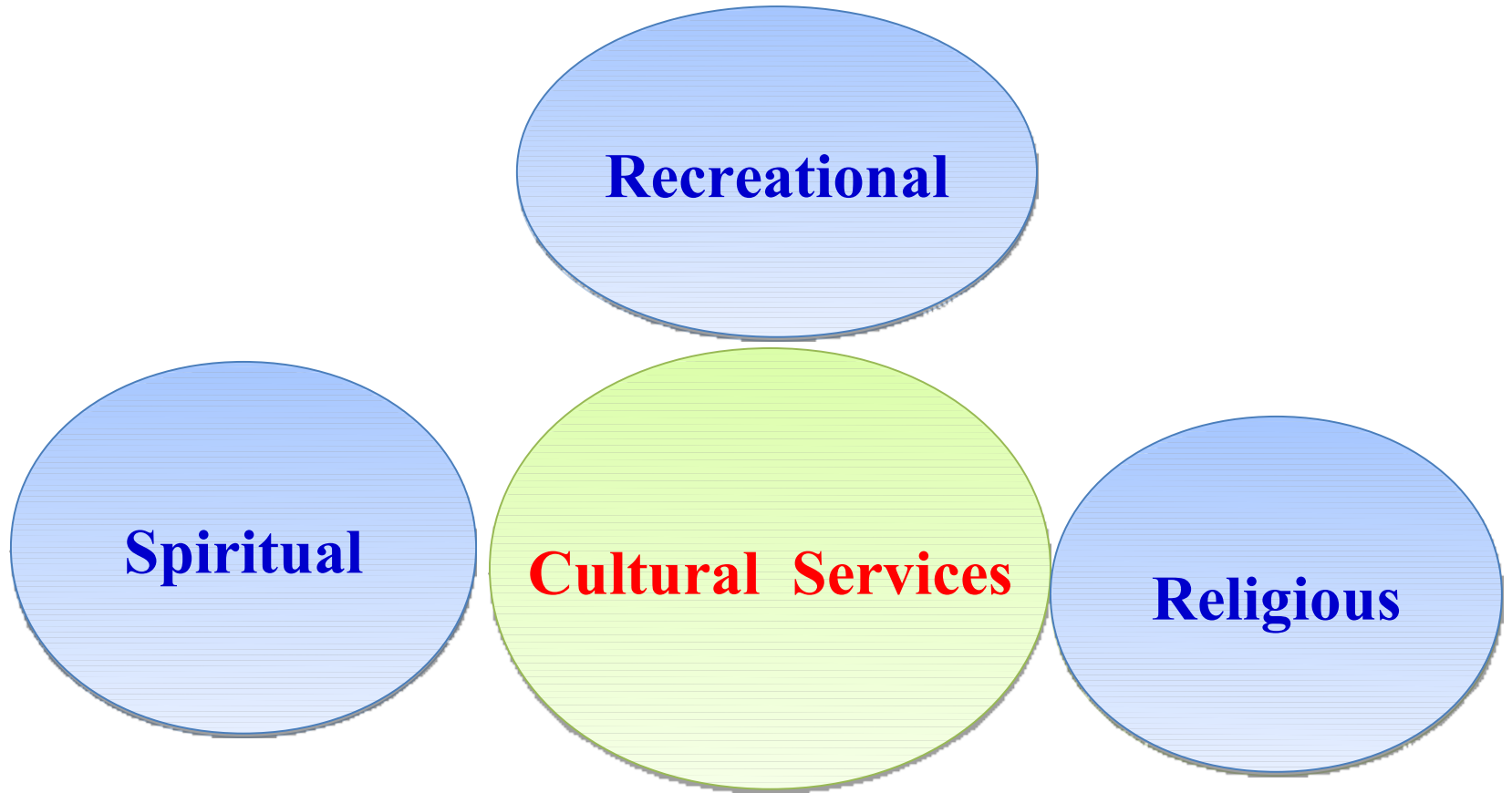
Importance of Biodiversity-Basis of Life on Earth



Importance of Biodiversity-Basis of Life on Earth



Importance of Biodiversity-Basis of Life on Earth



Importance of Biodiversity-Basis of Life on Earth

Some Important Facts:-

1. Health Security

- ❖ 30% of drugs obtained from plants
- ❖ 80% of world's population depends upon - natural medicines
- ❖ Of 150 top prescription drugs 118 originate from natural sources.
- ❖ Eg. Vincristine, Vinblastin (Sada bahar), Taxol (taxes bacata), Reserpin (sarpgandha), Guggul.

