OCR
RECOGNISING ACHIEVEMENT

Tuesday 4 June 2013 – Afternoon

GCSE GEOGRAPHY B

B561/01/02/RB Sustainable Decision Making (SDM) (Foundation and Higher Tier)

RESOURCE BOOKLET

This Resource Booklet should be available to candidates for up to three working weeks prior to this date.

Duration: 1 hour

B521990613

INSTRUCTIONS TO CANDIDATES

- This Resource Booklet must be handed in to your teacher at the end of each lesson. **You must not write on the booklet**.

INFORMATION FOR CANDIDATES

- The following abbreviations may be used:
  MEDC – More Economically Developed Country.
  LEDC – Less Economically Developed Country.
  EU – European Union which includes the United Kingdom.
- This document consists of **12** pages. Any blank pages are indicated.

INSTRUCTION TO EXAMS OFFICER / INVIGILATOR

- Do not send this Resource Booklet for marking; it should be retained in the centre or recycled. Please contact OCR Copyright if you wish to re-use it.

THE ISSUE:
ALL SHOOK UP – how do people in different parts of the world cope with the aftermath of earthquakes?

CONTENTS OF THE RESOURCE BOOKLET

Resource 1 – Living in areas of tectonic risk
Resource 2 – Information on selected recent earthquakes
Resource 3 – Cycle of disaster response
Resource 4 – The problem with earthquakes...
Resource 5 – Comparing earthquakes
  Resource 5a Turkey, October 2011
  Resource 5b New Zealand, September 2010
  Resource 5c Haiti, January 2010
Resource 6 – Seismic retrofitting
Resource 7 – Information about Hayward Fault, San Francisco Bay Area, California, USA
Resource 8 – What's at risk in the Bay Area?

