Economic Geography

Compiled by Urmi Sharma

An Introduction

Definition, Nature and Scope

परिभाषा, प्रकृति, विषय क्षेत्र

Geographical perspective
भौगोलिक परिप्रेक्ष्य/ नज़रिया

Distribution वितरण

↓

Intensity सघनता

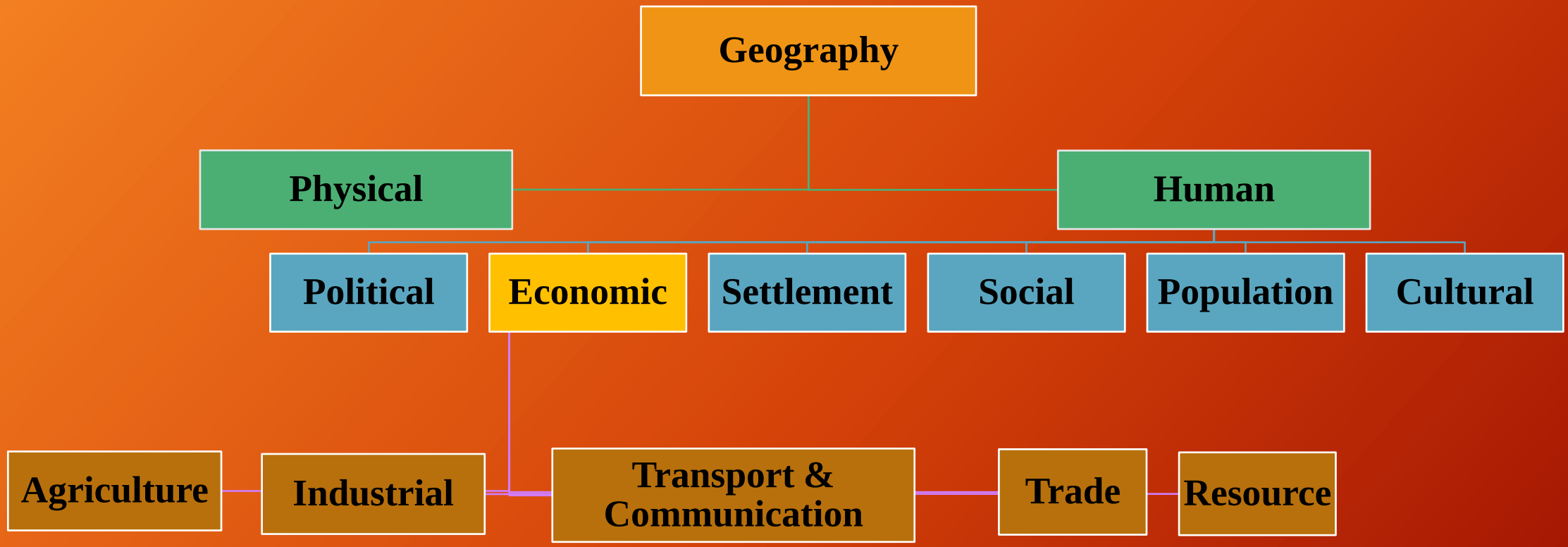
↓

Pattern प्रतिरूप

ECONOMICS in ECONOMIC GEOGRAPHY

- **The word ‘Economics’ originates from a Greek word ‘Oikonomikos’.**
- **This Greek word has two parts:**
- **- ‘Oikos’ meaning ‘Home’.**
- **- ‘Nomos’ meaning ‘Management’.**
- **Hence, Economics means ‘Home Management’. In other words, Economics comes from the ancient Greek word “oikonomikos” or “oikonomia.” Oikonomikos literally translates to “the task of managing a household.”**
- **Economics emerged as a subject with high level of applications in all other disciplines due to its basic principle of**

‘Choice making for optimization with the given resources of scarcity and surplus’


Geography
Physical
Human
Political
Economic
Settlement
Social
Population
Cultural
Agriculture
Industrial
Transport & Communication
Trade
Resource

Definitions

- आर्थिक भूगोल को परिभाषित करते हुए कहा जा सकता है कि इस विषय में पृथ्वी तल की उन स्थानिक विषमताओं का अध्ययन किया जाता है जो उत्पादन, विनिमय तथा उपयोग एवं सेवाओं से संबंधित है.
- आर्थिक भूगोल भूगोल का वह पहलू है जिसके अंतर्गत वातावरण (जैविक व अजैविक) के द्वारा मानवीय क्रियाकलापों पर पड़ने वाले प्रभावों का अध्ययन किया जाता है. (R.N. Brown)
- आर्थिक भूगोल आर्थिक प्रक्रियाओं की स्थानिक अभिव्यक्ति का अध्ययन है जो वैकल्पिक स्थानों में वैकल्पिक उद्देश्य हेतु संसाधनों का आवंटन करता है. (D.M. Smith)

Definitions

- "Economic Geography is concerned with the distribution of man's productive activities over the surface of the earth."

"आर्थिक भूगोल भूपृष्ठ पर मानव की उत्पादन क्रियाओं के वितरण का अध्ययन है।"

N.J.G. Pounds

Definitions…

- *"Economic Geography is the **study of areal variation** on the earth surface in man's activities related to **Producing**, **Exchanging** and **Consuming** wealth."*

"आर्थिक भूगोल वस्तुओं के **उत्पादन**, **विनिमय** तथा **उपयोग** संबंधित मानवीय क्रियाओं द्वारा पृथ्वी के धरातल पर सृजित **क्षेत्रीय विभिन्नताओं** का अध्ययन है।"

Hartshorne &Alexander

Definitions…

- Economic Geography is presumed to form **some reasonable estimate of the future course of commercial development** as determined by **geographical factors**.

"आर्थिक भूगोल के अंतर्गत उन सभी **भौगोलिक परिस्थितियों** का वर्णन किया जाता है जो वस्तुओं की **उत्पत्ति**, उनके **विनिमय** एवं **स्थानांतरण** पर प्रभाव डालती है।"

Chisholm

Definitions...

- Economic Geography is the study of influence exerted on the economic activity of man by his physical environment, and more specifically by the form and structure of the surface of the land, the climatic conditions which prevail upon it and the spatial relations in which its different regions stand to one another."

"आर्थिक भूगोल के अंतर्गत **मनुष्य के आर्थिक क्रियाकलापों के पर भौगोलिक तथा भौतिक परिस्थितियों**, विशेष रूप से भूगर्भिक संरचना, जलवायु तथा भूमि की धरातलीय विशेषताओं के प्रभाव का अध्ययन करते हैं।"

J. MacFarlane

Definitions…

- *"Economic Geography is concerned with the problem of making a living with world industries with basic resources and industrial commodities."*

"आर्थिक भूगोल के अंतर्गत इन तथ्यों का अध्ययन किया जाता है कि **किस प्रकार मानव की विभिन्न जीविकोपार्जन क्रियाएं विश्व के साधनों और औद्योगिक वस्तुओं की प्राप्ति** के अनुरूप होती है।"

E. B. Shaw

- Gotz (Father of Economic Geography, 1882) (आर्थिक भूगोल के जनक)

"आर्थिक भूगोल में **संसार के विभिन्न भागों** की उन विशेषताओं का वैज्ञानिक विवेचन किया जाता है जिनका **वस्तु के उत्पादन** पर **प्रत्यक्ष प्रभाव** पड़ता है।"

- R.E. Murphy के अनुसार:

"आर्थिक भूगोल **मनुष्य के जीविकोपार्जन की विधियों** में एक स्थान से दूसरे स्थान पर मिलने वाली **समानता** एवं **विषमता** का अध्ययन करता है।"

- Huntington के अनुसार:

"मानव **व्यवसाय**, **दक्षता** तथा **आवश्यकता** के अन्य पक्षों पर **भौगोलिक वातावरण के प्रभाव की सीमा** का अध्ययन आर्थिक भूगोल में किया जाता है।"

Aim: Our questions to be

उद्देश्य: हमारे प्रश्न

Questions

- आर्थिक क्रिया कहाँ स्थित है?Where is the economic activity located?
- आर्थिक क्रिया की क्या विशेषताएं हैं? What are the characteristics of the economic activity?
- आर्थिक क्रियाएं किन अन्य घटनाओं से संबंधित है? To what other phenomena are the economic activity related?

Questions...

- आर्थिक क्रिया वहीं क्यों स्थित है? *Why is the economic activity located where it is?*
- क्या यह आर्थिक क्रिया, आर्थिक और सामाजिक मानदंडों को बेहतर ढंग से पूरा करने के लिए कहीं और स्थित नहीं हो सकती थीं? *Would it not be better located elsewhere, to better satisfy certain economic and social criteria?*

Aims of Economic Geography

1. The study of the **manner of exploitation of Earth's resources.**

   पृथ्वी के संसाधनों के दोहन के तरीकों का अध्ययन करना।

Aims of Economic Geography...

2. To study comprehensive system of interaction between man and nature.

   मनुष्य और प्रकृति के अंतर्सम्बन्धों को मनुष्य की आर्थिक क्रियाओं पर पड़ने वाले प्रभावों का अध्ययन करना।

3. To study the changing dynamics of economic activities in the light of changing technology, social and political objectives.

   प्रौद्योगिकी या प्राविधिकी उन्नयन, सामाजिक तथा राजनीतिक उद्देश्यों के प्रकाश में आर्थिक गतिविधियों की बदलते स्वरुप या गतिशीलता का अध्ययन करना।

Aims of Economic Geography...

4. To **study the manner** in which Trade and Commerce are related to the Earth on which they are transacted.

   किस प्रकार व्यापार और वाणिज्य पृथ्वी (भौगोलिक दृष्टिकोण) से संबंधित हैं जिस पर उनका लेन-देन किया जाता है।

5. Economic Geography Aims and Scope at better and **efficient utilization of limited resources** through Rational, Systematic, Scientific and Long-term Planning.

   आर्थिक भूगोल का उद्देश्य तर्कसंगत, व्यवस्थित, वैज्ञानिक तथा दीर्घकालिक योजना के माध्यम से सीमित संसाधनों का बेहतर और कुशल उपयोग करना है।

Aims of Economic Geography...

6. Economic Geography Aims and Scope to **point out the potential for development of a region** and formulating futuristic developmental plans for it.

आर्थिक भूगोल का लक्ष्य एक क्षेत्र के विकास की संभावनाओं को इंगित करना और इसके लिए भविष्य के विकास की योजनाएं तैयार करना है।

Aims of Economic Geography...

7. Address **economic disparity** between regions.

   प्रदेशों तथा क्षेत्रों के बीच आर्थिक असमानता को संबोधित करना।

8. To search for **laws** and **generalizations** in order to **build a theory**.

   सिद्धांत निर्माण के लिए भौगोलिक नियमों और साम्यकरण की खोज करना।

Scope

- Resources: Distribution, Production, Consumption, Conservation.....their spatial variations
- Economic activities: Spatial distribution and their changing nature
- Locational analysis of economic activities: Location of Industries
- Functional linkages: SPATIAL ORGANIZATION (Transportation, Trade, Urban forms)
- Globalization
- Disparity: Developmental plans
- Economic regions

Scope

1. आर्थिक क्रियाकलापों की वितरण का अध्ययन
2. प्राकृतिक संसाधनों का मूल्यांकन एवं मात्राकरण
3. अर्थतंत्र का वातावरण से संबंध का अध्ययन
4. स्थानिक विशेषताओं का अध्ययन
5. आर्थिक क्रियाकलाप एवं प्राविधिकी की अंतःक्रिया एवं चयनित अर्थ तंत्र के स्वरूप में प्रादेशिक भिन्नता का अध्ययन
6. आर्थिक भूगोल के अध्ययन क्षेत्र में सांस्कृतिक-आर्थिक भूदृश्य, आर्थिक उन्नति, स्थानिक संगठन एवं प्रादेशिक नियोजन आदि को भी सम्मिलित किया गया जाता है.

Approaches उपागम

1. **क्रमबद्ध उपागम** Systematic Approach

- इसके अंतर्गत किसी भी **वस्तु एवं तत्व विशेष के विश्व वितरण संबंधी सामान्य विशेषताओं** का अध्ययन किया जाता है
- इस उपागम में **प्रत्येक तत्व का अलग-अलग अध्ययन** होता है एवं उसके **विश्व वितरण प्रतिरूप का विश्लेषण** करते हैं

Approaches उपागम

2. प्रादेशिक उपागम Regional Approach

- इसमें किसी **प्रदेश को एक इकाई** मानकर उसके संसाधनों/ **तत्व** का वितरण प्रस्तुत किया जाता है
- इसमें अध्ययन की इकाई प्रदेश के रूप में मानी जाती है तथा उस प्रदेश का विश्लेषण प्रस्तुत किया जाता है
- इस उपागम के अंतर्गत बच्चों का समावेशित विश्लेषण प्रस्तुत किया जाता है

Approaches

3. सैद्धांतिक उपागम (Theoretical Approach)

- आर्थिक भूगोलवेत्ताओं ने मानव की आर्थिक क्रियाओं को स्पष्ट करने के **स्थानीयकरण संबंधी सिद्धांत** प्रस्तुत किए
- इस **उपागम का उद्देश्य मॉडल बनाना है**
- **Alfred Weber का औद्योगिक अवस्थिति (Theory of Industrial Location) का सिद्धांत**
- **von Thunen का कृषि अवस्थिति,**
- **Chirstaller का केंद्रीय स्थान सिद्धांत** आदि मॉडल इसमें प्रमुख है

Approaches

4. आगमनिक एवं निगमन विधियां (Empirical & Deductive Methods)

- इस प्रकार के अध्ययन **प्रत्यक्ष अवलोकन से प्राप्त अनुभव विज्ञान** पर आधारित होते हैं.
- इस विधि को **आगमन विधि कहते हैं**
- इस विधि के विपरीत वर्तमान में **सैद्धांतिक तर्कों पर आधारित** एक अन्य विधि का उपयोग किया जाने लगा है जिसे **निगमन** विधि कहा जाता है.
- इस विधि में **कुछ मान्यताओं को लेकर तर्क के आधार पर उन परिस्थितियों में संभावित दशाएँ परिकल्पित** की जाती हैं
- इस विधि का उपयोग अधिकतम लाभ देने वाले वितरण के निर्धारण में अधिक होता है

Approaches

5. तंत्र विश्लेषण उपागम *(System Approach)*

- **इसमें किसी अर्थतंत्र के क्षेत्रीय संगठन का ज्ञान प्राप्त करने के लिए कार्यों की समग्रता पर विशेष बल दिया जाता है**

संसाधन-उपयोग-प्रक्रिया उपागम (Resource-Use-Process Approach)

- **Spencer नामक आर्थिक भूगोलवेत्ता ने इसका प्रतिपादन किया**
- **उनके अनुसार संपूर्ण पृथ्वी के संसाधन उपयोग हेतु प्रक्रियाओं को 2 मूलभूत वर्गों में रखा जा सकता है**

1. ***वे प्रक्रियाएं जो संसाधन उपयोग से संबंधित हैं तथा***
2. ***वे प्रक्रियाएं जो तत्वों के क्षेत्रीय अंतराल (Intervening space) को समाप्त करने से संबंधित है***

SECTORS OF ECONOMY

अर्थव्यवस्था के क्षेत्र

Primary प्राथमिक, Secondary द्वितीयक, Tertiary तृतीयक, Quaternary चतुर्थक, Quinary पंचमक

Slides compiled by Urmi Sharma

Introduction

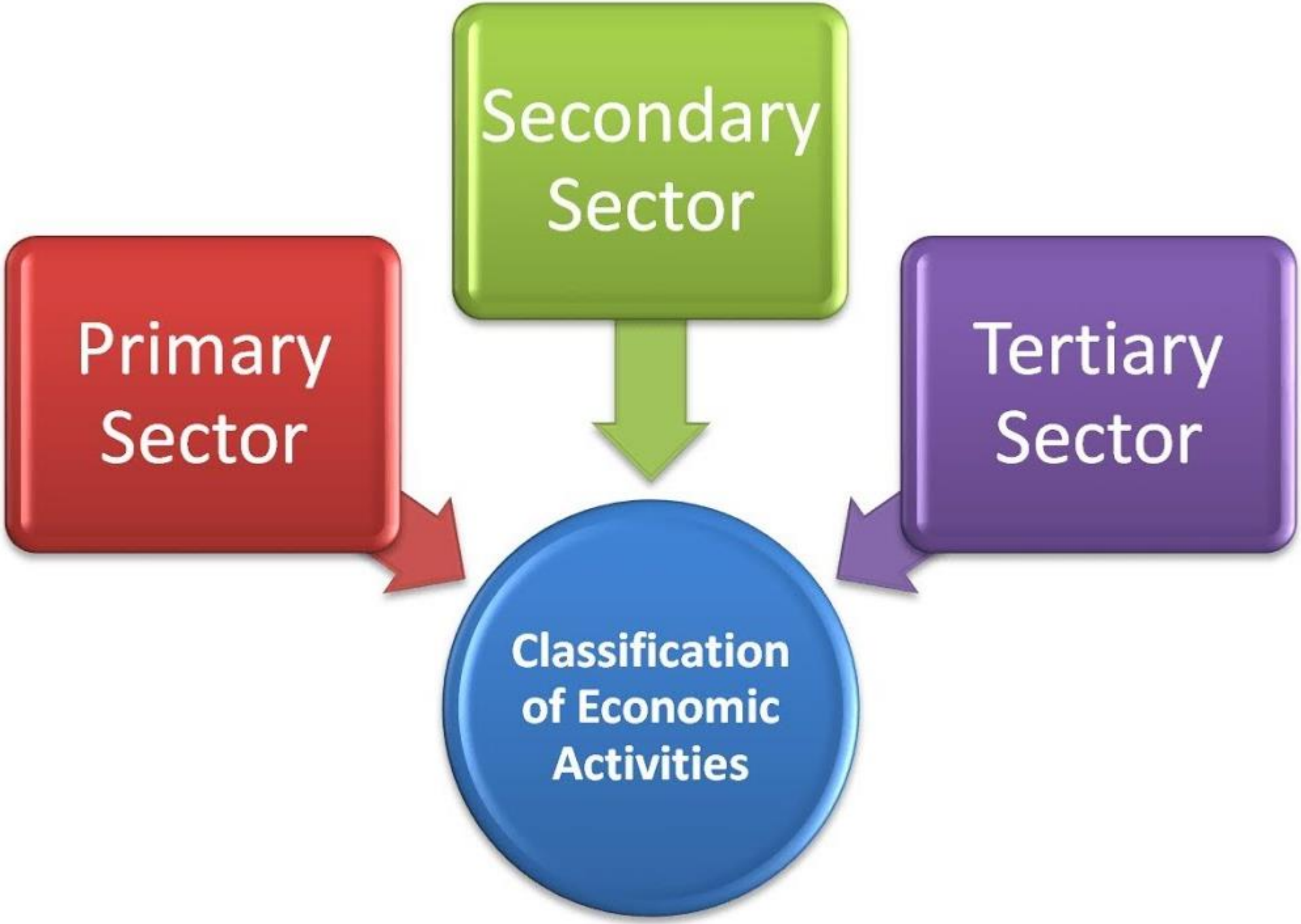
- Human activities which **generate income are known as economic activities.**
- Economic activities are broadly grouped into **primary, secondary, tertiary activities.**
- *Higher services under tertiary activities are again classified into quaternary and quinary activities.*
- According to the three-sector model, the main focus of an economy's activity **shifts from the primary, through the secondary and finally to the tertiary sector in the economic development of the country.**

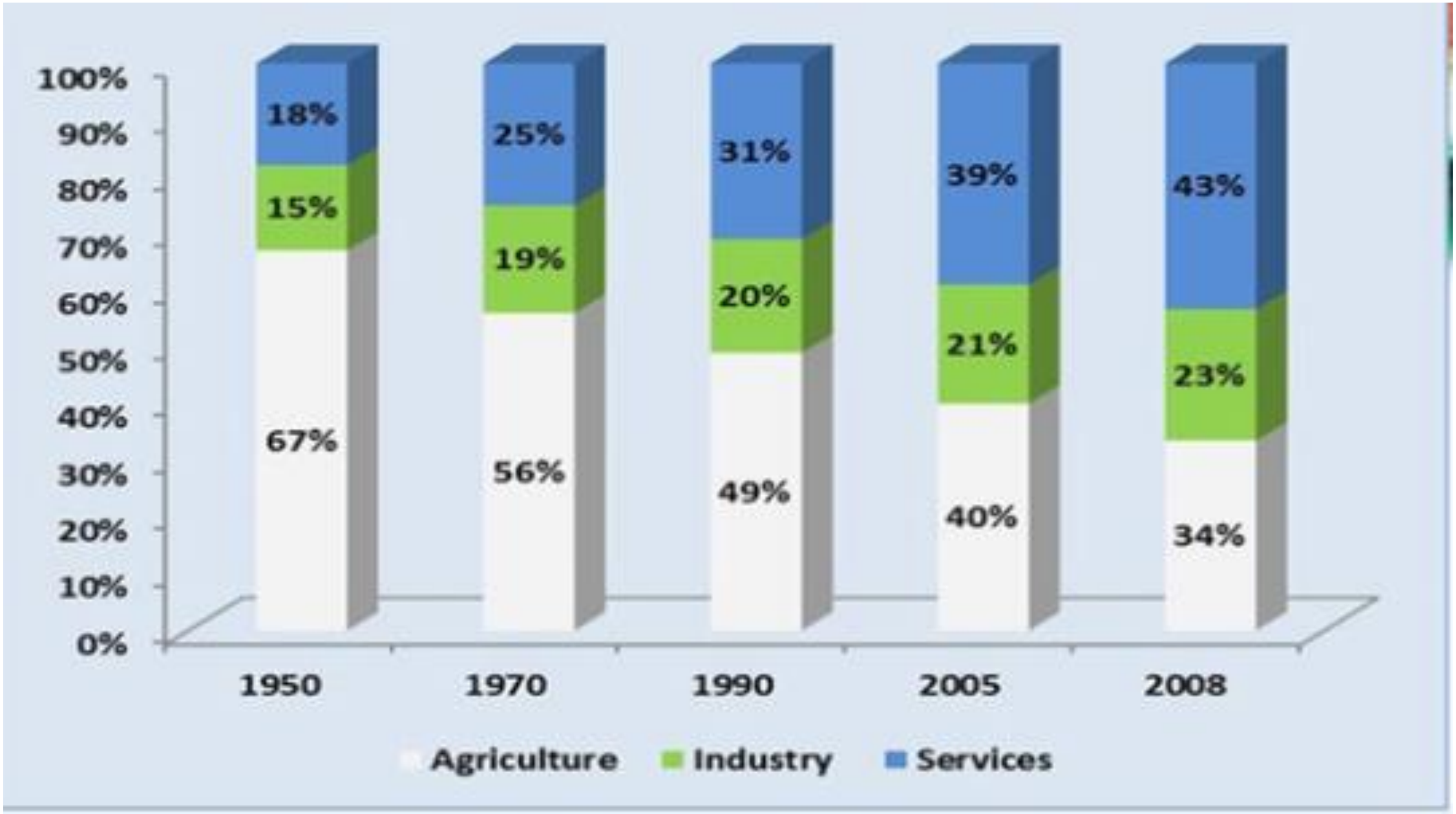
➢ Countries with a low per capita income are in an early state of development

- The main part of their national income is achieved through production in the primary sector.

