

## Student Handout 10.10B: Climate Change-Induced Migration in the Pacific Region (Source 7)

*Background:* Justin Locke, a geographer, writes the secondary-source article “Climate Change-Induced Migration in the Pacific Region” for an audience of college graduates and social scientists. His purpose is to present an argument and develop it with reasons (claims) and evidence. He uses two types of text organization in this excerpt from the article. The overall structure is cause and effect. In each of the paragraphs he states one effect. The rest of the paragraph follows the thesis-and-evidence organization. The effect is the thesis and the remaining sentences are evidence, generalizations, or related claims. This worksheet will help you analyze the text organization in depth to better understand the text.

### Directions

#### Part I

1. After discussing, rewrite the first four words of the title “Climate Change-Induced Migration”:

---

#### Part II

2. In the text, find and circle all the verbs and signal words related to cause and effect.

3. Using the circled words as your guide, underline the effect in each paragraph (often this is just part of a sentence, not the whole sentence).

#### Part III

4. Analyze the paragraphs by summarizing the contents of each sentence (in six words or fewer).

5. On the text of Source 6, put stars next to evidence that helps explain statements from the women’s stories in Source 5.

### Text Organization Pattern: Cause and Effect

<b>Verbs</b>	led to, enabled, induced, affected by, will respond by, change, become, can be linked to, caused, rendered
<b>Signal words</b>	thus, so that, since, therefore, then, consequently, as a result, due to, because of, effect, forecast

### Part II: Justin T. Locke, “Climate Change-Induced Migration in the Pacific Region: Sudden Crisis and Long-Term Developments”

People of Polynesian descent, who first inhabited the islands some 2000 years ago ... have become accustomed to living in Tuvalu's fragile and ever-changing environment, but recent climate changes may overwhelm their ability to adapt. It is believed that in the next few decades the small island state will be rendered uninhabitable due to rising sea levels, and evidence of future inundation is increasing (Parks and Timmons 2006, 14). In 2007, one of Tuvalu's small islets, where plant and animal life once thrived, disappeared beneath the sea. In 2000, Tuvalu experienced an unusually long flood season that normally lasts for only a few months. However, during this period, the floods lasted for over 5 consecutive months. The flooding percolated up through the porous limestone soil, soaking many of Tuvalu's islands from the inside out. Climate change forecasts indicate that this occurrence may become the norm in the near future.

Over the past few decades, the capital island of Funafuti has seen an influx of migrants from the outer islands. With a land area of 2.79 km<sup>2</sup>, Funafuti supports a population of approximately 5000 people, and as in the case of Kiribati, most migrants are isolated in a central area (Government of Tuvalu 2006). In Funafuti, squatters have taken sanctuary in Fongafale, a make shift village in the centre of Funafuti — of which 35% of the village is built on water and garbage-filled borrow pits, a legacy of World War II (Hunt 1996, 225). Due to overpopulation, deforestation, lack of potable water and an eroding shoreline, the Tuvaluan government's capacity to cope with a growing urban population has been severely hindered. ...

Sharp increases in population density on Funafuti over the last 30 years have had other effects on human development indicators. Funafuti has a relatively high annual death rate in comparison with the next most populated island of Tuvalu, Nukufetau. Although Nukufetau's population is only half that of Funafuti, Nukufetau's annual death rate is over 100 times less per year than that of Funafuti (Government of Tuvalu 2006). Health workers attribute the higher death rate on Funafuti to a poor diet, rooted in a dependency on imported goods, which are high in fat and low in fibre, while Tuvaluans on the outer islands maintain a more traditional diet of taro root, fish, breadfruit, papaya and coconut.

Bearing the brunt of changes in climate and, in effect, the customary lifestyles of Tuvaluans, are young women. Recent reports from the Women's Environment Development Organization and the World Conservation Union show that the adverse effects of climate change are affecting women most, in places like Tuvalu (Kallmeyer 2008, 1). According to studies, young women in Tuvalu are spending an increased amount of time securing water and fuel, due to the scarcity of potable water and resources (Kallmeyer 2008, 1). Increased time spent working to ensure the basic needs of the family can be linked to decreased girls' attendance in school and lower literacy rates, particularly among young girls....

As climate change intensifies, and food and water supplies become more unreliable, populations will undoubtedly respond by migrating to places that offer better livelihoods. ... Needless to say, the populations that will bear the brunt will be those with the fewest resources. ...