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RESOURCE 1

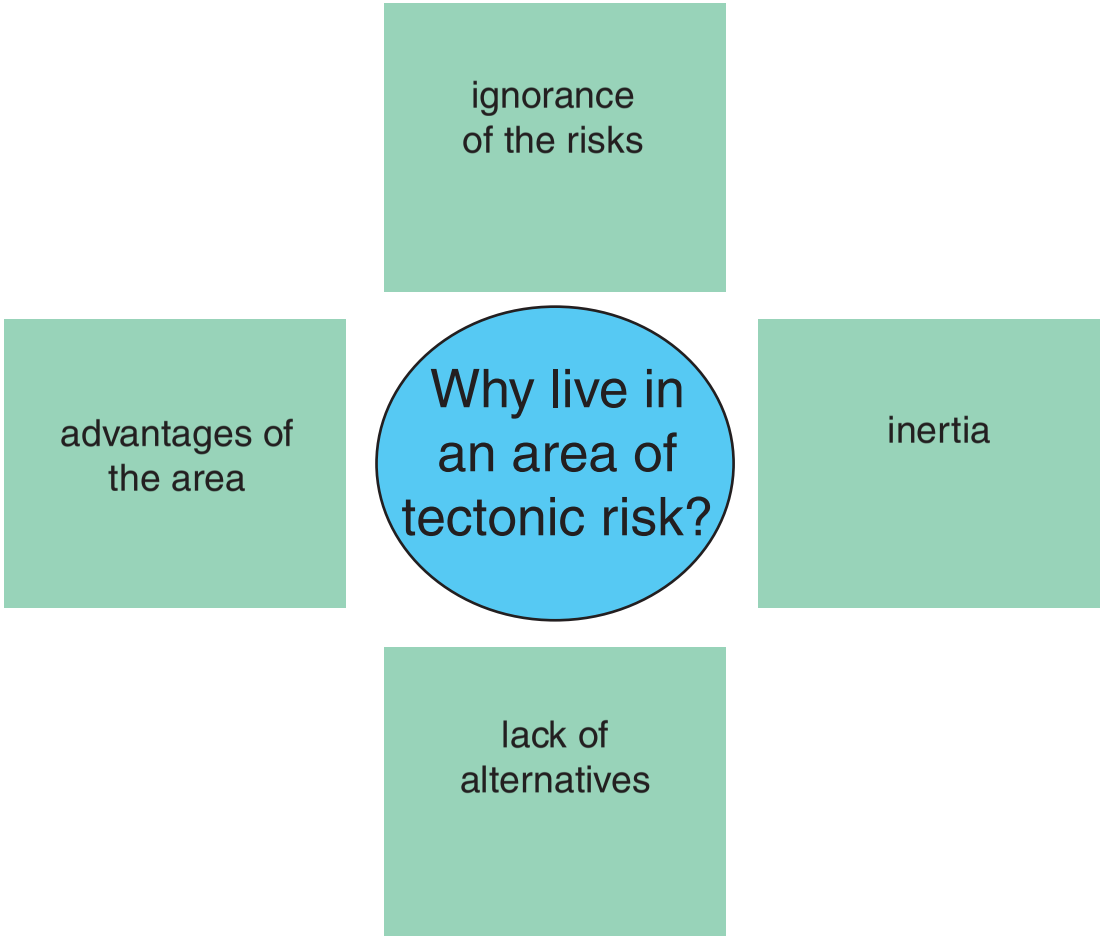
Living in areas of tectonic risk

1a Types of tectonic hazards

Earthquakes

Volcanoes

1b Why people live in areas of tectonic risk



RESOURCE 2

Information on selected recent earthquakes

Location	Magnitude	Estimated deaths	Cost of damage (US$)
Eastern Sichuan, China	7.9	87 587	150 billion
Central Alaska, USA	7.9	0	0
Samoa Islands	8.1	192	3 million
Kuril Islands	8.3	0	0
Hokkaido, Japan	8.3	1	1 million
Southern Sumatra, Indonesia	8.5	25	180 million
Northern Sumatra, Indonesia	8.6	1313	2.2 billion
Maule, Chile	8.8	507	15 billion
Honshu, Japan	9.0	20 896	300 billion
Northern Sumatra, Indonesia	9.1	227 898	3 billion

1 billion = 1 000 000 000

1 million = 1 000 000

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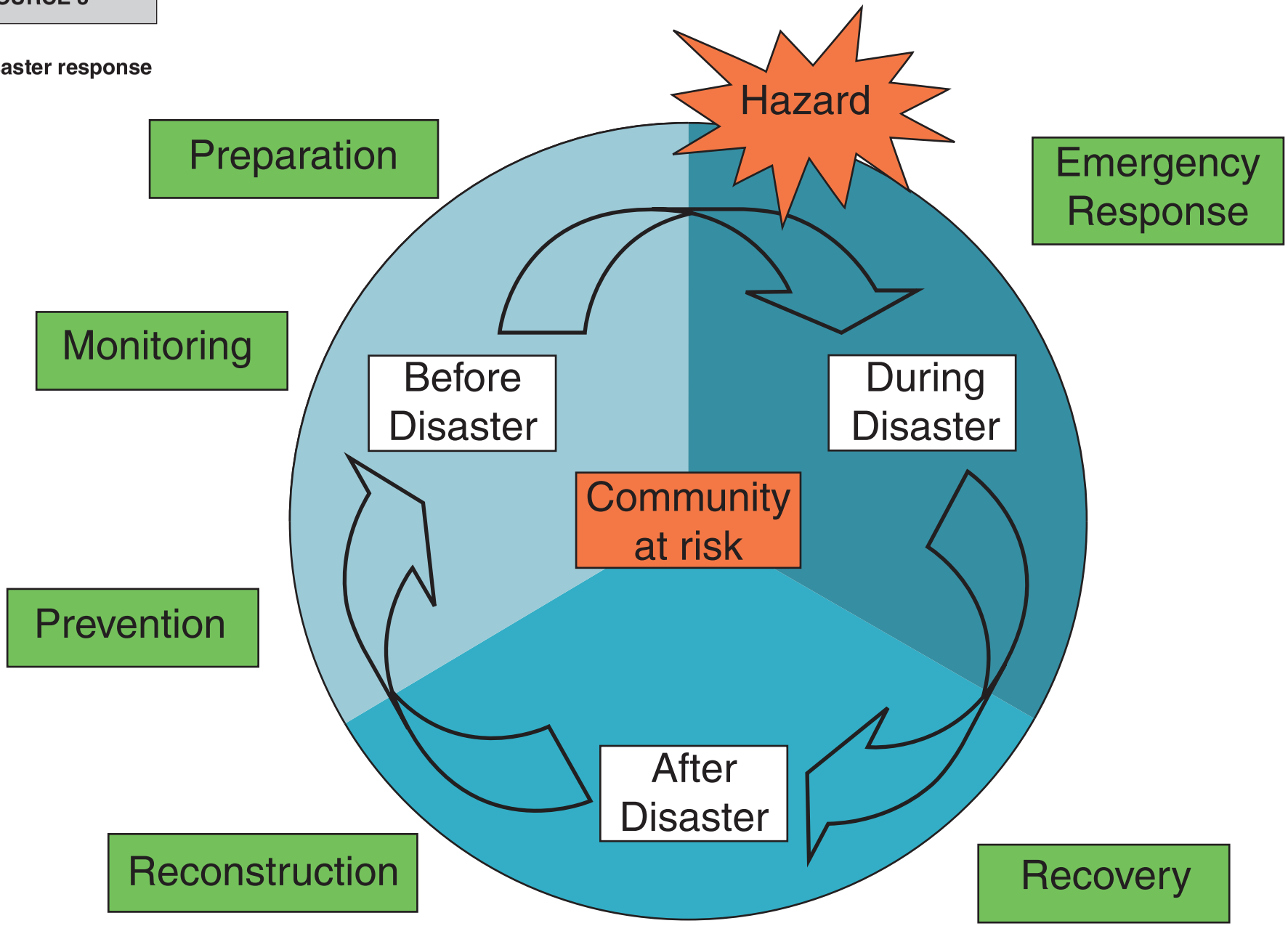
RESOURCE 3