➢ Countries in a more advanced state of development, with a medium national income, generate their income mostly in the secondary sector.

➢ In highly developed countries with a **high income**, the **tertiary sector** dominates the total output of the economy.


Secondary Sector
Primary Sector
Tertiary Sector
Classification of Economic Activities



Indian Economy Scenario

Primary activities

- Directly related with **nature's produce**
- **Exploitation of natural resources: Land, water, vegeta**
- The **production process** starts from such activities
- Fulfill basic needs of man (रोटी, कपड़ा, मकान)
- Examples:

Hunting, Fishing, Food gathering, Pastoral activities, Forestry, Agriculture, and Mining and quarrying

People engaged in primary activities are called **red-collar workers** due to the outdoor nature of their work.

- In developed and developing countries, a decreasing proportion of workers is involved in the primary sector.
- Only about 1.8% of the U.S. labor force was engaged in primary sector activity as of 2018

Secondary activities

- Secondary activities **add value to natural resources** by transforming raw materi into valuable products.
- The secondary sector makes and distributes **finished** goods.
  - ✓ **Manufacturing – e.g. producing cars from aluminum.**
  - ✓ **Construction – building homes, factories**
  - ✓ **Utilities – providing goods like electricity, gas and telephones to households**
- Secondary activities, therefore, are concerned with **manufacturing, processing and construction (infrastructure) industries.**
- **People engaged in secondary activities are called blue-collar workers.**

Secondary sector - Manufacturing & construction

a finished, usable product

Household goods

Buildings

Clothing

Road making

Tertiary activities

- Tertiary activities include both **production and exchange**.
- The production involves the **‘provision’ of services that are ‘consumed.**
- Exchange involves **trade, transport and communication facilities that are used to overcome distance.**
- ***Tertiary jobs = White-collar jobs***
- In most developed and developing countries, a growing proportion of workers is devoted to the tertiary sector.

More examples of this sector include:

Retail And Wholesale Sales,

Transportation And Distribution,

Restaurants,

Clerical Services,

Media,

Tourism,

Insurance,

Banking,

Health Care, And

Law

Economic Geography : Relations with Economics and allied subjects

Slides compiled by Urmi Sharma

Economics and Economic Geography
अर्थशास्त्र एवं आर्थिक भूगोल

- मनुष्य अपनी आवश्यकता की पूर्ति करने के लिए विभिन्न प्रकार के कार्य करता है।
- **इन कार्यों को आर्थिक कार्य कहते हैं (Economics = Managing household)**
- इन कार्यों के द्वारा उपयोगी वस्तुओं एवं सेवाओं की उत्पत्ति होती है।
- आर्थिक कार्य तथा उन पर पड़ने वाले **प्राकृतिक परिस्थितियों के प्रभावों का अध्ययन आर्थिक भूगोल** में किया जाता है।
- **आर्थिक कार्य एवं सेवाओं का प्रादेशिक वितरण कैसा है तथा उपर्युक्त कारक इस वितरण की कहां तक व्याख्या करते हैं यह आर्थिक भूगोल का मुख्य विषय है।**

- अर्थशास्त्र में संसाधनों के आवंटन distribution of resources की प्रक्रिया एवं संगठन का अध्ययन किया जाता है।
- H. Bernhard के अनुसार आर्थिक कार्यों की प्रादेशिक विषमता Regional disparity के कारणों का विश्लेषण करने में भूगोलवेत्ता सक्षम है न कि अर्थशास्त्री।
- Robinson 1932 ने बताया कि **अर्थशास्त्र वह विज्ञान है जिसमें साधनों तथा सीमित एवं वैकल्पिक उपभोग वाले साधनों से संबंधित मानव व्यवहार** का अध्ययन किया जाता है।
- अतः अर्थशास्त्र वह विज्ञान है जो **धन के उपभोग, उत्पादन व विनिमय का मानव कल्याण** के लिए प्रयुक्त मानवीय व्यवहार का अध्ययन करता है।
- **दूसरी ओर आर्थिक भूगोल मानव के आर्थिक क्रियाकलापों उत्पादन, उपभोग, विनिमय के स्थानिक वितरण व प्रक्रिया का अध्ययन करता है।**

Economics

- People are behaving in a rationale manner (homo economicus).
- People and firms are competing on markets where supply and demand reach an equilibrium.
- A market economy operates according to laws and principles.
- Universalism: laws and principles work everywhere.

Economic Geography

- People are behaving differently according to their context (homo geographicus).
- Markets have locations and geography is influencing supply and demand.
- Laws and principles are disrupted by geographical, social and political factors.
- Geographical diversity challenges universalism.

Economic geography and Allied subject
Sub fields of EG आर्थिक भूगोल की शाखाएं

- 20वीं शताब्दी में आर्थिक भूगोल मानव भूगोल की एक प्रमुख शाखा के रूप में स्थापित हुआ।
- जिसमें मानव की **आर्थिक क्रियाओं की क्षेत्रीय विभिन्नताओं** का अध्ययन किया जाता है।

1. कृषि भूगोल Agriculture Geography

- इस शाखा के अंतर्गत **कृषि की भौगोलिक दशाएं, कृषि प्रदेशों, कृषि उत्पादन एवं वितरण प्रतिरूप, इत्यादि का अध्ययन किया जाता है।**
- कृषि भूगोल में उन सभी क्षेत्रीय विशेषताओं का अध्ययन किया जाता है जो **ग्रामीण भू-दृश्य को जन्म** देती है।

Economic geography and Allied subject
Sub fields of EG आर्थिक भूगोल की शाखाएं

2. औद्योगिक भूगोल Industrial Geography

- औद्योगिक भूगोल में **औद्योगिक कच्चे माल की प्राप्ति के स्त्रोतों, उत्पादन समस्याओं, उत्पादित वस्तुओं के व्यापार, उद्योगों के वितरण एवं समस्याओं** का अध्ययन किया जाता है।
- इसके अतिरिक्त किसी क्षेत्र विशेष के **औद्योगिक संसाधनों के अभीष्ट उपयोग, औद्योगिक माल की उत्पादन लागत, नवीन तकनीकी विकास का उद्योगों एवं उनकी अवस्थिति** पर प्रभाव इत्यादि पक्षों का अध्ययन किया जाता है।

3. वाणिज्यिक भूगोल Commercial Geography

- वाणिज्यिक भूगोल मानव द्वारा संपादित **विनिमय की क्रियाओं** का अध्ययन करता है।
- व्यापारिक केंद्रों एवं उनके विकास के साथ ही **विनिमय-क्रियाओं पर भौगोलिक वातावरण के प्रभाव** का अध्ययन भी किया जाता है।

4. विपणन भूगोल Marketing Geography

- संपादित विनिमय की इस शाखा का संबंध **बाजार** से है।
- इस शाखा में **क्रेताओं एवं विक्रेताओं** के क्षेत्रों का अध्ययन किया जाता है।
- **बिक्री संस्थाओं की स्थिति, उनकी बिक्री सुविधाएं, बाजार क्षेत्र, इत्यादि भी इसके क्षेत्र में सम्मिलित** हैं।
- **मांग का क्षेत्र areas of Supply**
- **पूर्ति का क्षेत्र areas of Demand**

5. संसाधन भूगोल Resource Geography

- इसमें विभिन्न प्रकार की **प्राकृतिक एवं जैविक संसाधनों की उपलब्धि, वितरण, उपयोग एवं संसाधनों को प्रभावित करने वाली भौगोलिक दशाओं** का विश्लेषण किया जाता है।
- संसाधनों के **संरक्षण, महत्व, अनुकूलतम उपयोग एवं संसाधन प्रदेशीकरण** भी संसाधन भूगोल का विषय क्षेत्र है।

6. परिवहन भूगोल Transportation Geography

- इसके **अंतर्गत परिवहन मार्ग, उनके विकास, उपयोग, यातायात तकनीकी विकास से यातायात मार्गों पर प्रभाव, परिवहन लागत, परिवहन साधनों एवं परिवहन विकास** पर पड़ने वाले भौगोलिक दशाओं के प्रभावों का अध्ययन किया जाता है।

Classification of Resources

Compiled by Urmi Sharma

What is Resource?

- A resource is a substance in the environment that is useful to people is economically and technologically feasible to access and socially acceptable to use. Resources include soil, water, food, plants. animals and mineral. -AP Human Geography

- Resource is a source of supply, support, or aid, especially one that can be readily drawn upon when needed. -*Dictionary.com*

What is a RESOURCE?

(i) वस्तु का उपयोग सम्भव हो।

(ii) इसका रूपान्तरण अधिक मूल्यवान तथा उपयोगी वस्तु के रूप में किया जा सके।

(iii) जिसमें निश्चित उद्देश्यों की पूर्ति की क्षमता हो।

(iv) इन वस्तुओं के दोहन की योग्यता रखने वाला मानव संसाधन उपलब्ध हो।

(v) संसाधनों के रूप में पोषणीय विकास करने के लिए आवश्यक पूँजी हो।

Definitions of Resources

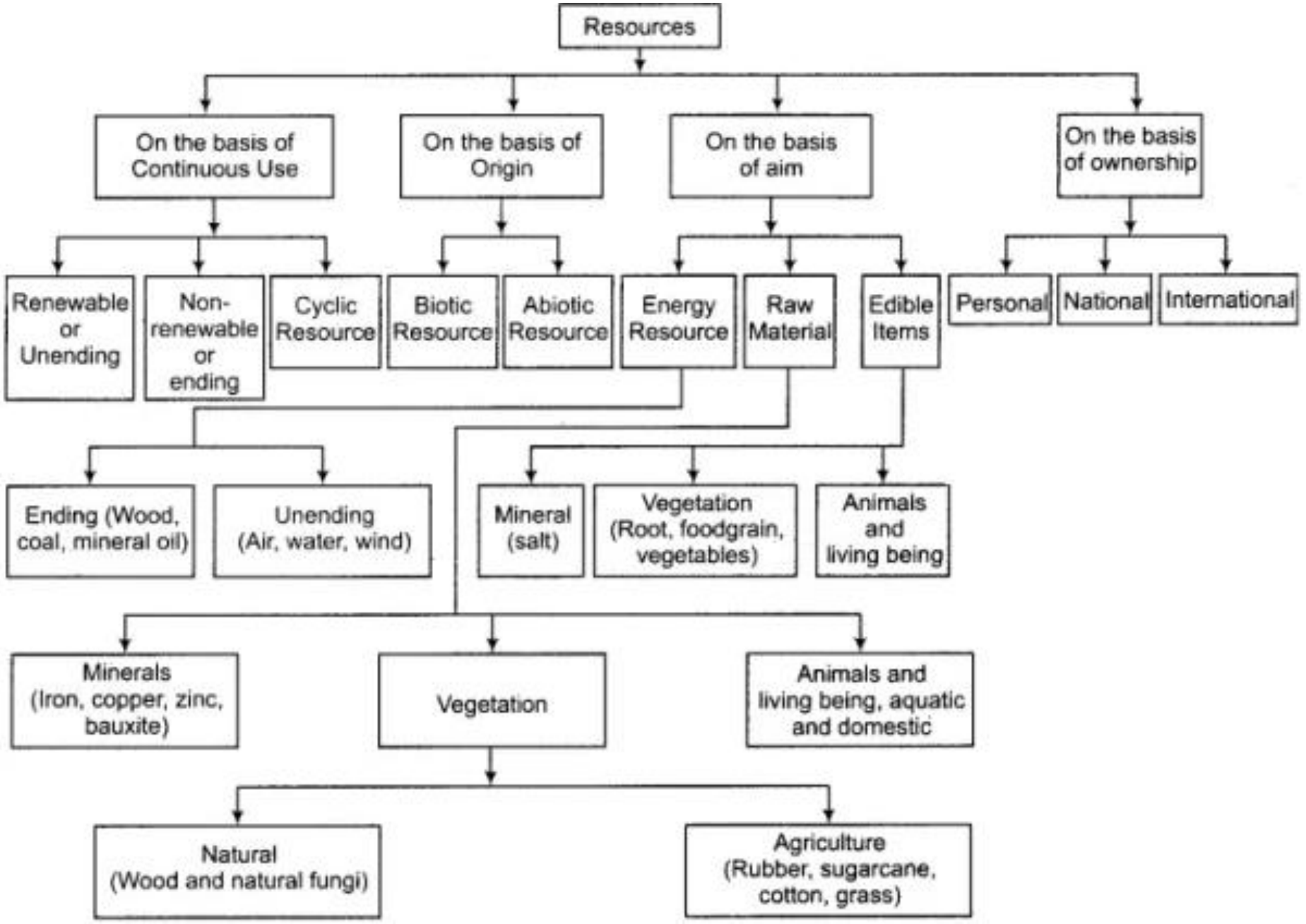
जिम्मरमेन के अनुसार, "संसाधन पर्यावरण की वे विशेषताएँ हैं जो मनुष्य की आवश्यकताओं की पूर्ति में सक्षम मानी जाती हैं। उन्हें मनुष्य की आवश्यकताओं और क्षमताओं द्वारा उपयोगिता प्रदान की जाती है।" (Features of the environment which are, or are considered to be capable of serving man's needs; they are given utility by the capabilities and wants of men.)[2]

जोहन्स्टन के अनुसार, "एक संकल्पना जो मानवीय सन्तुष्टि, सम्पन्नता तथा शक्ति प्रदान करने वाले स्त्रोतों को निर्दिष्ट करती है। श्रम, उद्यमी कौशल, विनिवेश, स्थिर पूँजीगत ढाँचा, तकनीकी, ज्ञान, सामाजिक स्थिरता तथा सांस्कृतिक एवं भौतिक विशेषताएँ किसी देश के संसाधन माने जा सकते हैं।" (A concept used to denote sources of human satisfaction, wealth or strength, Labour, entrepreneurial skills, investment funds, fixed capital assets, technology, knowledge, social stability and cultural and physical attributes may be referred to as the resources of a country.)[3]

जेम्स फिशर (Fisher J.S.) के अनुसार, "संसाधन ऐसी कोई वस्तु है जो मानवीय आवश्यकताओं तथा इच्छाओं की पूर्ति करता है।" (Resources are anything that can be used to satisfy a need or desire.)

स्मिथ एवं फिलिप्स के मतानुसार, "मूलतः संसाधन केवल पर्यावरणीय कार्यशीलता है, जो मानवीय उपयोग में आती है।" (Fundamentally, resources are merely environment functioning in the service of man.)

Classification of Resources



Classification of Resource

The resources can be classified in the following ways:

- On the basis of origin
- On the basis of exhaustibility
- On the basis of ownership

On the basis of origin

- **Biotic Resources** are obtained from biosphere and they have a life such as human beings, flora and fauna, fisheries, livestock etc.

- **Abiotic resources** include all those things which are composed of non-living things like rocks and metals

On the basis of origin

Biotic Resource

Abiotic Resource

I. उपयोग की सततता पर आधारित वर्गीकरण

(1) नवीनीकरण या नव्यकरणीय संसाधन (Renewable Resources)

(2) अनवीनीकरण या अनव्यकरणीय संसाधन (Non-Renewable Resources)

(3) चक्रीय संसाधन (Recyclable Resources)

II. उत्पत्ति के आधार पर वर्गीकरण

(1) जैविक संसाधन (Biotic Resources)

(2) अजैविक संसाधन (Abiotic Resources)

III. उद्देश्य पर आधारित वर्गीकरण

(1) ऊर्जा संसाधन (Energy Resources)

(2) कच्चा माल (Raw Material)

(3) खाद्य पदार्थ (Food stuff)

IV स्वामित्व

V वितरण

I उपयोग की सततता पर आधारित वर्गीकरण

किसी भी संसाधन के उपयोग की एक अवधि होती है। कुछ संसाधन न्यून अवधि के अन्दर समाप्त हो जाते हैं, जबकि कुछ का सतत उपयोग किया जा सकता है। इस प्रकार उपयोग की निरन्तरता या सततता के आधार पर संसाधनों को तीन वर्गों में विभाजित किया जा सकता है:-

(1) नवीनीकरण या नव्यकरणीय संसाधन (Renewable Resources)-इस श्रेणी में वे सभी संसाधन आते हैं जिनको पुन: उत्पादित किया जा सकता है। इस हेतु भौतिक, यान्त्रिक तथा रासायनिक प्रतिक्रियाएँ अपनाई जाती हैं अत: ये संसाधन असमाप्य होते हैं व इनकी जीवन धारणीय (Sustainble) पुनरावृत्ति सम्भव है। उदाहरणार्थ, वनों के एक क्षेत्र में काटे जाने के उपरान्त नये क्षेत्र में इन्हें पुन: उत्पादित किया जा सकता है। वन्य प्राणियों की संख्या में वृद्धि की जा सकती है। इसके अन्य उदाहरण सौर ऊर्जा, पवन, जल, मृदा, कृषि, उपजें तथा मानव संसाधन हैं।

(2) अनव्यकरणीय संसाधन (Non-Renewable Resources)-संसाधनों के सतत् उद्योग की श्रेणी में ऐसे संसाधन जिनका एक बार दोहन के उपरान्त उनकी पुन: पूर्ति (Restoration) संभव नहीं है। इनकी मात्रा सीमित रहती है तथा निर्माण अवधि भी लम्बी होती है। अत: इस श्रेणी में संसाधनों का दोहन तीव्र गति से करने पर ये समाप्त हो जाते हैं। भूगर्भ में खनिज संसाधन इस श्रेणी के अन्तर्गत हैं। कोयले का दोहन एक ही बार किया जा सकता है, जबकि इसके निर्माण में करोड़ों वर्ष लगे हैं। पेट्रोलियम, प्राकृतिक गैस, ताम्बा, बॉक्साइट, यूरेनियम, थोरियम आदि संसाधन भी अनव्यकरणीय या समाप्य हैं।

(3) चक्रीय संसाधन (Recyclable Resources)-पृथ्वी पर कुछ ऐसे संसाधन पाये जाते हैं जिनका बार-बार प्रयोग किया जा सकता है, जल संसाधन को विभिन्न समय में विभिन्न रूपों में प्रयुक्त किया जा सकता है। इसी प्रकार लोहा भी विभिन्न रूपों में उपयोग में आता है।

On the basis of exhaustibility

- **Renewable Resources** are those resources which can be renewed or reproduced by physical, chemical or mechanical processes, e.g., solar and wind energy, water, forests and wildlife, etc. Renewable resources may further be divided into
  - continuous or flow resources, e.g., wind, water
  - biological resources, which are of 2 types :
    - Natural Vegetation (Forests)
    - Wildlife

On the basis of exhaustibility

- **Non-Renewable Resources** are formed over a substantially long geological time, e.g., minerals and fossil fuels. These can subdivided into
  - recyclable resources, e.g. metals,
  - non-recyclable resources, e.g. fossil fuels,

  which cannot be recycled and get exhausted with their use

On the basis of exhaustibility

Renewable Resource

Non Renewable Resorce

IV **अधिकार या स्वामित्व के आधार पर संसाधनों का वर्गीकरण** (Classification of Resources on the basis of Possession)–इस आधार पर संसाधनों को तीन वर्गों में रखा गया है :-

(1) अन्तर्राष्ट्रीय या सार्वभौमिक संसाधन (International or Global Resources)–सम्पूर्ण विश्व में मानव कल्याण के लिए उपयोगी वस्तुओं को अन्तर्राष्ट्रीय संसाधन कहते हैं। पृथ्वी का प्राकृतिक पर्यावरण इस प्रकार का विश्वव्यापी संसाधन है। पृथ्वी पर स्थित महासागर प्रमुख अन्तर्राष्ट्रीय संसाधन है लेकिन इनका उपयोग कुछ सक्षम देश ही कर पाते हैं, जिनकी सागरीय स्थिति है। सूर्य के प्रकाश का उपयोग भारत, संयुक्त राज्य अमेरिका, दक्षिणी अफ्रीका आदि सभी देश कर सकते हैं जिनकी स्थिति सूर्य के प्रकाश की प्राप्ति में होती है। सर्वाधिक सूर्य का प्रकाश अयनवर्तीय क्षेत्रों (0 से 23.30) उत्तरी तथा दक्षिणी अक्षांशों में प्राप्त होता है।

(2) राष्ट्रीय संसाधन (National Resources)–ग्लोब पर स्थित किसी भी देश की सीमाओं में विद्यमान सम्पदाओं को राष्ट्रीय संसाधन कहते हैं। लंकाशायर कोयला क्षेत्र इंग्लैण्ड का, पेन्सिलवानिया कोयला क्षेत्र संयुक्त राज्य अमेरिका तथा कालगुर्ली स्वर्ण खानें आस्ट्रेलिया के राष्ट्रीय संसाधन हैं।

(3) व्यक्तिगत संसाधन (Individual or Private Resources)–किसी व्यक्ति की निजी चल-अचल सम्पत्ति उसका व्यक्तिगत संसाधन कहलाते हैं। पारिवारिक सम्पत्ति, भूमि, भवन, नकद धनराशि, स्वास्थ्य, उत्तम चरित्र, ईमानदारी तथा मानसिक क्षमता एवं कौशल आदि व्यक्तिगत संसाधन हैं।

On the basis of ownership

- **Individual Resources** are resources that are owned privately by individuals. Examples- land owned by farmers (allotted by the government against the payment of revenue), plantations, pasture lands, ponds, water in wells owned by individuals, plots, houses and other property owned by people in the city etc.