Importance of Biodiversity-Basis of Life on Earth

Some Important Facts:-

2. Food Security

- ❖ Development of High Yielding Varieties - World famous rice variety IR-36 developed from *Oryza nivara*.
- ❖ Development of disease resistant varieties- e.g. Grassy Stunt disease resistant variety developed from - *Oryza nivara*.
- ❖ Out of 3000 edible crops, only 150 are commercialized.
- ❖ 4 major food crops - Rice, Wheat, Maize & Potato.

The Economics of Ecosystem biodiversity- The invisible Economy

- **Over 100,000 different animal species - bats, bees, flies, moths, beetles, birds provide pollination services.**
- **1/3 of human food from plants pollinated by wild pollinators.**

Threats to Biodiversity

- Reducing forest cover,
- Population pressure,
- Change in land use pattern,
- Invasive Alien Species – Lantana, Parthenium, Epitorium etc.
- Changing agricultural practices – like burning of fields, mono-cropping etc.
- Pollution and climate change,
- Due to excessive use of fertilizers, pesticides, insecticides, weedicides – reduction of soil health and microbes.

Reducing forest cover



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Fuel wood collection through head loads

Biggest Threat to Biodiversity

- **70% of house hold in M. P. depends on fuel wood for cooking.**
- **1 Crore house hold consume 10 Crore cmt of fuel wood per year worth Rs. 20,000 Crores.**
- **Aprox. 50% of this comes from forest.**
- **Fuel wood requirement for mid day meal is 24 lakh cmt.**
- **Annual production of fuel wood is only 2 lakh cmt.**

Reducing forest cover



Reducing forest cover

Lopping of trees



Threat From Invasive Alien Species – Lantana, Parthenium, Epitorium



Conservation of Biodiversity

Historical Aspect

- ❖ **Convention on Biological Diversity – 1992 – Rio De Janeiro, Brazil – A landmark treaty.**
- ❖ **As a follow up of CBD the Biological Diversity Act was promulgated in 2002 followed by Biological Diversity Rules in 2004.**
- ❖ **The National Biodiversity Authority (NBA) was established in 2003.**

The Biological Diversity Act, 2002

An Act to provide for -

- **Conservation of Biological Diversity,**
- **Sustainable use of its components,**
- **Fair and equitable sharing of the benefit arising out of the use of biological resource, knowledge and for matters connected therewith or incidental there to.**

