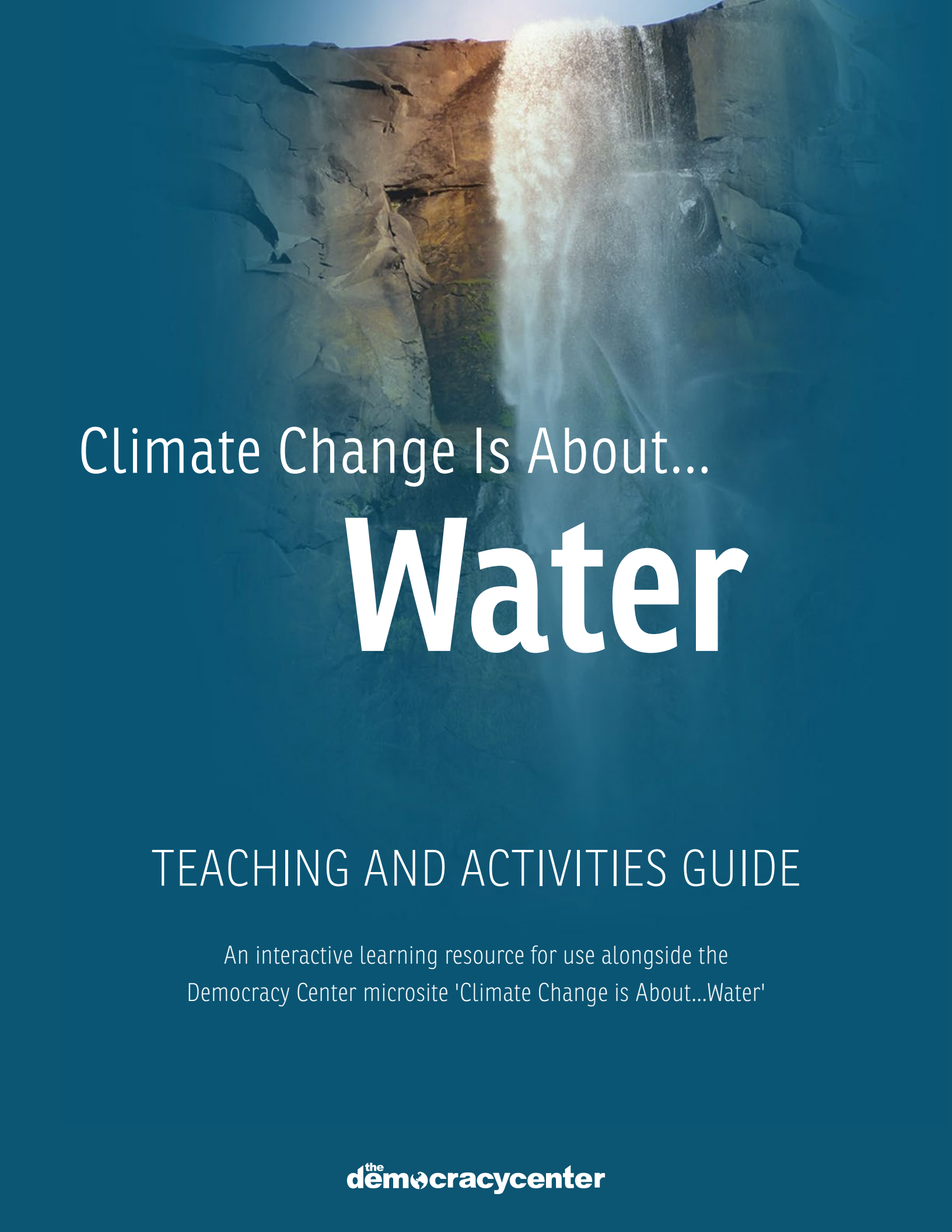

Climate Change Is About...

Water

TEACHING AND ACTIVITIES GUIDE

An interactive learning resource for use alongside the
Democracy Center microsite 'Climate Change is About...Water'

the democracycenter

Contents

Above: A flooded soccer field at the local school in Quillacollo.
Below: The earth breaks open in Pasorapa during severe droughts.

'Climate Change Is About...Water' – Teaching and Activites Guide

Thank you for using the 'Climate Change is About... Water' Teaching and Activities Guide. If you have any questions, comments or feedback, then please get in touch with maddy@democracyctr.org. For more information about the Democracy Center visit democracyctr.org.

The original copy for the 'Climate Change Is About... Water' website was written by Shawn Arquiñego.

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Layout by Anders Vang Nielsen.

