Article

Case Study: Klamath Basin

Klamath Basin Water Issues

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PROGRAM

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Wednesday, January 22, 2014

Geography

The Klamath Basin stretches from southern Oregon into northern California and covers an area of more than 31,080 square kilometers (12,000 square miles), which is about the size of the state of Maryland. The Klamath River runs through the basin. It is one of the few rivers in the country that flows west into the Pacific Ocean.

The population of the Klamath Basin is about 114,000 people, with most concentrated in the upper agricultural areas. Klamath Falls, Oregon, is the basin's largest city, with about 20,800 people. Yreka, California is the next largest city, with about 7,700 people. Four Native American tribes own land in the basin, and two-thirds of the land in the basin is owned by the federal government.

Assessment

The Klamath Basin supports family farming and ranching interests, as well as one of the largest commercial salmon fisheries in the country. The area is home to the Karuk, Klamath, Hoopa, and Yurok tribes, all of whom have traditionally fished the Klamath River. The tribes continue to fish for subsistence purposes, as well as for cultural tradition.

The U.S. Department of the Interior has designated the Klamath Basin as a "Treasured Landscape." The basin is home to six wildlife refuges providing important wetland habitat for waterfowl and migratory birds. The basin is estimated to be a critical stop for 80% of the migratory birds along the Pacific Flyway, including bald eagles and sandhill cranes. The river also provides spawning ground for a number of fish populations. The Klamath Estuary is one of the few along the west coast that has not been developed, making it an important place for salmon and other fish.

The Klamath River is the site of a number of hydroelectric dams, including four dams owned by the PacifiCorp

power company, whose federal licensing has expired. The dams must be fitted with fish ladders and other mandated updates to be relicensed. Collectively, the four dams produce an annual average of 82 megawatts of electricity.

Conflict

Water rights have long been an issue in the Klamath Basin. Agricultural interests need water for irrigation, while tribal and commercial fishing interests need water levels in the river to remain high enough to support healthy fish populations and provide spawning ground for fish such as salmon. The water rights balance is precarious in the region, and even minor droughts have resulted in large problems for both fishing and agricultural interests. Rotating shut-downs have affected both groups.

In 2001, irrigators suffered extensive crop damage and loss when they were forced into a water shutoff designed to protect drastically declining populations of threatened coho salmon. The following year, irrigators' rights were restored, resulting in a massive fish die-off in which tens of thousands of adult salmon died. By 2006, fish populations had gotten so low that almost all commercial fishing in the basin was shut down.

These rotating crises affected all stakeholders in the water rights issue, and many of these stakeholders came together to collectively work out a solution. In 2010, two water rights agreements were signed by over 40 stakeholders, including Native American tribes, commercial fishermen, farmers, conservation groups, PacifiCorp power company, state officials, the Department of the Interior, and many others. One of the agreements, Klamath Hydroelectric Settlement Agreement, included a specific plan for studies by the Department of Interior to approve the removal of four hydroelectric dams, owned by PacifiCorp, along the Klamath River. The removal of the dams was projected to significantly improve the water situation in the lower Klamath Basin. Removal of the dams was projected to make more water available for agricultural interests, help prevent algae build-up that resulted in fish die-offs, and help restore fish populations.

Although a coalition of stakeholders created and supported the water rights agreements, obstacles to the removal of the dams remain. PacifiCorp would pay for part of the dam removal, but California and the federal government would need to provide additional funding. In addition, the Department of the Interior would need to approve the removal of the dams after conducting environmental impact and other studies. A congressional bill to fund the project stalled in Congress, with two congressmen from the area opposed to the dam removal primarily because of the loss of electricity. Although the 2010 water rights agreements had wide support from a variety of interests, opposition still remains among local stakeholders as well.

Stakeholders

PacifiCorp: PacifiCorp owns and operates the four hydroelectric dams that would be removed. The federal license for the dams has expired, and PacifiCorp would be required to install fish ladders, along with other improvements, before the dams could be relicensed. PacifiCorp has estimated that the required modifications would cost more than their part of the dam removal costs. PacifiCorp signed on to Klamath Basin Hydroelectric Agreement and has already begun to raise their portion of the money for dam removal through surcharges to their customers.

Farmers: Farmers in the basin rely on irrigation to keep their crops healthy. Many farmers complain that the current system of water management in the Klamath Basin doesn't work for them, because they can't rely on a predictable supply of water. Twenty-two irrigation, farming, and ranching groups support the 2010 water agreements.