Structure for implementation of BD Act 2002

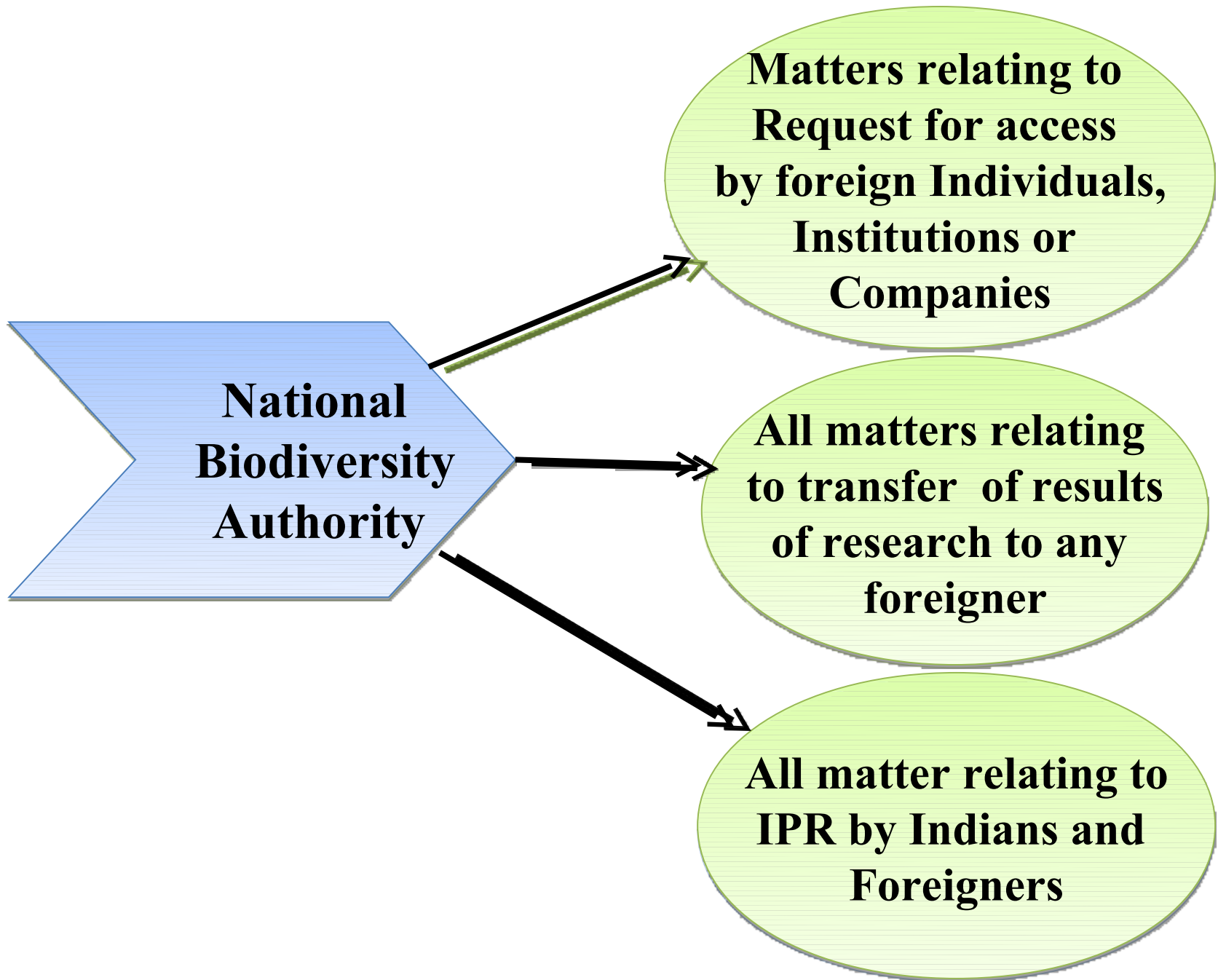
National Biodiversity Authority, Chennai