- **Community Resources** are resources accessible to all the members of a community. Examples :Village commons (grazing grounds, burial grounds, village ponds, etc.) public parks, picnic spots, and playgrounds in urban areas.

On the basis of ownership

- **National Resources** are all the resources that belong to a nation. Examples :
  - roads, canals, railways, etc.
  - minerals, water resources, forests, wildlife, etc.
  - land within the political boundaries,
  - territorial water and the resources within

The term territorial water refers to the oceanic area upto 12 nautical miles (19.2 km) from the coast.

On the basis of ownership

- **International resources**: there are also international resources regulating resources. The oceanic resources beyond 200km of the Exclusive Economic Zone belong to open ocean and no individual country can utilize these without the consensus of international institutions.

Forest Resource Conservation

FOREST RESOURCE

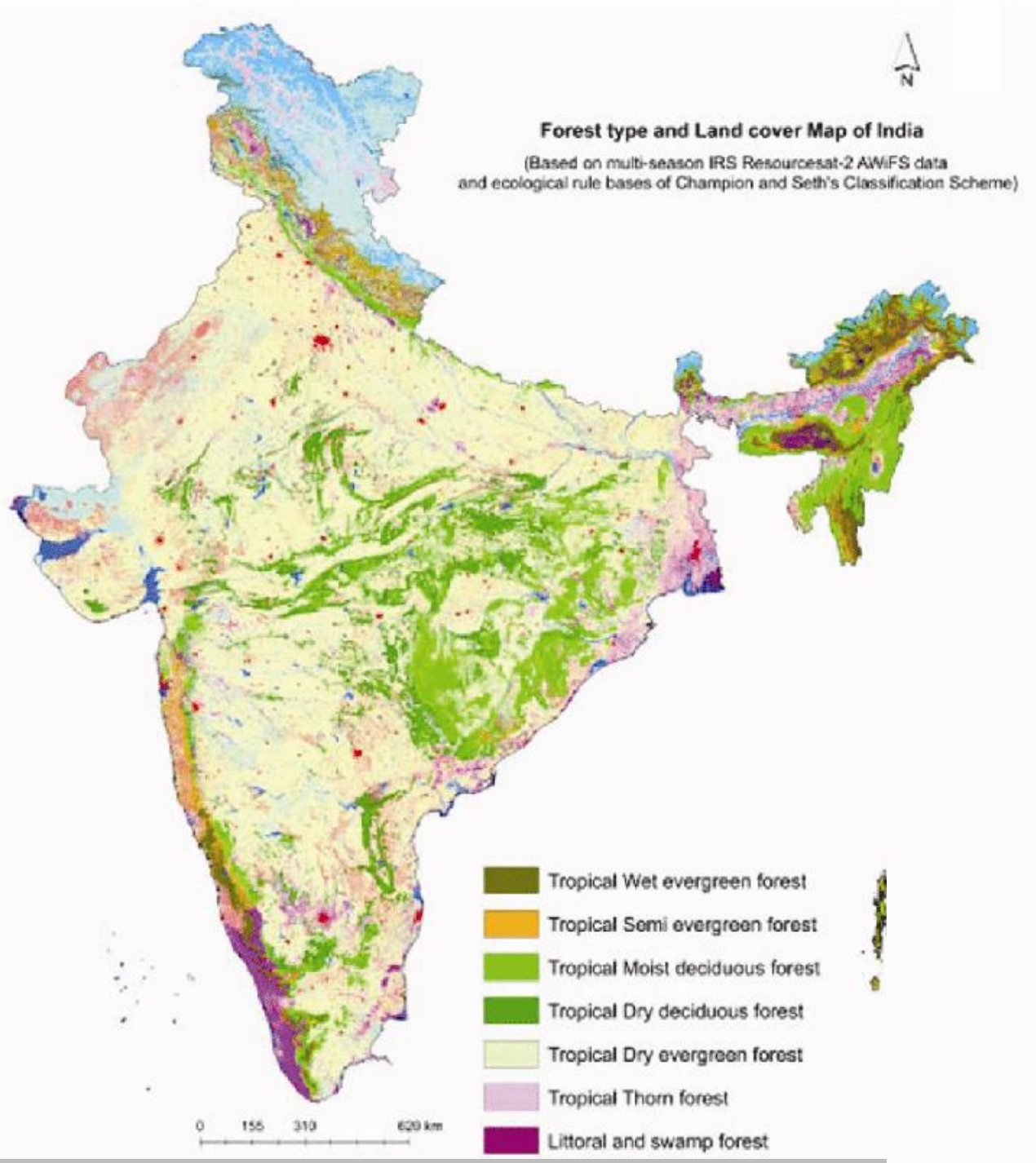
Meaning of the forest:

- The term "forest "is derived from the latin word "foris" meaning outside. Originally ,it is uncultivated and uninhabitated village boundary consisting of natural plants, i.e., trees and grasses .
- It means an association of plants , natural or cultivated, predominantly trees.
- In the words of Allen and Shorpe, **"Forest is a community of trees and associated organism covering a considerable area, utilizing air, water and minerals to attain maturity and to reproduce and capable of furnishing mankind with indispensable products and services"**

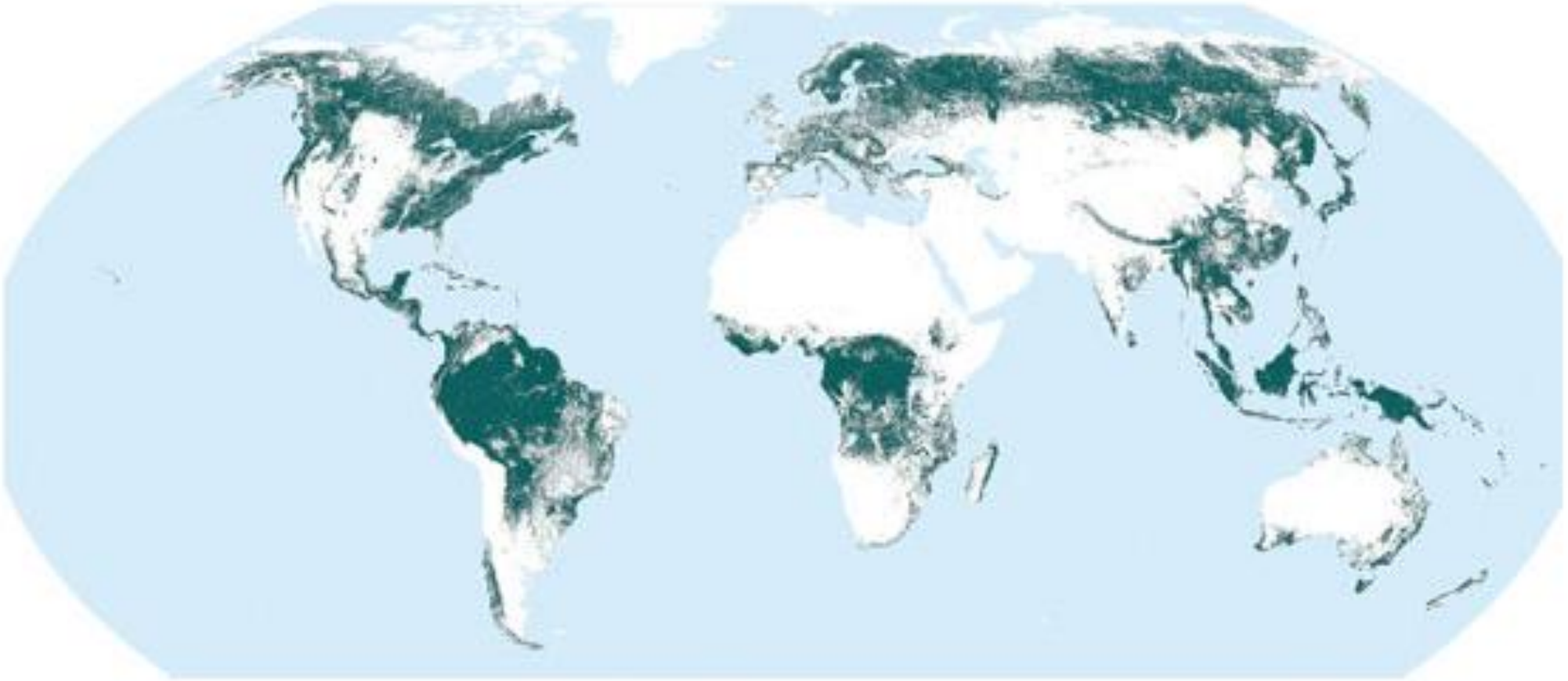
FOREST

- Latin word, foris= outside
- Include all uncultivated and uninhabited land.
- Jungle=collection of trees, shrubs etc.
- It is natural ecosystem having multi species and multi aged trees as dominant community.
- 1/3rd of the earth total area is covered by forest.
- In India, forest coverage is 22.74% but it should be 33% prescribed under national forest policy(1988).

Forest cover in INDIA



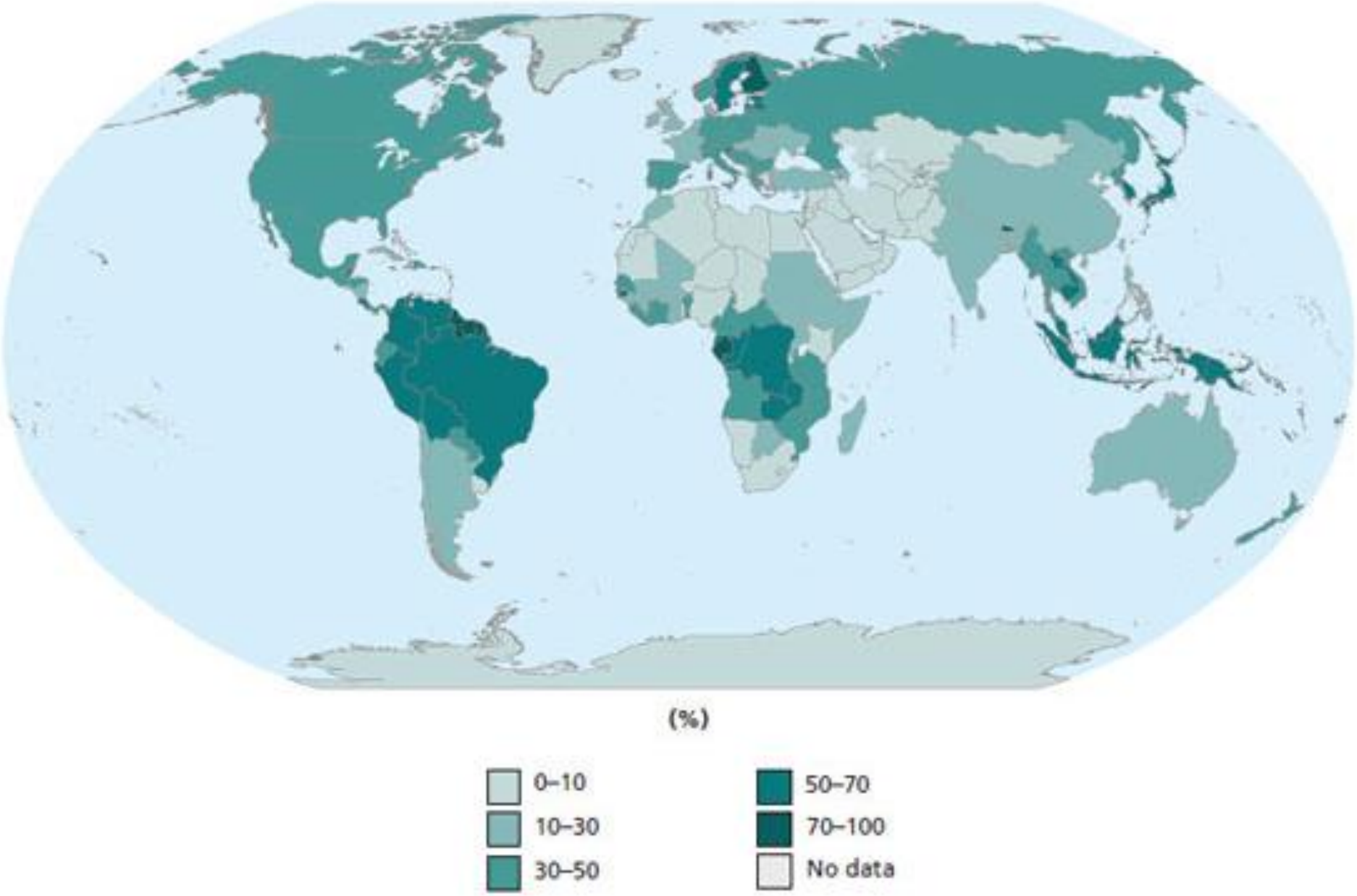
The world's forests



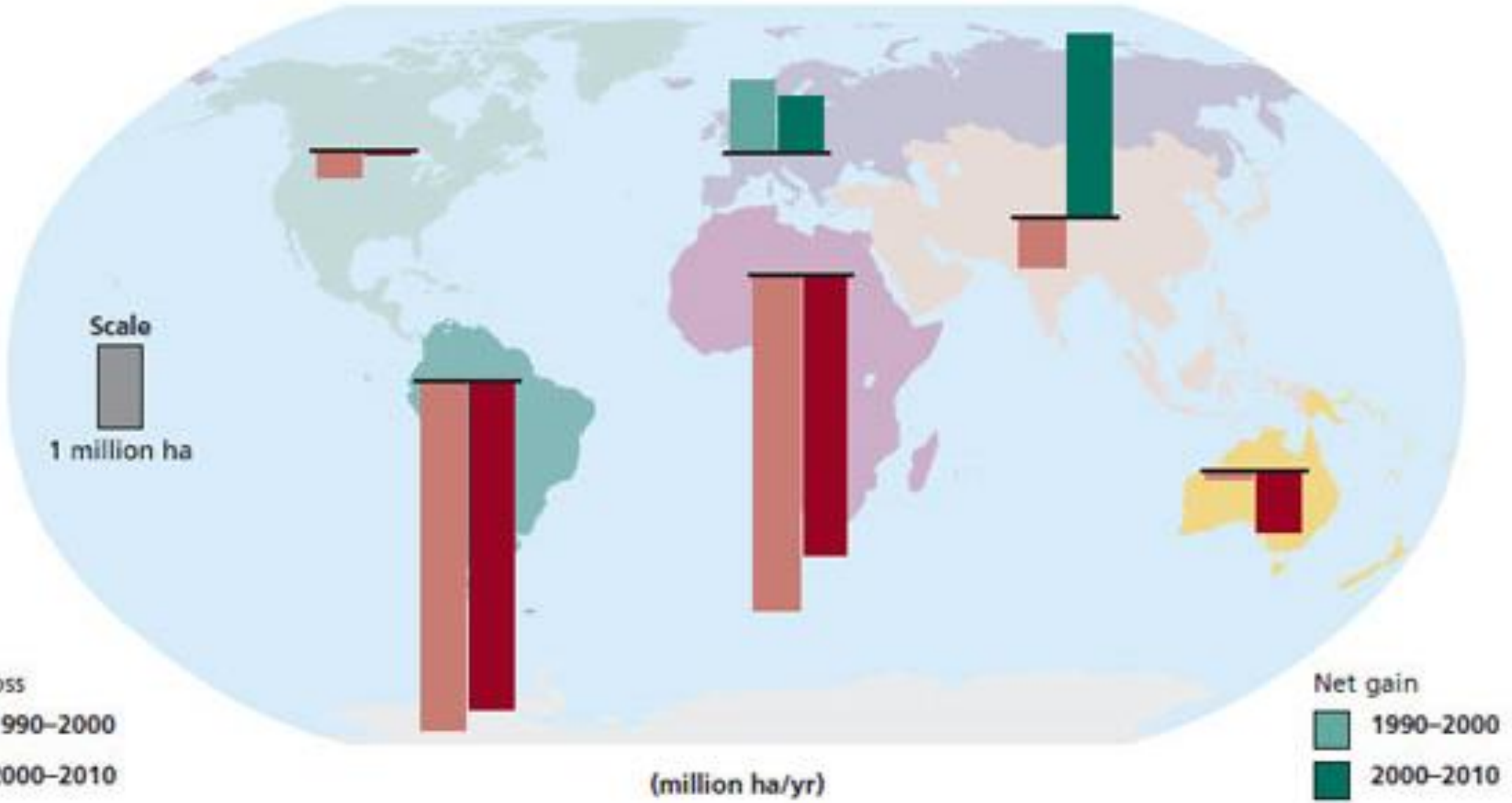
Note: Tree cover derived from MODIS VCF* 250 meter pixels for year 2005.

* Moderate-resolution Imaging Spectroradiometer Vegetation Continous Fields (Hansen *et al.* 2010).

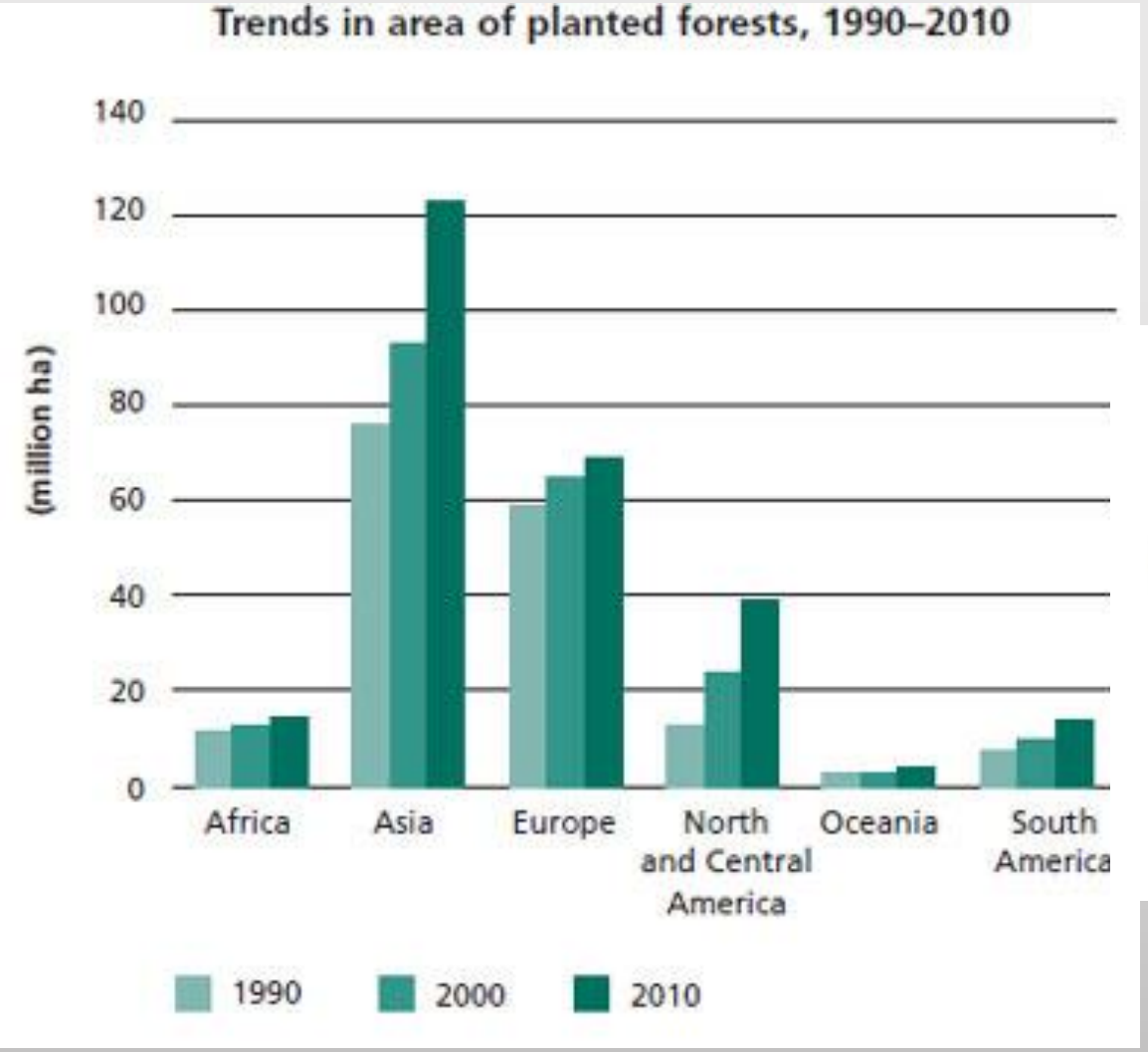
Forest area as a percentage of total land area by country, 2010

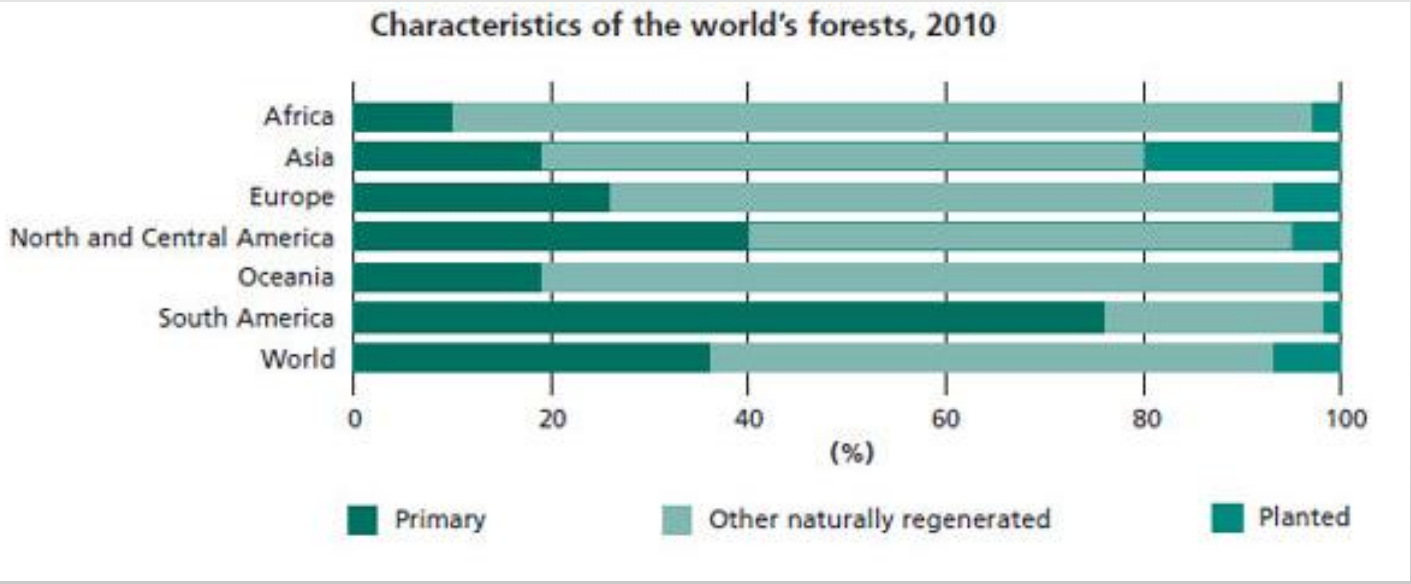


Annual change in forest area by region, 1990–2010



Global Forest Resource Assessment 2010





Uses of forest

- They provide timber for house-building, ship-building, bridges, railway carriages, furniture's etc.
- They supply fire wood and charcoal for fuel in homes and in industries.
- They provide wood pulp for the paper and rayon industries.
- They provide honey for food and medicines.
- They provide bee wax for candles, medicines, shoe-making etc.
- They provide canes foe baskets, mats, chairs, ropes, walking sticks and umbrella handles.
- They provide sandal wood for carved boxes and small domestic articles .
- They provide tanning materials in the form of wood, barks, leaves, roots, and fruits for tanning hides and skin.

