

# ADAPTING TO A NEW ENVIRONMENTAL REALITY IN MOROCCO

How one project is helping a part of the North African country innovate to weather the effects of a changing climate

POSTED BY ALANNA MITCHELL ON JULY 19, 2016

**Ten women who** can barely read or write. Six remote, impoverished villages nestled in the High Atlas Mountains, near Marrakesh, Morocco. An increase in flash floods that contaminate water for days. The vulnerable, especially children and the elderly, who fall ill when they drink it anyway.

How to help them cope? One idea is to give the 10 women tablet computers, internet connections and a dedicated Facebook page, and then teach them how to stay in touch.

Why the women? They are the de facto heads of their households, eking out a living running local restaurants, working in agriculture or as temporary employees while their husbands work in Marrakesh. When the floods come, it's the women who must deal with the catastrophic fallout. And they do it with courage and creativity, says Diane Pruneau, a professor of environmental education at the University of Moncton, whose team developed the Facebook project.

Researchers taught the women how to use the computers, explaining how to take photographs and videos, and then post them, along with comments. The researchers chose Facebook because it's simple to use. Before the training, the women had not known each other, despite living in villages strung along the Ourika River.

During a recent flood, as the river swelled unexpectedly and put their villages in peril, the women set up a system to warn each other. Those upstream posted pictures and video and wrote comments to let the women in villages downstream know what was happening.

After the flood, they experimented with home-made water filtration systems using sand, rocks, charcoal or fabric, taking photos of them and sharing the information with others on Facebook. Eventually, they came up with new ways of managing scarce water resources, and are exploring ways of protecting their homes during floods, meaning that they can teach other villagers, too.

Pruneau's Facebook group is part of a \$650,000, three-year program called Gestion intégrée des Ressources en Eau & Paiement des Services Environnementaux, or GIREPSE, which is funded by the [International Development Research Centre](#) to help vulnerable communities in the High Atlas Mountains weather changes stemming from climate change and other types of environmental degradation.

Those problems are getting worse, says Abdellatif Khattabi, president of the Association Marocaine des Sciences Régionales who heads the project in Morocco. Climate change is already affecting Morocco, leading to droughts. Rains now arrive in odd, vast torrents that the land is less able to absorb. Not only that, but the rains are less predictable than they used to be and air temperatures are higher.

At the same time, tree-cutting in the hills that feed the watershed has decreased forest cover, and agriculture is intensifying, but land-management practices to preserve water are not keep-



Restaurants and cafés line the banks of the Ourika River in Morocco in spring and summer (left), but when flooding occurs, the river's flow can be much more powerful and dangerous, damaging homes, businesses and infrastructure (right). The GIREPSE project is teaching locals to adapt to such changes, many of which are climate-change related. (Photos: Courtesy of GIREPSE)

ing up with the changes. It adds up to more intense flooding, says Heidi Braun the IDRC officer in charge of the program. Mega floods that used to happen only once or twice a century now happen far more often.

And pressures are growing on what little water there is. Marrakesh's population is increasing; tourists are flocking to the Ouri-ka basin in summer and winter; industry and agriculture are consuming more water. Worse, analysts predict that as climate change intensifies, less rain will fall on the area each year on average — although in more dramatic storms — and the temperature will continue to rise, causing greater evaporation.

The GIREPSE project is exploring a raft of innovative coping mechanisms for these problems. For example, could tourists pay a small environmental tax to support water conservation? Could increasing and maintaining agricultural practices such as terracing reduce erosion? Could villagers make a money from preserving fruit crops so they could sell them at higher prices throughout the year?

Meanwhile, the Facebook group has been an early and exciting success story about the ability of villagers to adapt to the coming changes, says Khattabi. But both he and Pruneau say that the project has had intriguing side benefits that go far beyond adapting to climate change. As the women communicated with each other, they began to believe that their observations and even their opinions about the floods mattered. They liked being heard. They even began sharing views about other issues they face. Perhaps most important of all, they began to believe that their actions can make lives better for themselves and their families.

