

Paper Reference 4GE1/01
Pearson Edexcel
IGCSE (9–1)

Geography

Paper 1: Physical Geography

Tuesday 21 May 2019 – Afternoon

Resource Book

Do not return this Resource Book with the Question Paper.

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For some Figures there is a modified colour and modified black and white diagram. You may use whichever version is easier for you to view. Some diagrams are only in modified colour but you are then provided with a description of the diagram.

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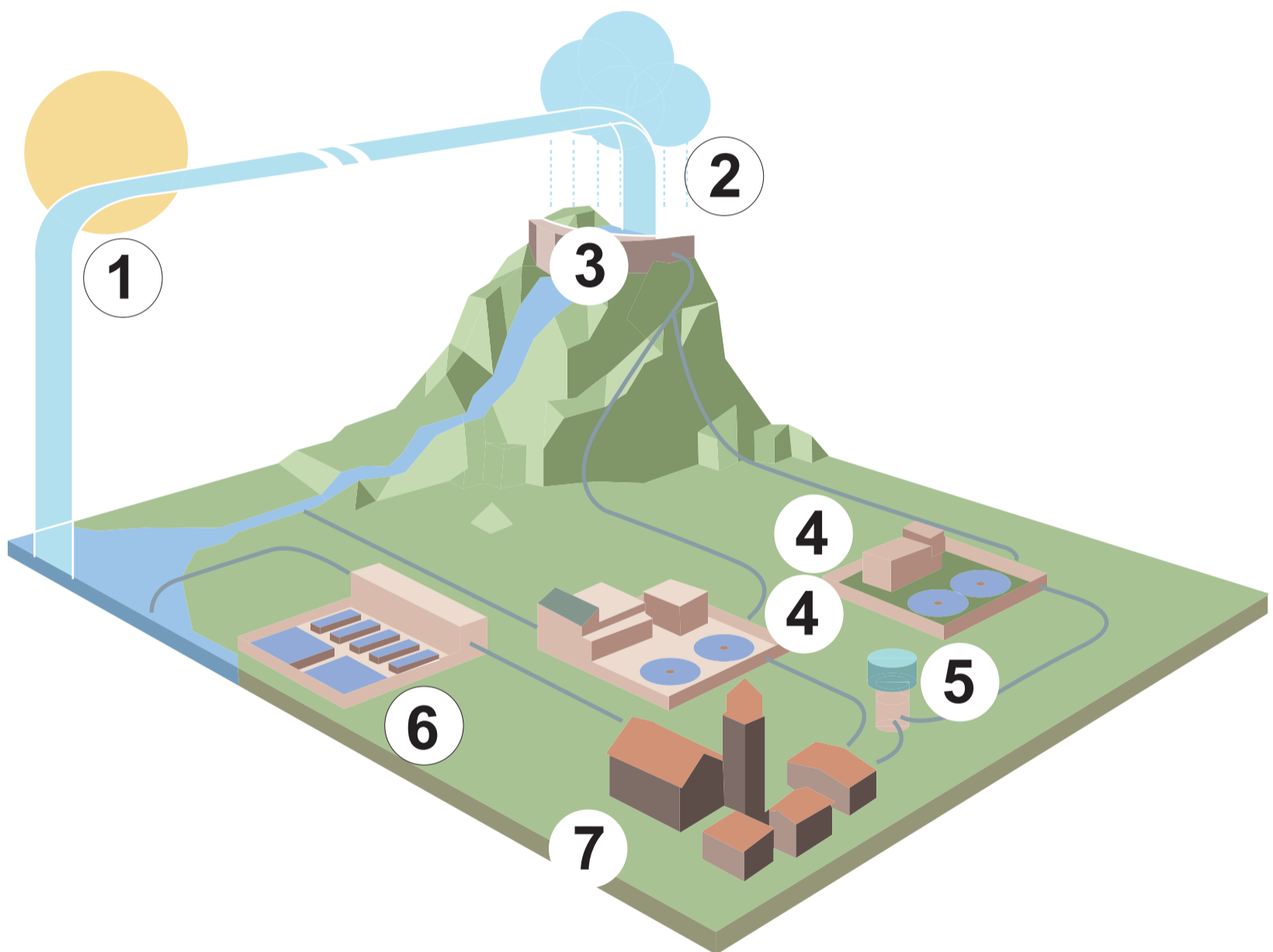
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Figure 1a

Water management in India

Water cycle management

1. Evaporation
2. Precipitation
3. Reservoirs, lakes or rivers
4. Water treatment plant
5. Water tanks
6. Water desalination plant
7. Domestic use



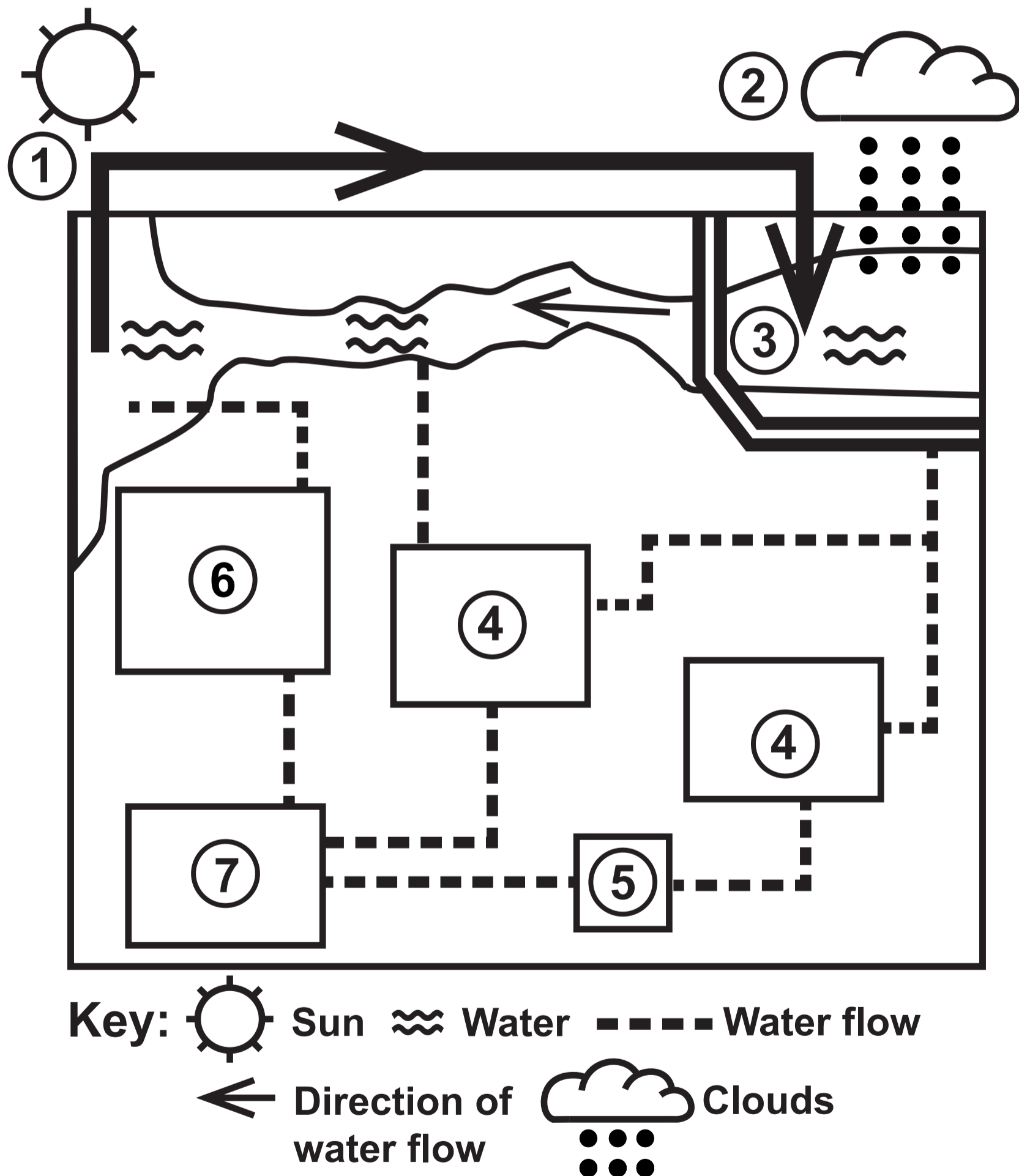
(Source: <http://www.sociocosmo.com/2015/05/india-water-management-Indian-agriculture-IMD-Skymet-ICAR.html>)

Figure 1a

Water management in India – Top View

Water cycle management

- | | |
|--------------------------------|-----------------------------|
| 1. Evaporation | 5. Water tanks |
| 2. Precipitation | 6. Water desalination plant |
| 3. Reservoirs, lakes or rivers | 7. Domestic use |
| 4. Water treatment plant | |



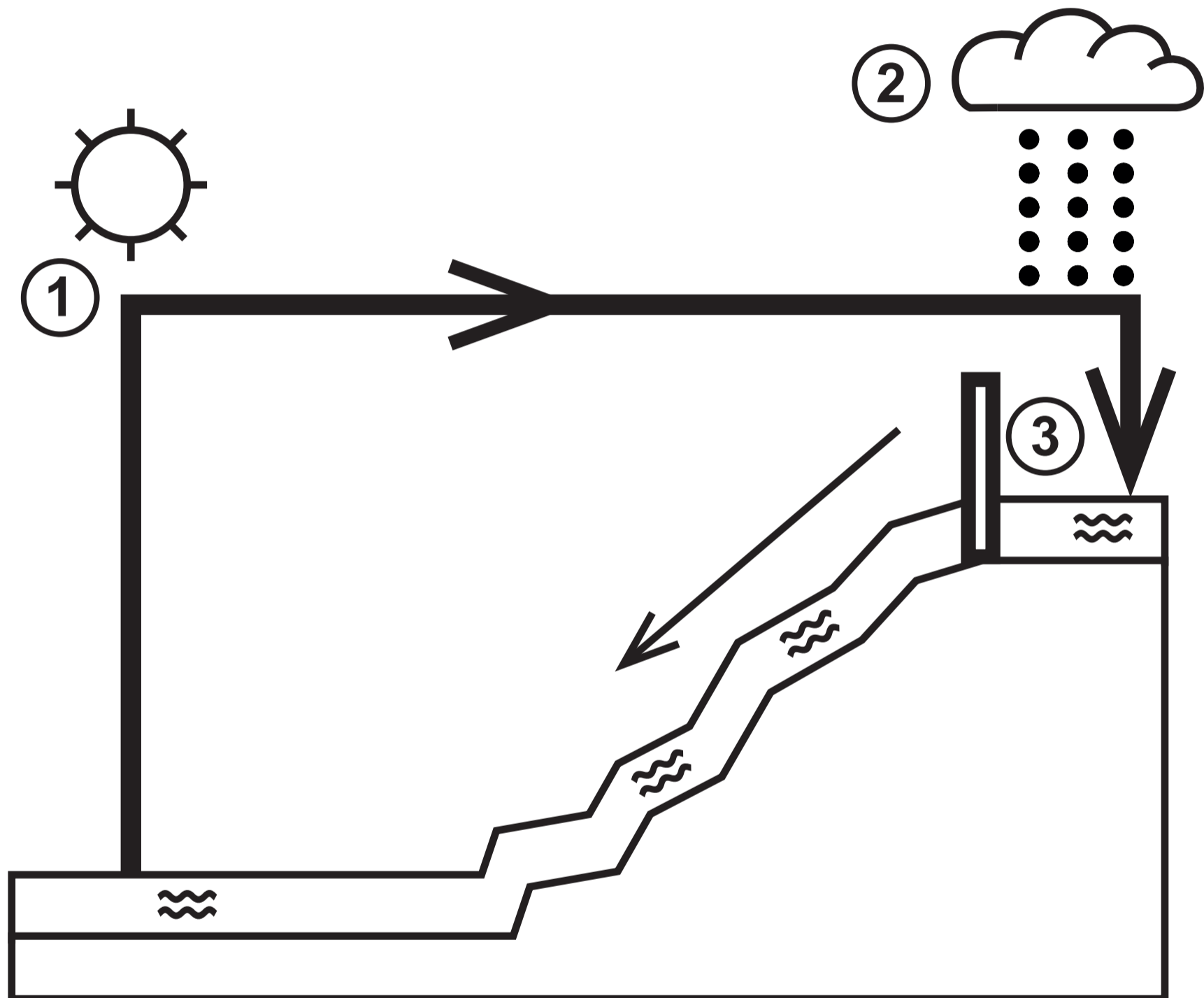
Adapted from: (Source: <http://www.sociocosmo.com/2015/05/india-water-management-Indian-agriculture-IMD-Skymet-ICAR.html>)