Cycle of disaster response



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RESOURCE 4

The problem with earthquakes...

Earthquakes don't kill people, buildings do!

Turn over

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RESOURCE 5a

Comparing earthquakes
Turkey, October 2011

Sunday 23 October 2011 1.41pm (local time)

Location: Van Province, eastern Turkey

Magnitude: 7.2
Depth: 20 km

Deaths: around 1000
Injuries: 1140
Building Damage: Over 1000 destroyed

City of Van population: 353 500

Description:
Turkey sits on major geological fault lines and so is vulnerable to earthquakes. Death and injuries were caused by the collapse of buildings; the worst affected being made out of clay bricks.

A Turkish seismologist said that building regulations were often ignored in Turkey. He said, “the enforcement of the code is not as good as it should be”.

The earthquake cut electricity and telephone lines and the authorities in some areas turned off gas supplies to avoid the risk of fire.

Camps were set up and blankets, food and water were provided to shelter the tens of thousands of people who were left homeless in freezing conditions.

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RESOURCE 5b

New Zealand, September 2010

Saturday 4 September 2010 4.45am (local time)

Location: Christchurch, South Island, New Zealand

Magnitude: 7.1
Depth: 10 km

Deaths: 0
Injuries: 2 serious
Building damage: widespread (insurance claims confirmed at between US$ 2.25 billion and US$ 3 billion)

City of Christchurch population: 367 700

Description:
The earthquake that struck the region in 2010 was the most destructive earthquake to hit New Zealand in 70 years.

The New Zealand Prime Minister said, “with only two serious injuries, the impact was even less serious than a traffic accident”.

The reasons behind the lack of fatalities were put down to two major factors:

- the timing of the earthquake – at 4.45 in the morning, meant that most people were at home asleep;
- strict building codes which are adhered to, along with a great deal of research and development into building structures that will withstand earthquakes.

Most of the residential buildings in New Zealand are one or two storeys, light wooden structures, often not directly tied to the foundation, but have a base isolating bearing, which allows the structure to ‘float’. No civilian buildings collapsed in this earthquake.

