

# Unit 4

# Living with Tropical Cyclones

**Learning Outcomes** – On completion of this unit you should be able to:

- identify the effects of tropical cyclones on people's social activities
- identify the effects of tropical cyclones on people's economic activities
- explain how people's actions can decrease the effects of cyclones
- explain how people's actions can increase the effects of cyclones
- apply a geographic idea.



## Social and Economic Effects

- Tropical cyclones affect both *social* and *economic* activities.
- The scale of the effects will depend on the size, intensity and duration of a tropical cyclone.
- The effects are closely related to the sequence of natural events – *before, during* and *after* a tropical cyclone.

### BEFORE:

#### Preparation (hours–days)

- Cyclone warnings are broadcast. A **civil emergency** may be declared.
- Preparations for the tropical cyclone begin. Windows are boarded up and roofs secured. Schools and businesses close early. Employers and employees suffer some loss of income.
- In villages, ripe fruit may be hurriedly picked from nearby trees, animals rounded up, boats brought in from the sea, and loose materials tied down.

### DURING:

#### Survival (hours–days)

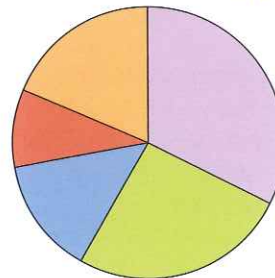
- All economic activity stops.
- People shelter in the strongest buildings available, often stone churches.
- People are fearful, and many pray for their survival.
- High winds, floods, landslides and stormy seas cause widespread destruction.
- Many poorly constructed homes are destroyed.
- Deaths and injuries are caused by collapsing buildings and flying sheets of roofing iron.
- Telephone and power lines are broken by falling trees, wind and floods. Live power lines on the ground are a serious hazard.
- The **eye** brings a brief period of relief, then the full fury of the cyclone returns.

Sequence of natural events	Human response
• cyclone approaches	• warnings issued
• cyclone strikes	• preparation
• eye	• shelter
• cyclone strikes	• emergency aid
• cyclone moves away	• shelter
	• emergency response
	• clean-up
	• economic recovery
	• planning

Low intensity
  High intensity



**Causes of Death – Tropical Cyclones Eric and Nigel Fiji 1985**



- collapsed buildings
- drownings
- flying debris
- electrocution
- other

(Total deaths = 28)

## AFTER:

### Emergency response (days)

- Search and rescue begins. The injured are treated, the dead buried.
- Survivors may be evacuated if their homes are destroyed and there is a safer place to go to.
- A *civil emergency* may be declared and disaster relief plans put into operation.
- Grief and shock affect many people. Health hazards may arise from mosquitoes breeding in flooded areas, and polluted water supplies.

### Clean-up and assessment (days–weeks)

- The clean-up begins. People rely on traditional community values and extended family support.
- The government assesses the damage, and **overseas aid** may be requested.
- Temporary homes and emergency food and medical supplies are provided, much of it by international **aid agencies**. Health care is a priority.
- Essential services are restored as soon as possible. Some businesses reopen but many remain closed, causing further loss of income. Shortages in shops cause price rises.

### Repair and reconstruction (months–years)

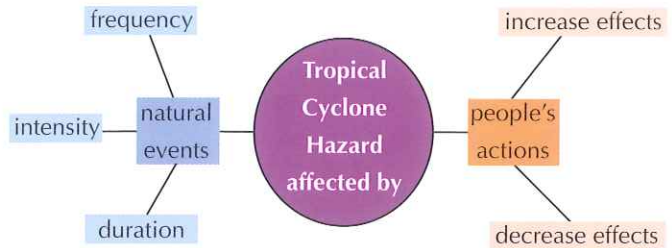
- **Subsistence economy** recovers first. **Cash economy** takes longer.
- Food crops are planted and traditional houses repaired with local materials, if they are still available. Some villages are abandoned.
- More businesses reopen, but some have closed permanently. The tourist industry is seriously affected. Overseas media reports result in holiday cancellations. Jobs and income are lost. **Emigration** increases.
- Pacific Island communities overseas start raising funds for repairing their home villages. Rebuilding churches is usually a priority.

### Recovery (years)

- Higher prices and unemployment may last for many years.
- The high cost of reconstruction increases foreign debt. Economic recovery is almost totally dependent on overseas aid.
- Overseas aid allows repairs to social (e.g. schools) and economic (e.g. roads) infrastructure to begin.
- Tourism eventually recovers, but many tourists have been attracted elsewhere. Other industries, such as food processing, may not recover.
- Plans for reducing the effects of future cyclones are prepared and implemented.
- Life goes on. Tropical cyclones will always be part of the Pacific way of life.

## Managing the Tropical Cyclone Hazard

- Natural hazards are affected by:
  - changes in the natural environment
  - changes in the cultural environment.