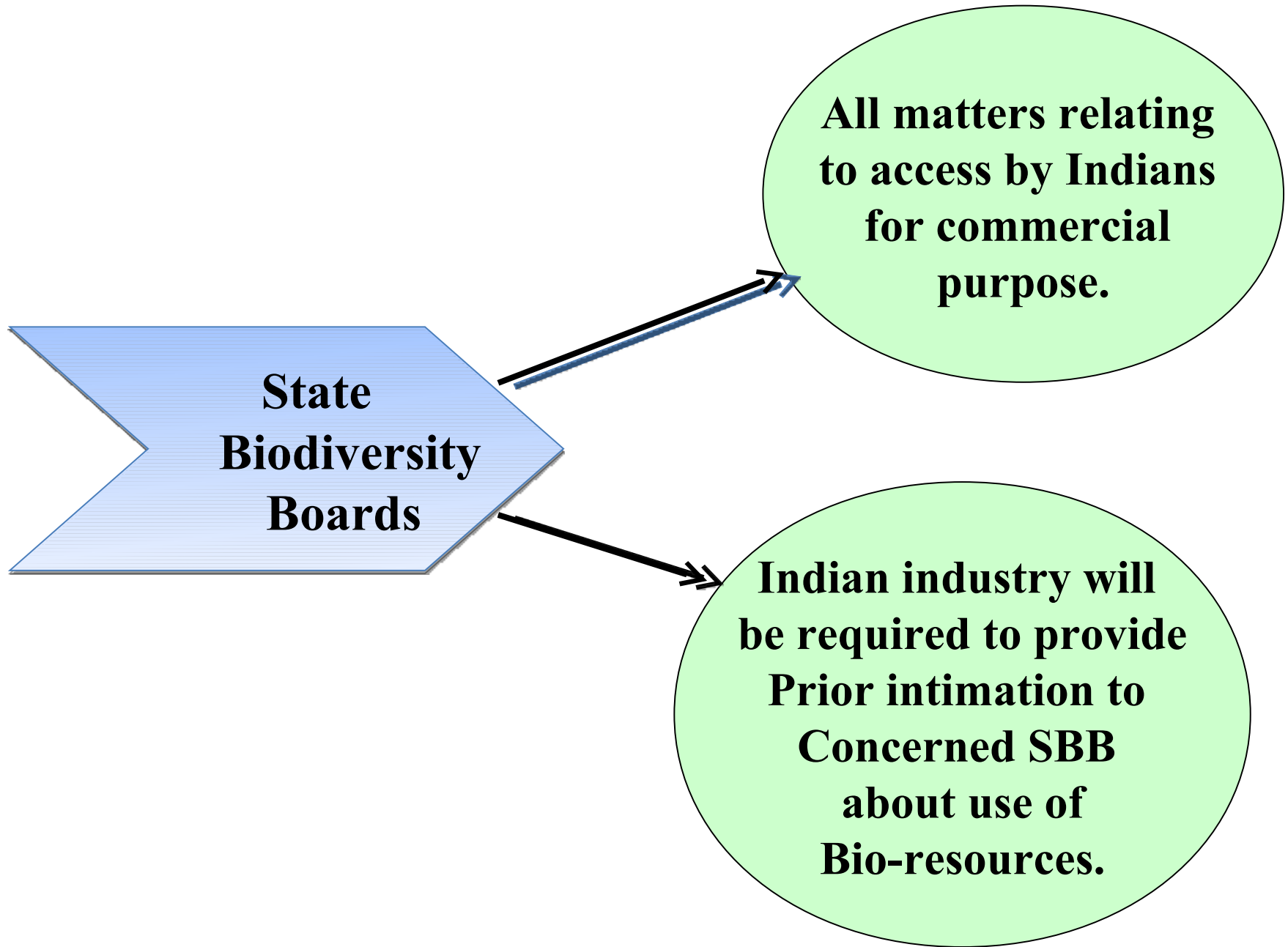


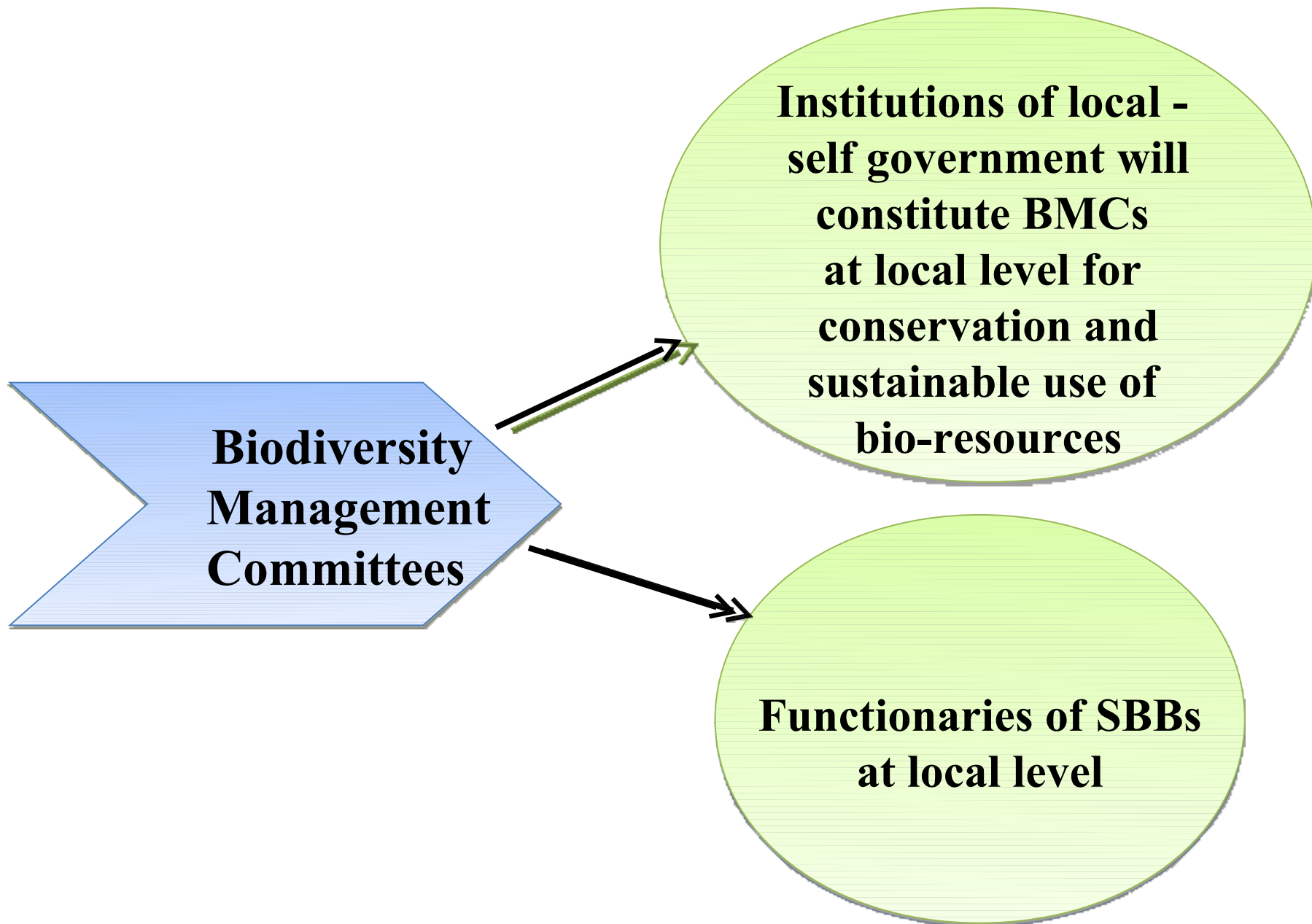
State Biodiversity Boards



Biodiversity Management Committees







The State Biodiversity Board

- **M. P. State Biological Diversity Rules, 2004 notified on 17th Dec. 2004**
- **The M. P. State Biodiversity Board constituted on 11th April, 2005.**



Local Varieties of Rice, Satna



Collection of NTFP in Mandla



Minor millets, Rewa

Main Provisions of Biological Diversity Act, 2002

“Biological Diversity”

•**Section 2 (b):-** "biological diversity" means the variability among living organisms from all sources and the ecological complexes of which they are part, and includes diversity within species or between species and of eco-systems;

“Biological Resource”

•**Section 2 (c):-** “Biological resources” means plants, animals and micro-organisms or parts thereof, their genetic material and by products (excluding value added products) with actual or potential use or value, but does not include human genetic material.