Also available in Spanish (translation by Leny Olivera Rojas) from our website.

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Introduction: Notes for Teachers

This document is a tool to help you teach the subjects addressed in the Democracy Center's website about climate change and water. The website is divided into seven sections, each focusing on a different aspect of the relationship between climate change and water. The sections contain short articles, in-depth articles, photos and video. The purpose is to explore what climate change really means for people in an interactive and engaging manner.

The website material and teaching guide are of particular relevance when studying climate impacts, development or human migration in **Geography,** and especially for lessons focused on Bolivia/the Andean region. For **Citizenship** and **Globalization** studies the material highlights global issues and encourages students to think about how social problems should be addressed. Older students of **social sciences** may also find relevant material here on the economic, social and cultural impacts of a changing climate in a developing country.

The website and teaching guide do not focus on the science of climate change, but on the human impacts. Teachers wishing to explore the science of climate change should investigate the teaching aids and other resources listed on the Resources pages of the 'Climate Change is About...Water' website.

This guide has lessons for each section of the website. In each lesson we have included a brief summary of the main themes of the lesson, a series of research/discussion points, and some activities. The website material and research/discussion points could be dealt with in class, or given to students as class preparation. Again, the Resources section of the site can be used to aid students in their research.

Aims

Assist students to understand:

- how climate change impacts water systems (floods, drought and glacier loss)
- how human society depends on water, and how we are affected by changes to water systems
- how and why some places and people are more vulnerable to climate change, and the reality of surviving with unpredictable water supplies
- the relationship between water, climate change and human migration
- the specific situation of Bolivia and Bolivians in relation to climate change and water

Enable students to deploy 21st century classroom skills:

- navigate online information
- select, interpret and apply information from online research
- learn and extrapolate from real-life experiences and draw comparisons between their own lives and those of their peers elsewhere
- critically engage with global issues and their causes and consequences
- seek solutions to local and global problems

Peer-to-peer learning

We are connecting students in various countries with this material, including in Europe, the USA and Latin America. Our hope is that the website and this guide help to motivate and support peer-to-peer learning between students from different circumstances and backgrounds. We have created a dedicated virtual Climate Classroom within the website, where we hope students will share their own responses to and thoughts about how to deal with the issues raised in the material, and also make contact with other students for further learning and debate.

Please note that the website and teaching guide are also available in Spanish.

Contact maddy@democracyctr.org for more information.

Notes on Bolivia for the teacher

Bolivia is a landlocked country in the central zone of South America. The country encompasses a great variety of climates and terrains, and one of the greatest degrees of biodiversity in the world. From the highest peak in Bolivia, Nevado Sajama at 6,542m, to the tropical lowlands in the east, Bolivia spans many different ecosystems.

Bolivia has one of the highest poverty rates on the continent, and a high rate of income inequality. Nearly 63% of Bolivians live in urban areas, a rate which is increasing due to high rural-to-urban migration.

Link to map, or see the map on this page of the website.

Key words and terms

(These terms can be discussed in the class, or a glossary provided to students – or they can look up the meanings themselves)

Adobe	Infrastructure	Precarious
Climate change	Informal housing	Sanitation
Climate change adaptation	Migration	Sustainability
Climate change mitigation	Natural disaster	Vulnerability
Extreme weather event	Natural resources	Watershed
Floodplain	Population density	
Inequality	Potable	

Optional lesson: Bolivia and the Water War

In Bolivia factors such as geographic diversity plus inequality and migration make the story of climate change and water especially important for this country. But Bolivia also has an interesting history when it comes to water. In 2000 the city of Cochabamba in Bolivia became famous when its inhabitants decided to stop a corporation called Bechtel from privatising their water supply. What happened next became known as 'the Water War'.

Get students to find out more about the Water War online, including from the Democracy Center's main website and the many videos on YouTube.

What was the water war all about?

- How did the people of Cochabamba manage to "win" the war?
- Why was keeping their water publicly owned so important to the *Cochabambinos*?
- Why is water so important to us?

Activity

- In groups ask students to consider what kinds of threats exist to water today, either where they live or in other places. Set a role play exercise in which they imagine their local water supply is threatened (by industry, climate change or some other cause) and call a town meeting to debate what should be done.

Lesson 1 – Why climate change is about water

Brief Summary

The website section for this lesson is the Introduction. This section introduces the links between climate change and water. It highlights how little potable water there is in the world, and the importance of water for life. The section explains how Bolivia, due to its geographic variability as well as social factors, is especially vulnerable to climate change impacts on its water. As the video with climate negotiator René Orellana explains, far from being an abstract concept, these climate effects are already being felt in the country.

