TWAS Science Diplomacy Workshop

Sustainable Water Management

Trieste, Italy - 30 November - 4 December 2015

Breakout Groups – Session III: Science Diplomacy Challenge

Scenario A

Snowfall shift threatens water supply for billions

http://www.scidev.net/global/climate-change/news/snowfall-shift-threatens-water-supply-billions.html

Global warming likely to reduce snowpacks in many places; Rural populations, particularly near mountains, set to suffer most; Governments must adapt to changes through tailored responses.

Glaciers in one mountainous country provide water for two other countries downstream who rely on the water for agricultural production. One of these countries has been stable for many years and has good infrastructure, including efficient irrigation. The other has recently had a civil war and has little functioning infrastructure. Most agriculture is currently rain-fed, but the international donors would like to help build an irrigation system – but this would place higher demands on the available water.

How can the countries (and the international community) work to ensure long-term sustainable and equitable supplies?

(Is geoengineering to slow down the melting of the glaciers an option?)

THE WORLD ACADEMY OF SCIENCES
for the advancement of science in developing countries

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4 December 2015, Trieste

Out line of presentation

* Background Information
* Problem definition
* Situation assessment
* Technical Solutions
* Financial &Institutional Solutions
* Conclusion and recommendation

Background Information

- Glaciers are large sheets of snow and ice that are found on land all year long

What's happening now?

- Glaciers all over the world have been melting for at least the last 50 years, and the rate of melting is speeding up.

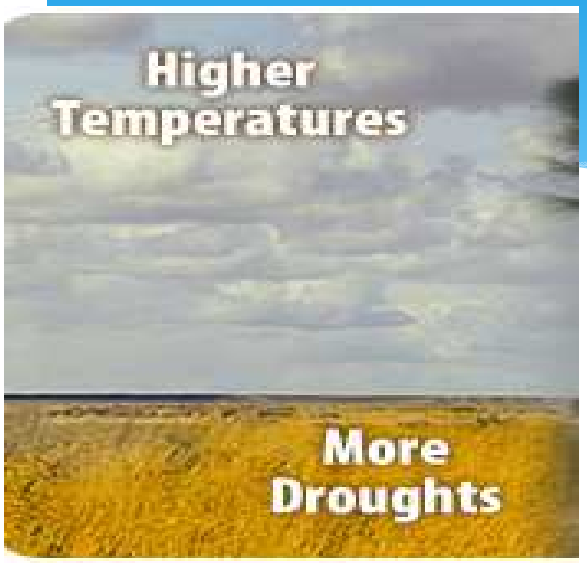
What will happen in the future?

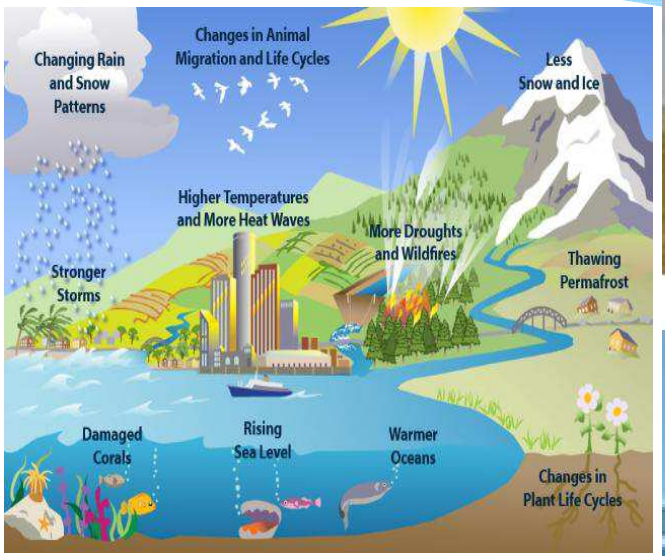
- If temperatures keep rising, glaciers will continue melting, and some could disappear completely.

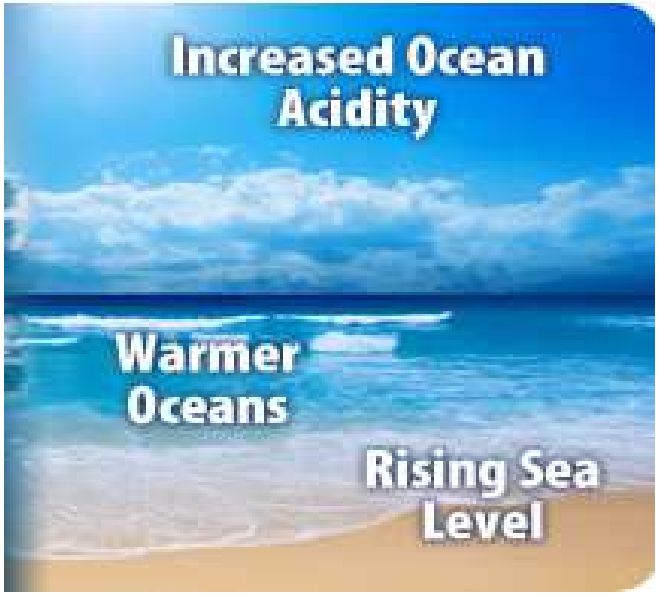
Dangers of Fast-melting Glaciers?

- Once the glacier has totally melted, the streams and rivers will run dry. Farmland will turn dry. Those depending on freshwater from the melting glacier will have to relocate.

