Climate change threatens California water supply

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By Leonard Anderson

BERKELEY, California (Reuters) - California's tallest mountain range, the Sierra Nevada, may lose nearly all its snowpack by the end of the century, threatening a water crisis in the nation's most populous state, a leading scientist and Nobel laureate said.

California could lose 30 percent to 70 percent of the snowpack to the ills of greenhouse gases and global warming, Steven Chu, director of the Lawrence Berkeley National Laboratory and the 1997 winner of the Nobel Prize in Physics, told Reuters.

A "bad scenario" of atmospheric carbon could mean the loss of 70 percent to 93 percent, Chu said in an interview, citing published climate models.

California depends on the snowpack to generate hydroelectricity, help irrigate the biggest agricultural economy in the United States, fill reservoirs, and support wildlife and recreation on the state's rivers.

"I think that's a much more serious problem than the gradually rising sea level, unless Greenland just completely melts," Chu said. "This is a huge water supply concern for California and the Southwest."

Water levels in the snowpack now are at 29 percent of normal, the lowest in 20 years, and water districts are pleading for conservation and more storage to counter future dry years.

Climate change may lead to more severe drought and higher flood peaks that could mean the loss of one-fourth of the snowpack by 2050, according to California's Department of Water Resources.

Water officials are also worried by dry conditions in the Colorado River Basin. The river is a big source of water for Southern California but has had below-average precipitation for seven of the past eight years.

Chu and the Lawrence Berkeley Lab at the University of California are researching a range of new energy programs to counter the effects of global warming and climate change.

In the short term, ridding the world of wasteful energy habits could mean big gains in trimming carbon levels.

'PEDAL TO THE FLOOR'

"If I were emperor of the world, I would put the pedal to the floor on energy efficiency and conservation for the next decade," Chu said.

Tackling energy waste in residential and commercial buildings is a high priority for Chu. He said new designs and technologies in that area could go a long way toward improving heating, ventilation and lighting systems and reducing energy consumption.

"Get rid of the wasteful habits and inefficiency and that by far and away will show the biggest gains in the short term," he said.

Chu lists examples of "hybrid thinking" to deliver more energy efficiencies such as cogeneration plants that capture waste heat while producing electricity, but says the dominance of coal-fired electricity is a big obstacle to progress.

Coal accounts for half of electricity generation in the United States and despite the push to develop alternative, sustainable energies, it is likely to remain the "default" fuel for the next 50 years, he said.

"I hope not but we need something for 50 years to transition off of fossil fuel. Fusion won't be there for 50 years, it may not ever be there," Chu said.

Chu will oversee new energy programs at the Berkeley Lab under a program with London-based BP Plc, the third largest Western oil company, which has committed $500 million over 10 years to support a bioscience research institute to develop new biofuels for transportation.

BP is partnering with the University of California at Berkeley and the University of Illinois to develop new energy sources while improving the environment.