Classification of Industries/Organizations/ Departments/ Undertakings/Private Companies Using Bio-resources for Commercial Purpose

- **Herbal Industries**
- **Forestry Based Industries**
- **Minor Forest Produce Based Industries**
- **Sugar Mills**
- **Distilleries**
- **All Food Processing Units**
- **Soya Industries**
- **Spinning/Textile Mills**
- **Other Agro and Bio based Industries**
- **Coal Mining Industries (Govt., Semi Govt. and Private)**
- **Industries Using Coal Bio-resource (e.g. Cement and Steel)**

Government and Semi Government Department/Corporation

- **Forest Department (Timber, Fuel wood, Bamboo Production etc.)**
- **Minor Forest Produce (Trade and Development) Federation (Tendu Leaves and other forest produce, Vindhya Herbals etc.)**
- **Madhya Pradesh Forest Development Corporation (Timber, Fuel wood, Bamboo production etc.)**
- **Fisheries Department and Fisheries Federation (Commercial utilization of fisheries)**
- **M. P. Livestock and Poultry Development Corporation**
- **Sericulture (Commercial utilization of produce from silk insect)**
- **All other Corporation using Bio-resource.**

Main Provisions of Biological Diversity Act, 2002

“Commercial Utilization of Bio-resource”

•Section 2 (f) :- “Commercial utilization” means end uses of biological resources for commercial utilization such as drugs, industrial enzymes, food flavours, fragrance, cosmetics, emulsifiers, oleoresins, colours, extracts and genes used for improving crops and livestock through genetic intervention, but does not include conventional breeding or traditional practices in use in any agriculture, horticulture, poultry, dairy farming, animal husbandry or bee keeping.

Main Provisions of Biological Diversity Act, 2002

“Fair and equitable benefit sharing”

•**Section 2 (g):- “Fair and equitable benefit sharing” means sharing of benefits as determined by the National Biodiversity Authority under section 21.**

“Value added product”

•**Section 2 (p):- “value added products” means products which may contain portions or extracts of plants and animals in unrecognizable and physically inseparable form.**

Main Provisions of Biological Diversity Act, 2002

Normally traded commodities are exempted from the Act if traded normally

- Section 40 Power of Central Government to exempt certain biological resources - Notwithstanding anything contained in this Act, the Central Government may, in consultation with the National Biodiversity Authority, by notification in the Official Gazette, declare that the provisions of this Act shall not apply to any items, including biological resources normally traded as commodities.**

Main Provisions of Biological Diversity Act, 2002

For Non-Indians:-

- **Approval of National Biodiversity Authority (NBA)**
mandatory for –
 - **Obtaining bio-resource or associated knowledge for research or commercial use (Section 3 & 4).**

For Indians and Non-Indians:-

- **Seeking Intellectual Property Right (IPR) on bio-resource or traditional knowledge (Section 6).**

Main Provisions of Biological Diversity Act, 2002

For Indians:-

- **Prior Intimation to State Biodiversity Board mandatory – For obtaining bio-resources for research or commercial use (Section 7 and M.P. Biological Diversity Rule 17) .**

Section 7 – No person, who is a citizen of India or a body corporate, association or organization which is registered in India, shall obtain any biological resource for commercial utilization, or bio-survey and bio-utilization for commercial utilization except after giving prior intimation to the State Biodiversity Board concerned.

Provided that the provisions of this section shall not apply to the local people and communities of the area, including growers and cultivators of biodiversity, and vaid and halims, who have been practising indigenous medicine.

Main Provisions of Biological Diversity Act, 2002

- **Functions of State Biodiversity Board:-** Section 23 - The functions of the State Biodiversity Board shall be to:-
 - (a) advise the State Government, subject to any guidelines issued by the Central Government, on matters relating to the conservation of biodiversity, sustainable use of its **components and equitable sharing of the benefits arising out of the utilization of biological resources;**
 - (b) **regulate by granting of approvals** or otherwise requests for commercial utilization or bio-survey and bio-utilization of any biological resource by Indians;
 - (c) perform such other functions as may be necessary to carry out the provisions of this Act or as may be prescribed by the State Government.

Main Provisions of Biological Diversity Act, 2002

- **Section 24 - Power of State Biodiversity Board to restrict certain activities violating the objectives of conservation etc.:-**

(1) Any citizen of India or a body corporate, organization or association registered in India intending to undertake any activity referred to in Section 7 shall give prior intimation in such form as may be prescribed by the State Government to the State Biodiversity Board.