Indirect uses of forest.

- They stop the rain-bearing winds and cause the rainfall.
- They increase the moisture content in the atmosphere and thereby provide additional precipitation(i.e., rainfall) in the locality
- They minimize the extreme variation in climatic condition and make the climate more equable.
- They control floods during heavy rain by absorbing excess rain water.
- They prevent soil erosion by checking the force of flowing of water.
- The thick roots of the trees absorb large quantity of water thus, forest help in the flow of rivers and streams.

- They offer hunting grounds.
- They provide shelter to wild animals and birds.
- They improve the sanitary condition of a place .
- They are a source of revenue to the government .
- They facilitate human existence by provide by providing O2 to human beings and absorbing CO2 by human beings.
- They provide employment large number of people in different capacities as wood cutters, carriers etc.

Depletion of forest resource.

The history of the exploitation of forest is as old as man himself but during older times, the exploitation was balanced through natural growth of forest because at that time , exploitation was only for personal and community uses. But in recent year , depletion of forest has been on a large scale.

The main reasons for large scale depletion of forest.

- Expansion of agriculture, more forest have been cleared for agriculture.
- Large area of forest lands have been cleared for urbanization and human settlement.
- Commercial exploitation of forest .
- Forest fires .
- Mining activities in forest areas.
- Forest diseases are also partly responsible for depletion forest.

Adverse effects of depletion of trees

- It has contributed to rise in temperature.
- It has contributed to lesser precipitation.
- It is responsible for increased rate of soil erosion
- It is responsible for increase in the frequency and volume of floods .
- it has lead to loss of soil productivity.
- It is responsible for loss of biodiversity.
- It has lead to extinction of several species of plants and animals.
- It has caused imbalance in ecosystem.

DEFORESTATION

- It means reckless or large-scale felling or cutting of trees by man for commercial and other purposes.
- The FAO(Food and Agriculture Organization) of the UN defines "change of forest with depletion of tree crown cover more than 90%."

DEFORESTATION RESULTS IN

- Soil erosion
- Extinction of animals and plants
- Loss of biodiversity
- Change in the local and global climates(global warming)
- Decrease in rainfall
- Destructed of wild life
- Absence or scarcity of soil moisture create drought
- Increase in soil surface evaporation
- Crop productivity is affected
- Over-grazing of forest → reduced the regenerative capacity
- ecosystem gets totally disturbed

Conservation of Forest

Conservation of forests:

- Keeping in view the importance of forests in our life, the people all over the world have stopped unnecessary deforestation. Our Government has also made laws to prevent unnecessary felling of trees. Government has decided to declare certain forests as protected areas. These protected areas are called Reserves or wild Life Sanctuaries. Here no one is allowed to hunt animals. There are about 150 wild life sanctuaries in India. People come from all over the world to see these sanctuaries. They consist of some of the most beautiful and rare animals.

By our Indian Constitution

Legislation for conservation

- Various laws and acts have been passed in Indian constitution for the protection and conservation of various natural resources. Some of them are:
- Environment Protection Act,1986.
- Forest Conservation Act,1980.
- Chipko Movement, 1988.

And many more...

सत्यमेव जयते

Box 1: Key international forest-related conventions and agreements

CBD (1993): conservation and sustainable use of biological diversity and the equitable sharing of the benefits of genetic resources, including forest biological diversity; an expanded programme of work on forest biological diversity was adopted in 2002

CITES (1975): control of trade in endangered or threatened species, including several tree and woody species

ILO No. 169 (1991): protection of the social, economic and cultural rights of indigenous peoples, including (implicitly) forest dwellers and forest-dependent indigenous peoples

ITTA (1994): facilitation of trade in tropical timber and ensuring of exports from sustainable sources

Ramsar (1975): conservation and wise use of wetlands, including mangroves and some other forest ecosystems

UNCCD (1996): mitigation of the effects of drought and prevention of desertification, including optimising the contribution of forests to this goal

UNFCCC (1994): limitation of human-induced disturbances to the global climate system by stabilizing greenhouse gas (GHG) concentration in the atmosphere. Forests are reservoirs, sinks and sources of GHGs; rules and modalities for forests to mitigate climate change are provided by UNFCCC, the Kyoto Protocol, and the Marrakech Accord. Joint Implementation and the Clean Development Mechanisms under the Kyoto Protocol include forestry projects.

World Heritage (1975): protection and maintenance of sites of outstanding cultural and natural heritage of universal value, including forest areas

WTO (1994): support to and ensuring of the proper function of free trade, including of forest products; the Committee on Trade and Environment is addressing the links between the multilateral trade system and trade measures under multilateral environmental agreements, including issues related to trade in forest products

Forest Conservation through Laws in India

- National Forest Policy 1952 enunciated that **one third of the geographic area** of the country should be under forests.
- However, there had been continuous deforestation in the country for various reasons, and it is estimated that 4.23 8 Mha of forest land was officially diverted to non-forest purposes between 1951-52 and 1979-80.
- With a view to conserve forests. Govt. of India enacted the Forest (Conservation) Act, 1980.

Forest (Conservation) Act, 1980

- This Act was enacted with a view to **checking indiscriminate dereservation and diversion of forest land to non-forest purposes**.
- Under this Act, prior approval of Central Government is required before any **reserved forest is declared as dereserved, or forest land is diverted to non-forest** purposes.
- If diversion is permitted, **compensatory afforestation** is insisted upon and other suitable conditions are imposed.
- Where **non-forest lands are available** compensatory afforestation be raised over **equivalent area of non-forest lands**.
- Where **non-forest lands are not available**, compensatory plantations be raised **over degraded forests twice in extent to the area being diverted**.
- The Forest (Conservation) Act, 1980 was amended in 1988 to incorporate strict panel provisions against violators.

Famous personalities who protected forest

- Khejarli movement by Amrita Devi (1736)
- The Bishnois, who are known conservators of their forest, were inspiration to many people's participatory movements for Environmental protection in India.
- The **Chipko movement** resisted the destruction of forests of India in the 1970s.
- **Sunderlal Bahuguna** was the leader of this movement. People in the movement hugged the trees, and prevented felling of trees by contractors.
- The 'Forest man of India', **Jadav Payeng** who created 1,360 acres of dense and defiant forest was born in Arunasapori (a river island on the Brahmaputra).

Conservation of Forest.

- Regulated and planned cutting of trees.
- Control over forest fires.
- Reforestation.
- Afforestation .
- Check on forest clearance for agriculture and human habitation and settlement.
- Development green belt around cities.
- Check on mining activities in forest areas.
- Protection of existing forest.
- Conservation of threatened species of trees.

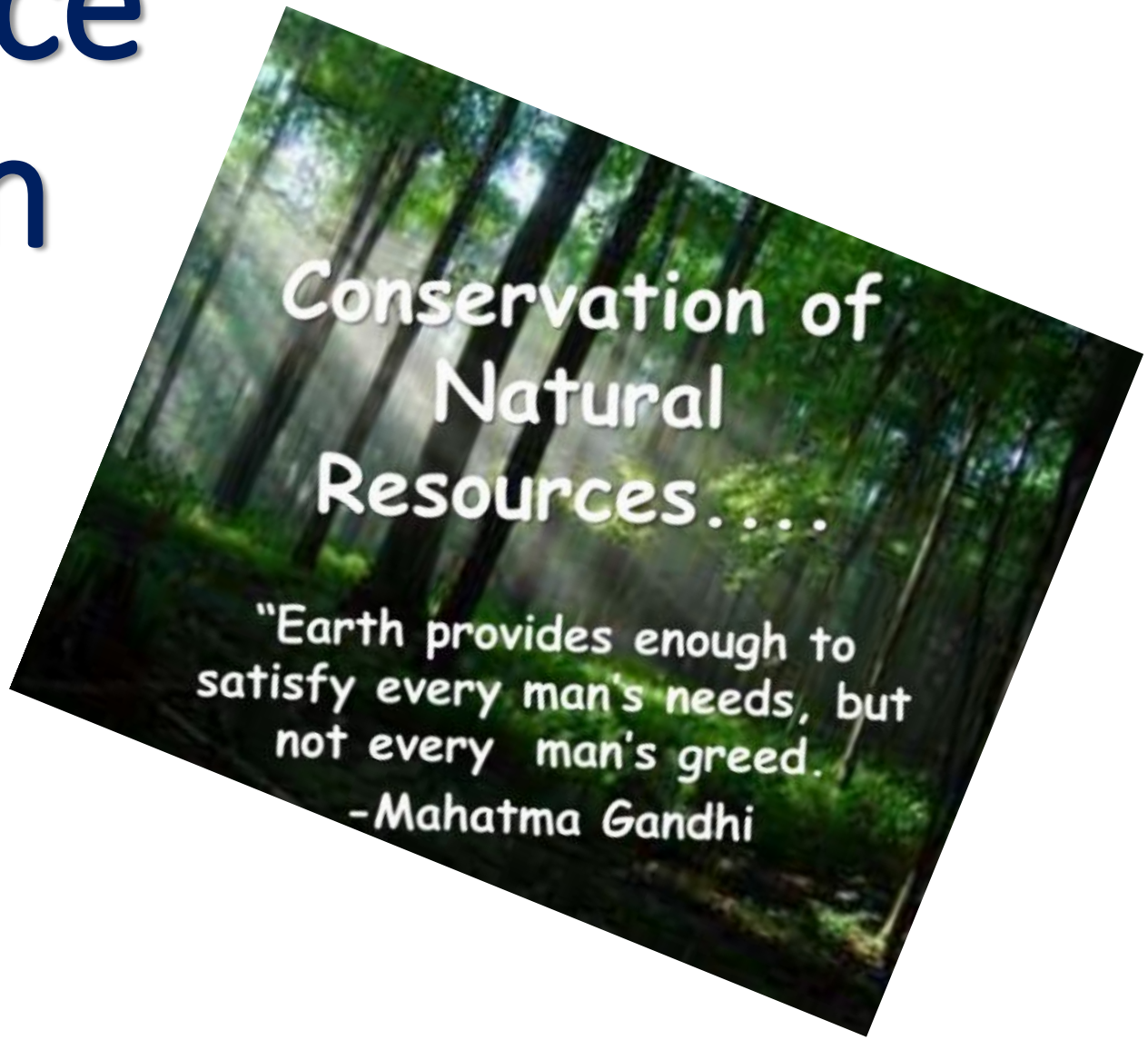
- Social forestry and agro-forestry.
- Development of national parks and game sanctuaries.
- Development of botanical gardens
- Development of seed banks.
- Forest management.
- Proper role of government in forest conservation

- ***Social forestry*** **refers to the management and protection of forests and afforestation on barren lands with the purpose of helping in the environmental, social and rural development.**
- This is a concept of village forests to meet the needs of the rural people.
- The popular types of social forestry are; **farm-forestry, community forestry, extension forestry and agro- forestry**.
- **Agroforestry is a land use management system in which trees or shrubs are grown around or among crops or pastureland.**

Control of deforestation.

- Prevention of human settlement in forest areas.
- Check on expansion of agriculture into forest lands.
- Prohibition of setting up of agriculture into forest lands
- Check on reckless cutting of trees.
- Controlled mining in forest areas.
- Check on construction of large dams in forest areas.
- Control on over grazing in forest areas.

Water Resource Conservation



Conservation of natural resources

As the human population is growing continuously, the consumption of natural resources is also increasing. With the increase of industrialization and urbanization of the modern human society, the use of all these resources in increasing day by day. If these resources are not properly managed and used, there will be a serious scarcity of these resources. So, we need to conserve the natural resources.

Conservation is the proper management of a natural resource to prevent its exploitation, destruction or degradation.....

Why should we conserve natural resources?

- As we know that nature provides all the basic needs which are necessary to us but, we are overexploiting or overusing these resources.

  if we go on overexploiting the nature, there will be no more resources available in the future.

- So there is an urgent need to conserve the nature. Here are some needs:

- To maintain ecological balance for supporting life.
- To preserve different types of biodiversity.
- To preserve the natural resources for the present and future generations.

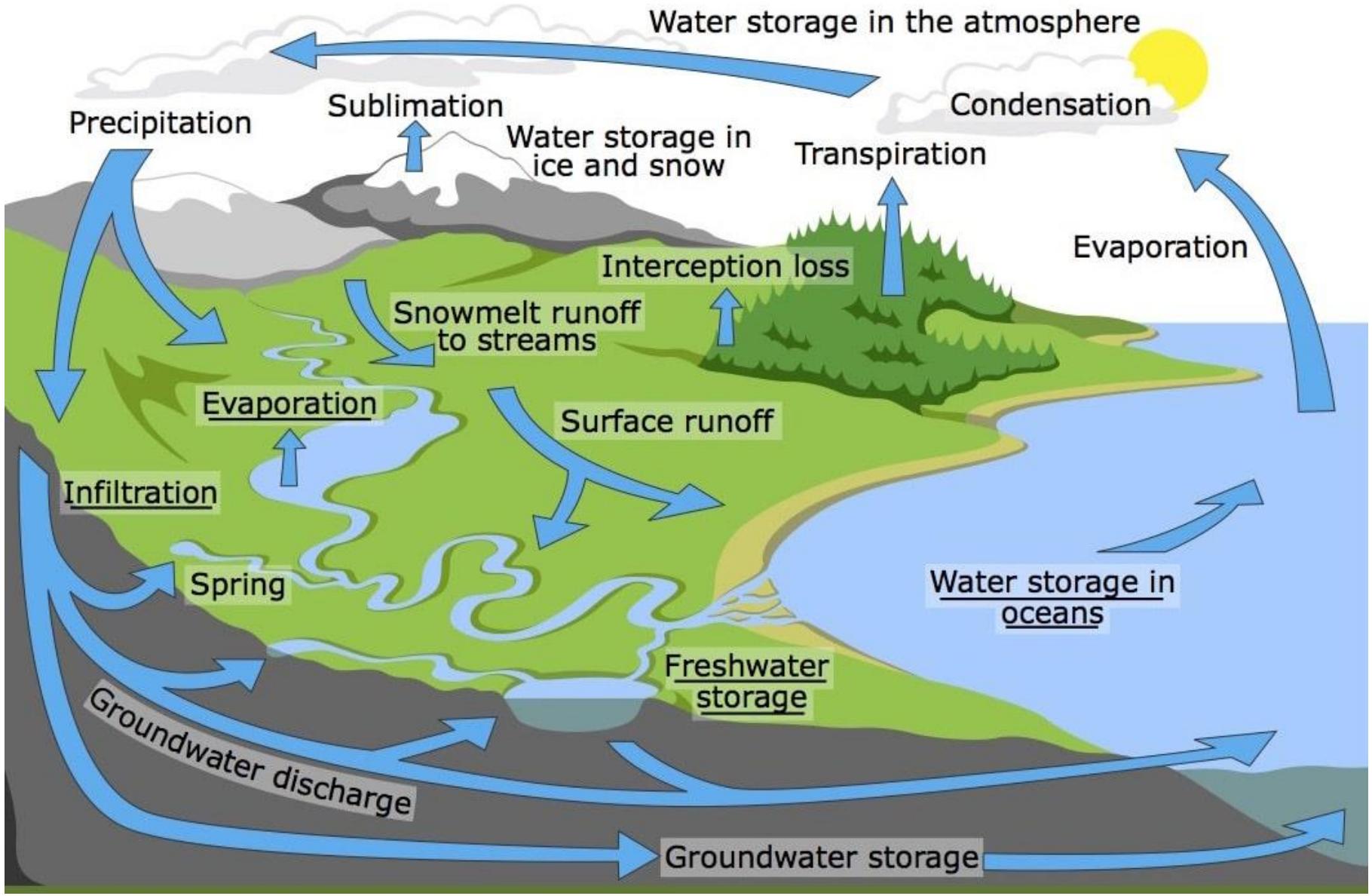
What is calling for our attention?

- India as country is blessed with rich natural resources. But from our research on the usage of natural resources in our country, we found that the resources are depleting every day. For example:
  - Forest and arable land is being depleted due to urbanization, overpopulation and overconsumption
  - Wild life resources are being lost due to illegal poaching, hunting and industrialization.
  - Water resources are being contaminated are drying up due to industrialization.

Water

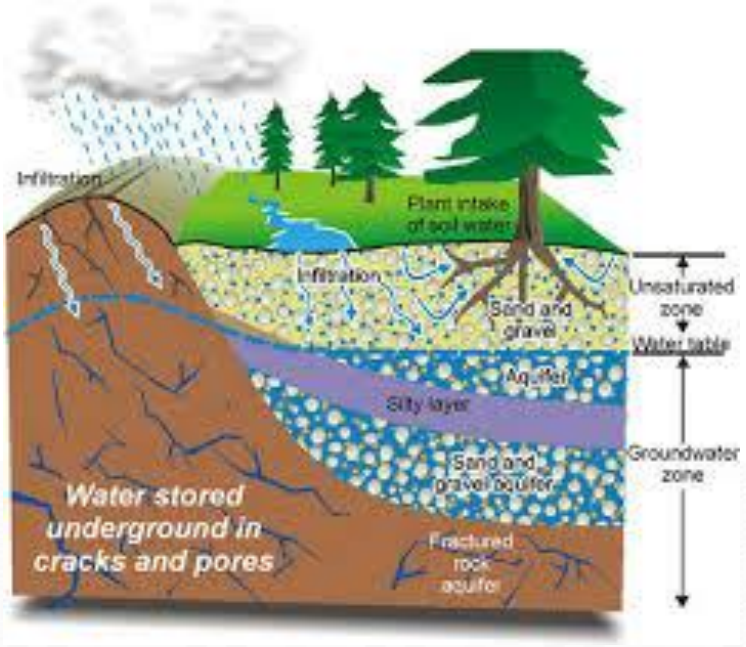
- Water covers about 71% of the earth's surface.
- 326 million cubic miles of water on the planet
- 97% of the earth's water is found in the oceans (too salty for drinking, growing crops, and most industrial uses except cooling).
- 320 million cubic miles of water in the oceans
- 3% of the earth's water is fresh.
- 2.5% of the earth's fresh water is unavailable: locked up in glaciers, polar ice caps, atmosphere, and soil; highly polluted; or lies too far under the earth's surface to be extracted at an affordable cost.
- 0.5% of the earth's water is available fresh water.
- If the world's water supply were only 100 liters (26 gallons), our usable water supply of fresh water would be only about 0.003 liter (one-half teaspoon).
- In actuality, that amounts to an average of 8.4 million liters (2.2 million gallons) for each person on earth.
- This supply is continually collected, purified, and distributed in the natural hydrologic (water) cycle.