Commercial Fishermen: The hydroelectric dams proposed for removal block salmon from reaching hundreds of miles of spawning grounds, leading to reductions in the salmon population in the area. Although runs of salmon

were once plentiful in the Upper Klamath Basin, there are no longer any salmon runs above the Iron Gate Dam. Commercial fishermen in the Klamath Basin have been economically devastated by the decline of fish populations. Most support the removal of the dams.

Native American Tribes: The decline of fish populations in the basin has negatively affected the four Native American tribes in the basin. These tribes depend on fishing for sustenance and as an important part of their cultural heritage. Three of the tribes signed the 2010 water management agreements supporting removal of the dams. The Hooka tribe supports the removal of the dams, but did not sign, advocating for more emphasis on measures rewarding water conservation.

States of California and Oregon: The states of California and Oregon were instrumental in creating the 2010 agreements. The removal of the dams is predicted to help both states' ailing salmon fishing industries. However, both state governments have to pass legislation to help fund the dam removal process. With California's ongoing economic problems, some worry that the state will not be able to fund its $100 million share of the project.

Federal Government: Removal of the hydroelectric dams in Klamath Basin requires approval from the Department of the Interior. The 2010 agreements set out a specific plan for studies and approval processes that were due to result in a decision by March 2012. Although the studies showed positive results and lower costs than predicted, a decision was not made, pending Congressional approval for funding. A bill to provide about a billion dollars to fund the removal of the dams stalled in Congress. Two California representatives, U.S. Rep. Tom McClintock and U.S. Rep. Wally Herger, have vocally opposed removal of the dams. They cite the need for the electricity from the dams as one reason.

Wildlife Conservationists: Wildlife conservationists are concerned with the water issues in the Klamath Basin because of the negative impact on fish and birds in particular. The area is an important stop along the Pacific Flyway and low waters, particularly in the wetlands area, are a concern. More than 30 conservation organizations have gone on record supporting the 2010 agreements.

Consumers of Electricity: Consumers want a reliable supply of electricity at reasonable costs. If the hydroelectric dams in the Klamath Basin are removed, it could potentially increase the cost of electricity in the area. Removing a source of electricity without replacing it with another source would reduce the overall amount of electricity available.

Conflict Mitigation

The 2010 water rights agreements were remarkable in large part because of the historic conflicts among the parties that signed the agreement. Groups that often disagreed on issues related to water rights—including farmers, fishermen, and Native American tribes—worked together to agree on a plan to restore the Klamath Basin. The addition of PacifiCorp to the talks helped set the stage for the proposed dam removals, which are projected to have a positive impact on the region.

Although approval of the dam removals depends on Congress, other parts of the agreement do not. Stakeholders have already begun implementing other measures from the agreements.

A new potential energy source in the region might also help to alleviate concerns about loss of power from the dams. New technology enabling low-temperature geothermal energy to be converted into electricity is slated to be used at a new geothermal power plant in the Klamath River Wildlife Refuge. The new geothermal facility is planned to generate between 3 and 6 megawatts of electricity annually. Other geothermal sites might also open up in the

region thanks to the new technology.

VOCABULARY

Term	Part of Speech	Definition
case study	*noun*	form of problem-based learning, where the teacher presents a situation that needs a resolution. The learner is given details about the situation, often in a historical context. The stakeholders are introduced. Objectives and challenges are outlined. This is followed by specific examples and data, which the learner then uses to analyze the situation, determine what happened, and make recommendations.
conflict	*noun*	a disagreement or fight, usually over ideas or procedures.
dam	*noun*	structure built across a river or other waterway to control the flow of water.
electricity	*noun*	set of physical phenomena associated with the presence and flow of electric charge.
energy	*noun*	capacity to do work.
energy resource	*noun*	source of energy found in nature that has not been subject to any human-induced energy transfers or transformations; for example, oil, coal, gas, wind, or sunlight.
energy source	*noun*	location in which the energy resource (oil, coal, gas, wind, etc.) is converted into electrical energy.
geothermal energy	*noun*	heat energy generated within the Earth.
hydroelectric power	*noun*	the rate of producing, transferring, or using hydroelectric energy, often measured in kW or mW.
non-renewable energy	*noun*	energy resources that are exhaustible relative to the human life span, such as gas, coal, or petroleum.
renewable energy	*noun*	energy obtained from sources that are virtually inexhaustible and replenish naturally over small time scales relative to the human life span.
stakeholder	*noun*	person or organization that has an interest or investment in a place, situation or company.

For Further Exploration

Articles & Profiles

- National Geographic Magazine: Klamath River

Websites

- Klamath Restoration.gov: Klamath Basin Water Issues

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