Figure 1a

Water management in India – Side View

Water cycle management

1. Evaporation
2. Precipitation
3. Reservoirs, lakes or rivers



Key:



Adapted from: (Source: <http://www.sociocosmo.com/2015/05/india-water-management-Indian-agriculture-IMD-Skymet-ICAR.html>)

Figure 1b

A river landform in Hong Kong



Key:



Vegetation



Water



Rock face

(Source: © David Holmes)

Figure 1c

Factors affecting water quality

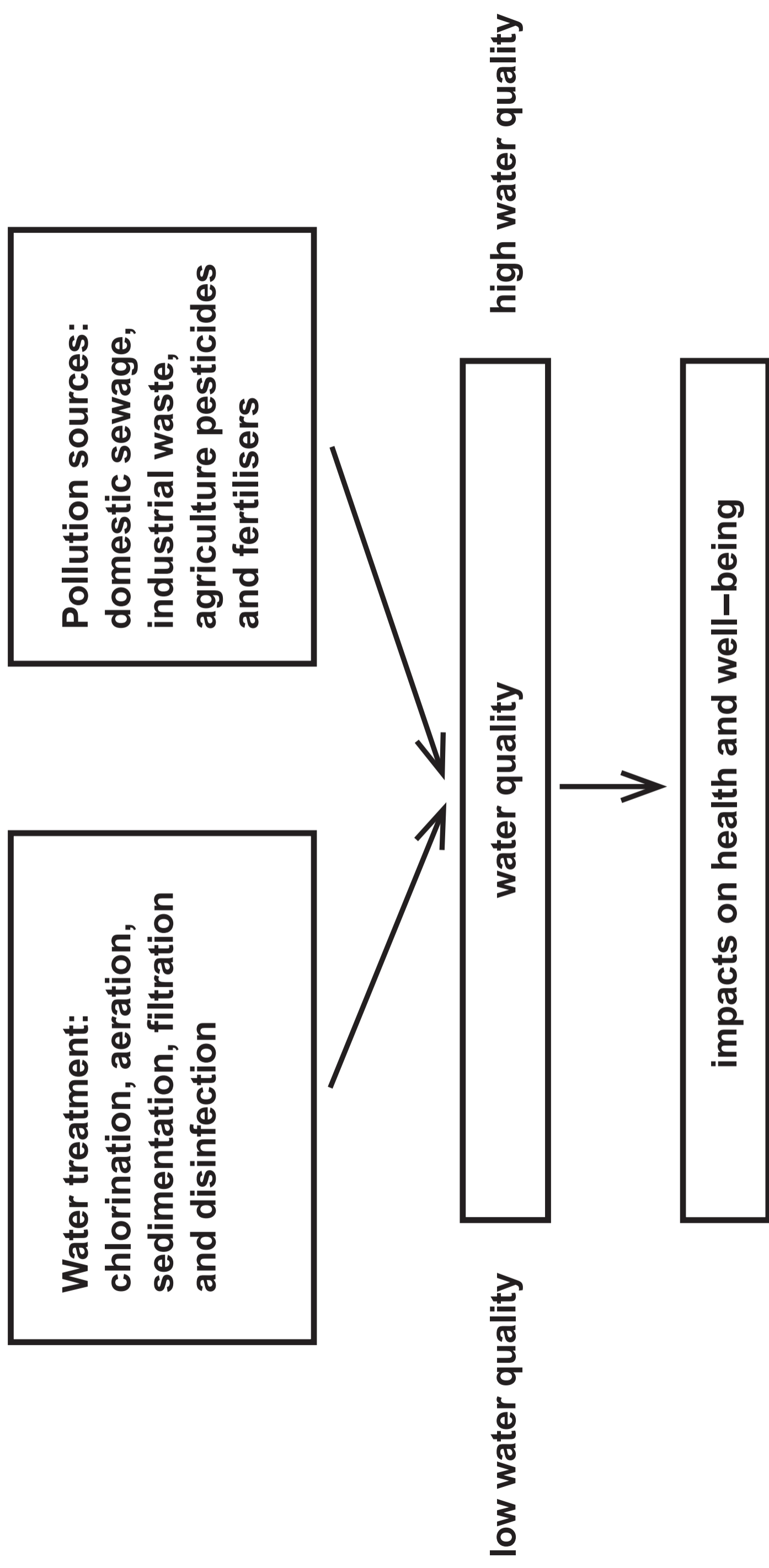
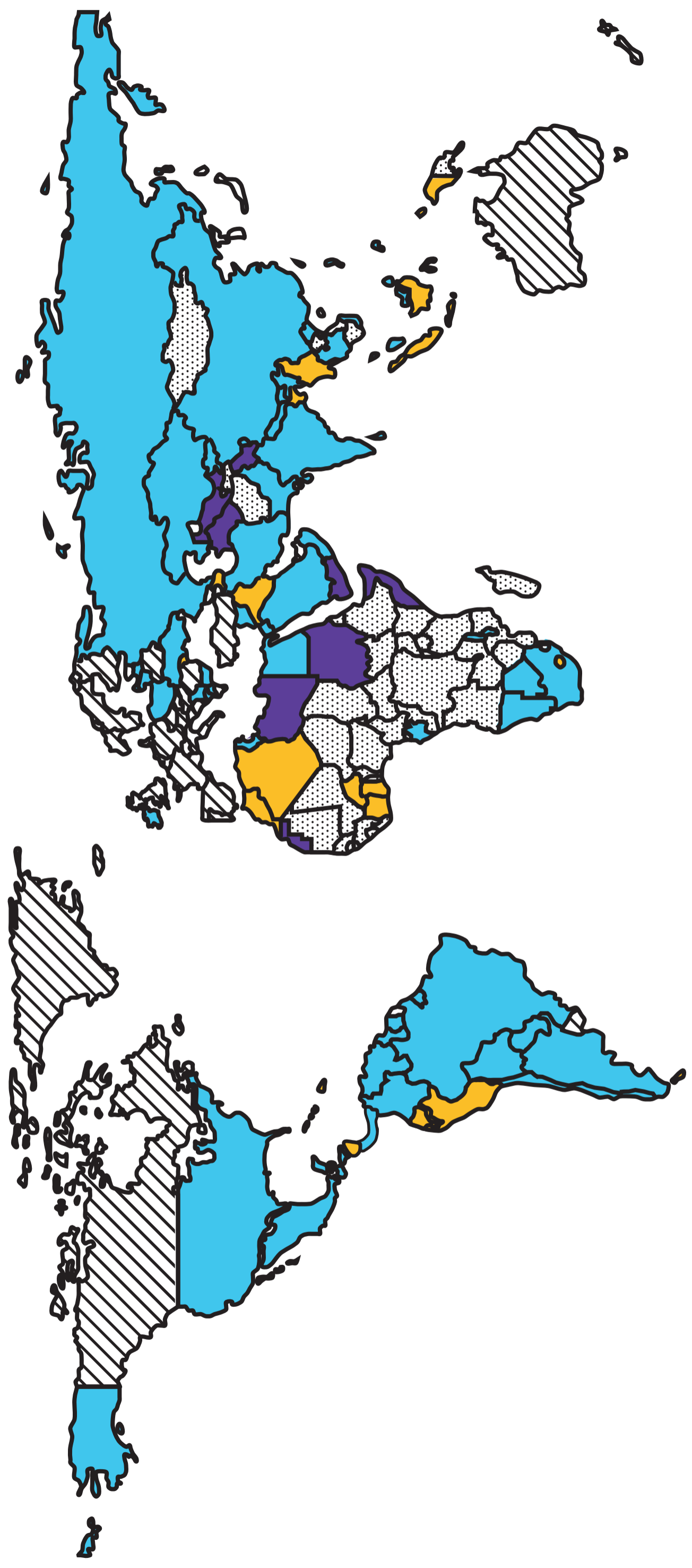


Figure 1d – Colour

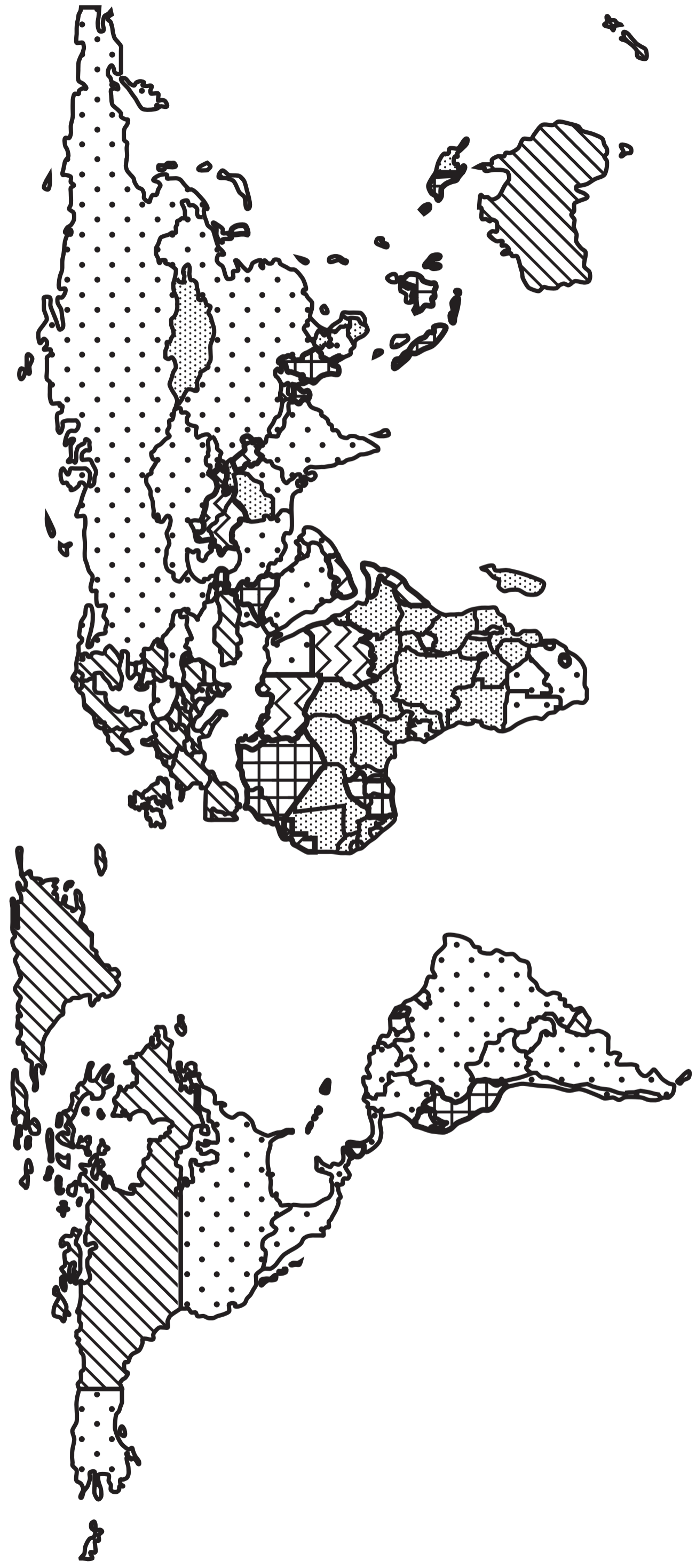
Percentage of people using untreated drinking water



(Source: <https://www.theguardian.com/global-development-professionals-network/2017/mar/17/access-to-drinking-water-world-six-infographics#img-2>)