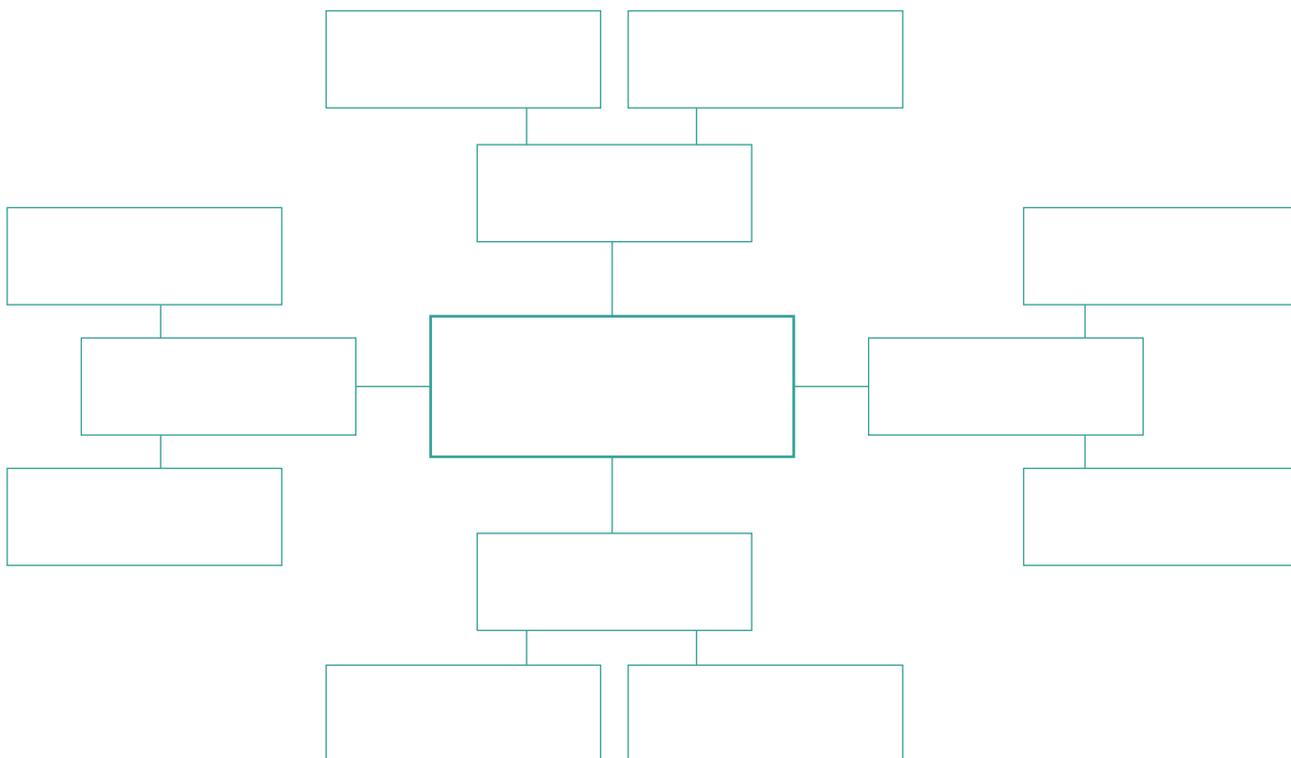
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## READING AS THINKING

Answer the following in complete sentences.

1. Create a mind map depicting the main idea and supporting details of the article. The main idea should go in the center of the map and the details should be included in the branches. You may use a combination of pictures and words.



2. Explain why flooding is a problem in this area.

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3. Identify five ways that the women and GIREPSE are coping with the fallout from flooding.


4. Now that you have identified several things that are already being done to cope with the issue, you have a chance to add your own idea. Design and propose one innovative solution for coping with the impacts of climate change and flooding in the region.

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5. Analyze the picture in the article and complete the following.

a) Make 3 observations about the image.


b) What thoughts and emotions does the image provoke?

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c) Why do you think the image was chosen?

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6. Assess the effectiveness of Facebook for this project versus other social media platforms.

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7. Form a reasonable prediction that outlines the outcomes of the project five years from now. Use evidence from the article to support your prediction.

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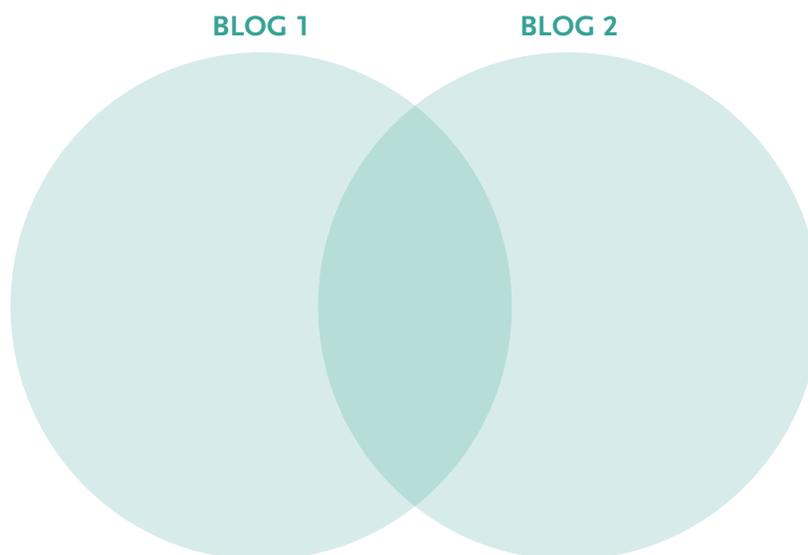
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## Think-Pair-Share

8. *Think*  
Create a blog entry that tells the world about an aspect of this project. Your teacher will inform you if your entry is to be completed in your notebook or using a publishing tool such as Blogger.

### *Pair*

Share your entry with a classmate. Identify the themes in the blogs and compare and contrast.



### *Share*

Discuss overlapping themes in the blog entries as a class.

