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Water adaptation strategies urgently needed to counter glacier shrinkage – UN official

Glaciers in southern South America and Alaska melting faster than those in Europe

7 December 2010 – The United Nations environment chief is calling for the urgent development of adaptation strategies ranging from urban planning to improved water storage in the face of intensified rain fall and glacier shrinkage that threaten the food security and livelihoods of hundreds of millions, if not billions, of people.

"Over half of the world's population lives in watersheds of major rivers originating in mountains with glaciers and snow," UN Environment Programme (UNEP) Executive Director Achim Steiner says in the preface to a new report – High Mountain Glaciers and Climate Change: challenges to human livelihoods and adaptation.

"A warming climate is now causing a global recession in glaciers, and some areas may lose their glaciers entirely in this century."

He notes that worldwide, and particularly in Asia, floods strongly affect over 100 million people every year, killing tens of thousands and increasing cases of disease and ill health as cities with limited or no sewage become flooded and drinking water polluted.

"Here lies a crucial message for all nations involved," he writes. "Changes in the intensity and timing of rains, added to variable snow and glacier melt will increasingly challenge food security and the livelihoods of the most vulnerable under various climate change scenarios.

“With urban populations expected to nearly double to over 6 billion people in 40 years, and land pressures rising in the surrounding hills, the development of strategies for adaptation is urgently needed with women often being in the centre of the ability of families to cope.”

Such strategies need to be wide ranging, covering urban planning, improved water storage and efficiency in agriculture, and the restoration of critical ecosystems like forests and wetlands that can enhance water supplies and act as buffers against extreme climatic events such as flooding.

The report, compiled from scientists and research centres worldwide, including the Norwegian Polar Institute and Norut Alta, stresses that although glacier systems show a great amount of inherent complexity and variation, clear overall trends indicate that global glacier recession is likely to accelerate in coming decades.

“One of the chief challenges in the coming decades will be to capture and store excess water during periods of high water availability,” it says. “We are likely to experience more extreme melting, as well as extreme events of rainfall. With great land-use pressures in many mountain regions, including deforestation and heavy grazing combined with extreme rainfall, flashfloods and flooding will likely increase…

“Storing excess water, adapting to floods and developing and implementing more effective irrigation systems will become crucial to future food security in regions dependent upon mountains for their water supply.”

The report notes that glaciers in Patagonia in Argentina and Chile followed by those in Alaska and its coastal mountain ranges have overall been losing mass faster and for longer than those in other parts of the world.

The third fastest rate of loss is in the northwest United States and southwest Canada followed by the high mountains of Asia, including the Hindu Kush of the Himalayas, the Arctic and the Andes.

Overall Europe's glaciers had been putting on mass since the mid-1970s but this trend was reversed around the year 2000. While the overall trend is down, higher levels of precipitation in some places has increased the mass and in some cases the size of glaciers, including in western Norway, New Zealand's South Island and parts of Tierra del Fuego in South America.

Some mountain ranges are experiencing apparently contradictory effects. In smaller areas of the Karakoram range in Asia, for example, advancing glaciers have even over-ridden areas that have been ice-free for some 50 years, while in the Tianshan and Himalayan ranges, glaciers are receding – some rapidly.

Melting glaciers could, in some places and perhaps in a matter of a few decades, cause a reduction in water in dry areas, such as Central Asia and parts of the Andes. In dry regions of Central Asia, Chile, Argentina and Peru, where there is little rainfall, receding glaciers will have much more impact on seasonal water availability than in Europe or in parts of Asia where monsoon rains play a much more prominent role.

Many glaciers may take centuries to fully disappear but many low-lying, smaller glaciers, which are often crucial water sources in dry lands, are melting much faster, the report notes. Most glaciers have been shrinking since the end of the Little Ice Age around 150 years ago, but the rate of loss has increased substantially in many regions since the start of the 1980s.

In some regions, it is very likely that glaciers will largely disappear by the end of this century, whereas in others glacier cover will persist but in a reduced form for many centuries to come.

As glaciers melt, lakes held back by walls of mud, soil and stones can form, sometimes containing millions of tonnes of water which can put at risk villagers and infrastructure, such as power plants, the report adds.

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