Figure 1d – Black and White

Percentage of people using untreated drinking water

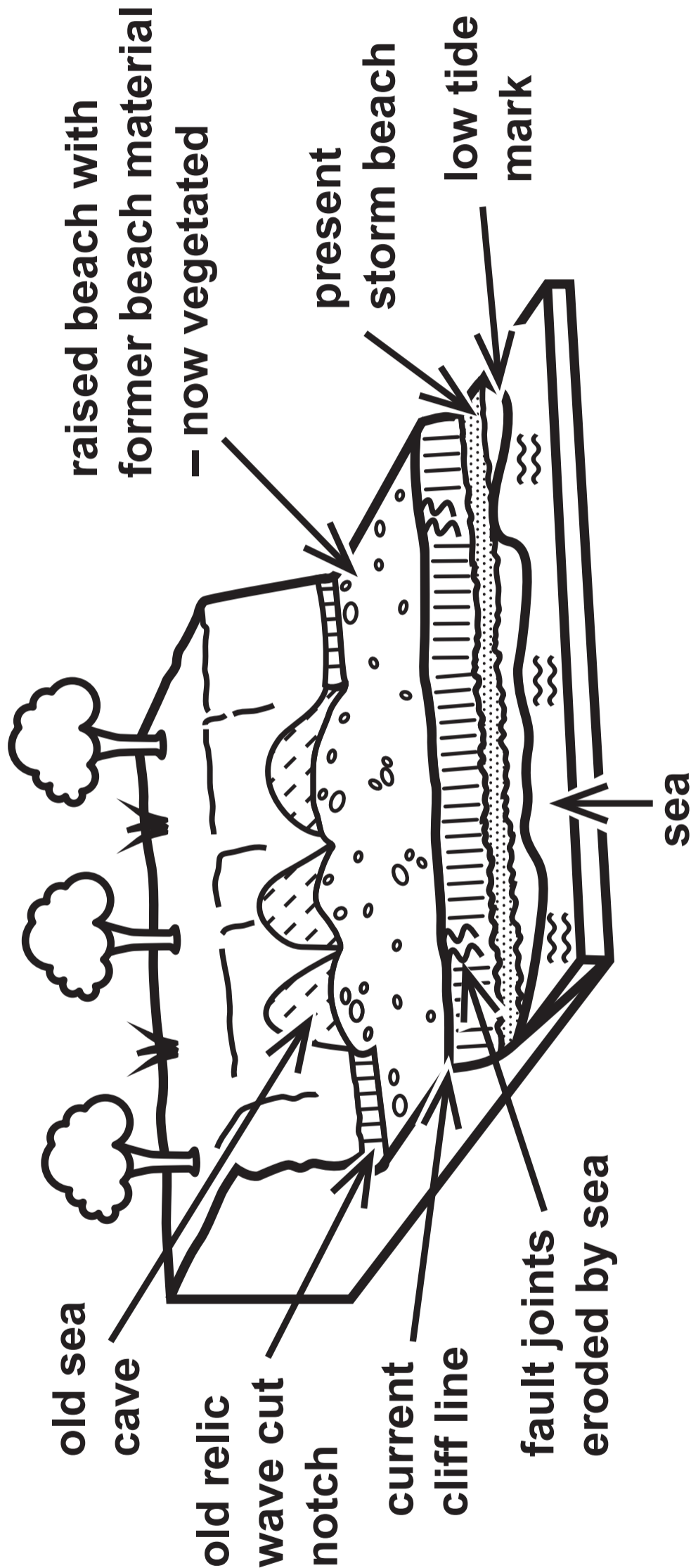


(Source: <https://www.theguardian.com/global-development-professionals-network/2017/mar/17/access-to-drinking-water-world-six-infographics#img-2>)

Figure 2a

An example of a coastal landscape in
south west England

Raised beaches



Key:

Trees Vegetation Sea

Figure 2a – Top and Side View

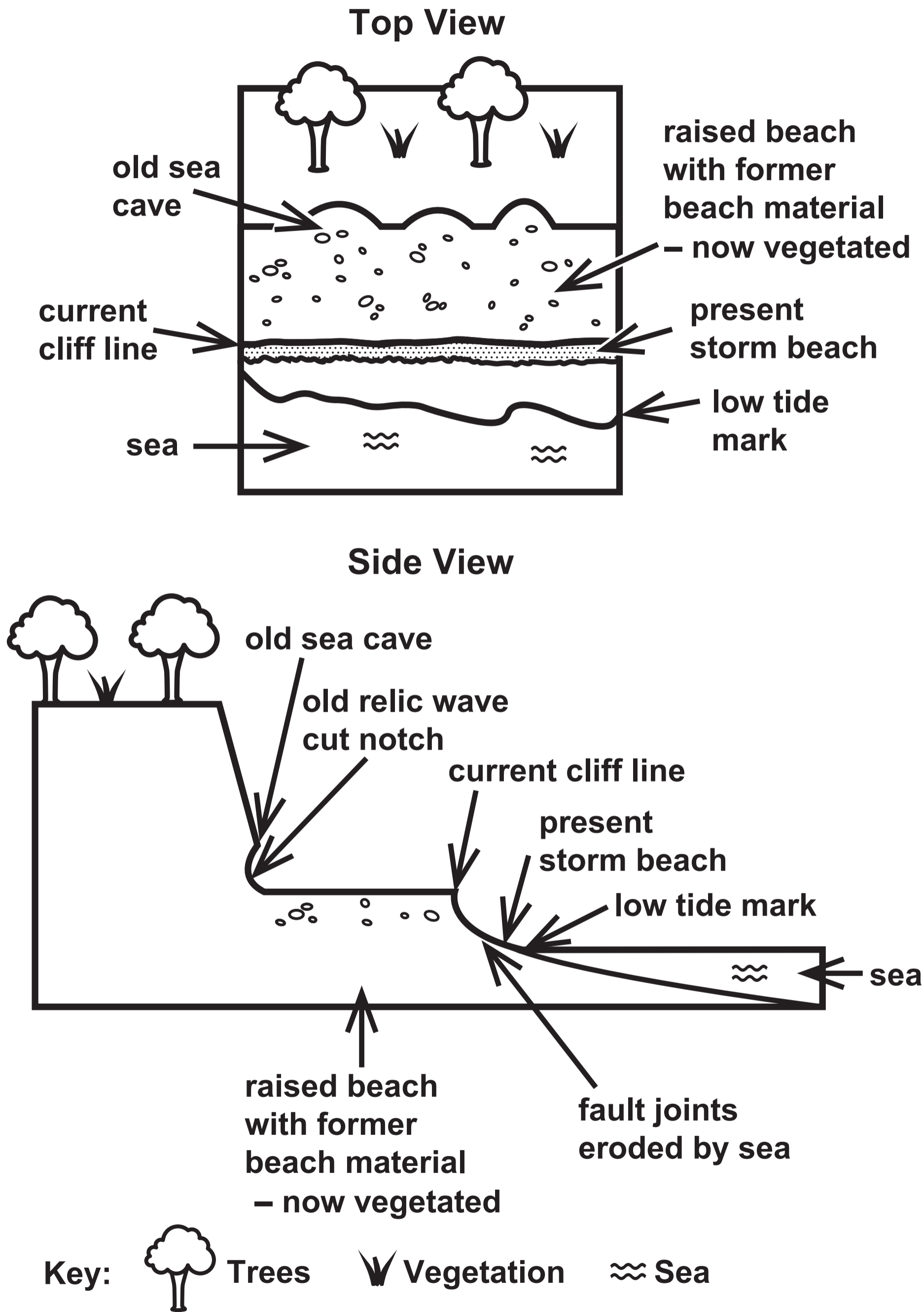
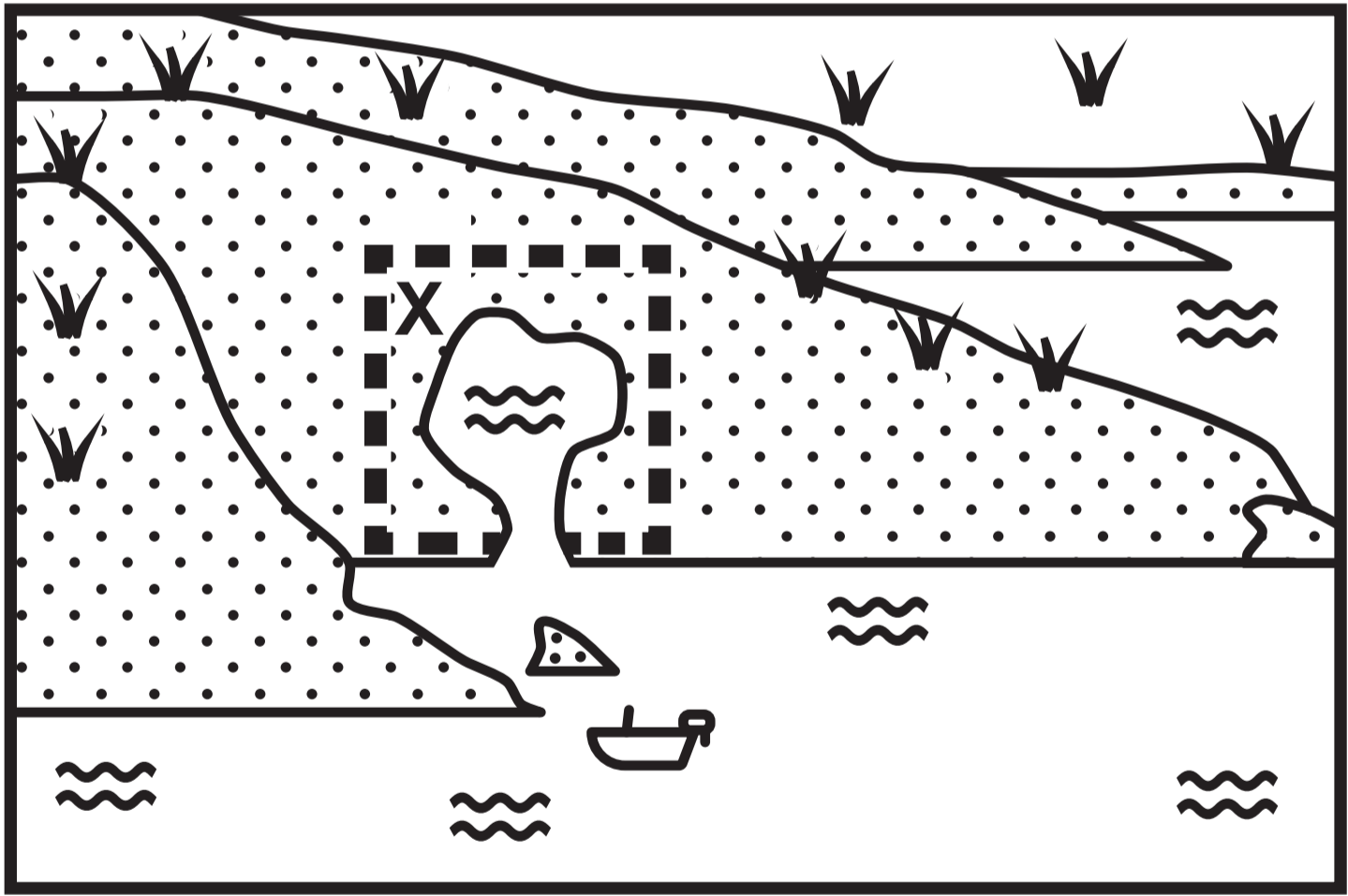


Figure 2b

A coastal landscape in St Lucia



Key:







- Vegetation Rock Sea Boat
- Gap through rock

(Source: © De Agostini Picture Library / Contributor/ Getty Images)

