

## Nutrient cycling -

\* Nutrients are Inorganic Raw material

\* Also known as -

(1) Biogenetic Nutrients - As they become component of living org.

(2) Biogeochemicals - As they obtained from earth.

→ The repeated circulation of Nutrients Abiotic and Biotic components of ecosystem is called Biogenetic/Biogeochemical cycle.

\* In ecosystem Nutrient cycling occurs  
but

\* Energy Never circulates as it flows unidirectionally that's why a continuous flow of solar energy is required to sustain the ecosystem.

## Types of Biogeochemical cycle :-

Mainly Two Types -

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(1) Gaseous cycle -

- Nutrients occurs in the form of Gas/vapour

- Nutrient pool is atmosphere or Hydrosphere

- They are nonmineral in nature

- cycling is quite rapid

ex - C, H, O, N.

[2]. Sedimentary cycle -

- Nutrients are Nongaseous
- They are minerals in nature
- Nutrient Pool is Earth's crust (Lithosphere)
- Cycling is relatively slow

ex - S, P, Ca, Mg, Zn, Cu

Input of Nutrients in Ecosystem -

(1) Dry deposition - Particulate state or dust fall

(2) Wet deposition - In dissolved state  
 - Through Rain  
 - Flowing water (siltation)

(3) Weathering of Rocks -

(4) Biological N<sub>2</sub> Fixation -

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Output of Nutrients from Ecosystem -

output from one ecosystem usually become input of another ecosystem.

(1) Runoff-water - through rain

(2) Soil erosion - through Rain/wind

(3) Denitrification -  $NO_3 \rightarrow N_2$  (Pseudomonas & Thiobacillus denitrificans)

(4) Economic output - Harvesting crop  
 - Removal of log from forest.

# Phosphorus cycle -

\* Imp constituents of -

- DNA, RNA, ATP
- Plasma memb
- Bones, Teeth.

\* Plant absorb them as orthophosphate ( $PO_4^{--}$ )

\* Mycorrhiza Helps in P absorption in Higher plants.

\* Guano - is Bird excreta is rich in P

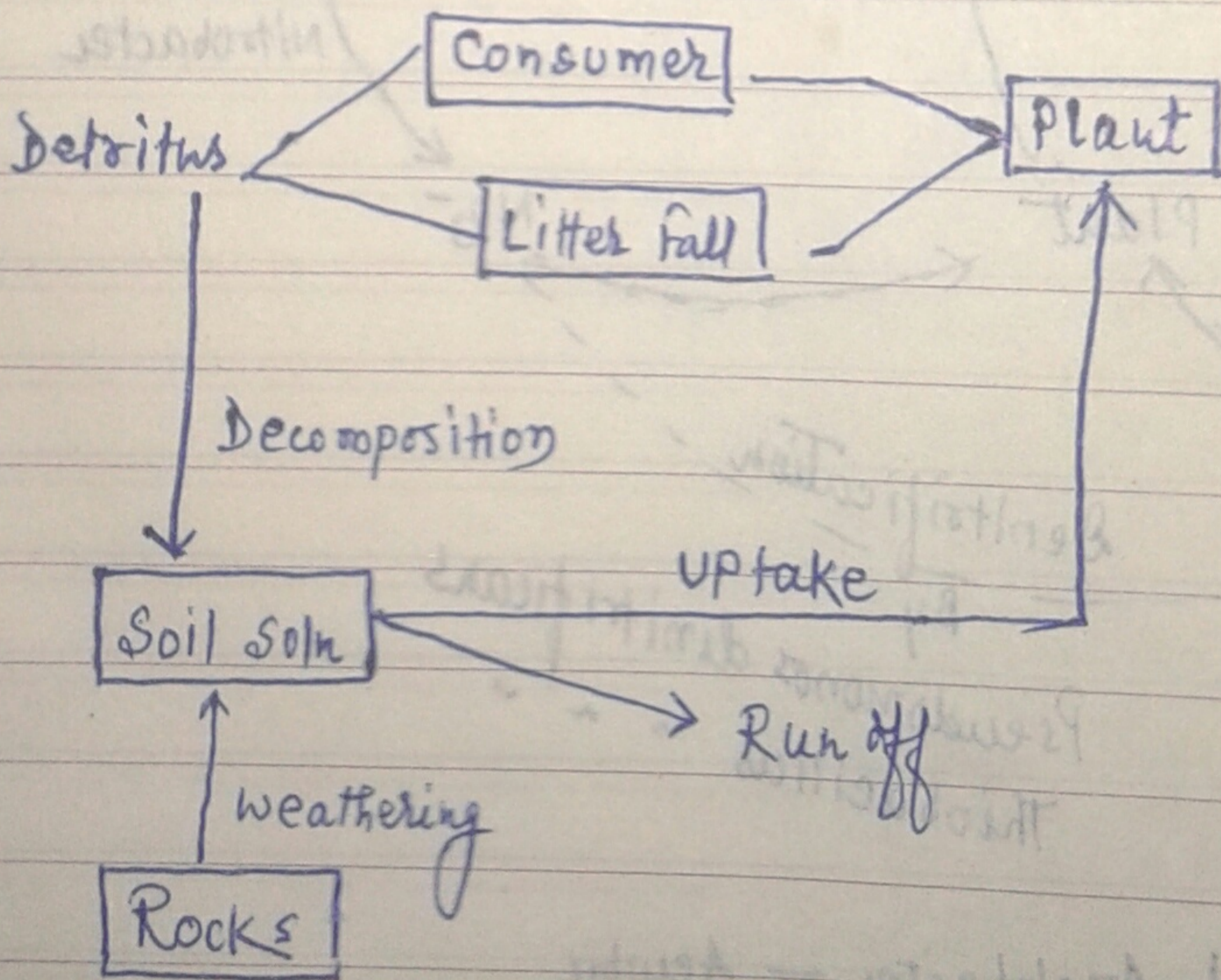
↳ Living nearby sea coast & Island

- Aquatic ecosystem Generally receive higher

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Quantity of  $PO_4^{--}$  due to soil wash, detergent Industrial effluents etc.