Turn over

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RESOURCE 5c

Haiti, January 2010

Tuesday 12 January 2010 4.53pm (local time)

Location: Léogâne, Haiti

Magnitude: 7.0
Depth: 13 km

Deaths: around 92 000 according to International Agencies
Injuries: 220 000 recorded by International Agencies, 300 000 by Haitian government
Building damage: 250 000 residences and 30 000 commercial buildings collapsed or severely damaged

City of Port-au-Prince population: around 900 000 (Haitian capital, 25 km from epicentre)

Description:
This earthquake was more severe than others of the same magnitude due to the widespread damage and devastation to the buildings and infrastructure of the region. Within Port-au-Prince all air, land and sea transport facilities and communication systems were destroyed or severely disrupted. Roads were blocked with debris or the surfaces broken, hampering the delivery of rescue workers and aid. All hospitals were destroyed.

The mortuary facilities were overwhelmed and bodies were placed on streets and pavements, where government crews collected them in trucks to take them to mass graves.

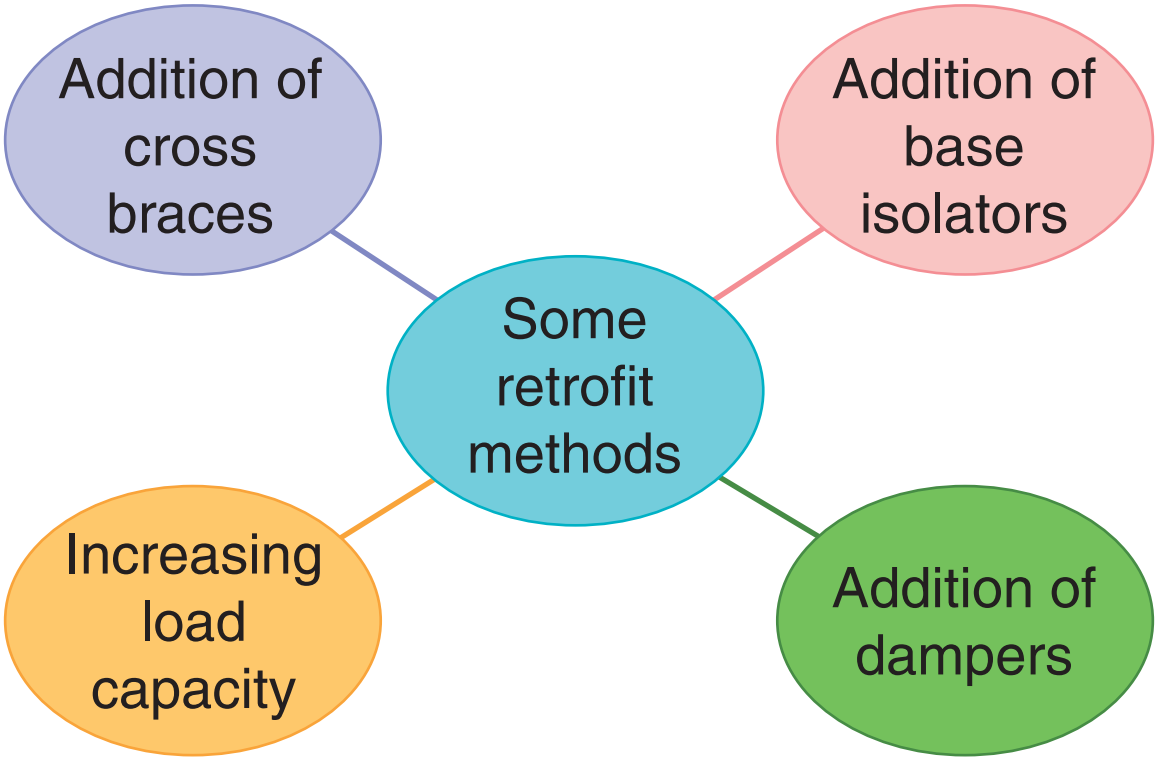
The governments of countries all around the world gave billions of US dollars in short and long term aid. Senegal in Africa offered Haitians free land in their country.