Figure 2c – Colour

Different approaches to shoreline management along a stretch of coastline

KEY

	Marsh		Farmland
	Sand		Cliff face
	Settlement		Original beach

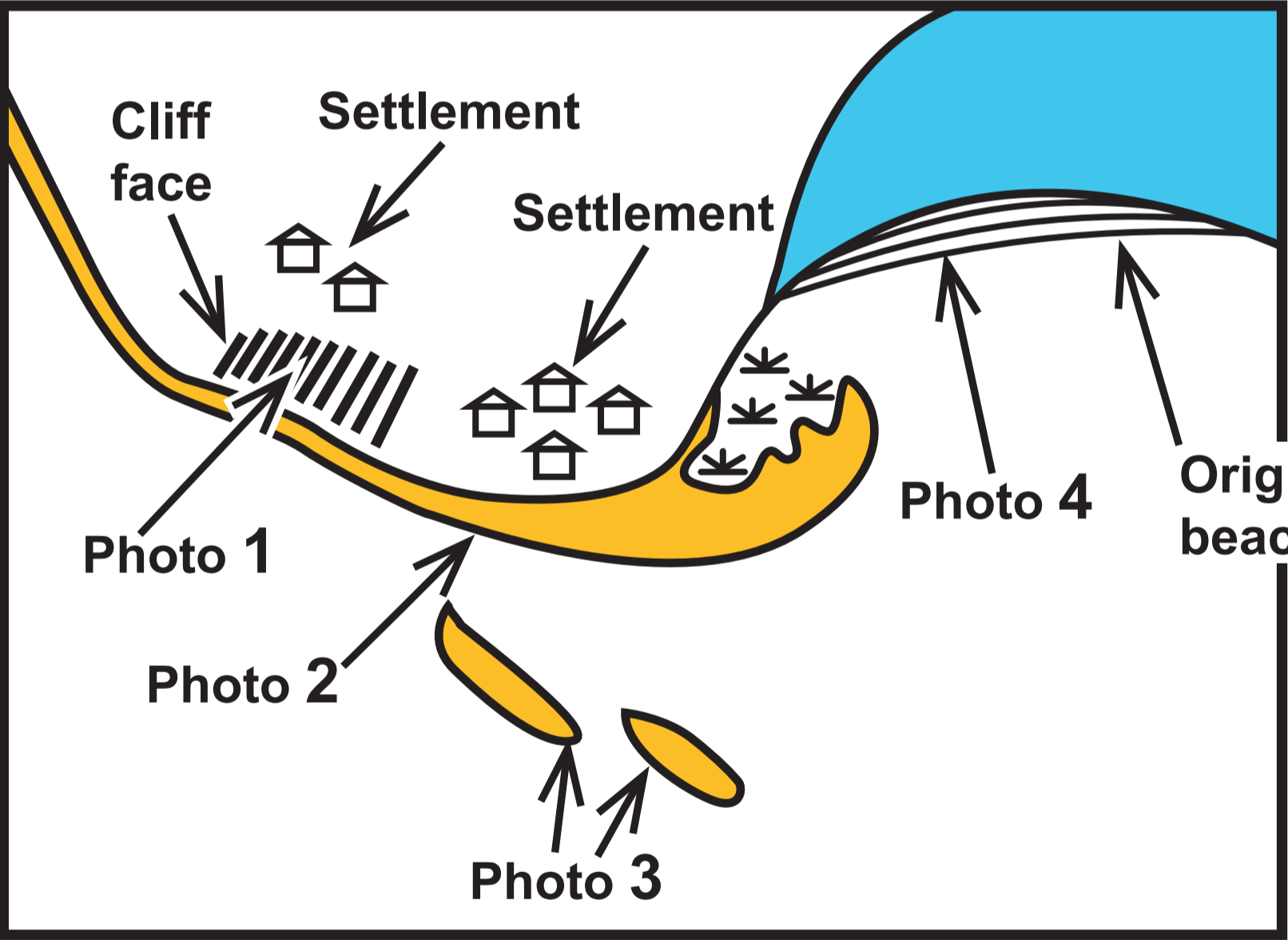


Figure 2c – Black and White

Different approaches to shoreline management along a stretch of coastline

KEY

	Marsh		Farmland
	Sand		Cliff face
	Settlement		Original beach

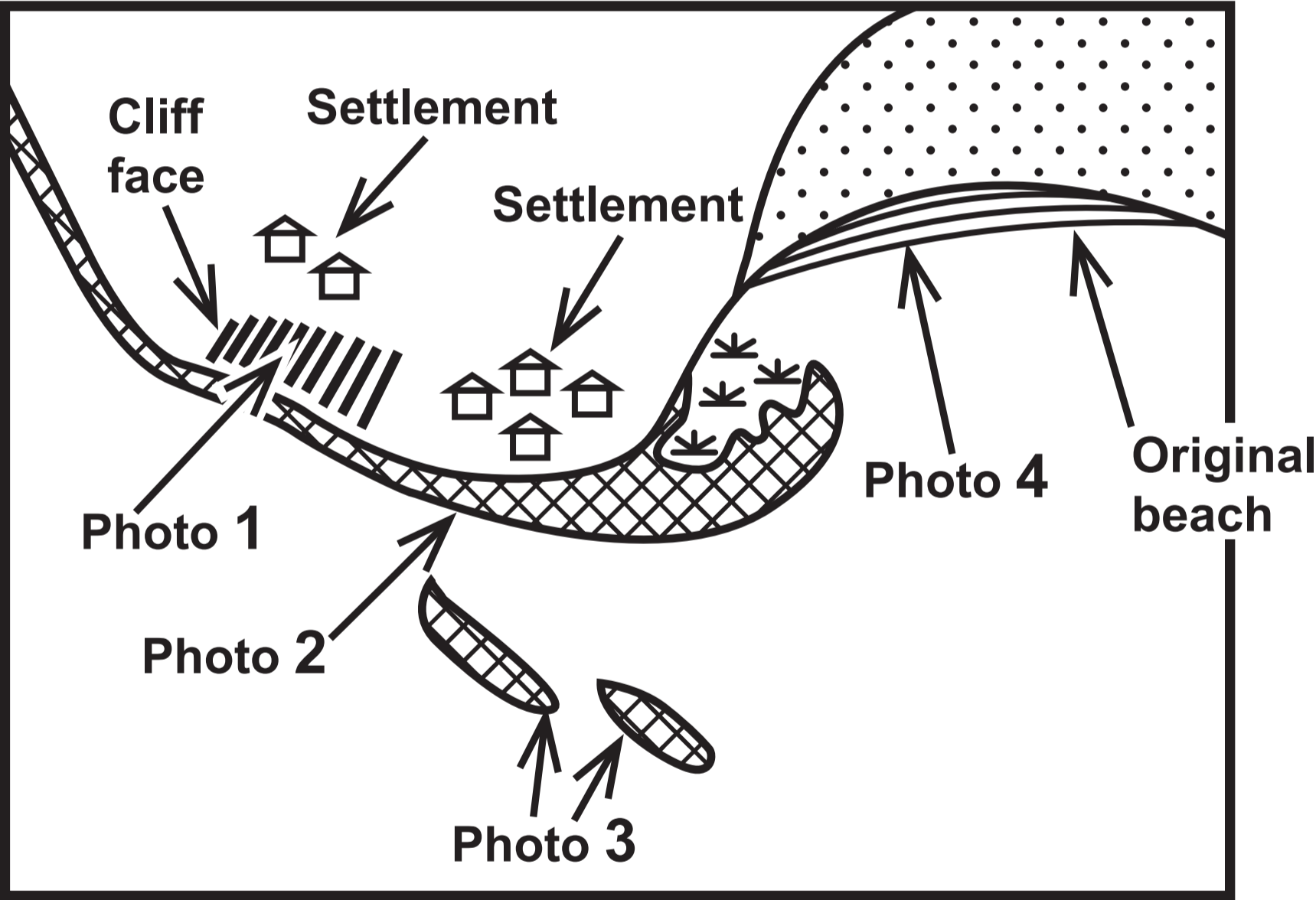


Figure 2d – Information

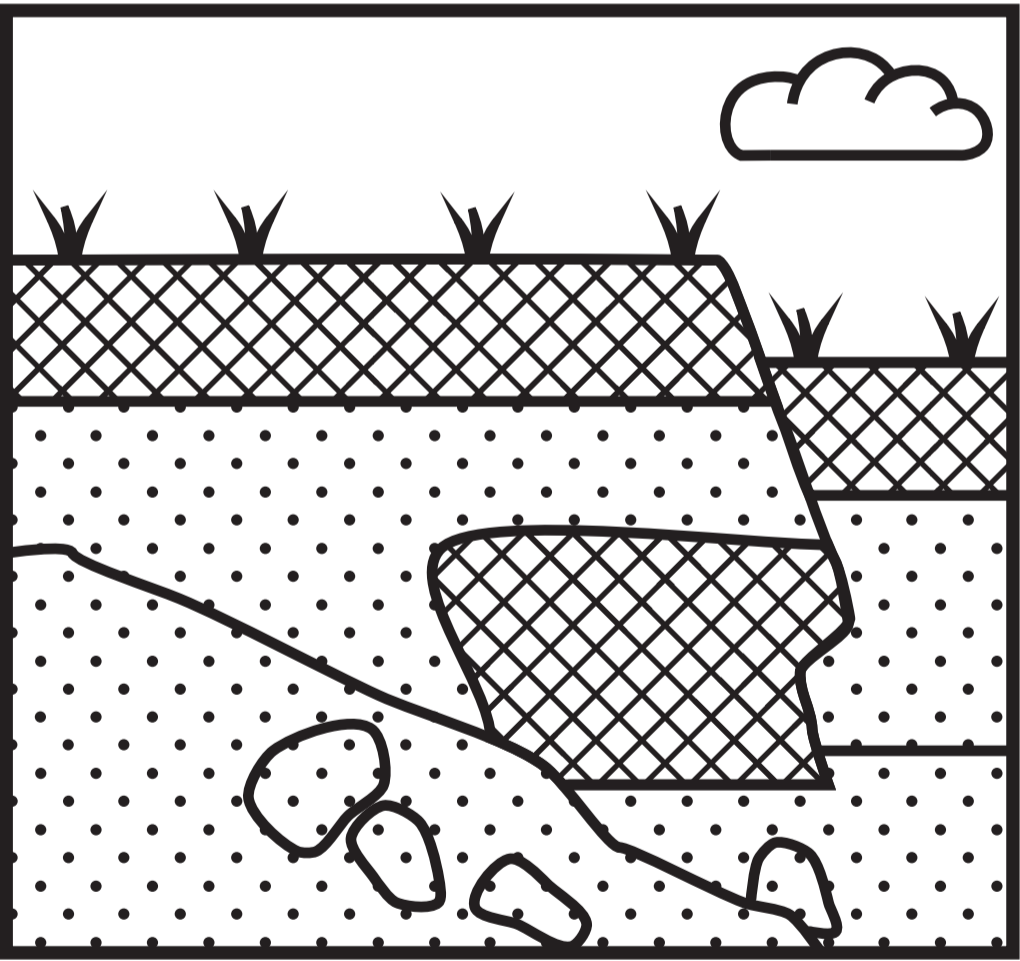
Photographic evidence of beach management techniques referred to in Figure 2c

Photo 1	Cliff regrading high maintenance and high cost.
Photo 2	Beach replenishment high maintenance cost and £20 per cubic metre so could be quite expensive.
Photo 3	Development and extension of natural sandbars. This has a similar cost and maintenance as beach replenishment.
Photo 4	Managed retreat low maintenance and cost dependent on compensation due to people living in the area.

(Sources: Photo 1 – © Geography Photos / Contributor/Getty Images, Photo 2 – © Mick House / Alamy Stock Photo, Photo 4 – Crown Copyright, Photo 3 – © Thales Paiva/Art in All of Us / Contributor/Getty Images)

Figure 2d (Part 1)

Photo 1

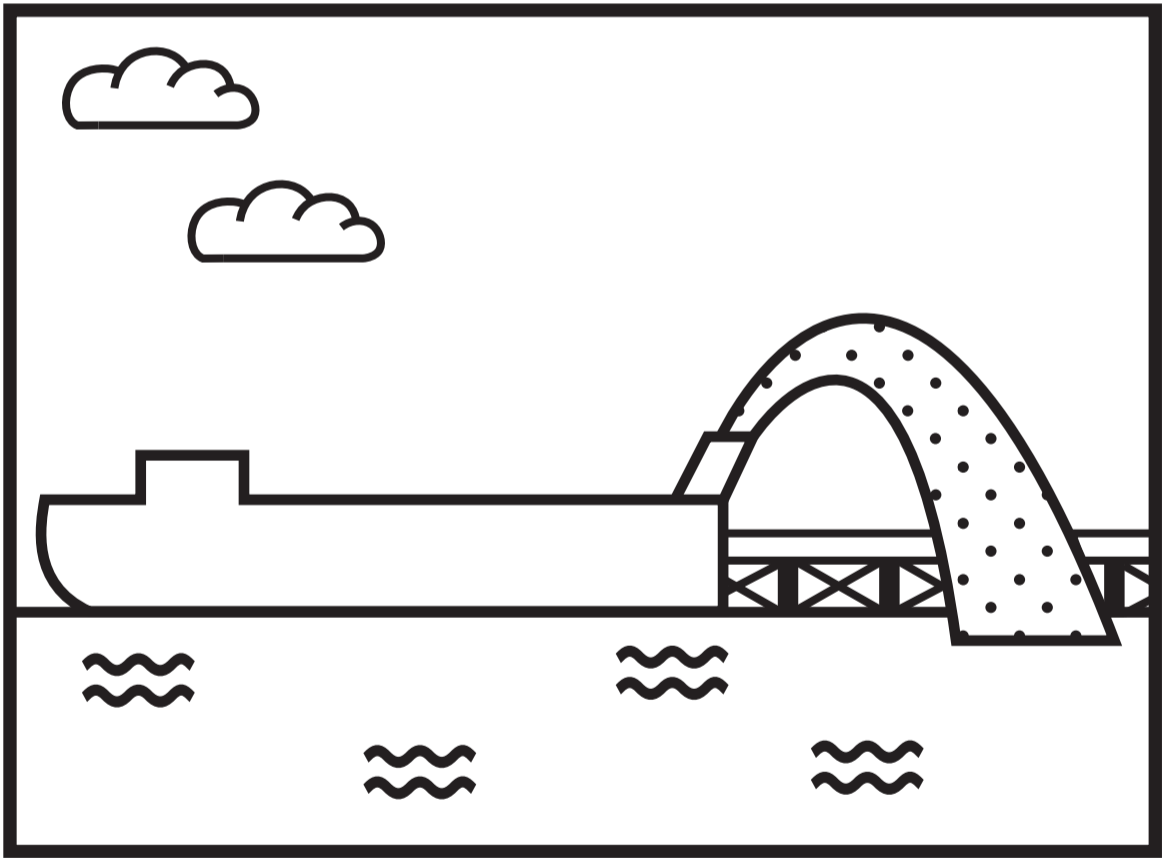


Key:

-  Loose rock
-  Vegetation
-  Cliff
-  Clouds

Figure 2d (Part 2)

Photo 2



Key:






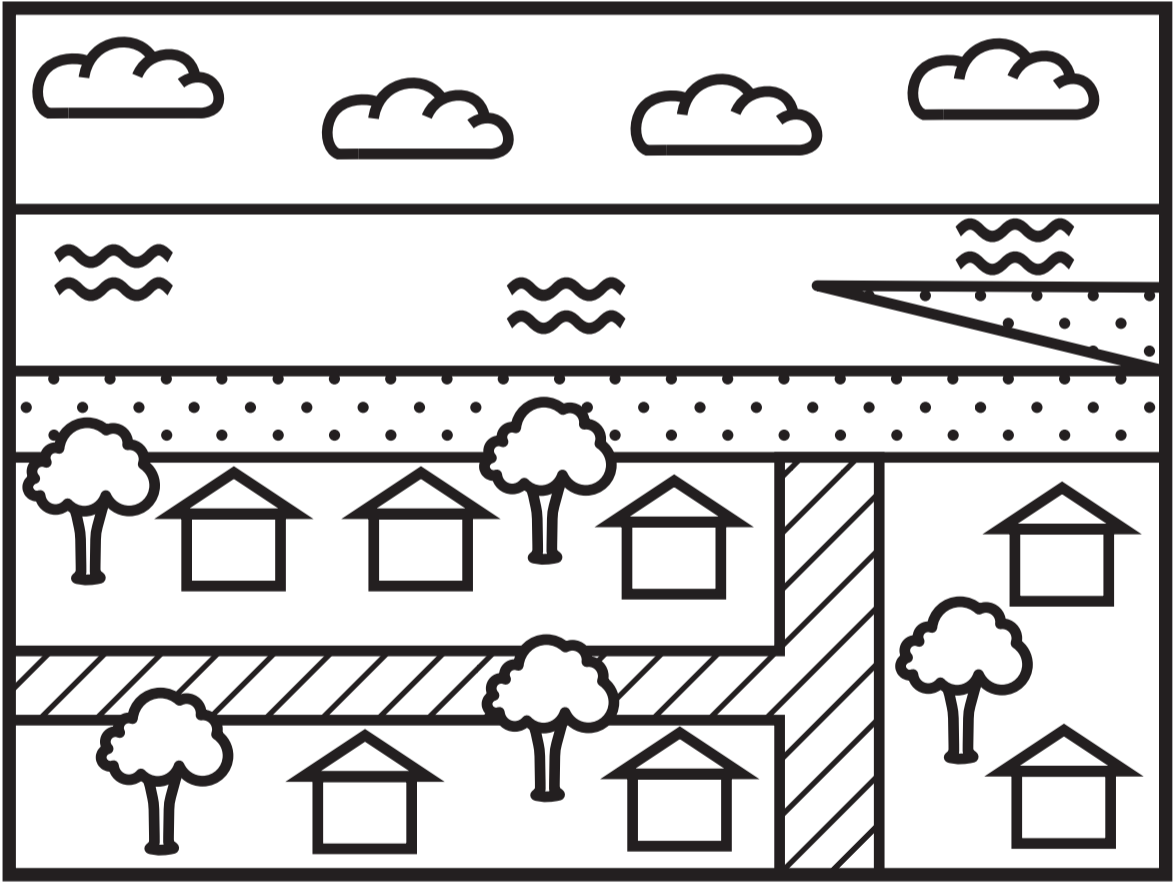
- | | | |
|--|---|--|
|  Sea |  Boat |  Sand |
|  Clouds |  Pier | |

Figure 2d (Part 3)

Photo 3

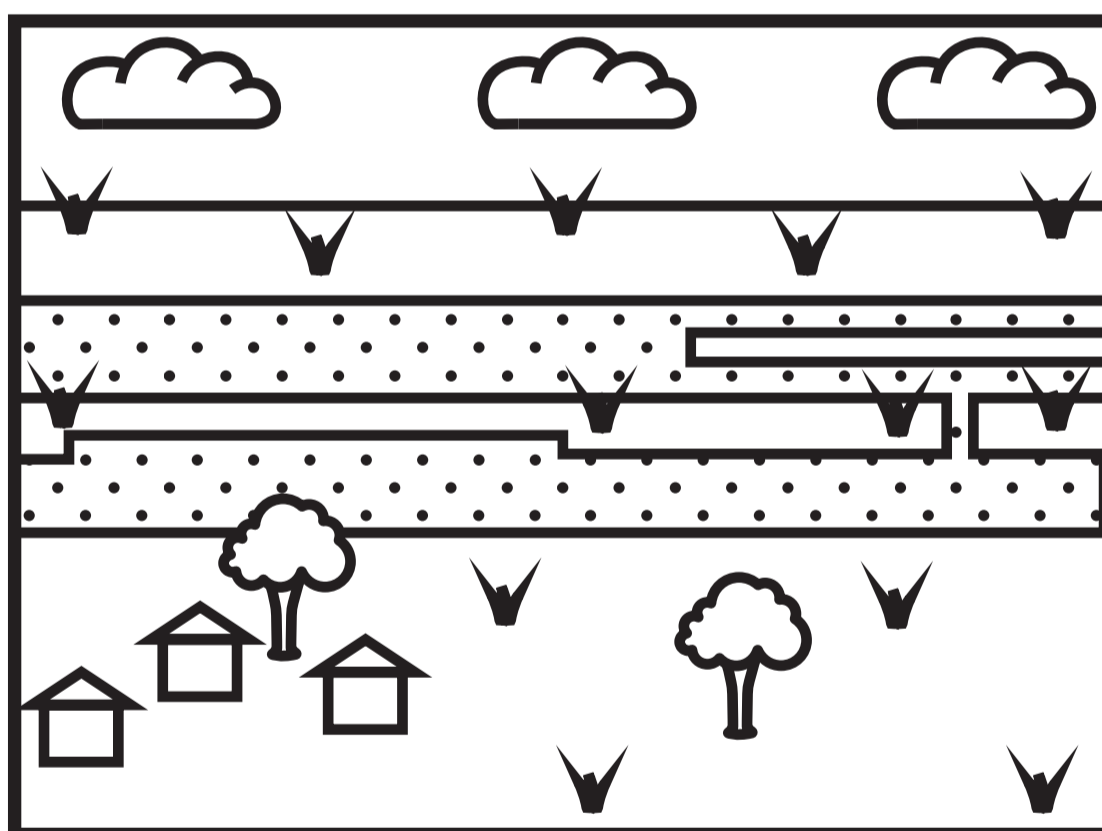


Key:

-  Sea
-  Sand
-  Clouds
-  Road
-  Trees
-  Houses

Figure 2d (Part 4)

Photo 4



Key:

 **Fields**
 **Water**
 **Clouds**

 Trees  Houses

Factors affecting the formation of tropical cyclones

■ = Sea temperature over 27°C

A = June–October

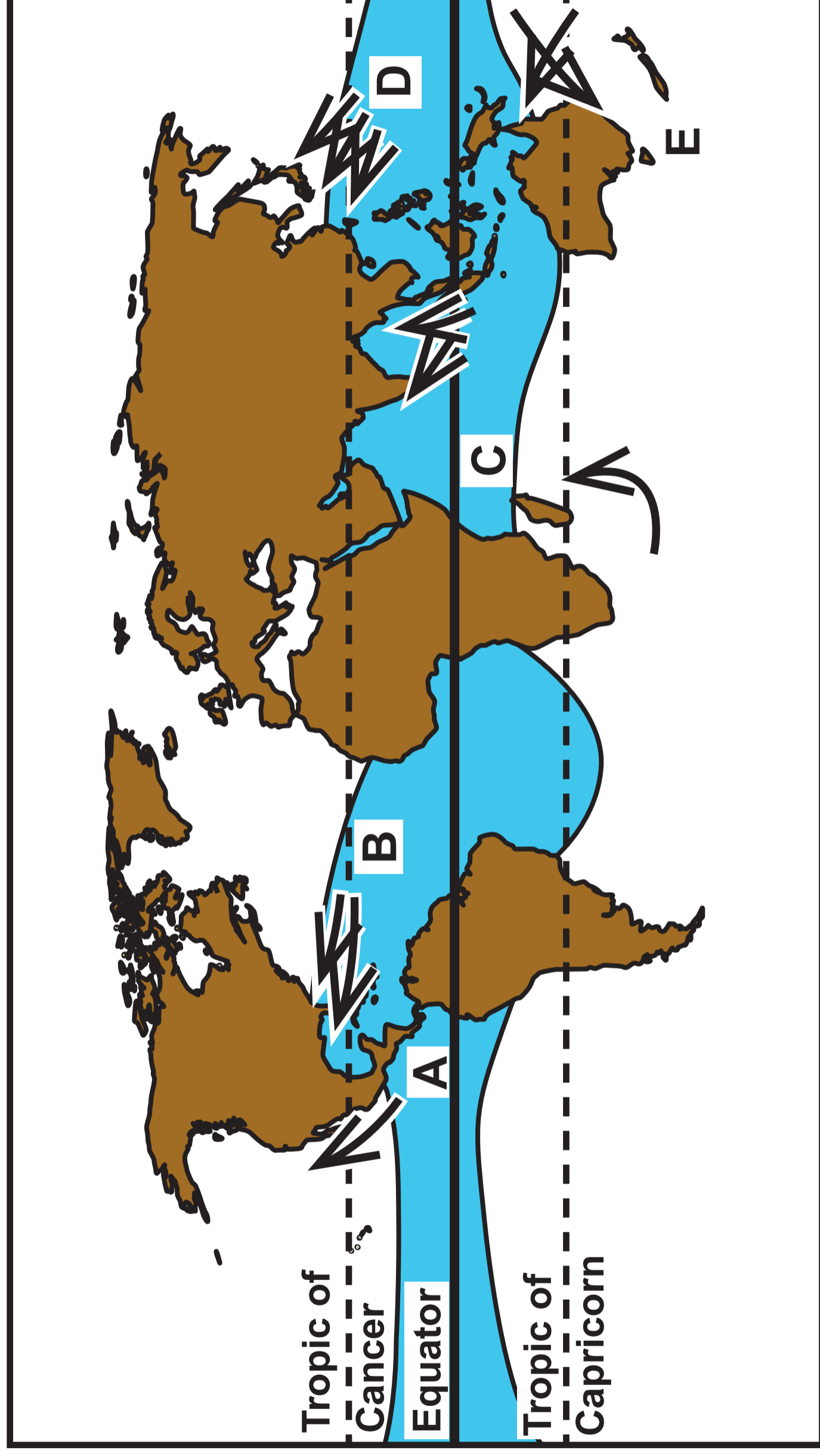
D = May–December

B = August–October

E = January–March

← = Direction of tropical cyclone

C = October–November



Factors affecting the formation of tropical cyclones

∴ = Sea temperature over 27°C A = June–October D = May–December

B = August–October

C = October–November

↓ = Direction of tropical cyclone

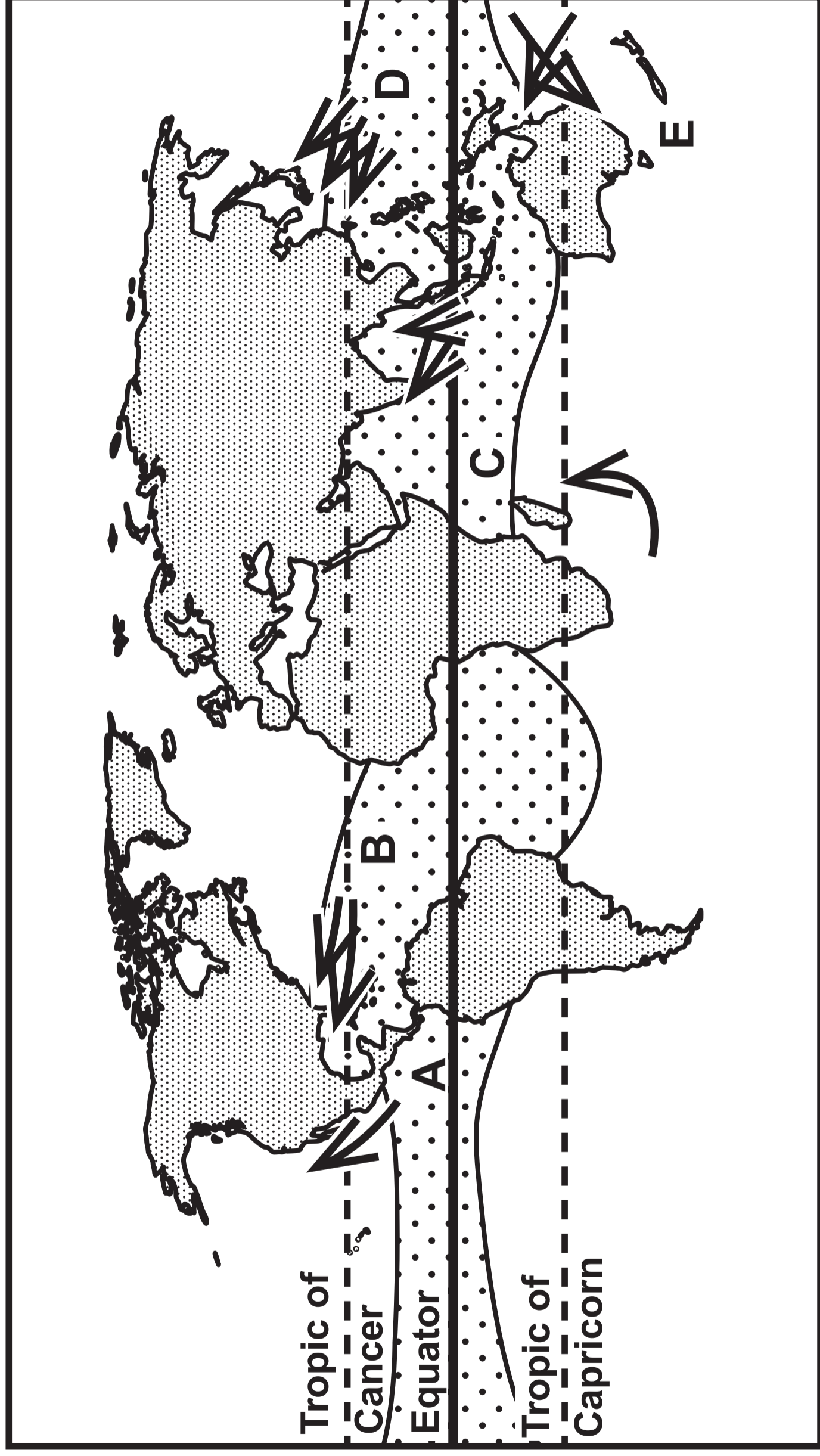
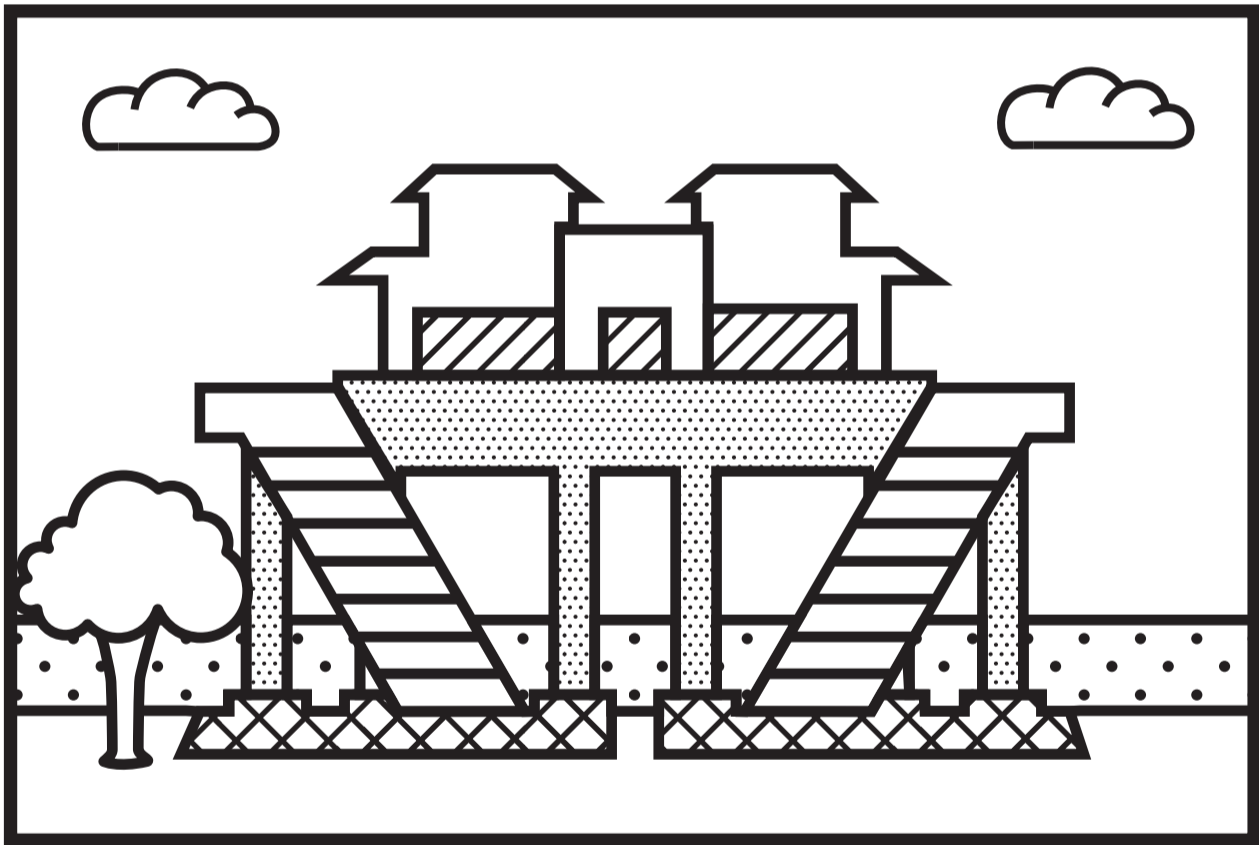
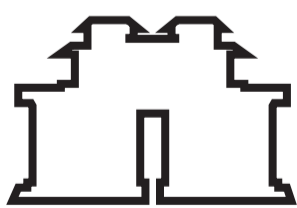


Figure 3b

A tsunami resistant building



Key:



Building



Stairs



Trees



Pillars



Windows



Rocks



Sea



Clouds

(Source from: https://commons.wikimedia.org/wiki/File:Tsunami_shelter_near_Khao_Lak_Thailand.jpg)

Figure 3c

Stages in hazard mapping

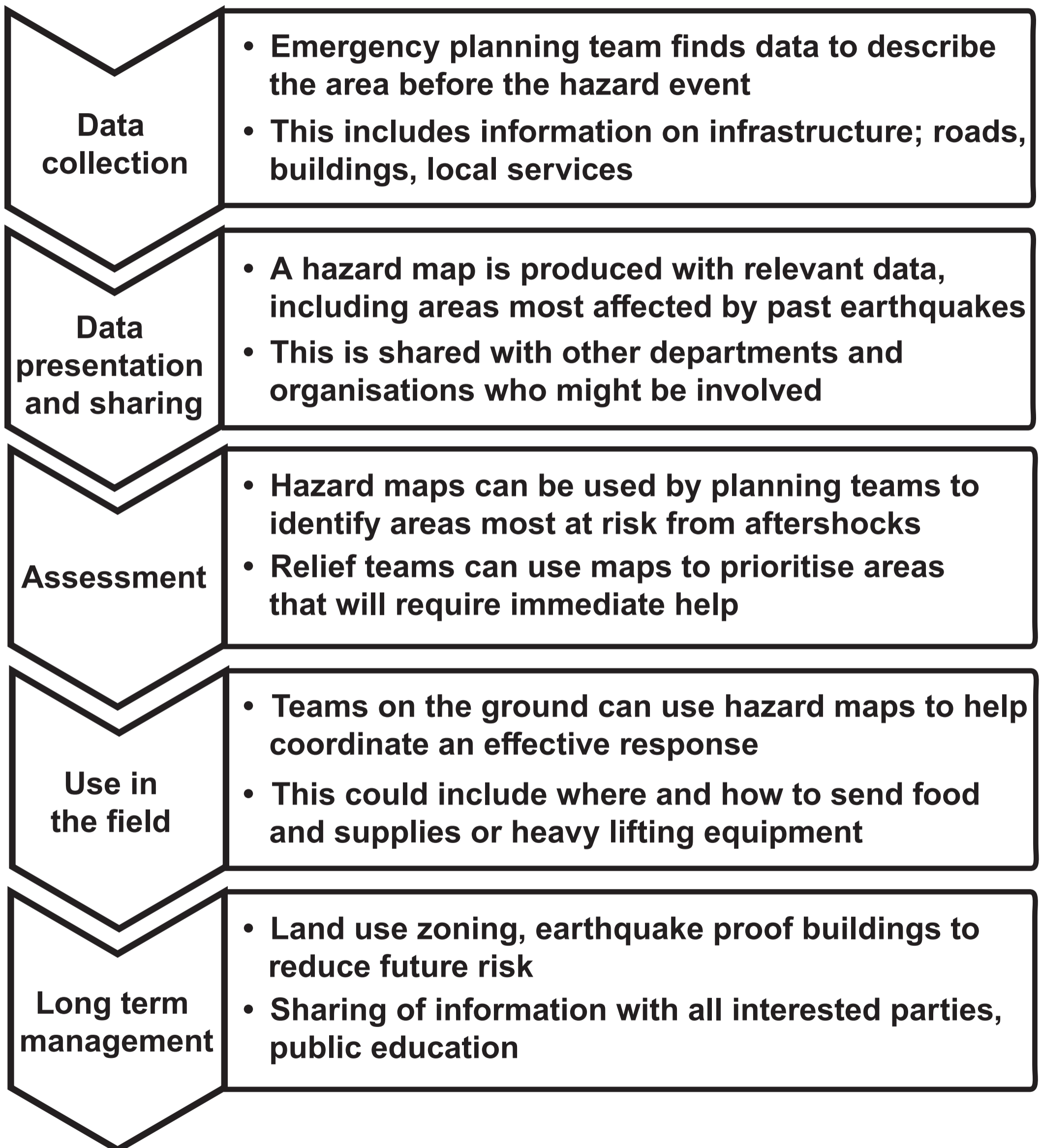
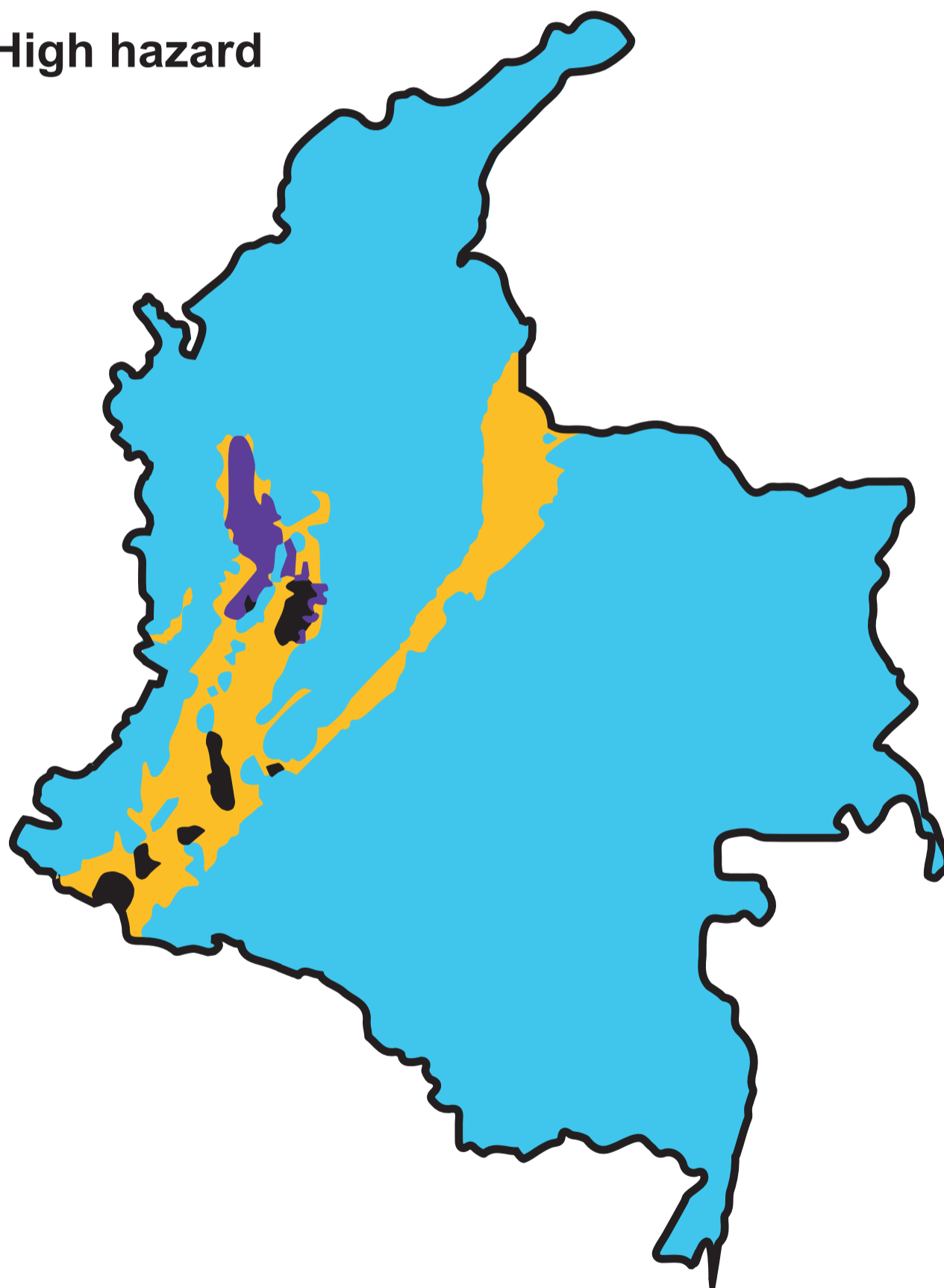
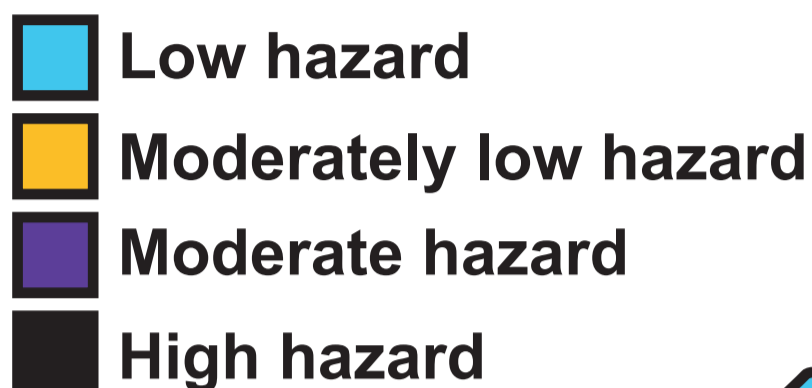