- **Global warming** is believed to be making tropical cyclones more frequent and powerful. By raising sea levels it also exposes more land to wave and storm surge damage.
- People cannot *control* or prevent tropical cyclones, but their actions can *increase* or *decrease* their effects.
- Efforts to prepare people and property for future natural hazards in order to minimise their harmful effects is known as **emergency management**. All South-west Pacific island nations have established government agencies to assist with emergency management.

## Emergency Management

- South-west Pacific island nations can reduce the effects of tropical cyclones through the following.

### 1. Better forecasts and warnings

- **Satellites** can track cyclones.
- Tropical cyclone warning centres.
- Radio communication links to all villages.
- Internet sites show live cyclone tracks.



### 2. Better preparedness

- Set up **Civil Defence** organisations.
- Education about what to do *before*, *during* and *after* tropical cyclones.

### 3. Better planning

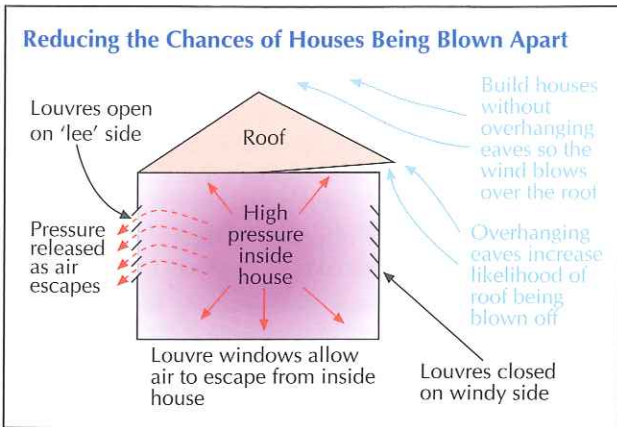
- Avoiding hazardous sites for settlements. e.g. low-lying coastal areas, valleys which act as wind funnels or are liable to flooding.

### 4. Better agricultural practices

- Growing crops that are more cyclone-resistant.
- Harvesting *before* cyclone season.

### 5. Stronger buildings

- Better building designs.
- Stronger building materials.
- Better construction methods.



### 6. Seeking overseas aid

- **Overseas aid** to pay for expensive measures to reduce cyclone effects.

## Increasing the Effects

■ Inadequate long-term emergency management may result in an increase in the effects of tropical cyclones through population growth, **urbanisation** and **economic development**.

- Pacific Island nations have high *birth rates* and rapidly growing populations. As a result more people are being exposed to the cyclone hazard.
- The increasing *concentration* of people in coastal towns is exposing greater numbers to such hazards as storm surges, flooding and building collapse.
- Imported *modern building materials* are stronger than traditional materials, but also much more expensive. If they are used incorrectly to cut costs they *increase* the tropical cyclone hazard; e.g. loosely attached roofing iron; unreinforced concrete block walls.
- *Cash crops* have replaced the growing of more cyclone-resistant traditional food crops.
- In the South-west Pacific the tropical cyclone hazard is greater now than ever before.

## Skill

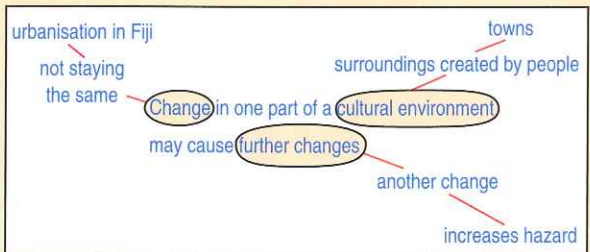
## Applying Geographic Ideas

**Important geographic idea:** *Change in one part of an environment (natural or cultural) may cause further changes.*

To help you *apply* an important geographic idea, follow these steps.

1. Write the *important geographic idea* in the centre of your page.
2. Highlight the *key words*.
3. Link each key word to a simple *definition* of the word. (Use your own words/diagrams.)
4. Link each definition to at least one specific *example* related to the topic.
5. Write a short *paragraph* to show your understanding of how the geographic idea can be applied to the topic being studied.

*Change in one part of a cultural environment may cause further changes*



In Fiji, urbanisation has changed the cultural environment causing an increase in the country's tropical cyclone hazard. More people are now living in towns that are generally located in low-lying coastal areas. Here they risk being affected by storm surges and floods when tropical cyclones strike. There is also greater use of permanent building materials in urban areas. Poorly attached roofing iron and unreinforced concrete block walls increase the tropical cyclone hazard.

### Key Points Summary

- The cultural events associated with a tropical cyclone follow a predictable sequence – preparation, survival, emergency response and recovery.
- The recovery phase is the longest, and may continue for years.
- Tropical cyclones have social and economic effects.
- People cannot control tropical cyclones but their actions can increase or decrease their effects.
- In the South-west Pacific the tropical cyclone hazard is increasing.