(2) On receipt of an intimation under sub-section (1), the State Biodiversity Board may, in consultation with the local bodies concerned and after making such enquires as it may deem fit, by order, prohibit or restrict any such activity if it is of opinion that such activity is detrimental or contrary to the objectives of conservation and sustainable use of biodiversity or equitable sharing of benefits arising out of such activity.

Main Provisions of Biological Diversity Act, 2002

Provided that no such order shall be made without giving an opportunity of being heard to the person affected.

(3) Any information given in the form referred to in subsection (1) for prior intimation shall be kept confidential and shall not be disclosed, either intentionally or unintentionally, to any person not concerned thereto.

- Areas of Biodiversity importance may be declared as Biodiversity Heritage Sites by the State Govt. (Section 37 and M. P. Biological Diversity Rule 22)**
- Local bodies to constitute BMCs (Section 41 and M. P. Biological Diversity Rule 23)**
- Constitution of local Biodiversity fund (Section 43 and M. P. Biological Diversity Rule 24)**

Main Provisions of Biological Diversity Act, 2002

Penalties:-

- **Section 55 (1) - Whoever contravenes or attempts to contravene or abets the contravention of the provisions of section 3 or section 4 or section 6 shall be punishable with imprisonment for a term which may extend to five years, or with fine which may extend to ten lakh rupees and where the damage caused exceeds ten lakh rupees such fine may commensurate with the damage caused, or with both.**
- **Section 55 (2) – As per section 55 (2) Contravention of the provision of section 7 shall be punishable with imprisonment for a term which may extend to 3 years or with fine which may extend to 5 lakh rupees or with both.**

Main Provisions of Biological Diversity Act, 2002

Penalties:-

- **Section 56 – Contravention of any direction given or order made by State Biodiversity Board shall be punished with a fine which may extend to 1 lakh or subsequent continuous offence with fine which may extend to 2 lakh rupees every day.**

Main Provisions of Biological Diversity Act, 2002

- **Section 57 (1)** – Where an offence or contravention under this Act has been committed by a company, every person who at the time the offence or contravention was committed was in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence or contravention and shall be liable to be proceeded against and punished accordingly.
- **Section 58** - The offences under this Act shall be cognizable and non bailable.
- **Section 59** - The provisions of this Act shall be in addition to, and not in derogation of, the provisions in any other law, for the time being in force, relating to forests or wildlife.

Main Provisions of Biological Diversity Act, 2002

Section 61 – No Court shall take cognizance of any offence under this Act except on a complaint made by –

(a) the Central Government or any authority or officer authorized in this behalf by that Government; or

(b) any benefit claimer who has given notice of not less than thirty days in the prescribed manner, of such offence and of his intention to make a complaint, to the Central Government of the authority or officer authorized as aforesaid.

Main Provisions of Biological Diversity Act, 2002

Central Government, State government, National Biodiversity Authority or officer authorized in this behalf. By the Gazette Notification no. S.O. 2708 (E.) dated 17th Nov. 2008 these officers are authorized:-

<i>S. No.</i>	<i>Officers authorized to file complaints under Section 61 (a) of the Biological Diversity Act, 2002</i>	<i>Area of Jurisdiction</i>
<i>1.</i>	<i>Officers of the National Biodiversity Authority, not below the rank of Scientist 'C'</i>	<i>Whole of India</i>
<i>2.</i>	<i>Officer of the State Biodiversity Board, not below the rank of Scientist 'C'</i>	<i>Whole of the concerned State</i>
<i>3.</i>	<i>Officers of the Regional Officers of the Ministry of Environment and Forests, Government of India, not below the rank of Scientist 'C'</i>	<i>Whole of the State under the jurisdiction of the respective Regional Offices.</i>

Report Card of Madhya Pradesh State Biodiversity Board

- **No. of notices issued under Section 3 and Section 7 - 740**
- **Order under Section 24 (2) issued - 11**
- **Prosecuted industries before CJM - 5**
- **Appeal before National Green Tribunal - 13**
- **Appeal before High Court (Jabalpur and Indore) - 11**