Figure 3d (Part 1) – Colour

An example of hazard, vulnerability and risk maps for tectonic events in a South American country

Hazard map

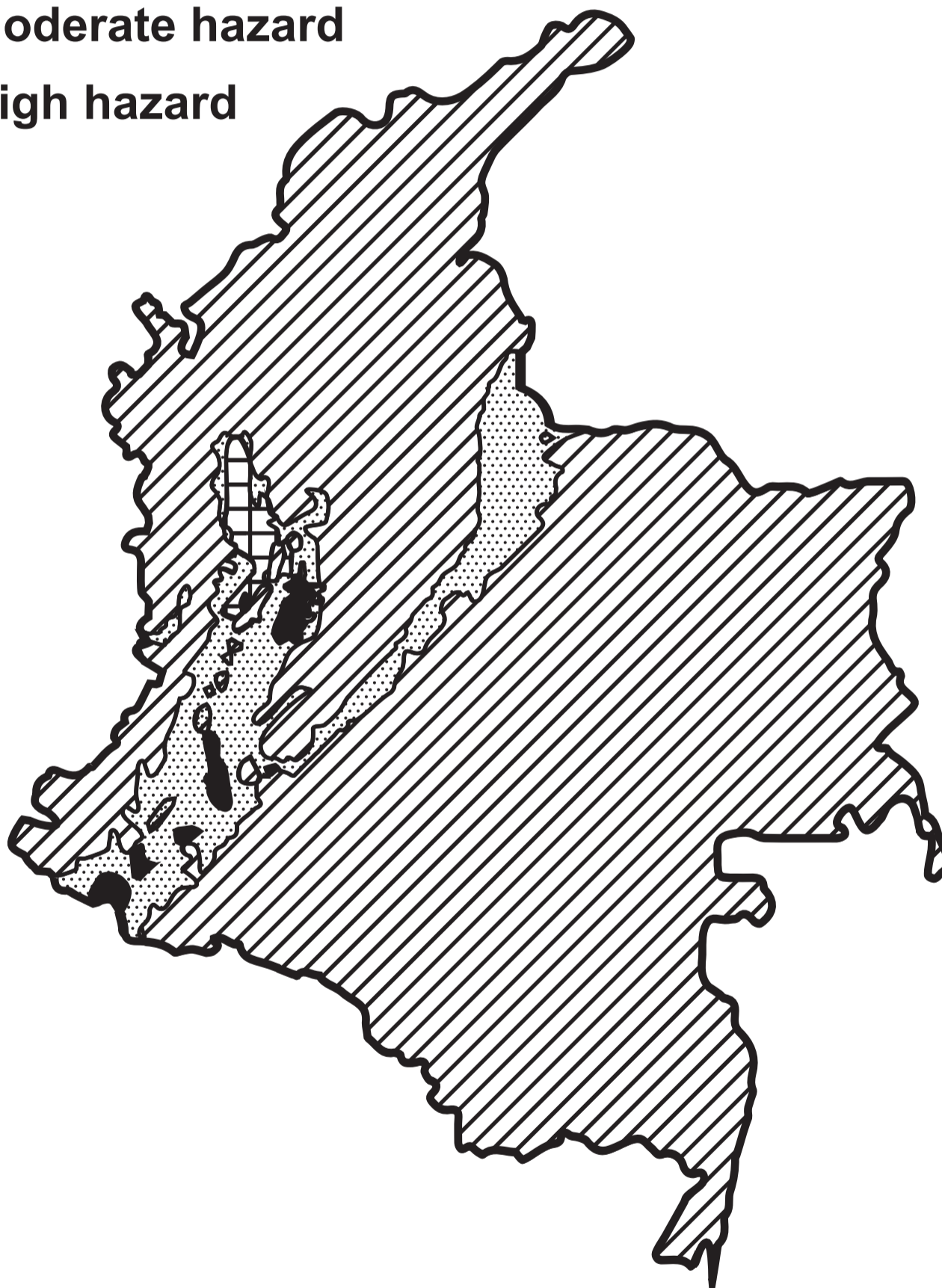
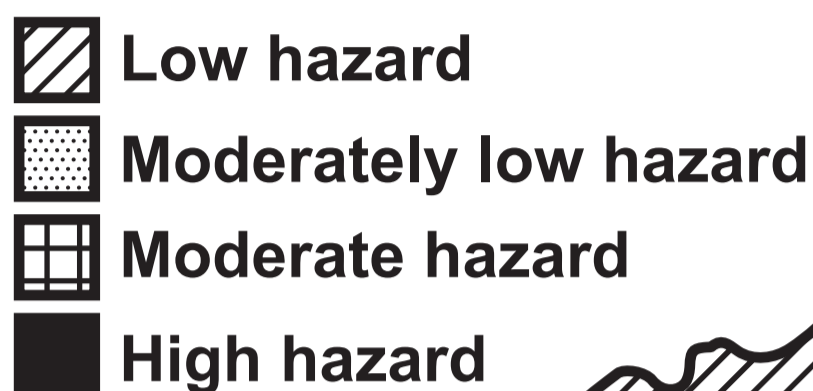


(Sourced from: Van Westen, C.J. (1997) Hazard, vulnerability and risk analysis. In: Cees van Westen, Asunción Saldaña López, Patricia Uría Cornejo and Guillermo Chávez Ardanza (eds). ILWIS Applications Guide, p 1–18. <https://www.itc.nl/ilwis/applications-guide/application-1/>)

Figure 3d (Part 1) – Black and White

An example of hazard, vulnerability and risk maps for tectonic events in a South American country

Hazard map

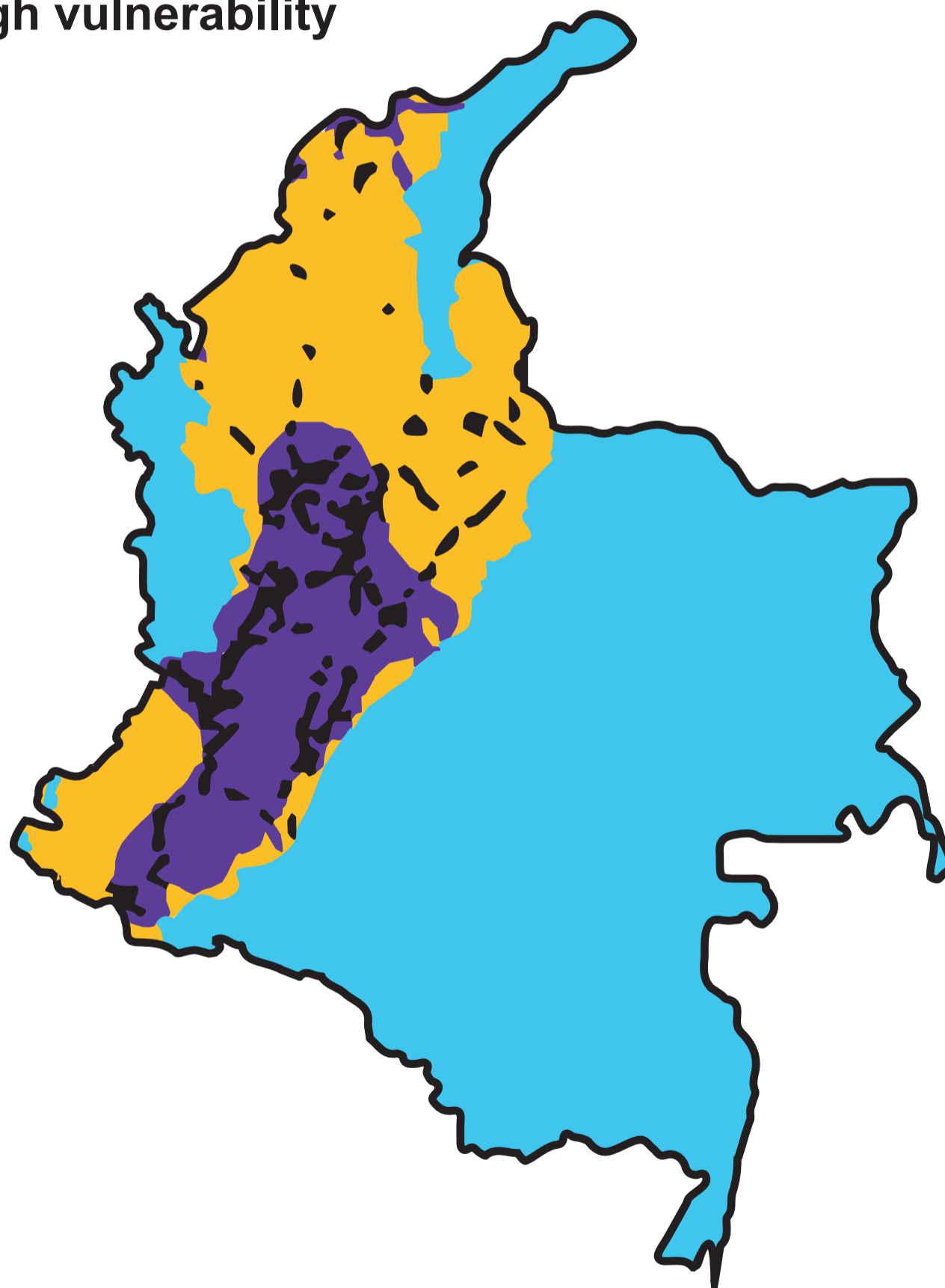
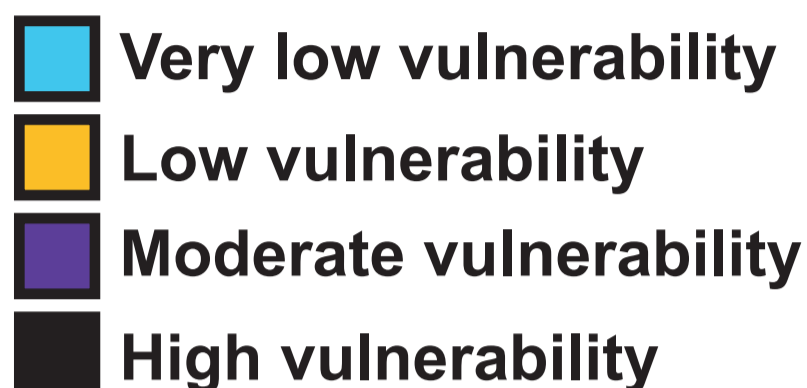