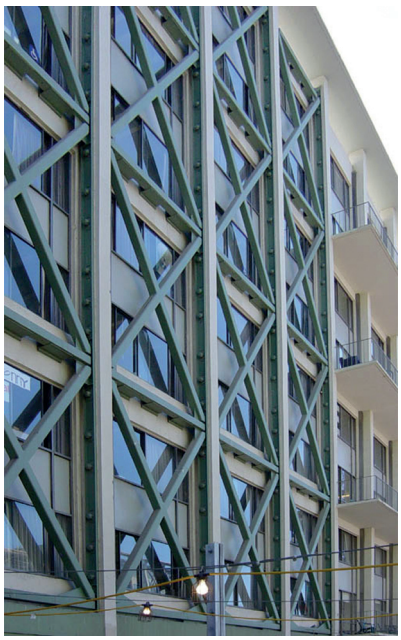
However, a report from Oxfam a year after the earthquake said that relief and recovery were at a standstill, due to the inaction of the Haitian government. The report stated that only 5% of the rubble had been cleared and only 15% of the required temporary housing had been built.
Even now, more than a million people still live in crowded camps, where the risk of diseases such as cholera is ever-present.

RESOURCE 6

Seismic retrofitting

A seismic retrofit provides existing structures with more resistance to earthquakes. In buildings this process includes strengthening weak connection points between the foundations and the rest of the building, or between the walls and roof.