DYNAMIC AND COMPLEX: THE GLOBAL WATER CYCLE

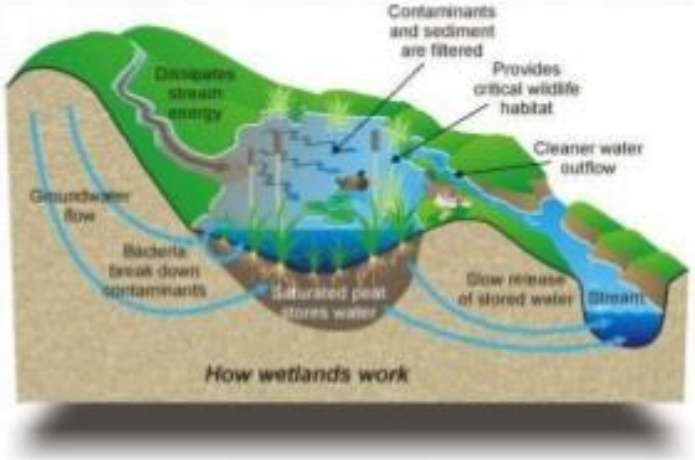


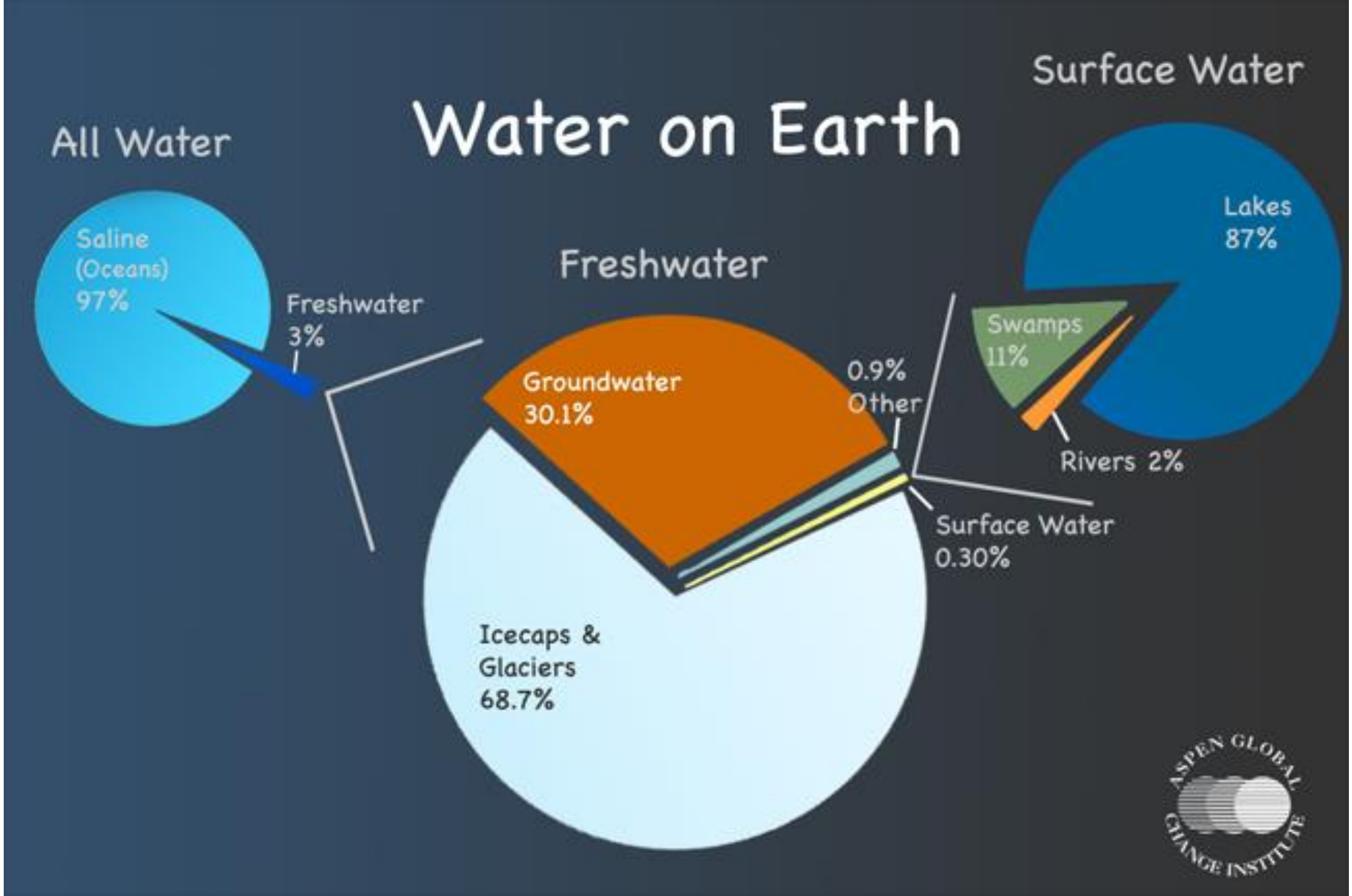
Water resources

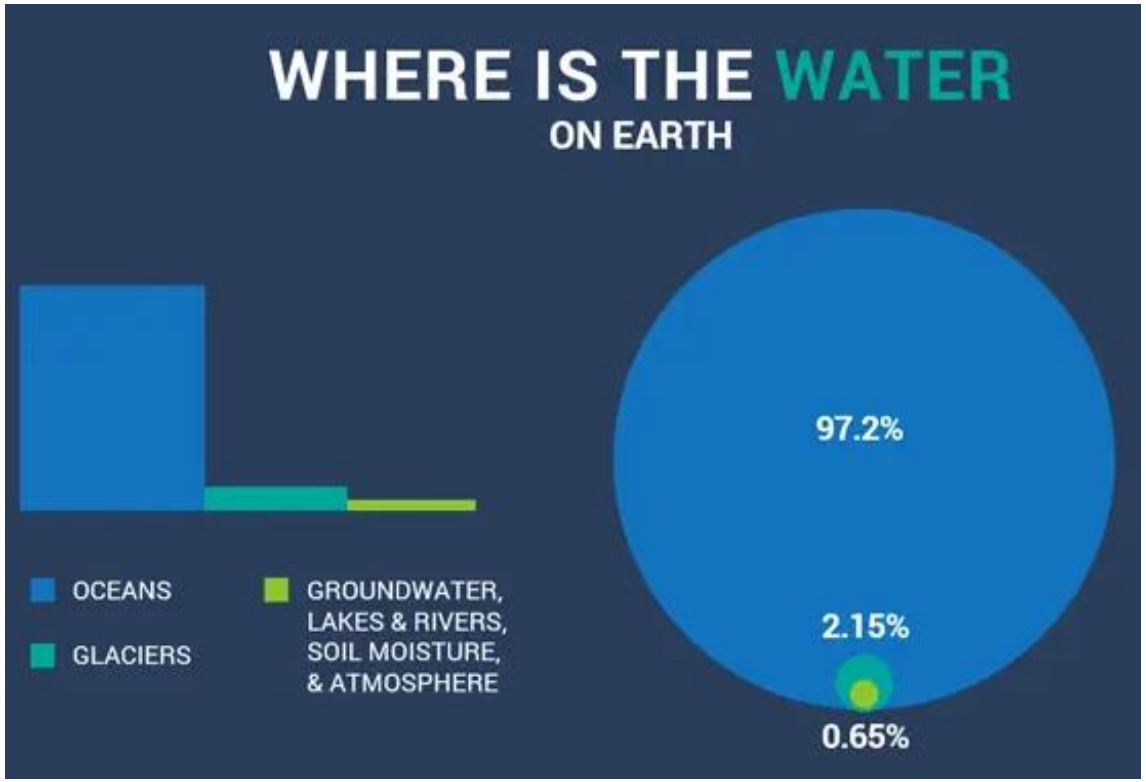
1. Underground water resource
2. Surface water resources: Inland & Oceanic



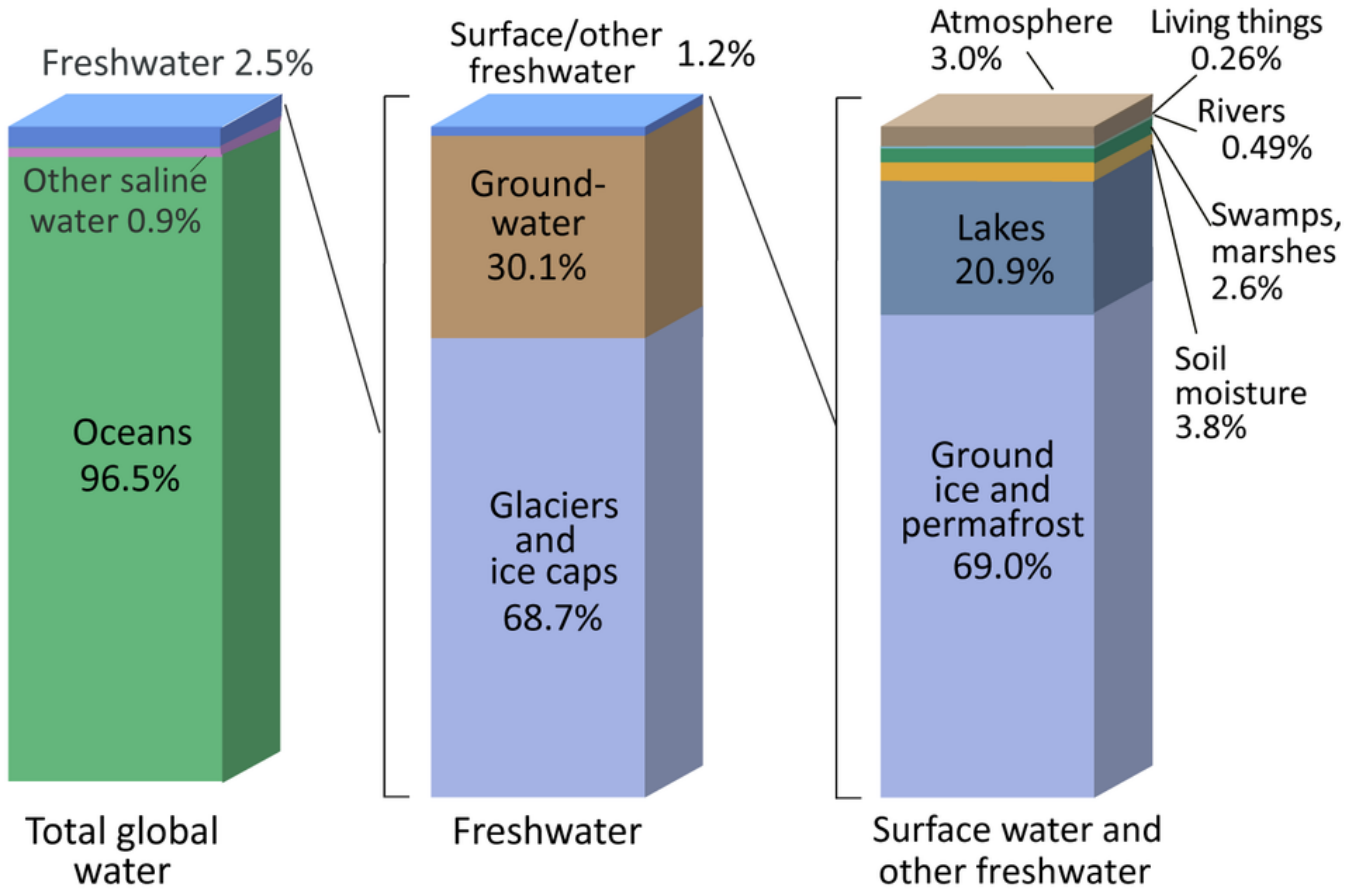
- Rivers & streams
  - Fast moving
  - Cold, highly oxygenated
  - Insect larvae, trout, long narrow plants, algae
- Lakes & ponds
  - Slow moving
  - Warm, less oxygenated
  - Bass, catfish, cattails, leeches
- Wetlands
  - Covered with water most of the year
  - Absorb and slow water flow
  - Filter pollutants & sediment
  - Provide breeding ground for water birds, shellfish, fish




Water on Earth
All Water
Saline (Oceans) 97%
Freshwater 3%
Freshwater
Groundwater 30.1%
0.9% Other
Icecaps & Glaciers 68.7%
Surface Water
Lakes 87%
Swamps 11%
Rivers 2%
Surface Water 0.30%
ASPEN GLOBAL CHANGE INSTITUTE



Where is Earth's Water?



Credit: U.S. Geological Survey, Water Science School. https://www.usgs.gov/special-topic/water-science-school
Data source: Igor Shiklomanov's chapter "World fresh water resources" in Peter H. Gleick (editor), 1993, Water in Crisis: A Guide to the World's Fresh Water Resources. (Numbers are rounded).

Most Common Uses of Water

Domestic

Agricultural

Industrial

Domestic Use

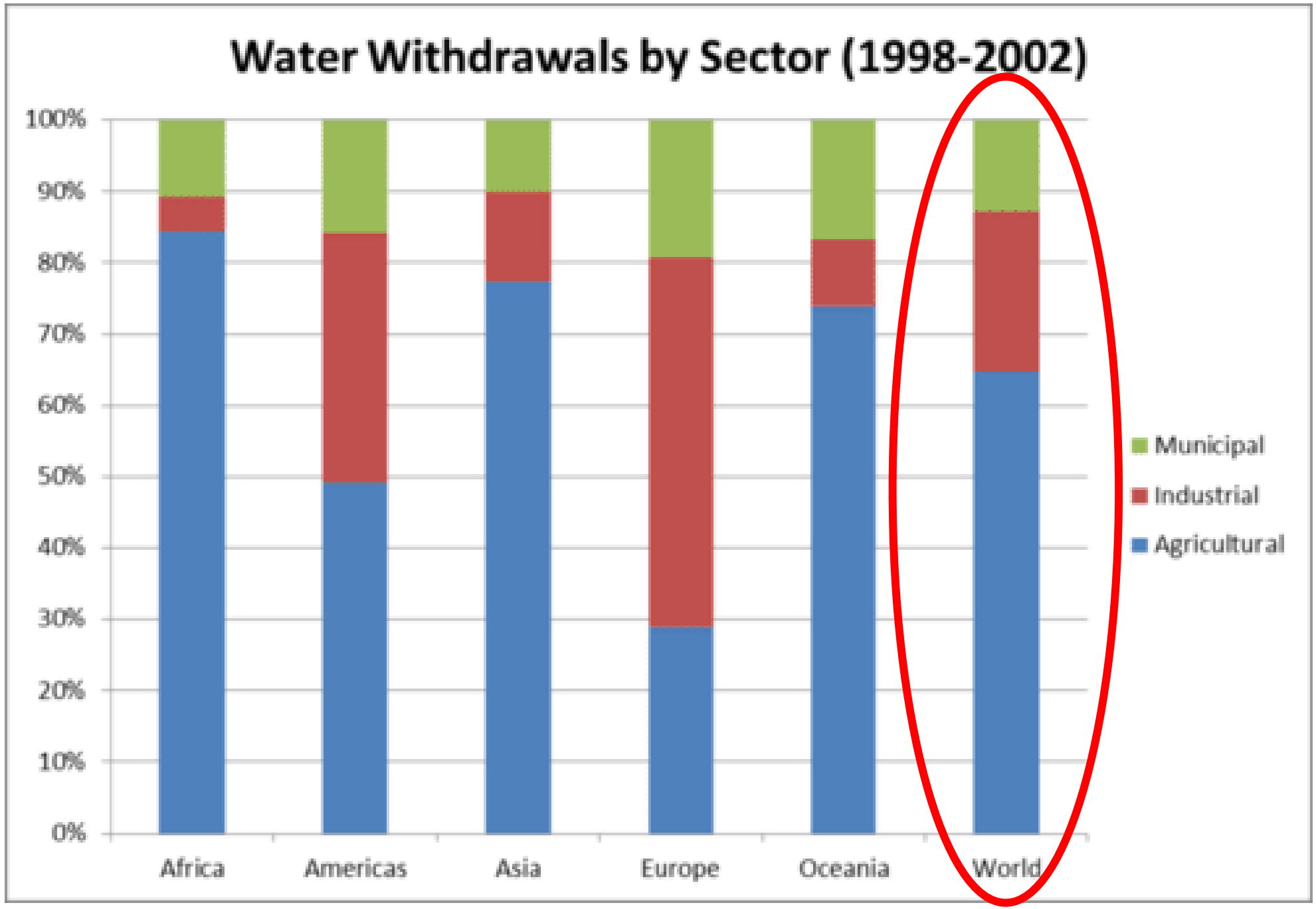
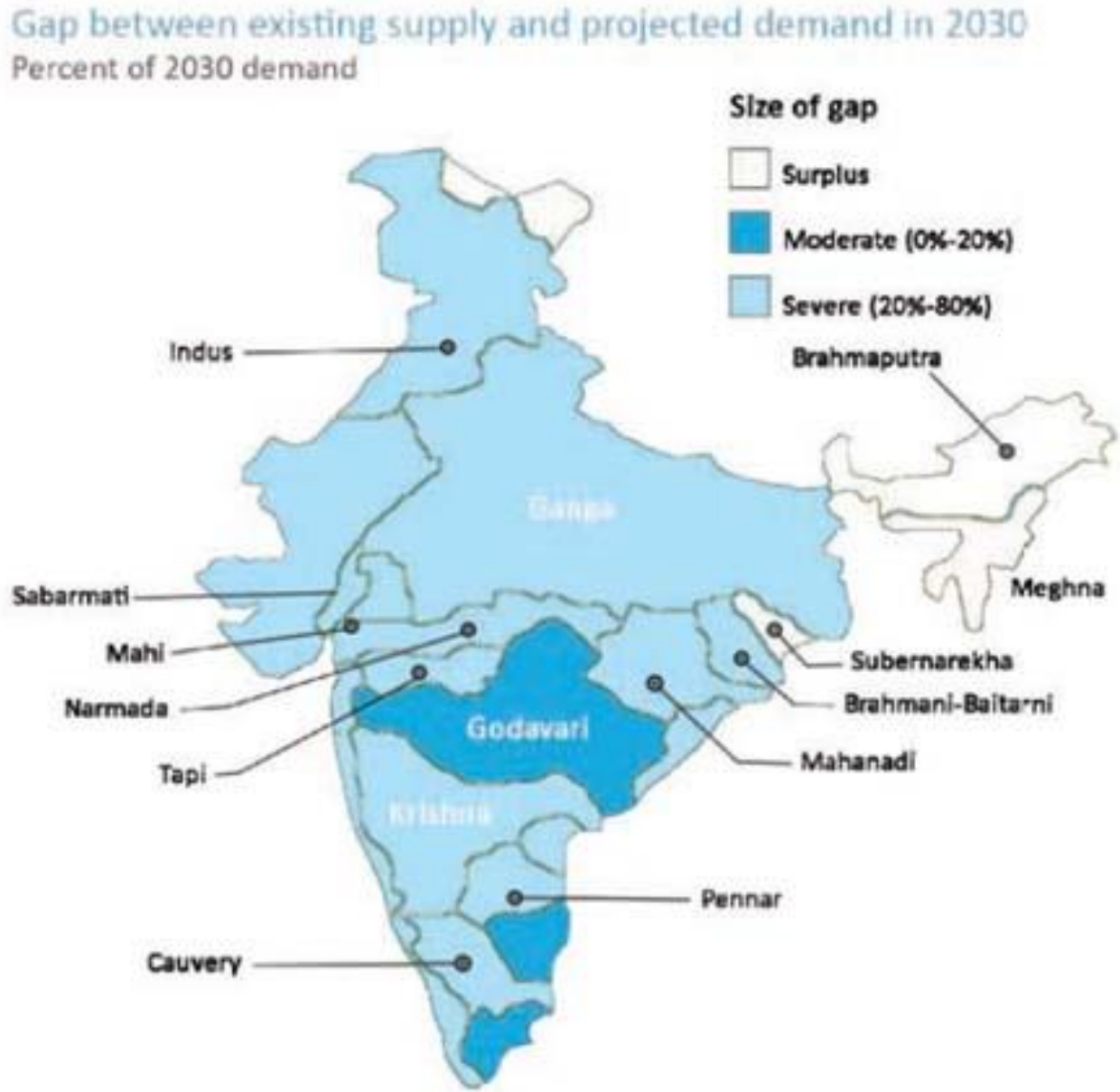

Water Withdrawals by Sector (1998-2002)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Africa
Americas
Asia
Europe
Oceania
World
Municipal
Industrial
Agricultural

Figure 1.2: India's Water Supply and Demand Gap



Source: Addams et al. (2009 : 55)

Water pollution

1. Sewage and other waste
2. Industrial effluents
3. Agricultural discharges
4. Industrial wastes

Water resource conservation

- The objective of water conservation can be achieved through concrete efforts on the conservation and utilization of water on sustainable basis with a focus on holistic planning and sustainable development of sources of water

- The goals of water conservation efforts include as follows:
- To ensure availability for future generations.
- The withdrawal of fresh water from an ecosystem should not exceed its natural replacement rate.