Discussion/Research Questions

- What do you know about climate change?
- What do you think the relationship between climate change and water is?
- Answer the question on this page.
- Ask students to list all the things in their lives that need water. (Or that don't need water?)
- Ask students to think about why their city/town/village was originally founded in its particular geographic location. What does it have to do with water? *(You might want to provide a map or satellite image for this exercise).*
- Or – 'you've just arrived on planet earth from outer space and want to build a new settlement. How do you pick a location?

Activity

- Ask the students to find out how water has changed in their area over recent decades – examples could be rivers, sea, groundwater, wells, or water supply. If possible, students can ask older people about how water has changed in their lifetimes. Ask the students if they think that other parts of the world have experienced similar or different changes in their water systems and why that might be.

Lesson 2 – Vulnerability

Brief Summary

The section for this lesson is Vulnerability. It is easy to think that geographic location is the main cause of vulnerability to climate change impacts. Actually there are several other root causes, such as economics, geopolitical issues, government capacity, race, class and gender. The article *In the Crosshairs: Climate Change Vulnerability in Bolivia* explores some of these root causes in depth. However, it does not explore the issues of race, class, age, and gender which are also causes of vulnerability. These causes can be explored in the class discussion if appropriate.

Migration is a coping strategy of vulnerability, and the reasons for migration fall into three categories: push factors - a lack of resources in the home community; pull factors - the draw of possible access to these resources elsewhere; and intervening factors such as established patterns of migration, transportation factors, and more.

Issues raised: *Migration, causes of vulnerability, inequality, government responses to climate events.*

Discussion/Research Questions

- Why do people migrate? Have people in your area migrated? If possible, find out why.
- On the board, the teacher can write up the reasons for migration that students give. Then ask the students whether the reasons are push factors, pull factors, or intervening. Discuss which of these factors might be related to climate change.
- It is often younger people that migrate. Ask students to think about what the possible consequences might be if a community loses large numbers of its youth (economic, social and cultural impacts).
- Show the students the relief map of Bolivia, linked on the first page of this guide, and explain that due to its geographic variability it is especially vulnerable to climate impacts (you can find information about that in the short essay 'In the Crosshairs'). Then ask the students if they think vulnerability is a geographic effect? Are there other types of vulnerability? What are the causes?
- Show the students the picture of vulnerability root causes on this page and ask them if they think there are any more root causes of vulnerability.
- Do you know of anyone who has suffered impacts from climate events, or have you? Do you think climate events affect everyone the same? Why/why not?
- What do you know about the response to climate events from the government in your country? Do you think it's the same everywhere? Why/why not?
- Why doesn't Bolivia respond more efficiently when there are climate disasters?

Activities

- In groups, ask students to draw a rough map of their city/town/village/neighbourhood/area and to mark on the map places that are vulnerable to climate impacts such as floods, erosion, drought, crop failure, lower crop yields, sea level rise, glacier melt, reduced availability of water, etc.
- Ask students to research a major climate event/impact in their own country or region (see examples on this page of the website). How did the local and national government respond? Was the response sufficient? If not, what more should have been done?
- They should then imagine how the area and community would be affected in 10 (or 20, or 50) years time if the problem continues or worsens. Who is most vulnerable in the area/community? Who is responsible for protecting them? *(As well as the government you might encourage students to think about the role of family and social networks, other institutions such as schools and hospitals, the role of the media, and international institutions responsible for seeking global solutions to climate change).*

Thinking about solutions

- Together students draw up a Climate Action Plan which presents ideas about how to prevent the potential climate-related risks for the area under study, with particular consideration for protecting the most vulnerable members of the population. This could include visual and written material, or presented e.g. in the form of an interview with a member of their Climate Action Plan Committee.

Lesson 3 – Drought case study: Pasorapa

Brief Summary

This section of the website deals with the human impacts of drought induced by climate change. A visit to a farming community, Pasorapa, illustrates the impacts of drought on the community. Pasorapa has always had droughts, but in the past years they have become much more severe. Locals explain the increased negative impacts on their livelihoods. The government has promised help in the form of wells and irrigation, but it has not materialised. These impacts are worsening the poverty in Pasorapa, and many of the young people are leaving for the cities.