(Sourced from: Van Westen, C.J. (1997) Hazard, vulnerability and risk analysis. In: Cees van Westen, Asunción Saldaña López, Patricia Uría Cornejo and Guillermo Chávez Ardanza (eds). ILWIS Applications Guide, p 1–18. <https://www.itc.nl/ilwis/applications-guide/application-1/>)

Figure 3d (Part 2) – Colour

An example of hazard, vulnerability and risk maps for tectonic events in a South American country

Vulnerability map







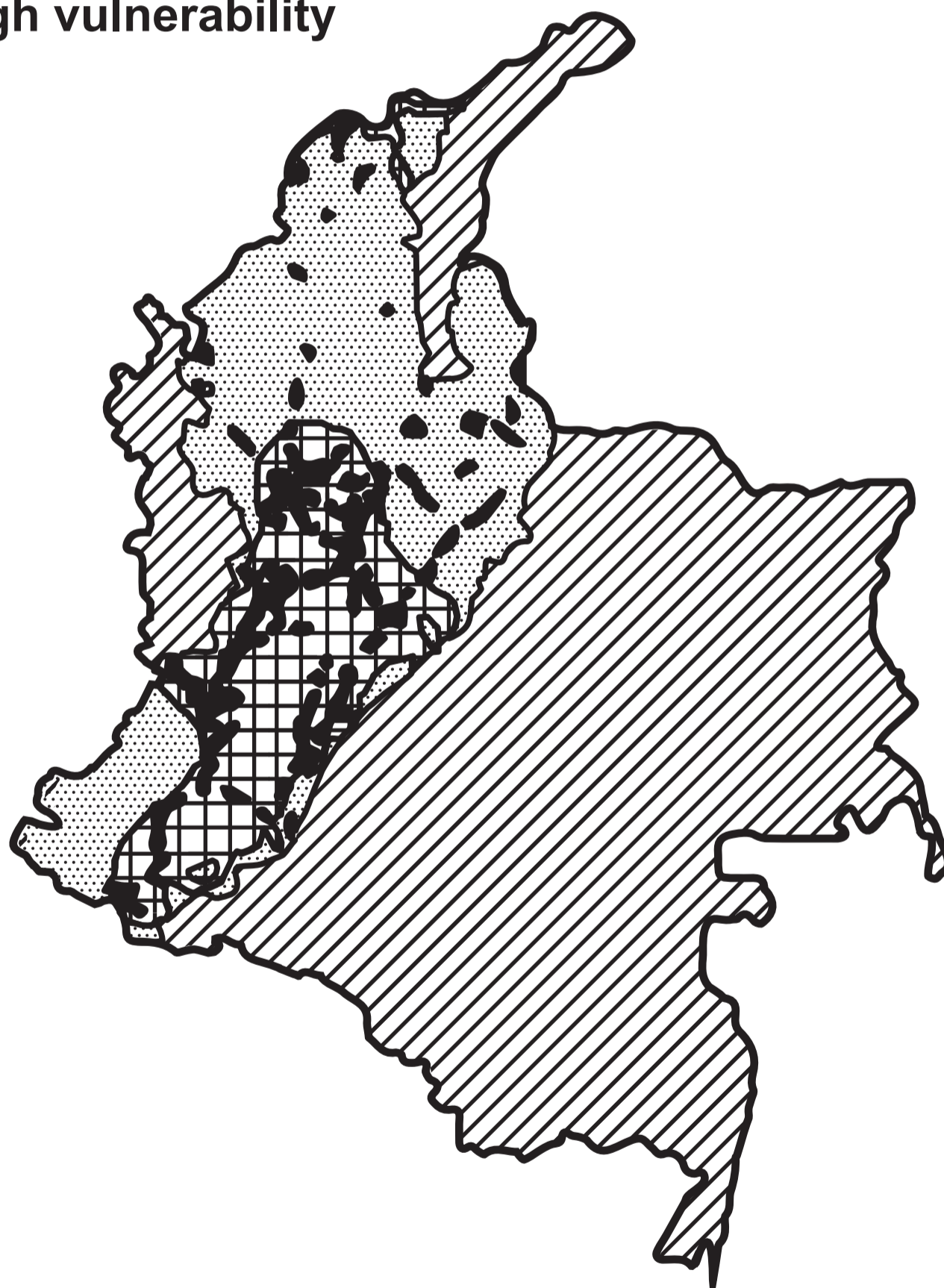
(Sourced from: Van Westen, C.J. (1997) Hazard, vulnerability and risk analysis. In: Cees van Westen, Asunción Saldaña López, Patricia Uría Cornejo and Guillermo Chávez Ardanza (eds). ILWIS Applications Guide, p 1–18. <https://www.itc.nl/ilwis/applications-guide/application-1/>)

Figure 3d (Part 2) – Black and White

An example of hazard, vulnerability and risk maps for tectonic events in a South American country

Vulnerability map

-  Very low vulnerability
-  Low vulnerability
-  Moderate vulnerability
-  High vulnerability



(Sourced from: Van Westen, C.J. (1997) Hazard, vulnerability and risk analysis. In: Cees van Westen, Asunción Saldaña López, Patricia Uría Cornejo and Guillermo Chávez Ardanza (eds). ILWIS Applications Guide, p 1–18. <https://www.itc.nl/ilwis/applications-guide/application-1/>)

Figure 3d (Part 3) – Colour

An example of hazard, vulnerability and risk maps for tectonic events in a South American country

Risk map



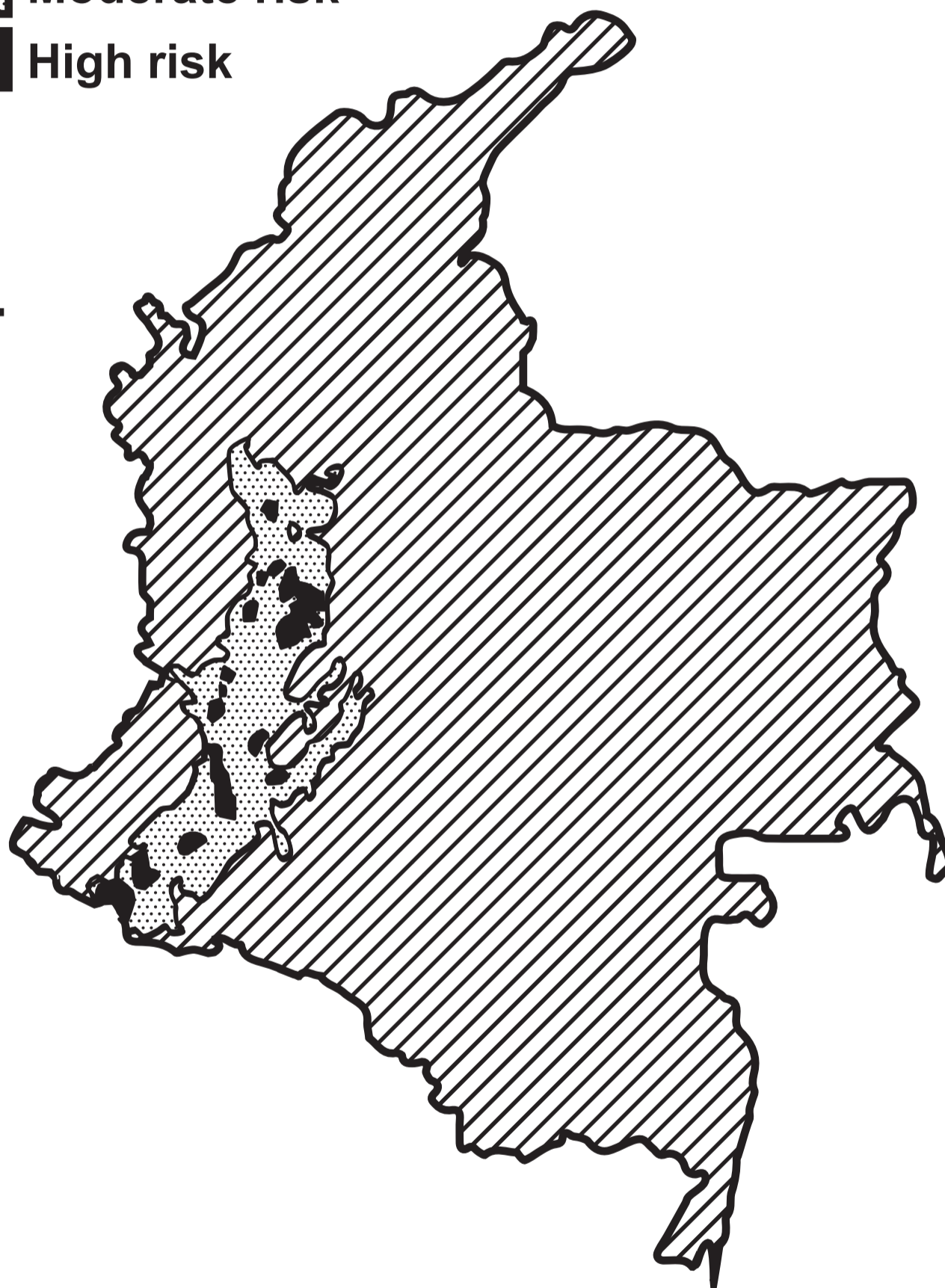
(Sourced from: Van Westen, C.J. (1997) Hazard, vulnerability and risk analysis. In: Cees van Westen, Asunción Saldaña López, Patricia Uría Cornejo and Guillermo Chávez Ardanza (eds). ILWIS Applications Guide, p 1–18. <https://www.itc.nl/ilwis/applications-guide/application-1/>)

Figure 3d (Part 3) – Black and White

An example of hazard, vulnerability and risk maps for tectonic events in a South American country

Risk map

-  Low risk
-  Moderate risk
-  High risk



(Sourced from: Van Westen, C.J. (1997) Hazard, vulnerability and risk analysis. In: Cees van Westen, Asunción Saldaña López, Patricia Uría Cornejo and Guillermo Chávez Ardanza (eds). ILWIS Applications Guide, p 1–18. <https://www.itc.nl/ilwis/applications-guide/application-1/>)

Figure 4a

River data collected by a group of students

Sample	Time taken (seconds)
1	20·0
2	16·0
3	14·1
4	15·0
5	35·0

Figure 5a

Coastal data collected by a group of students

Site	Mean shingle size (mm)
1	20·0
2	16·0
3	14·1
4	10·0
5	30·1

Figure 6a

Hazardous environment data collected by a group of students

Sample	Wind speed (mph)
1	50.0
2	35.1
3	45.1
4	40.0
5	10.0