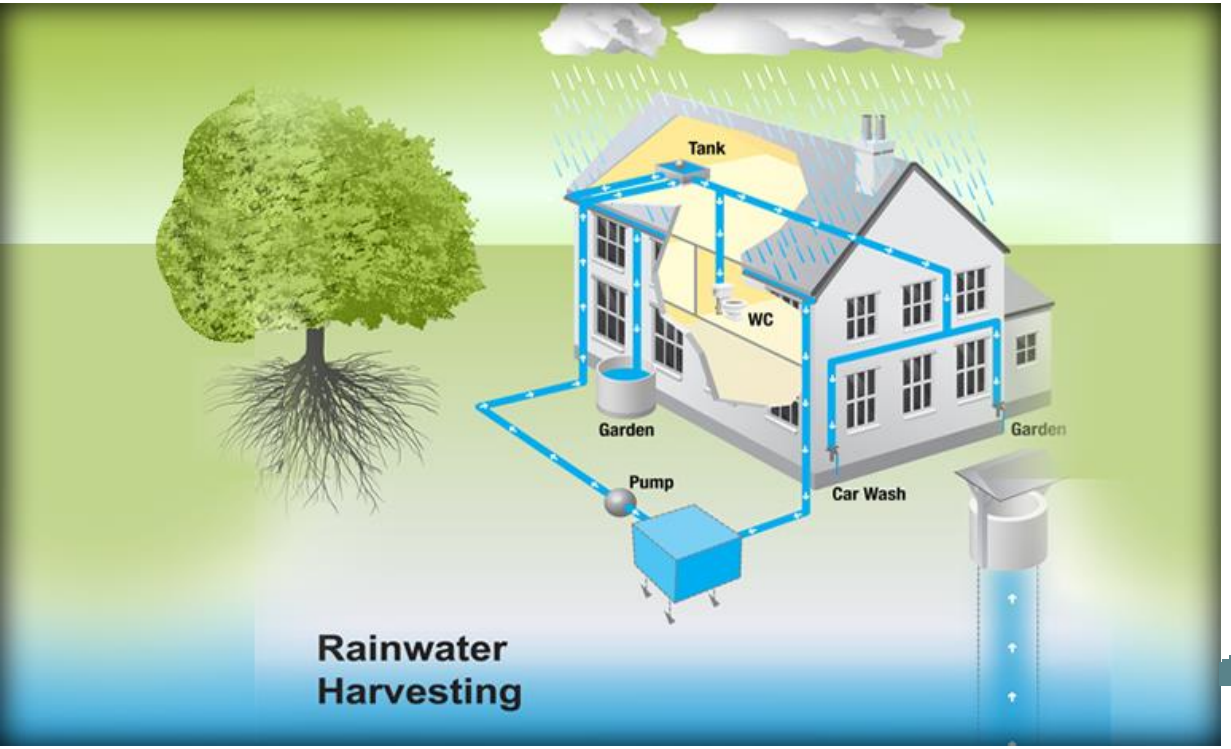
INDOOR CONSERVATION

- Shorten your shower by a minute or two and you'll save up to 150 gallons per month.
- Monitor your water bill for unusually high use. Your bill and water meter are tools that can help you discover leaks.
- Grab a wrench and fix that leaky faucet. It's simple, inexpensive, and you can save 140 gallons a week.
- Teach children to turn off faucets tightly after each use.
- Turn off the water while brushing your teeth! This will, on the average, save 3 gallons of water for each time you brush.
- Use conserving appliances, such as low-volume shower heads, efficient dishwashers and washing machines etc.
- Use low-flow toilets, and flush the toilet only when really necessary

OUTDOOR CONSERVATION

- Use a bucket of water to clean your car instead of a hose
- Sweep sidewalks, driveways and patios instead of hosing.
- Clean gutters and downspouts manually, without using a hose.
- Cultivate the soil regularly so water can penetrate and develop a good root system.
- In arid and semi-arid regions, replace lush green lawns with decorative rock garden
- Methods to harvest rainwater should be provided

- Use gray water from washing machines to water vegetation
- Water lawns and plants in the early morning, late afternoon or at night so as to reduce evaporation
- Use drip or sprinkle irrigation and place water-holding mulch around garden plants
- In arid and semi-arid regions, plant drought-resistant vegetation that needs less water
- Local bodies should install water-meter and encourage water pricing policies in which water is much more expensive beyond some baseline amount.


Tank
WC
Garden
Garden
Pump
Car Wash
Rainwater
Harvesting


Rain Water Harvesting

INDUSTRIAL CONSERVATION

Water conservation measures that can be taken by industries and manufacturing units include:

- Using dry cool cooling systems or cooling towers that use less water
- Reuse the cooling water for irrigation or other purposes
- Industries and manufacturing units should curb water withdrawals wherever possible by increasing in-plant treatment and recycling of water or by developing new equipment and processes that require less water
- Recycled water should be used for floor washing, and other such purposes

AGRICULTURAL CONSERVATION

Agriculture is the biggest water user and perhaps half of all the agricultural water used is lost to leaks in irrigation canals and application to areas where plants do not grow, runoff and evaporation. Improved agricultural irrigation could reduce withdrawals by between 20 to 30%. Tremendous saving may be achieved by implementing following agricultural conservation measures:

- Use lined or covered canals that reduce seepage and evaporation
- Use improved irrigation techniques, such as sprinklers or drip irrigation
- Irrigate fields in the early morning or at night when evaporation is minimal


WATER EFFICIENT
SPRINKLER NOZZLES


© Jain Irrigation System Ltd.

- Adopt better farming techniques, such as minimum tillage, leaving crop residue on fields and ground cover on drainage ways, intercropping etc.
- Use mulch to help retain water around plants
- Price agricultural water to encourage conservation
- Integrate the use of surface and ground water so as to have a more effective use of the total resources. For instance, irrigate with surplus surface water when it is abundant and also use surplus surface water to recharge groundwater aquifers; and when surface water is in short supply, use more ground water for irrigation
- In arid and semi-arid regions, encourage the development of crops that require less water and are drought resistant

A **mulch** is a layer of material applied to the surface of soil. Reasons for applying **mulch** include conservation of soil moisture, improving fertility and health of the

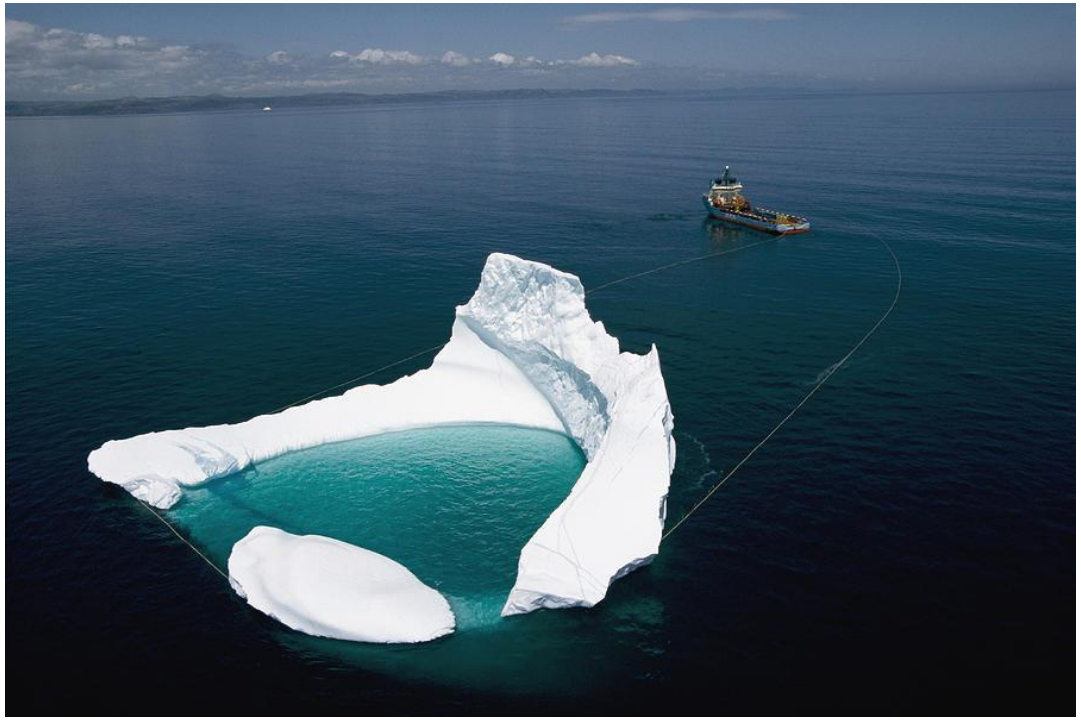
STRATEGIES TO SUPPORT WATER CONSERVATION

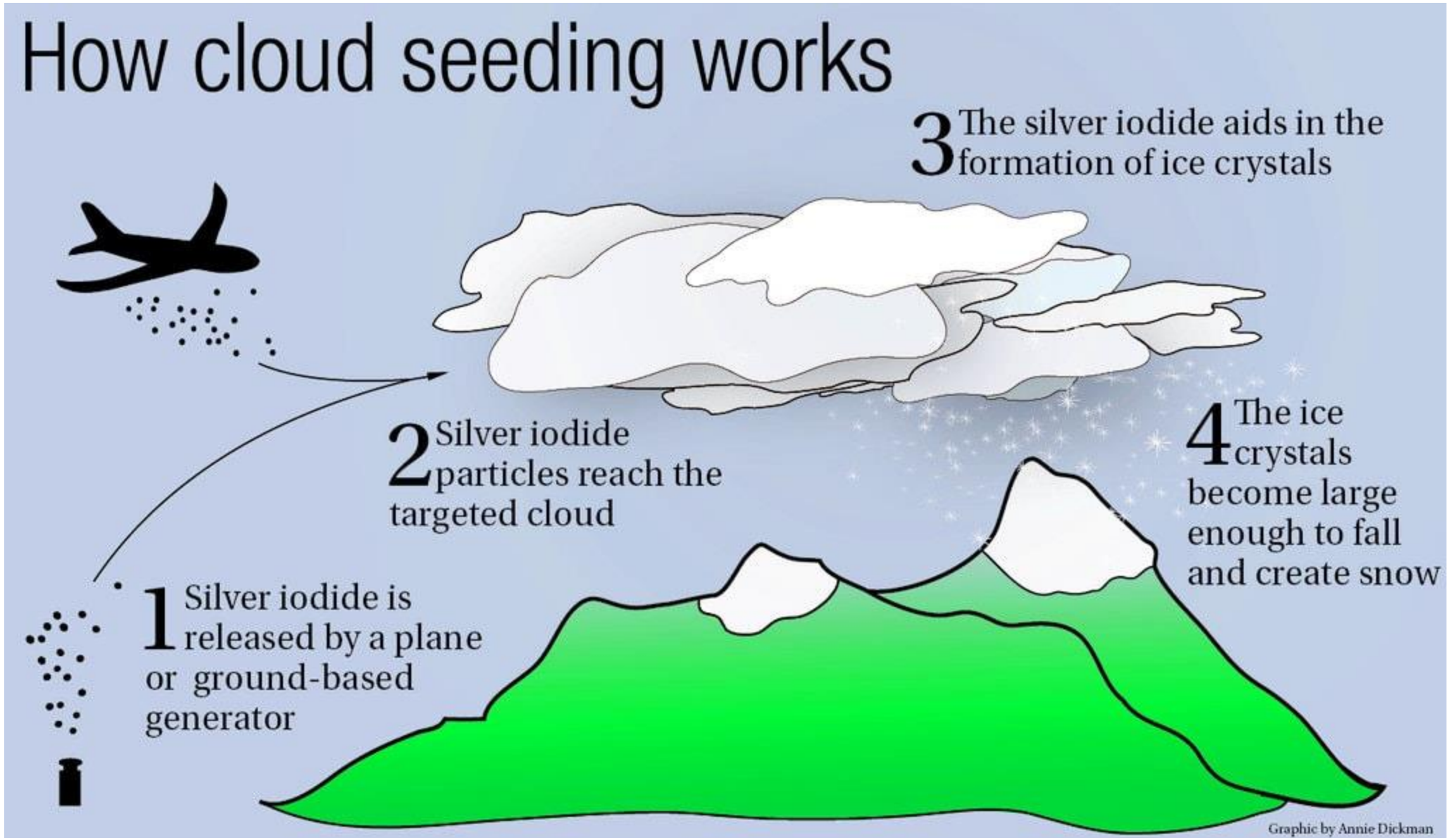
Some of the strategies that can support water conservation activities and tackle the water scarcity problem include:

- **Rain water harvesting**
  - Roof top rainwater harvesting
  - Revival of traditional water harvesting structures
  - Micro-catchment water harvesting
  - Recharge structures for wells and bore wells
- **Sustainable water utilisation**
  - Minimise domestic water consumption
  - Recycling of waste water
  - Improved irrigation methods
- **Encourage natural regeneration of vegetation and supplementing with artificial regeneration**
- **Maintain and improve quality of water**
  - Collection and treatment of waste water effluents
  - Pollution check
- **Awareness building on water conservation**

Conservation of Water

1. Redistribution of water: Reservoirs & Canals; River linkage system
2. Rational use of underground water
3. Saving water from polluting
4. Cloud seeding
5. Towing icebergs
6. Restructuring of production technology




How cloud seeding works
3 The silver iodide aids in the formation of ice crystals
2 Silver iodide particles reach the targeted cloud
4 The ice crystals become large enough to fall and create snow
1 Silver iodide is released by a plane or ground-based generator
Graphic by Annie Dickman

Whittlesey's Agricultural Regions of the World

Facts in brief

- One of the **earliest** and the most **satisfactory** attempts to formulate a **classification of world agriculture** was proposed by **Derwent Whittlesey** in **1936**.
- His paper entitled **"Major Agricultural Regions of the Earth"** was published in ***Annals of the Association of American Geographers, Vol. 26, No. 4.***
- The classification scheme is exclusively based on **the inherent properties of the agriculture** practiced.
- Qualitative & Quantitative technique.
- Further a **comparative study** is made between regions framed.
- He recognized agricultural regions of the **first order of magnitude**.

Forces of Classification

The regional pattern is determined by two concurrent forces:

1. **Natural Environment:**

   Climate, Soil, Slope

   Drainage, Exposure, Altitude

2. **Cultural Environment:**

   Density of Population

   Stage of Technology

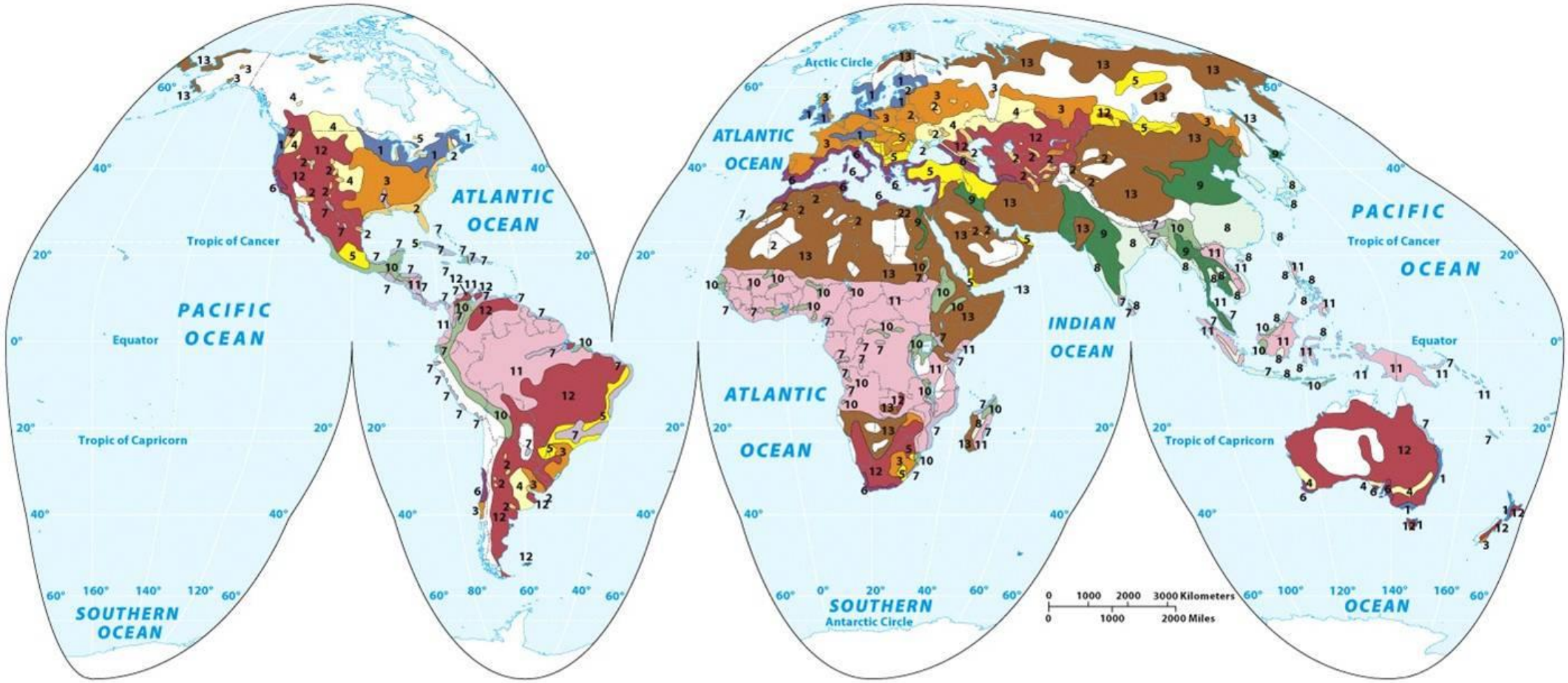
   Inherited Tradition

Bases of Classification

The functioning forms (regions) which appear to dominate every type of agriculture may be listed under five heads:

1. The **crop and livestock association**
2. The **methods** used to grow crops and produce the stock
3. Intensity of **Capital**, **Labour**, **Organization**.
4. **Consumption patterns** of agricultural production (Do they eat what they produce?)
5. **Associations of buildings** and other structures associated with agriculture.

13 main types of agricultural regions with a further category of ***Land virtually unused for farming*** are recognized by Whittlesey.



WORLD AGRICULTURE

1 Dairying

2 Fruit, Truck and Specialized Crops

3 Mixed Livestock and Crop Farming

4 Commercial Grain Farming

5 Subsistence Crop and Livestock Farming

6 Mediterranean Agriculture

7 Diversified Tropical Agriculture –chiefly plantation

8 Intensive Subsistence Farming –chiefly rice

9 Intensive Subsistence Farming –chiefly wheat and other crops

10 Rudimentry Sedentary Cultivation

11 Shifting Cultivation

12 Livestock Ranching

13 Nomadic and Semi-Nomadic Herding

Nonagricultural Areas

1. Nomadic Herding यायावरी पशुचारण

- Vast spaces of earth, too dry to produce crops but not utterly barren deserts
- Aboriginal form of livestock business
- Two elements of environment in deciding their **duration of stay** & **direction of migration**:
  1. The amount and quality of water
  2. Forage
- Animals:

  Cattel, Goat, Sheep, Horses, Camels, Reindeers
- Temporary settlements, widely scattered, seasonal migration.
- Monotheism is practiced.

Nomadic Herding

- Major regions:

1. **Central Asia:**

Mongolia, Tibet, Sikiyang, Kazakhstan, Uzbekistan & Steppes region

2. **South-West Asia & Northern Africa:**

Iraq, Iran, Jordan, Saudi Arabia, UAE, Turkey, Sudan, Sahara semi-arid region.