### **Vocabulary**

rendered: changed into

inundation: flooding

islet: a small island

percolated: filtered through (in this case, rose up)

porous: filled with holes

Kiribati: a nearby island nation that faces similar problems

squatters: people who settle on land they do not own

taken sanctuary: found a safe place from which they won't be kicked out

make shift: to survive by whatever means they can or make houses out of whatever cheap or free material they can find; in this case, it is an adjective meaning that the squatters made their shelters out of whatever they could find

borrow pits, a legacy of World War II: During World War II, US, Australian, and other Allied soldiers used Funafuti as an air base to fight against the Japanese. Allied soldiers (and the local people they hired) dug up sand and gravel from these pits to use in construction fill in other areas.

potable water: drinkable water

capacity: ability

hindered: held back, made more difficult

human development indicators: Social scientists use certain statistics to judge how "developed" a country is. A "highly developed" country is wealthy, has lots of technology and industry, and provides its people with support and healthcare; a "developing" country is poor, does not have much technology or industry, supports itself by agriculture, and cannot provide enough support or healthcare for its people. Some commonly used health statistics are life expectancy, the rate of deaths compared to births, and infant mortality rates.

rooted in a dependency on imported goods: caused by the fact that people in Funafati eat food imported from other countries, not local food

adverse: negative, bad

**Part III:** *Analyze the paragraphs by summarizing the contents of each sentence (in six words or fewer). In the tables for each paragraph, the first column tells you what function each sentence performs in the development of the argument. Sentence by sentence, decide with your partner on six words (or fewer) that summarize what that sentence says. Record those six words in column 2. The words are notes and do not have to form complete sentences.*

### Paragraph 1

People of Polynesian descent, who first inhabited the islands some 2000 years ago ... have become accustomed to living in Tuvalu's fragile and ever-changing environment, but recent climate changes may overwhelm their ability to adapt. It is believed that in the next few decades the small island state will be rendered uninhabitable due to rising sea levels, and evidence of future inundation is increasing (Parks and Timmons 2006, 14). In 2007, one of Tuvalu's small islets, where plant and animal life once thrived, disappeared beneath the sea. In 2000, Tuvalu experienced an unusually long flood season that normally lasts for only a few months. However, during this period, the floods lasted for over 5 consecutive months. The flooding percolated up through the porous limestone soil, soaking many of Tuvalu's islands from the inside out. Climate change forecasts indicate that this occurrence may become the norm in the near future.

Introduction	
Effect (claim)	
Evidence 1	In 2007,
Evidence 2 (3 sentences)	In 2000,
Generalization about change	

### Paragraph 2

Over the past few decades, the capital island of Funafuti has seen an influx of migrants from the outer islands. With a land area of 2.79 km<sup>2</sup>, Funafuti supports a population of approximately 5000 people, and as in the case of Kiribati, most migrants are isolated in a central area (Government of Tuvalu 2006). In Funafuti, squatters have taken sanctuary in Fongafale, a make shift village in the centre of Funafuti — of which 35% of the village is built on water and garbage-filled borrow pits, a legacy of World War II (Hunt 1996, 225). Due to overpopulation, deforestation, lack of potable water and an eroding shoreline, the Tuvaluan government's capacity to cope with a growing urban population has been severely hindered. ...

Evidence 1	
Evidence 2	
Evidence 3	
Effect (claim)	

### Paragraph 3

Sharp increases in population density on Funafuti over the last 30 years have had other effects on human development indicators. Funafuti has a relatively high annual death rate in comparison with the next most populated island of Tuvalu, Nukufetau. Although Nukufetau's population is only half that of Funafuti, Nukufetau's annual death rate is over 100 times less per year than that of Funafuti (Government of Tuvalu 2006). Health workers attribute the higher death rate on Funafuti to a poor diet, rooted in a dependency on imported goods, which are high in fat and low in fibre, while Tuvaluans on the outer islands maintain a more traditional diet of taro root, fish, breadfruit, papaya and coconut.

Transition/generalization	
Effect (claim)	
Evidence 1	
Cause (claim; analysis)	

### Paragraph 4

Bearing the brunt of changes in climate and, in effect, the customary lifestyles of Tuvaluans, are young women. Recent reports from the Women's Environment Development Organization and the World Conservation Union show that the adverse effects of climate change are affecting women most, in places like Tuvalu (Kallmeyer 2008, 1). According to studies, young women in Tuvalu are spending an increased amount of time securing water and fuel, due to the scarcity of potable water and resources (Kallmeyer 2008, 1). Increased time spent working to ensure the basic needs of the family can be linked to decreased girls' attendance in school and lower literacy rates, particularly among young girls....

Effect (claim)	
Evidence 1	
Evidence 2	
Analysis	

Paragraph 5

As climate change intensifies, and food and water supplies become more unreliable, populations will undoubtedly respond by migrating to places that offer better livelihoods. ... Needless to say, the populations that will bear the brunt will be those with the fewest resources. ...

Cause & effect prediction	
Claim	

Student Handout 10.10B Key: Climate Change-Induced Migration in the Pacific Region (Source 7)

Part I: Answers will vary.

Part II: Identify the effect described in each paragraph.

1. Small island state will be rendered uninhabitable (will be rendered, due to, forecasts, may become).
2. Influx of migrants to Funafuti/Tuvaluan government can't cope with growing urban population (due to), but have to tell students that the first sentence is an important part of the effect as well.
3. Human development indicators — higher annual death rate in Funafuti — point out that the first sentence doesn't tell you what the effect is, only that there is an effect. You have to go to the next sentence to find out what the effect is.
4. Effects hurting young women (effects — but not in first sentence, due to, can be linked to).
5. Populations will respond by migrating (respond).

Part III: Answers will vary.