Issues raised: *Drought, agriculture, water use, government aid.*

Discussion/Research Questions

- What is drought? Do you know anyone who has suffered drought? How did it affect them?
- Do you think the effects of drought are the same everywhere? Why/why not?
- What information can you find from the website section on 'Droughts are about...' on the links between the drought in Pasorapa and climate change?
- How did the drought affect Pasorapa economically?
- Do you think the drought affected everyone in Pasorapa equally? Why/why not?
- What options do you think are available to the people of Pasorapa in the face of the drought?
- How did the government react to the drought in Pasorapa?
- What do you think would happen in your area if there was a drought this severe? Do you think the government would provide help?
- What does your thinking about these questions tell us about *climate change and inequality?*

Activities

- Ask the students to calculate how much water they use in a day, including going to the bathroom, showering, washing the car, etc.
- Then ask them to investigate where their water comes from. As well as looking at sources such as rivers and reservoirs, they should think about how water is brought into homes, farms and businesses and who they think is responsible for making that happen. What would happen to these sources and systems in a drought?
- Ask them to research water use around the world and compare the amount of water they use to other regions.
- Students could prepare a song, story, poem or play about what would happen – to them personally and/or their community or society – if the rains didn't fall.

Thinking about solutions

- Get students to investigate civil society groups, campaigns, NGOs etc who are raising awareness about the link between climate change and droughts. What messages do they find? What help is being given? Ask students to create an awareness-raising poster, animation or similar to help their peers understand the issue.

Lesson 4 – Flooding case study: Quillacollo

Brief Summary

This section deals with the impacts of flooding. Quillacollo, a town in the province of Cochabamba, suffered severe flooding in 2011 and again in 2012. Severe rains over a week eventually caused the river Rocha to overflow, bringing with it sewage from a sanitation system unable to cope with the volume of water. Quillacollo has grown rapidly due to rural-to-urban migration, and many houses are built on the floodplain. Some houses were also inadequately built to withstand the floods and collapsed. Disease such as diarrhoea and skin problems emerged after the flooding, especially amongst children. Government help to rebuild has been nearly non-existent and many people have been forced to sell off their land cheaply.

Issues raised: *Flooding, migration, disease, town planning, government aid.*

Discussion/Research Questions

- What are floods? Do you know anyone who has suffered because of flooding? How did it affect them?
- Do you think the effects of floods are the same everywhere? Why/why not?
- What information can you find from the section 'Floods are about...' on the links between the flooding in Quillacollo and climate change?
- Who was most affected by the floods?
- How did the flood affect Quillacollo economically?
- Do you think the flood affected everyone in Quillacollo equally? Why/why not?
- How were people's daily lives affected by the floods?
- Why have migrants settled in areas so close to the river?
- Compare the impacts of drought and floods – are the impacts on humans similar in both cases? Why/why not?
- What does your thinking about these questions tell us about the links between *climate change and migration?*

Activities

- In groups, ask students to produce a news report on the flooding, including interviews with affected people. The students themselves take on the roles of community members and news reporters. The report can be in video or audio, or if equipment isn't available, in written format.
- Ask students to research other areas that have suffered flooding. *Try to make sure some students research areas in the global North, and some in the South.*
- How were the impacts on people similar or different to Quillacollo?
- How was the response of the government similar or different?
- Have any plans to prevent future floods been implemented?

Thinking about solutions: Adaptation

- Discuss the meaning of the word 'adaptation'. What kinds of adaptation are students aware of among humans and other animals? Ask students to present to class an example of how adaptation aids survival.
- Thinking about the floods in Quillacollo, ask students to prepare their own climate change adaptation plan, either for Quillacollo or somewhere else affected by climate change.
- Discuss the differences in the climate change adaptation plans of different countries and regions. Why are they different? *(Students should think about the issues raised in the 'Vulnerability' section)*
- Do students think that making plans to adapt to climate change is a sufficient response to the crisis? Why/why not? For higher level students, a debate could be organized about whether public money should be prioritized for climate adaptation or climate mitigation.

Lesson 5 – Glacier loss case study: Khapi

Brief Summary

This is the section for this lesson. In the video, Democracy Center staff visit a mountain community that depends on a glacier for survival. Community members explain the impacts of the glacier melt that is taking place. *Why Glaciers are Important* details the ecological and human functions of glaciers – they regulate the weather patterns, provide drinking water, and in Bolivia, provide water for hydroelectric power generation. It is now clear that glaciers are melting faster than ever before.