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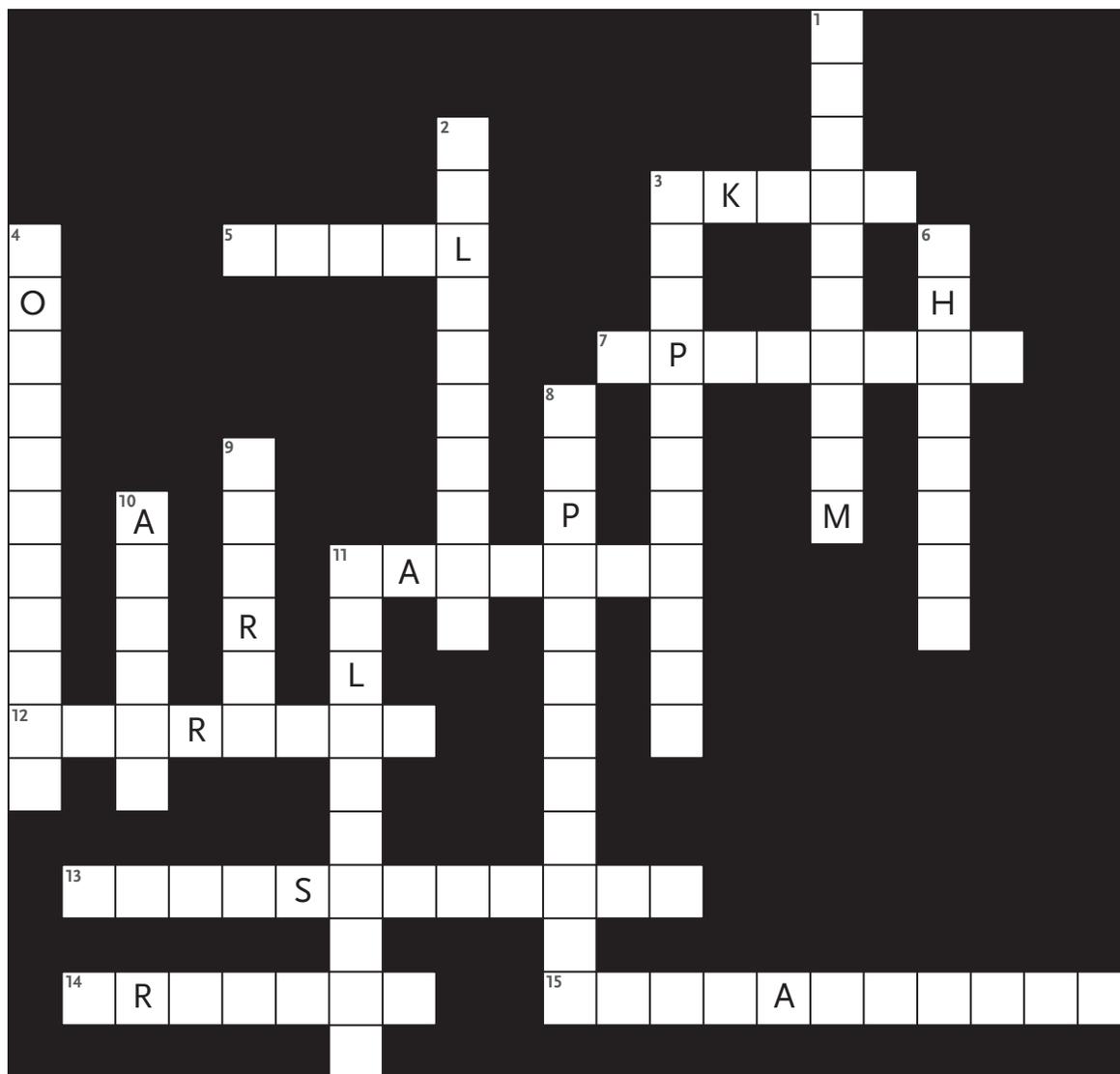
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## ONLINE

1. Locate Morocco on [Google Maps](#) and explore the country. Using the quick facts section and other research tools, find the following:
  - a) the population
  - b) an ocean that borders it
  - c) a sea that borders it
  - d) the capital city
  - e) the High Atlas Mountains
  - f) Marrakesh
  - g) Oued Ourika (this is the Ourika River)
  - h) a neighboring country
2. Learn more about the [Atlas Mountains](#).
3. Keep up to date on [flash floods in Morocco](#).
4. Read more about the project from the [Morocco World News](#).
5. Learn more about the [International Development Research Centre](#).
6. Visit the [Public Health Agency of Canada](#) to learn more about climate change and flooding.
7. Checkout [Mark Zuckerberg's post](#) on delivering internet from space to connect people living in remote regions in sub-Saharan Africa.

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## CROSSWORD:

### Across

3. To make a living with great difficulty
5. Great danger
7. The direction that is opposite to the flow of a river
11. Unpleasant results or effects of an action or event
12. Large amounts of water being released
13. Great trouble or destruction
14. Gradual destruction of something by natural forces, such as water
15. The act of damaging something

### Down

1. The direction that a river flows
2. Susceptible to illness due to age
3. To change from a liquid to a gas
4. Water becomes impure
6. A hard black material that is made by burning wood with a small amount of air
8. Reduced to poverty
9. Not plentiful
10. Water being taken into the land in a gradual way
11. Removing something unwanted from water