\* Phosphate settling at the bottom of Lake/Ocean is lost to cycling Pool.



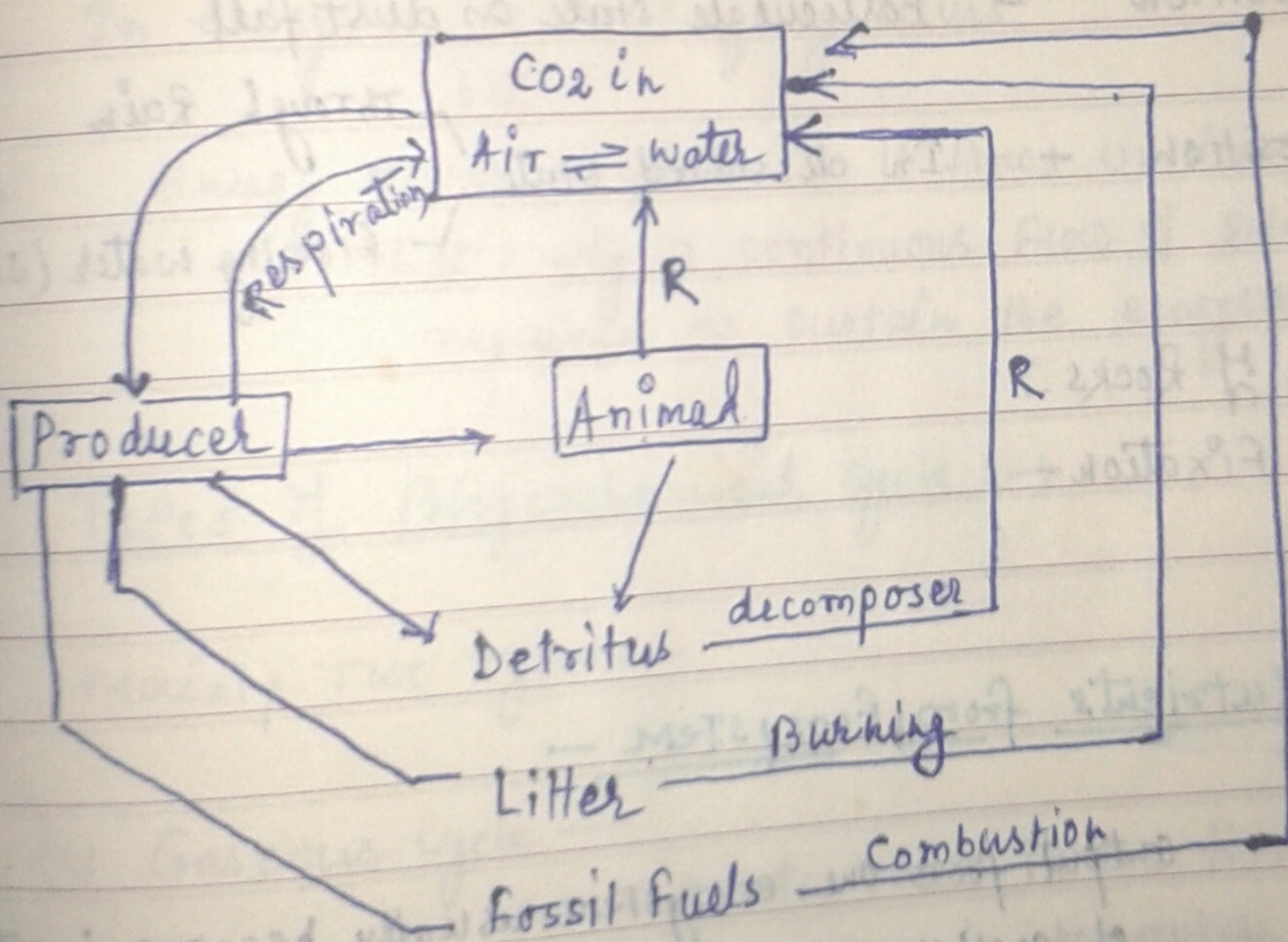
# Carbon cycle →

It is present in every organic substance.

Source —

- (1) Atmosphere — Free  $\text{CO}_2$  (29%)
- (2) Hydrosphere — dissolved  $\text{CO}_2$  (71%) — Most  
— Mostly oceanic

Both (1) & (2) are Nutrient pool  
where Lithosphere is the Reservoir pool.



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## Ecosystem service →

→ are the Benefits provided by ecosystem processes to the envt.

→ Robert Constanza et al (2000) - valued the Ecosystem service B/w 16-54 (Average 33) Trillion dollar.

\* CO<sub>2</sub> Fixation

\* O<sub>2</sub> Release

\* Purification of Air

\* Biodiversity

\* Causes Rain

\* Check Flood

\* Check Soil erosion

\* Pollination

\* Nutrient cycling

\* Provide Food, Fibers  
Medicine, wood etc

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