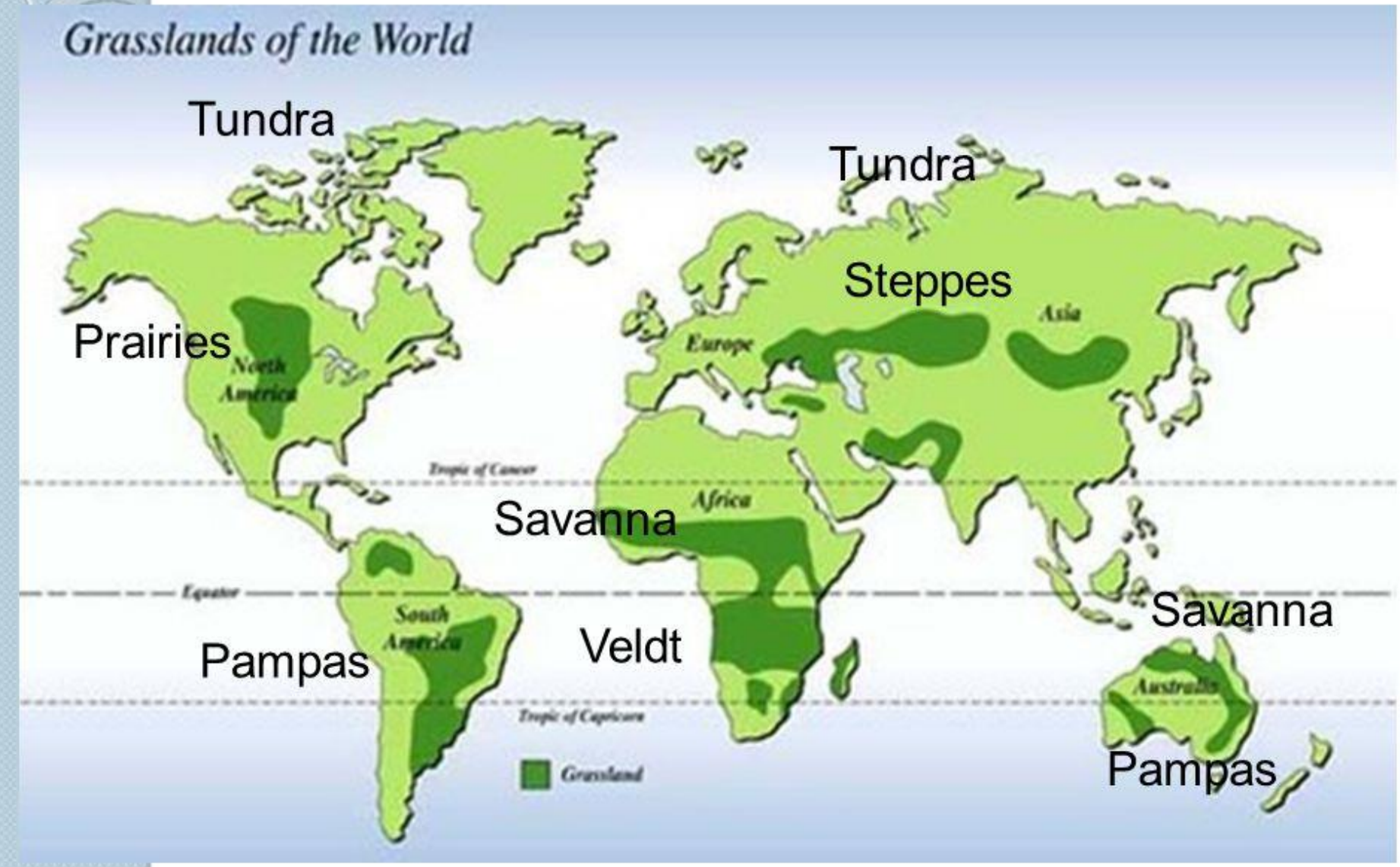
3. **Tundra:**

Norway, Sweden, Finland, Alaska

2. Livestock Ranching पशुधन-संवर्धन

- ***Ranch:*** A ranch is an area of land, including various structures, given primarily to the practice of ranching, the practice of raising grazing livestock such as cattle or sheep for meat or wool.
- Extensive **dry Temperate Grassland** regions and **Tropical** regions
- **Australia, New Zealand, South Africa, South America, North-western North America**
- **Commercial** form of **nomadic herding (व्यापारिक यायावरी पशुचारण)**
- **Semi-sedentary** type (**अर्द्ध -स्थानबद्ध**)
- Great care is taken to **improve breed** and the rancher is a **large-scale business** operator
- ***All the leading ranching regions are in the new continents*** (Stage of technological development)
- **Encroaching (अतिक्रमण)**nomadic herding regions

Grasslands of the World



3. Shifting Cultivation स्थानान्तरण खेती

- **Subsistence (जीवन निर्वाहक)** and most **rudimentary (अल्पविकसित)** type of agricultural practice
- Land is cultivated temporarily (2-3 years) and left **fallow (पड़त)** for longer duration (5-12 years)
- **Regions**: **Humid low latitudes** (**आर्द्र निम्न अक्षांश**), mainly **rain forest** areas **(वर्षा वन)**

  Africa; South America;
- **Crude (अपरिष्कृत)**of methods of cultivation: '***Slash & Burn***'
- Use of ***primitive tools***
- Forest dwellers live in ***small tribes*** by clearing the virgin forest
- It extends beyond rain forest areas to park-savanna, to ocean deltas, to mountain basins (14,000 feet elevation)

Shifting Cultivation स्थानान्तरण खेती …

- Practices around the world:
  - Indonesia – ***Ladang*** **लदांग**
  - Philippines – ***Caingin*** **कनजिन**
  - Mexico and South America – ***Milpa*** **मिलपा**
  - Venezuela – ***Conuco*** **कोनुको**
  - Brazil – ***Roca*** **रोका**
  - Central Africa & Congo – ***Masole*** **मासोल**

- **India**
  - North-East – ***Jhum*** or ***Jum*** **झूम /जुम**
  - Odisha – ***Dabi***, ***Coma***, ***Brring*** **डाबी, कोमा, बृंग**
  - Western Ghats – ***Kumari*** **कुमारी**
  - South-eastern Rajasthan – ***Walra*** **वालरा**
  - Chhattisgarh (*Bastar*) – ***Penda***, ***Bewar***, ***Dahiya***, ***Deppa***, ***Kumari*** **पेंडा, बेवर, दहिया, देपा, कुमारी**

4. Rudimentary Sedentary Cultivation आद्यरूप स्थानबद्ध कृषि

- **Permanent settlements (स्थाई निवास**) of farmers (Sedentary)
- **Crude** tools and intensive method of cultivation
- **Little knowledge** to make soils more fertile
- **More than one crop** in a year
- **Mixed cropping pattern (मिश्रित कृषि प्रारूप)** is observable
- Crops are mainly used for local consumption

Rudimentary Sedentary Cultivation…

- Animals are also domesticated (mainly as farm animals)
- **Densely populated regions (सघन बसे क्षेत्र)** (Soil and Climate are favorable above average)
- *The intrusion of outsiders in historical times has tended to turn shifting cultivation to sedentary forms (Europeans intrusion has accelerated this tendency)*
- **Mainly Cash crops (नकदी फसल) are grown**: Cotton, Rubber, Cacao, Oil palm, coco palm, etc.
- A shift has been noted towards more efficient use of land in regions of shifting and rudimentary cultivation.
- **Regions**: South America; South-East Asia; Western Africa

Intensive Agriculture सघन कृषि

Characteristics:

- **Small-sized** farm
- **Labour intensive** cultivation
- Less involvement of animals
- **Variety of crops** are grown
- Use of **HYV** seeds and **fertilizers**
- Practiced in regions having **high population pressure on agricultural land**
- Regions:

China	India	Japan
Bangladesh	Sri Lanka	Indonesia
Malaysia	Philippines	Vietnam
Thailand	Laos	Cambodia

Intensive Subsistence Agriculture
सघन निर्वाहिक कृषि

I. Intensive Subsistence with Rice dominated

II. Intensive Subsistence without Paddy

5. Intensive Subsistence with Rice dominated

- **Humid** regions of **South** and **East Asia (Monsoon Asia)**
- Crop association is dominated by **RICE**
- Rice yield more grain per acre than any other crop
- Cropping Pattern:
    1. **Three crop**: Irrigable deltas, Floodplains, Coastal Plains, Terraced areas.
    2. **Two crop**: Where climate is hot
    3. **One crop**: Water scarcity, Cool season
- Other crops in association are: grains, oil-seeds, cotton, vegetables
- Fish cultivation is also practiced
- Method of Cultivation: almost all work is performed by **hands**, hand-tools, **rotation of crop** is a common practice
- In spite of the fact **per capita production is low**, thus people have **low income**.

➢ *Conditions for Rice cultivation*:

- Rice is grown under varying conditions **in India** from **8° to 25° N** latitude
- Usually from **mean sea level to about 2,500 metre altitude**
- It is a **tropical plant** and requires **high heat** and **high humidity** for its successful growth.
- The **temperature** should be fairly high at **mean monthly** of **24°C**.
  - ✓ Sowing: 20°- 22°C
  - ✓ Growing: 23°-25°C
  - ✓ Harvesting: 25°-30°C
- The **average annual rainfall** required by rice is **150 cm**

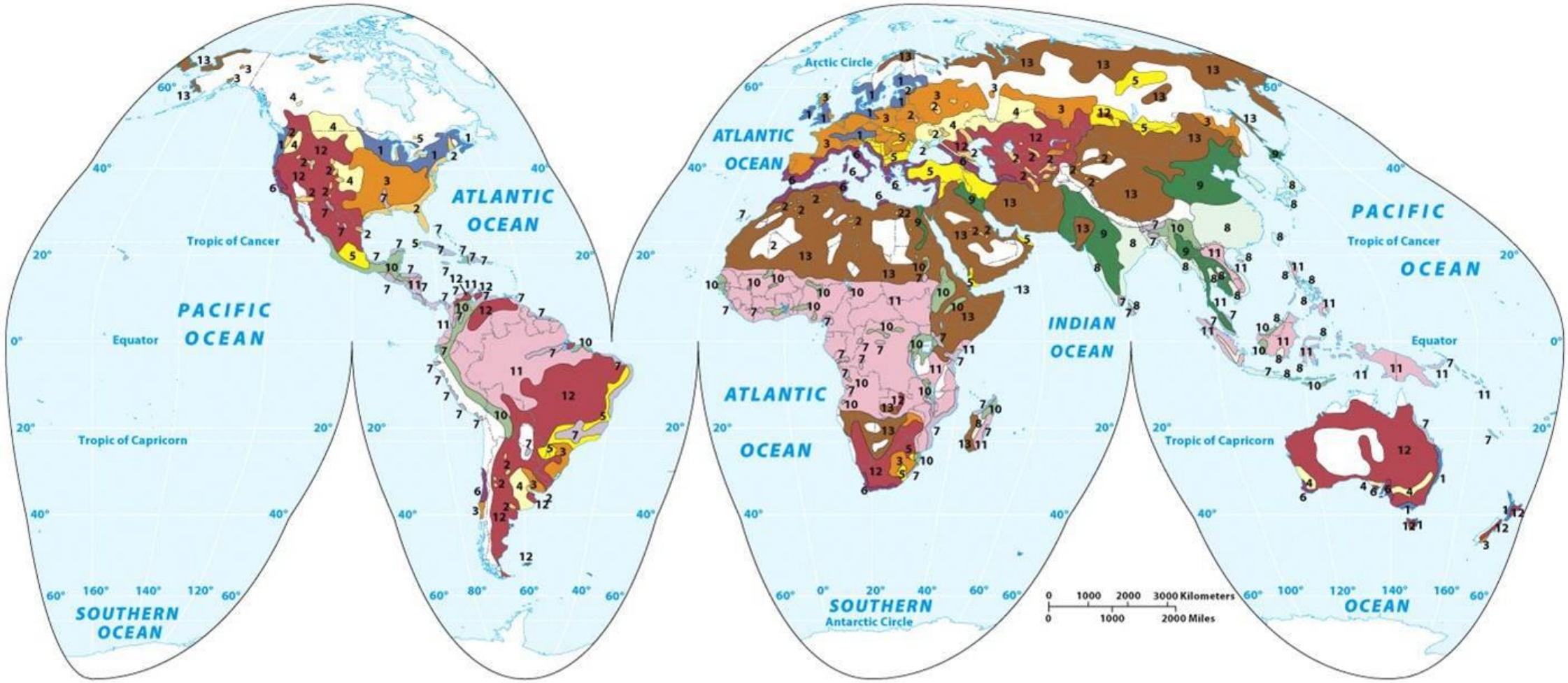
- **Regions**:
  - **South-Eastern China**
  - **Japan**
  - **India:** West Bengal, Bihar, U.P., Kerala, coastal Andhra Pradesh, Tamil Nadu

    Punjab**,** Haryana **(*Irrigation*)**
  - **Philippines**
  - **Indonesia**

6. Intensive Subsistence without Paddy

- Neighboring Rice regions
- **Difference**?
  - ✓ **Climate**: Lack of moisture, comparatively drier, short-growing season
  - ✓ Farming regions are generally **inland**
  - ✓ **Irrigation** supports cultivation but comparatively on a small scale
  - ✓ Crops are same (apart from rice)
  - ✓ **Wheat** is the dominating crop
  - ✓ **Densely populated** regions but less dense in comparison with Paddy dominating regions
  - ✓ Suffers from frequent **famines**, **drought**, and sometimes **flood** due to **erratic rainfall**.
- **Similarity in method of cultivation**

- **Regions**:
  - **Eastern China**
  - **India: Punjab, Haryana, Western U.P., Gujarat, Maharashtra, Karnataka**
  - **Pakistan**
  - **Inland regions of Myanmar, Thailand, Vietnam**
  - **Egypt (Nile river valley), Euphrates and Tigris river plains**



WORLD AGRICULTURE

1 Dairying

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Nonagricultural Areas

7. Commercial Plantation Crop Tillage
व्यापारिक बागाती कृषि

- Commercialization of Intensive subsistence tillage and Rudimentary sedentary tillage by **Europeans and Americans** in limited areas. (Their colonies)
- **Plantation**:
  - Production in tropical regions **consumption in middle latitudes**
  - यह कृषि **उष्ण कटिबंधीय क्षेत्रों** में मुख्यतः **नकदी फसलों** का उत्पादन करने हेतु प्रचलित है।
  - Every bit of produce is sold (Degree of Commercialization)

    उत्पादन का **अधिकांश भाग निर्यात** किया जाता है।
  - **Capital, Technicians, Management (Outsiders) & Labor (Local)**
  - **Plantation crops** (Cash-crops): Tea, Coffee, Sugarcane, Oil-palm, Cocoa, Tobacco, Rubber, Cotton, Groundnut, Jute

    मुख्य उपज: रबड़, ताड-तेल, कपास, गरी, चाय, कहवा, केला, गन्ना, जूट आदि हैं।

7. Commercial Plantation Crop Tillage… व्यापारिक बागाती कृषि …

- प्लान्टेशन पर फार्मिंग **विशेष कौशल द्वारा** और जहाँ संभव होता है वहाँ **मशीनों व उर्वरकों**, **कीटनाशक दवाओं व रोगनाशक रसायनों का प्रयोग** कर की जाती है।
- बगाती फसलों की **समस्त प्रक्रिया फार्मों पर** ही पूर्ण कर निर्यात हेतु उपलब्ध की जाती है ।
- **Farm** size is **large**
- Farms are **connected** with major railways and roadways to export produce
- Crops have **international market**
- **Infrastructural development for laborers** and their families livelihood

- Regions: Narrow Coastal belts of Tropical and Sub-tropical regions; High lands (India)
  - ✓ **Asia**: North-eastern states in India, Indonesia,
  - ✓ **Africa**: South Africa, Guinea Coast, Mozambique
  - ✓ **South America:** Brazil, Columbia, Peru
  - ✓ **Middle America:** Mexico, West Indies
  - ✓ **Australia:** Queensland Province, Papua New Guinea

- **Commercial plantation crop tillage occupies in aggregate a very small acreage, compared to any of the other types of agricultural land occupance.**

Summary so far…

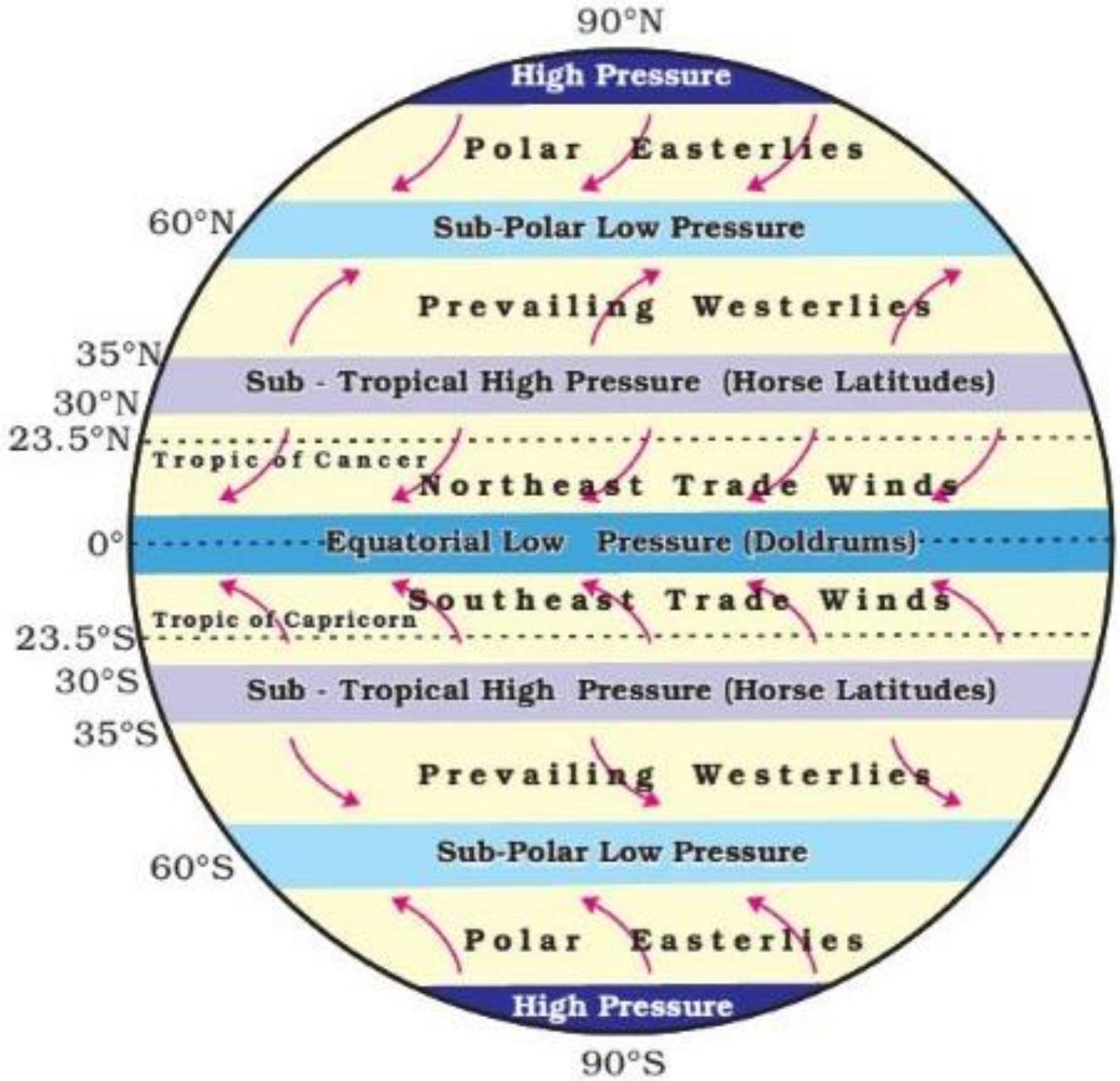
- In contrast with the two dryland types of agricultural occupance the remaining **systems of humid low latitudes depend largely on tillage**.
- **Livestock is excluded**: Wholly with minor exceptions.
- **Subsistence is the primary objective** of the farmer (Commercial Plantation is a n exception)
- The systems discussed so far covers a **large part of the earth tilled and grazed areas**.
- **Supports nearly 70% of the world's population.**
- The next remaining agricultural systems include principal commercial systems fo agriculture in the world.

8. Mediterranean Agriculture
भूमध्यसागरीय कृषि

The term 'Mediterranean agriculture' applies to the agriculture done in those regions which are having Mediterranean type of climate

Climate:

- ✓ **Summers**: Long, **dry** & hot
- ✓ **Winters**: (Mild) Warm and **wet**
- ✓ **Temperatures**: Winters: 3°C to 13°C
  Summers: 22°C
- ✓ **Rainfall**: Fairly dry climate with 50 cm annual rainfall **only occurring in winter season.**

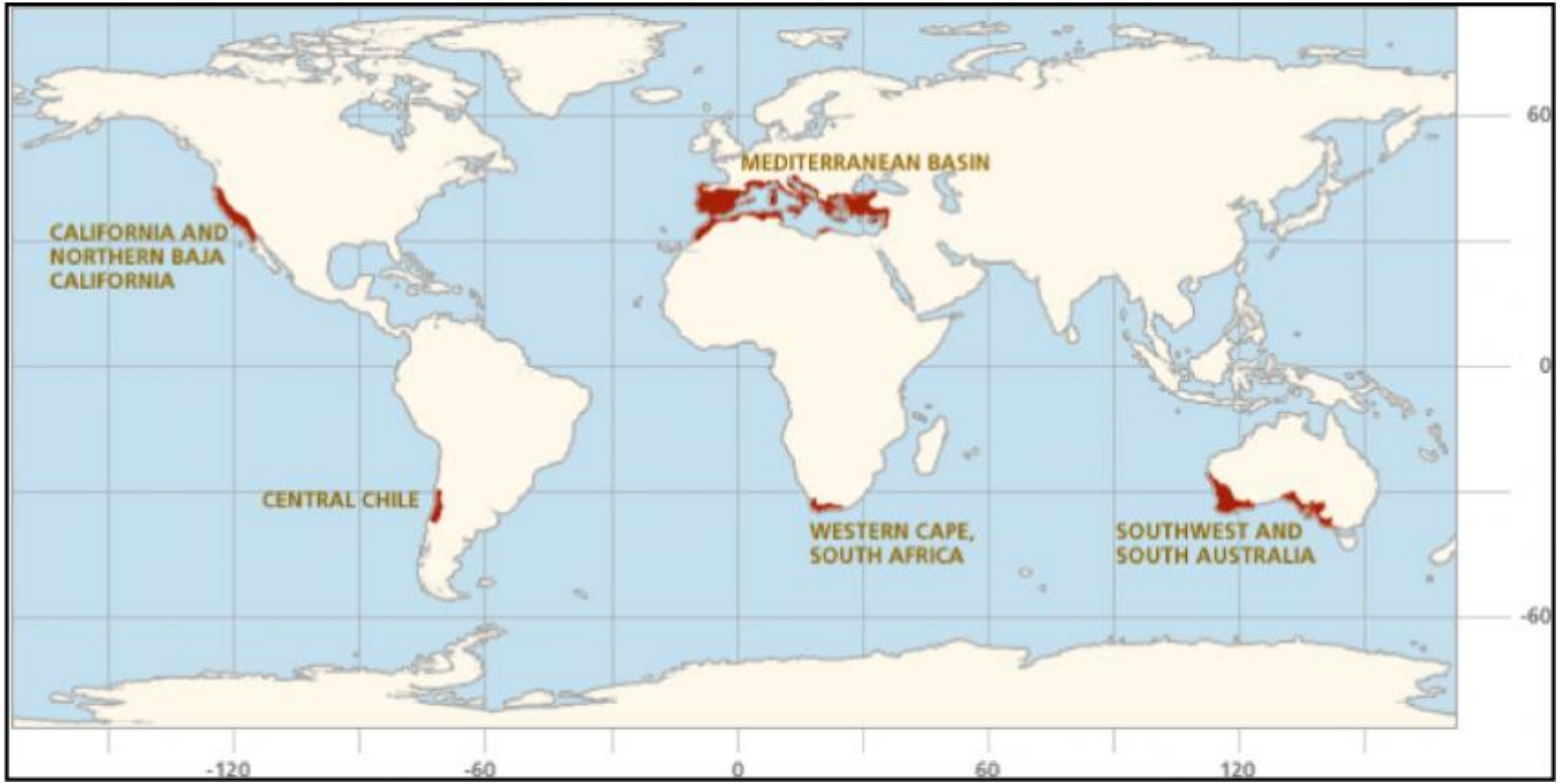

90°N
High Pressure
Polar Easterlies
60°N
Sub-Polar Low Pressure
Prevailing Westerlies
35°N
Sub - Tropical High Pressure (Horse Latitudes)
30°N
23.5°N
Tropic of Cancer
Northeast Trade Winds
0°
Equatorial Low Pressure (Doldrums)
Southeast Trade Winds
Tropic of Capricorn
23.5°S
30°S
Sub - Tropical High Pressure (Horse Latitudes)
35°S
Prevailing Westerlies
Sub-Polar Low Pressure
60°S
Polar Easterlies
High Pressure
90°S