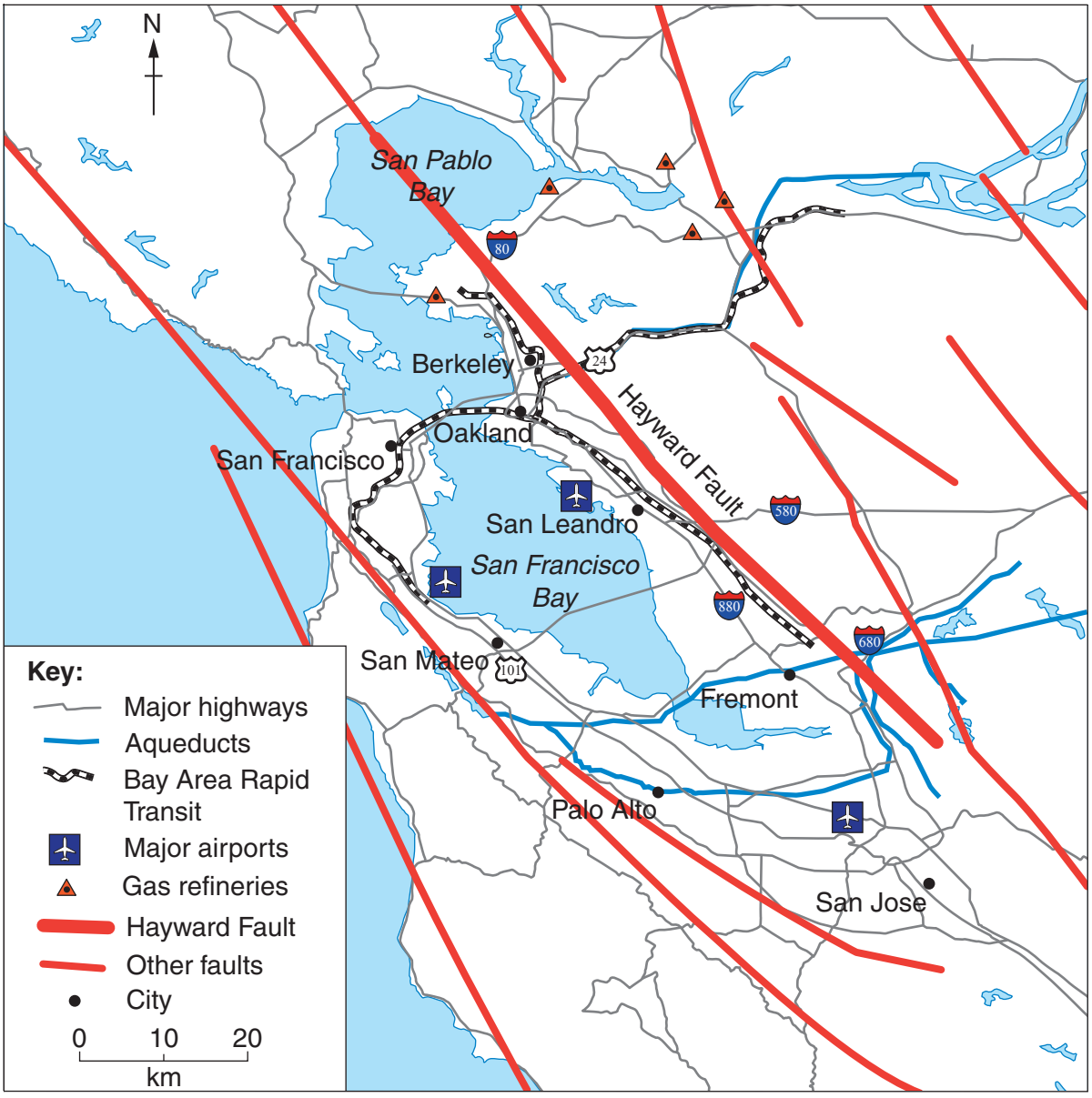




RESOURCE 7

Information about Hayward Fault, San Francisco Bay Area, California, USA

7a



A catastrophic earthquake on the Hayward Fault would have effects throughout California and the USA.

The San Francisco Bay Area has one of the highest concentrations of people and wealth in the USA. It is recognised as a centre of innovation in the country due to the high density of High-Tech companies in Silicon Valley, to the south of San Francisco Bay.

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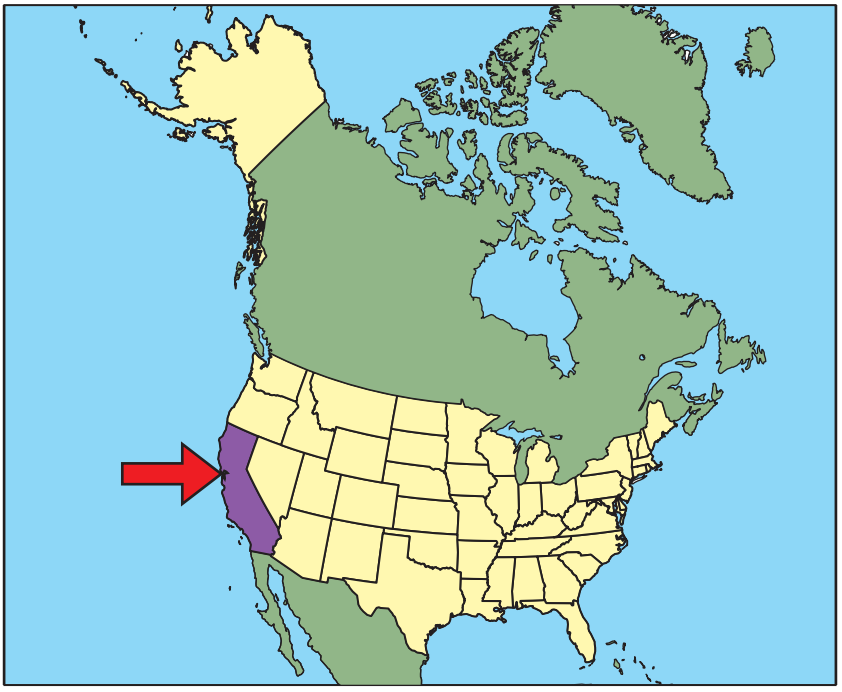
7b



Key:

USA

California

San Francisco Bay Area

RESOURCE 8

What's at risk in the Bay Area?

Facilities at risk

Types of facilities	Number (or extent) of Bay Area facilities with a high likelihood of experiencing damaging shaking in the next 30 years	Percentage of total number of facilities in the Bay Area (0 25 50 75 100)
Hospitals	76	
Fire, police, and local government	2970	
Elementary schools	987	
Intermediate or middle schools	164	
High schools	233	
Colleges or universities	62	
Bridges and interchanges	2721	
Bay Area Rapid Transit (BART) tracks	150 km	
Roads	30 350 km	

Property and people at risk

County	Residential property US$ billions	Commercial property US$ billions	Population
Alameda	215	150	1 575 000
Contra Costa	160	95	1 075 000
Marin	55	25	260 000
San Francisco	115	155	855 000
San Mateo	130	85	755 000
Santa Clara	315	205	1 880 000
Solano	50	25	425 000
Sonoma	70	30	495 000
Total	**1110**	**770**	**7 320 000**

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