**Paper 1: Living with the physical environment**

**Section B: The living world**

**Ecosystems**

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| * An **ecosystem** is
* Ecosystems can be any size. eg

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| Ecosystems depend on inputs | Important interrelationships link together the biotic and abiotic parts of the ecosystem:* Physical linkages –
* Chemical linkages –
 | **Biotic** – **Abiotic** – |
| The **grazing food web** comprises:* **Plants** or **primary producers**:
* **Herbivores** or **primary consumers**:
* **Carnivores** or **secondary consumers**:
* **Top carnivores**:
* These are known as the **apex predator**.

Depending on the amount of energy transfers in an ecosystem there may be primary, secondary, tertiary, quaternary (and so it continues) consumers. These represent the **trophic levels**. At each trophic level the biomass will get \_\_\_\_\_\_. | The **detrital food web** comprises **decomposers*** **Bacteria** and **fungi**
* **Detritivores** are larger organisms that speed up decay by feeding on dead material (detritus); these include earthworms, maggots, woodlice and carrion crow. These are referred to as **scavengers**.

The detrital food web is linked to the grazing food web.  |
| Ecosystems are incredibly **vulnerable to change**. Ecosystems can adapt to slow natural changes but rapid changes can have serious impacts. **Invasive species** **Agricultural fertilisers** | **Biomes** are **Climate affects biome distribution**. Climate and therefore biome distribution is affected by the following factors:1.2.3.4. |
| **Food chain** – **Food web** – **Nutrient cycle** – |

**Tropical Rainforests**

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| **Location of tropical rainforests**: | Largest rainforests | Why are levels of biodiversity high? |
| **Climate of tropical rainforests**: | Tropical rainforest **nutrient cycling** is rapid. Explain how this works. |
| The **four layers** (stratification) of the rainforest include:* .
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| **Plant adaptations in a tropical rainforest** cope with heavy rainfall & competition for sunlight::* **Emergents** -
* **Drip tips -**
* **Epiphytes** -
* **Lianas** -
* **Smooth bark**
* **Buttress roots** –
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| **Causes of deforestation in Malaysia, South East Asia**.Deforestation is the cutting down of trees often on a very large scale. The motivating factor for this is often monetary profit:* **Logging** –
* **Energy development** –
* **Mineral extraction** –
* **Commercial farming** –
* **Population pressures** –
* **Subsistence farming** –
* **Road building** –
 | **Impacts of deforestation in Malaysia**:* **Soil erosion** –
* **Loss of biodiversity** -
* **Contribution to climate change** -
* **Decline of indigenous tribes -**
* **River pollution**:.
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| **Economic gains from deforestation**: | **Economic losses from deforestation**: |
| **Deforestation rates:*** An area of tropical rainforest the size of China has been lost due to deforestation.
* Every 2 seconds an area of tropical rainforest the size of football field is destroyed.
 | **The case of Brazil**:* Historically Brazil has had rapid rates of deforestation.
* Much of the clearance was to create large cattle ranches.
* Fortunately since 2004 the rate of deforestation has fallen by 80% and is now at the lowest levels on record (although deforestation still occurs). Reasons for this reduction include:
	+ .
 |
| **Reasons to protect the tropical rainforest**:* **Biodiversity** –
* **Medicine** –
* **Resources** –
* **Water** –
* **Indigenous tribes** –
* **Oxygen** –
* **Climate** –
* **Climate change** –

. | **Sustainable management strategies**:The **aim** of sustainable management is:1. Protect the rainforests for future generations.
2. To allow the use of valuable rainforest resources in a manner that does not harm the environment.

**Strategies** for sustainable management occur at **three different levels** – local, national & international. The strategies can take two main forms:1. Logging is allowed in a sustainable manner.
2. Areas are protected with no logging/clearance allowed

Sustainable management methods include:* **Selective logging & replanting** –
* **Ecotourism** –
* **Conservation & education** –
* **International agreements –**
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**Hot Deserts**

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| **Hot desert characteristics**: | **Hot desert soils**: | **Plant adaptation to hot deserts**: |
| **Desert animal adaptations:****Camel adaptations:** | **Thar Desert:** |
| **Thar Desert development opportunities:*** **Mineral extraction**
* **Energy**
* **Farming**
* **Tourism provides jobs for the locals**
 | **Challenges for development in the Thar Desert:*** **Extreme heat of over 50°C in the summer.**
* **Water supply**
* **Accessibility**
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| **Indira Gandhi Canal** |
| **Desertification** is the process by which fertile land becomes desert, typically as a result of drought, deforestation, or inappropriate agriculture. * Land on the edges of an existing desert is most vulnerable as these are ecologically fragile.
* Causes can be classed as natural or human:
	+ Natural – drought.
	+ Human –
* Once the land/soil is exposed to the weather it will be eroded by the wind & rain.
* One billion people live in areas at risk from desertification.
* Can affect rich & poor countries alike. In Europe Spain is vulnerable to desertification.
 | **Commercial farming** using too much irrigation can lead to **salinisation.** |
| **Reducing desertification in hot deserts** |
| **Reforestation** |  |
| **Earth dams** |  |
| **Magic stones** |  |
| **Coppicing** |  |
| **Terracing** |  |
| **Crop rotation** |  |
| **Animal husbandry** |   |
| **Earth bunds** |  |
| **Shelter belts** |  |
| **Irrigation** |  |
| **GM Crops** |  |
| **National Parks** |  |