Mediterranean Agriculture

Location:

- ***Western parts of the continents***
  महाद्वीपों के पश्चिमी भागों पर
- **30º - 45º Latitudes in both hemispheres**

1. **The Mediterranean Basin**: France, Spain, Italy, Algeria, Morocco, Turkey, Tunisia, Israel, Northern Nile valley, i.e., all the regions around Mediterranean Sea
2. **California** in USA
3. **Central Chile**
4. **Southern part of South Africa** (**Cape area**)
5. **Lower Murray – Darling basin of South Australia**


MEDITERRANEAN BASIN
CALIFORNIA AND NORTHERN BAJA CALIFORNIA
CENTRAL CHILE
WESTERN CAPE, SOUTH AFRICA
SOUTHWEST AND SOUTH AUSTRALIA
60
0
-60
-120
-60
0
60
120

Mediterranean Agriculture…

Characteristics:

- ✓ A specialized kind of **commercial व्यापारिक** agriculture
- ✓ **Subsistence निर्वाहक** agriculture (wheat, barley and vegetables) occurs side by side with commercial farming (***horticulture*** & ***viticulture***).
- ✓ **Nucleated** settlement **एकाकी बस्ती** is a rule

➢ The **four main aspects पक्ष** of Mediterranean agriculture are:

1. **Orchard (बगीचे)farming: "Orchard lands of the world"**
2. **Viticulture अंगूर की खेती (2/3rd wine production of world)**
3. **Cereal अनाज and vegetable सब्ज़ियां cultivation**
4. **Limited animal husbandry सीमित पशु पालन** (hot summers, lack of water & grazing lands)

Mediterranean Agriculture…

1. Orchard farming:

- ✓ It represents a **highly specialized commercial agriculture** here.
- ✓ The world supply of citrus fruits, olives and figs comes almost exclusively from Mediterranean lands.
- ✓ **Citrus fruits खट्टे फल** (oranges, lemons, grapefruits) (नीम्बू , संतरे ,अनार), **olives जैतून** and **figs अंजीर**. Olives and figs are indigenous to the Mediterranean region
- ✓ **Fruits** are sometimes raised on **unirrigated ground असिंचित भागों** and draw their moisture supply from deep in the soil.
- ✓ **Irrigation is**, however, **practiced** in many areas, especially **California, Israel and parts of France, Spain and Italy.**

Mediterranean Agriculture…

2. Viticulture: अंगूर की खेती

- ✓ **Viticulture** or **grape cultivation** is a specialty of the Mediterranean region.
- ✓ It represents a **very intensive सघन form of farming** requiring not only good conditions of moisture, temperature and soil but also much personal care.
- ✓ Grapes raised in different parts of the Mediterranean lands have **distinctive flavors विशिष्ट स्वाद** and **wines made in the various areas maintain their exclusive names.**
- ✓ The great variation in relief, climate, soil and methods of preparation has produced many famous wines.

Mediterranean Agriculture…

2. Viticulture…

- ✓ Few examples are given below -
  - ***Sherry*** from the Andalusia district of southern **Spain**
  - ***Port wine*** from the Doura basin of western **Portugal**
  - ***Marsala*** from the Isle of **Sicily**
  - ***Anti*** from the Chianti Hills of **Tuscany**
  - ***Asti*** from the Piedmont district of northern **Italy**
- ✓ **In France wine-making is a national industry राष्ट्रीय उद्योग.**
  - ***Champagne*** comes from the **Paris** basin
  - ***Burgundy*** from the limestone scarp-lands of the **Cote d'Azure**
  - ***Claret***, ***Brandy*** (Cognac) ***Bar sac*** and ***Bordeaux*** from different parts of **western France**, especially the basin of Aquitaine
- ✓ Wines are also produced in the Mediterranean lands of Australia, South Africa and South America, though these are not as famous.

Mediterranean Agriculture…

3. Cereal and vegetable cultivation:

- In acreage, cereal crops are the most important in Mediterranean agriculture
- In most Mediterranean countries cereals often occupy about **half the total cultivated acreage** and provide enough grain for **home consumption**.
- **Wheat गेहूँ**, especially hard winter wheat, is the **principal food grain मुख्य खाद्यान फसल**
- **Barley जौ** is grown in the **poorer areas**
- The **warm and sunny Mediterranean climate** also allows a **wide range of other food crops** and **green vegetables** to be harvested.
- **Beans, lentils, onions, tomatoes, carrots, sugar beet फलियाँ, दालें, प्याज, टमाटर, गाजर, चुकंदर** and all the leafy vegetables of the warm temperate latitudes are grown.

Mediterranean Agriculture…

4. Limited animal husbandry:

- Mediterranean agriculture is also characterized by **limited animal husbandry**, which **survives on grasslands घास के मैदान** available here.
- In areas like Lombardy plain, Ebro basin, San Joaquin valley of **California**, **dairy farming दुग्ध उत्पादन** is important.
- In **mountain areas** the practice of '**transhumance**' **मौसमी प्रवास** :
  - ✓ **moving the cattle up** to mountain pastures in the ***summer*** and,
  - ✓ returning them to the **valleys** in ***winter***,

  is a common thing.

9. Commercial Grain Farming

- Commercial grain farming is an **extensive** and **highly mechanized** form of agriculture.
- Bulk of the grain harvest is exported. **"Commercial grain farming is the creature of industrial revolution"**.
- **Crop cultivation dominates**. Livestock is secondary and only for local consumption
- Exercised on **previous lands of nomadic herders** or **livestock ranchers**.
- Commercial grain farming has successfully developed in **economically developed temperate grasslands:**

  Prairies, Pampas, Velds, Downs, Steppes

- **Population density is low** (50-200 persons/ sq km)
- **Availability of land is high**
- Only a **small fraction of the population** is **dependent on agricultural activities**.

Use of Machines in fields

Location:

The areas lie **between Humid and Semi-arid** climate. The region reflects a ***continental (inland) position***

- **North America:**

  i) The largest area runs from *Alberta*, *Saskatchewan*, *Manitoba* to *Dakotas*

  ii) Another centre is in *Kansas*, eastern *Washington*, *Oregon*, eastern *Illinois* and northern *Iowa*

- **South America:**

  Pampas Grassland region of ***Argentina***

- **Eurasia:**

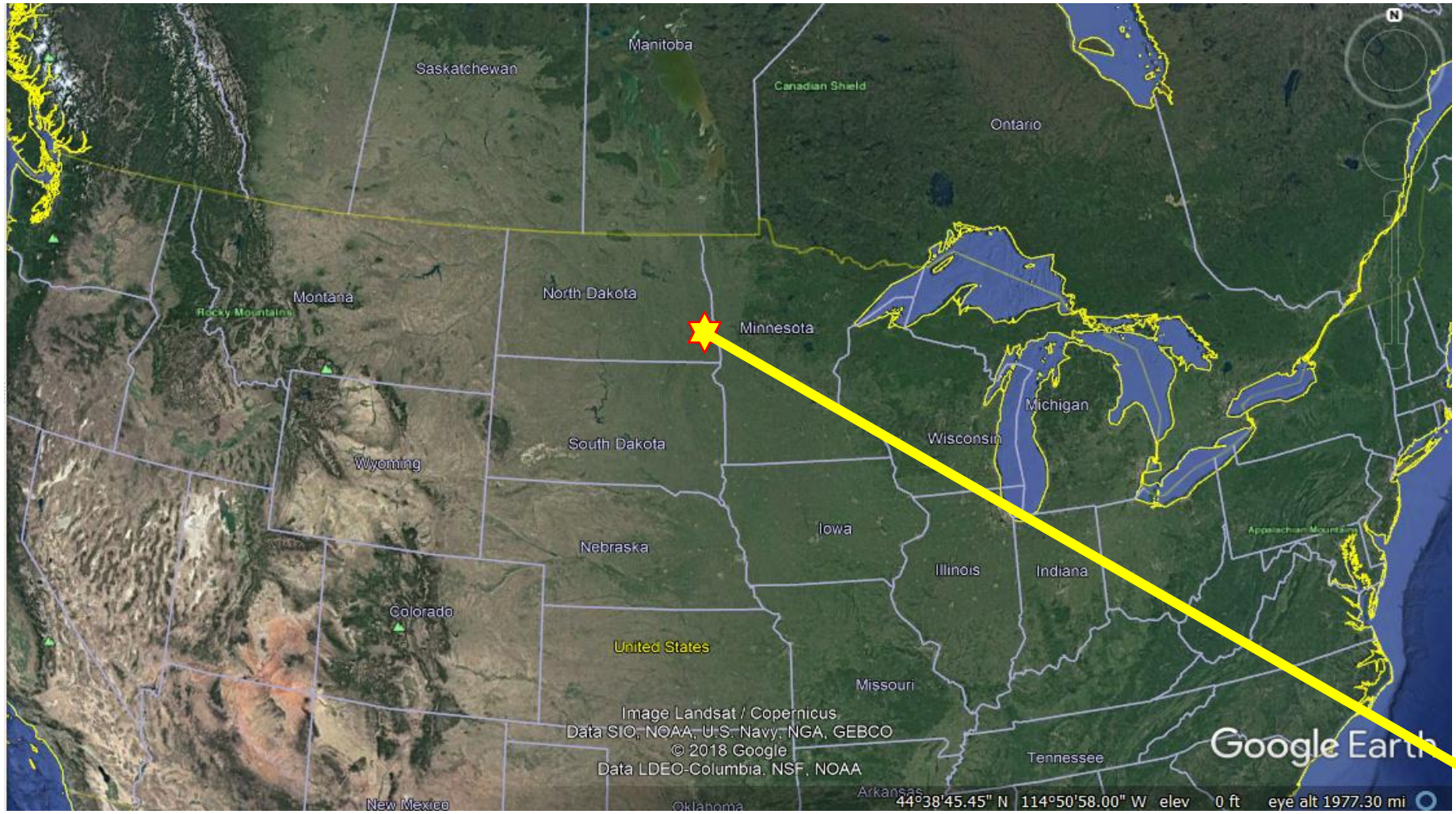
  Ukraine, *Central Siberia* (Steppes), *Central Asia* (Semi-arid region)

- **Australia:**

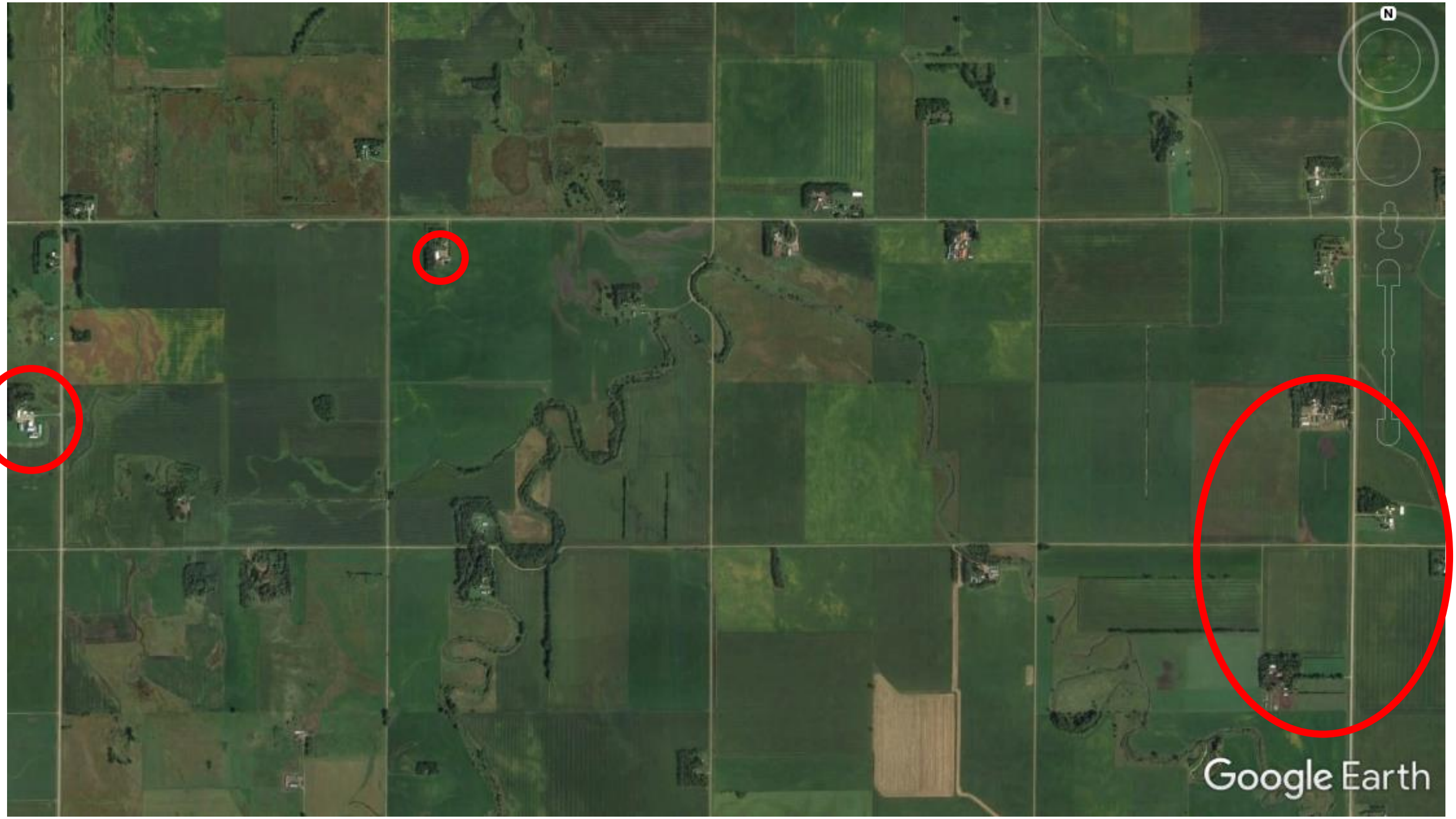
  South-west region

- **New Zealand:**

  Canterbury plains



Fields in North Dakota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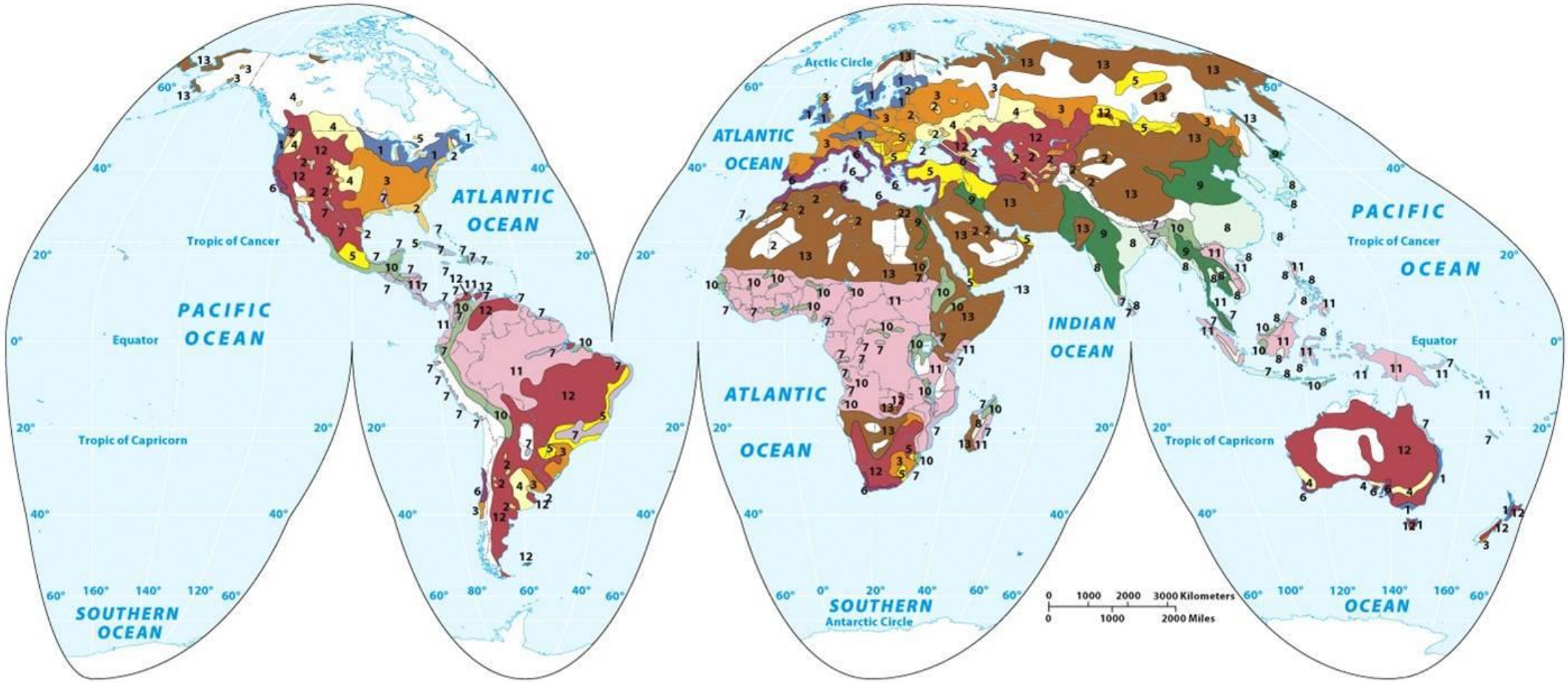

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Nonagricultural Areas

Characteristics:

1. Specialization in single crop:

- ✓ Highly specialized and generally **one single crop** is grown.
- ✓ ***Wheat monoculture*** is practiced. It is **a cash crop** here.
- ✓ Both **winter wheat** and **spring wheat** is grown in these areas.
- ✓ ***Maize, flax, barley*** and ***millets*** are grown in drier parts

2. Farms are very large:

- ✓ Ranging from **240 to 16,000 hectares**
- ✓ **Land is cheap** therefore large holdings is observed
- ✓ Low density of population facilitates **higher per capita land availability**

3. **Highly mechanized:**
   - ✓ Entire process of cultivation (**from ploughing to harvesting**) is mechanized
   - ✓ ***Tractors, harvesters, winnowers, thrashers*** and other machines are employed during cultivation
   - ✓ Apart from these, for marketing, ***hayracks, wagons, mowers, stokers*** and even ***airplanes for spray of pesticides*** are also necessary

4. **Comparatively low yield per acre:**
   - ✓ Quite **low** *as compared to intensive tillage regions*
   - ✓ **Average yield** is seldom more than *1,700 kg per hectare*

5. **Lack of manual labour:**
   - ✓ Due to the **development of secondary and tertiary sectors** (mining, manufacturing, trade and commerce) in this whole region, agriculture is no more a lucrative occupation
   - ✓ As population density is low and better scope of employment in other sectors exist, **labour becomes costly**

6. Transport and communication:

- ✓ **Speedy and smooth transport system** is a prerequisite here as entire dependency is on export market
- ✓ The area is crisscrossed by **super highways** and **railways** to facilitate smooth **export business**.

7. Farm ownership:

- ✓ Most of the farms are owned by **individuals**. *Co-operative* and *state participation* is almost absent

8. Climatic influence:

- ✓ *Low rainfall* (30 to 60 cm), bright sunshine during harvesting season and, little irrigation *crop failure* risks

9. Settlements:

- ✓ **Dispersed** settlements are observed. Known as '***Farmsteads***'
- ✓ Residential to commercial ratio is very low

10.Commercial Livestock and Crop Farming

- Aka "**Mixed farming**". Commercial use of both livestock and crops
- **Location**:
  - **Mainly Europe**, and
  - also in the **humid middle latitudes** of all other continents except Asia

Major regions:

1. Ireland: Middle Europe (Temperate region)
2. U.S.A. (Eastern part): Ohio, Indiana, Illinois, Virginia, Oklahoma, Tennessee, Nebraska, Iowa

***Other*:**

Mexico

Southern Brazil

Argentina

Eastern South Africa

South Eastern Australia

10.Commercial Livestock and Crop Farming

Characteristics:

- Supporting **dense population**
- **Urban** and **industrial** societies
- **High level of commercialization**: Products are sold at high prices in the market
- **High returns** of agricultural products
- **Standard living of famers** are far better as compared to others practicing the same

10.Commercial Livestock and Crop Farming

- Rainfall all year round and dry winters
- **Variety of soils (**high use of fertilizers**)** produces **variety of crops**
- Climate: Warm – **Wheat** (*Humans*), **Corn & Oats** (*Stock*)

  Dry/Cold – **Barley** (*Jo*)
- Fine variety of grass/ (Pasture lands)
- ***A major portion of agriculture produce is used by farm animals***
- **Crop rotation** is practiced

10.Commercial Livestock and Crop Farming

- Farm unit is characterized by : *House*, *ranch* and *machines*
- *Farm size:*

  England: 10 – 15 hectare

  USA: 40-100 hectare
- Use o f machines
- Careful attention to **breeding** and **plant selection**
- **Training** to make **farmers** more efficient
- ***Concentration of Marketing towns:*** in a cash system there is much trade.