Issues raised: *Glaciers, ecosystem services, knock-on effects of climate impacts, agriculture.*

Discussion/Research Questions

- Why are glaciers important?
- What information can you find from the section on 'Melting glaciers are about...' on the links between the glacier loss at Illimani and climate change?
- What are the effects worldwide of glacier melt? How might your own community be affected?
- In the video of Khapi, what are the impacts on the community when Illimani melts? Are the impacts only water and food-related?
- What lessons do you think you can learn from the people of Khapi?
- Do you think the melting of Bolivia's glaciers is a human rights issue? *(If students are interested in exploring this issue further, they could research the 2010 UN Resolution on the Right to Water and Sanitation. There is a WaterAid lesson plan on this subject here.)*
- What does your thinking about these questions tell us about the relationship between *climate, landscape, and culture?*

Activities

- Ask the students to think about how climate change could have an effect on the culture of their home or somewhere they care about. What about areas that depend on agriculture, fishing, skiing, or seaside leisure activities? What might happen to traditional harvest festivals or other seasonal rituals and celebrations?
- Equipment permitting, students could choose an aspect of the potential impacts of climate change on local culture (based on the previous activity) to prepare a short audio, photo or video documentary report about.

Thinking about solutions

- Young people may not live near glaciers, but they can understand their importance both for local communities and for their storage function of the globe's fresh water. Ask students to prepare a lesson plan that would help primary school age children understand the risks associated with melting glaciers. The more creative and engaging the better!

Lesson 6 – Climate Crises Worldwide

Brief Summary

This lesson refers to the section on Climate Crises Worldwide. It is not just Bolivia that is feeling the effects of climate change. Natural disasters and changes in weather patterns are happening worldwide. A wide range of responses are needed to solve the climate crisis.

Issues raised: *Global interconnectedness, inequity of climate impacts, capacity for adaption.*

Discussion/Research Questions

- Have you or anyone you know experienced any extreme weather events like those described in the Climate Crises section of the website? Do you think they were related to climate change? Why/why not?
- Do these local events have global consequences? Why/why not?
- Have the Texas and California droughts affected local people in the same way as the Pasorapa drought? Why/why not?
- Watch the video on this page with Marcela Olivera. What problems with water in Bolivia does she outline? Where does she think the solutions lie? Do you agree or disagree?
- Is your country taking steps to adapt to climate change? Do you think they are different from the steps Bolivia is taking? Why?
- What does your thinking about these questions tell us about *climate change as a global issue?*

Activities

- Buy a copy of the film Beasts of the Southern Wild and watch it with the class. The film deals with forced migration due to severe weather. Discuss with the class their thoughts on the film.
- Do a survey of how many news stories have appeared linking climate change with extreme weather events across the world in the last year. What conclusions can students draw about the role of the media in communicating climate change and its impacts?
- Arrange a web forum with students from another state/country to share experiences and reflections on global climate change and their experiences of it. *You could check our Climate Classroom area to help facilitate this.*

Thinking about solutions

- Link up with another group or class to explore ways of sharing your stories and ideas about the climate change crisis and what young people can do to help confront it. *Don't forget to share your work in the Climate Classroom Gallery*

Conclusion – What is to be done?

The last section of the website is named Conclusions, though it's clearly not the case that an issue like climate change can be rounded off to a neat "conclusion". We would like to amplify this section with a wider range of voices, and we have created a virtual classroom within the website that we invite teachers and students to contribute to. We have included a list of suggestions here on ways in which students can reflect on the issues they have covered and think about the kinds of responses that are needed from decision-makers and global citizenry.

Reflection questions

- Apart from water, what are some of the major impacts climate change is having on the earth and human society?
- Who is responsible for climate change and its impacts?
- Who will suffer most because of climate change impacts, now and in the future?
- Who is responsible for dealing with the problems?
- What can be done?

Suggested Activities

- Ask the students to make a short video, audio recording, or written piece on what steps they think the world should take to deal with climate change. They should think about where and how they could get it seen by their peers and others.
- Students could arrange a meeting with a local councillor/government representative to ask questions about what they are doing locally or at the national level to push for action on climate change
- Students could do a survey of local groups and campaigns working on climate-related issues and make it available to the school body to encourage membership and involvement.
- What creative campaigning responses do students have – for example using plays, poems, stories, songs, raps, poetry, visual arts and graphics, graffiti, animations, journalism etc etc to inform and inspire.
- Students could create a 'climate change storybook' that gathers together voices, faces and experiences related to climate change and/or the efforts to confront it.

Use the Climate Classroom on the 'Climate change is about...Water' website to post student-produced materials relating to climate change and possible solutions, and to link with students in other places who are working on the issue.