Background Information







Problem definition

- Climate change
- Water Scarcity
- Damaged infrastructure
- Lack of negotiation
- Power Asymmetry (debatable)

Climate change

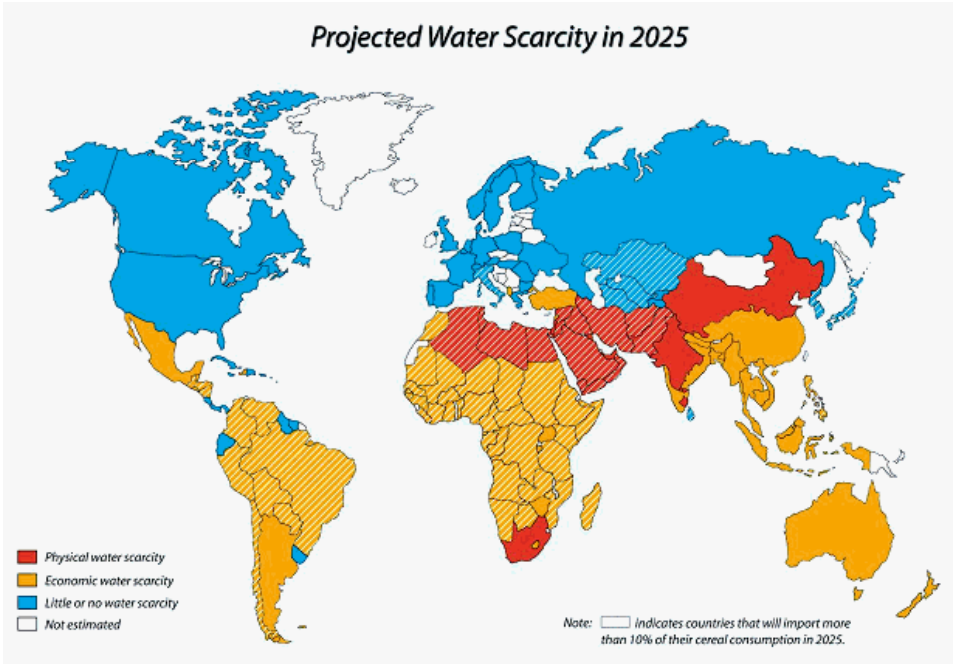
Impact of Climate Extreme Events

- Climate Extreme Events

Flash floods, Droughts, Heavy precipitation events, Hailstorms, Dust storms, Cyclones, Heat waves

- Cause damage to life and property
- Destroy standing crops
- Destroy stored food grain
- Spoil quality of food grains

Water Scarcity



Damaged infrastructure

- Globally, more intense hurricanes and downpours could cause billions of dollars in damage to property and infrastructure such as homes, roads, bridges, railroad tracks, airport runways, power lines, dams, levees, and seawalls.

Situation assessment

* Three riparian sharing single water source
* Water stress situation associated with snowpack reduction
* Absence of regulations on water sharing formula
* Infrastructure decay due to civil war in one of the riparian country
* International assistance for installation of new irrigation systems in the affected country

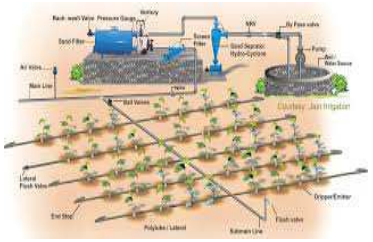
Technical Solutions

* ***Is geoengineering to slow down the melting of the glaciers an option???***

* **Construction of dam is one of the quick way to solve the problem**
* **Use of thin reflective foil cloak to slow the meltdown**
* **Mimicking volcanoes by spreading a solar shield of aerosols in the stratosphere**
* **Modifying the planet's reflectivity to reflect sunlight away from the Earth could slow the meltdown**
* **Geoengineering solutions may seem adaptive but it comes with a price.**

Technical Solutions

- Water Conserving/Saving Methods
- Water Harvesting
- Modern Irrigation Methods
- Reconstructing/ Rehabilitation of irrigation system and infrastructure
- Changing Crop Pattern due to climate change



Financial &Institutional Solutions

* ***How can the countries (and the international community) work to ensure long-term sustainable and equitable supplies?***
* Public education
* Establishing Data Bank accessible by three riparian's
* Establishing Trilateral River Basin Commission on stages
* Establishing Joint Technical Committees and Establishing Trust Fund
* To help riparian countries address their problems with international water resources
* To remove the obstacles to priority development activities that are usually held hostage by disputes over shared watercourses,
* To reduce inefficiencies in the use and development of scarce water resources caused by the lack of cooperative planning and development

Continue---------

* To attach the utmost importance to riparian's entering into appropriate cooperative arrangements for such purposes, and stand ready to assist them in achieving these objectives.
* In cases where differences remain unsolved, international organizations should require that the country offer to negotiate in good faith with other riparian's in order to reach appropriate agreements or arrangements
* Catalyze the mobilization of official as well as private funding;
* Provide an important channel for gaining access to expertise;
* Help ensure systematic evaluation of alternative solutions through the appropriate use of analytical techniques.

Conclusions

* Mobilizing political will and commitment to address water issues worldwide remains crucial.
* The involvement of two or more states makes the water transboundary issue highly political especially if power are not equal.
* Optimized cooperation between riparian countries will ensure for just water allocations and also encourage more information exchanges so that neighboring countries can learn from each other best practices.
* It is important to not only focus bilateral negotiations on water sharing rights but to shift the debate away from cross boundary issues and to instead focus on mutual interests and shared benefits
* Strong institutions are an important feature of basin resilience, and the lack thereof may increase the basin vulnerability.

Recommendations

- To identify comparative joint projects
- To generate and share benefits
- To create positive sum outcomes and make the pie bigger; encourage win-win solutions optimal use of water resources, hydro electricity
- To start with small steps

Thanks