

**SUSTAINABLE, JUST & PRODUCTIVE  
WATER RESOURCES DEVELOPMENT IN WESTERN NEPAL  
UNDER CURRENT & FUTURE CONDITIONS  
(DIGO JAL BIKAS – DJB)**

# **What about the future?**

**Planning for uncertainty and risk**

**Thursday, 7<sup>TH</sup> June, 2018 (Kathmandu)**

**Friday, 8<sup>TH</sup> June, 2018 (Kathmandu)**

**Monday, 11<sup>TH</sup> June, 2018 (Dhangadhi)**

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**USAID**  
FROM THE AMERICAN PEOPLE



## Past versus Future

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- Presented results are for baseline scenarios
- Can we assume the future to be the same?
  - Climate
  - Anthropogenic Changes – Development, Industrialization, Urbanization
- Climate impacts society and society impacts climate
- TO DO – add one of Emily's result charts here

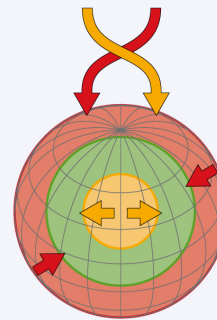


## There are many possibilities for the future

- Ideal future should be:
  - Robust
  - Resilient
  - Equitable
  - Efficient
  - Low risk
- Planning should consider
  - Risk
    - Hazard, vulnerability, exposure
  - Uncertainty
    - Data and projections

(A) Our world

Multiple stressors including climate change



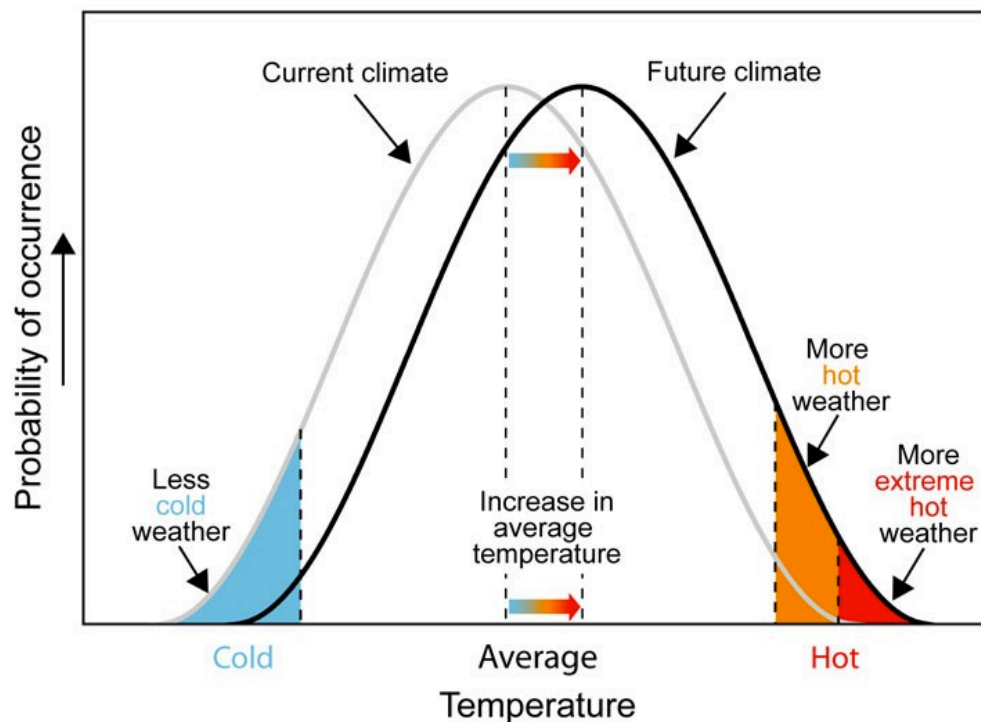
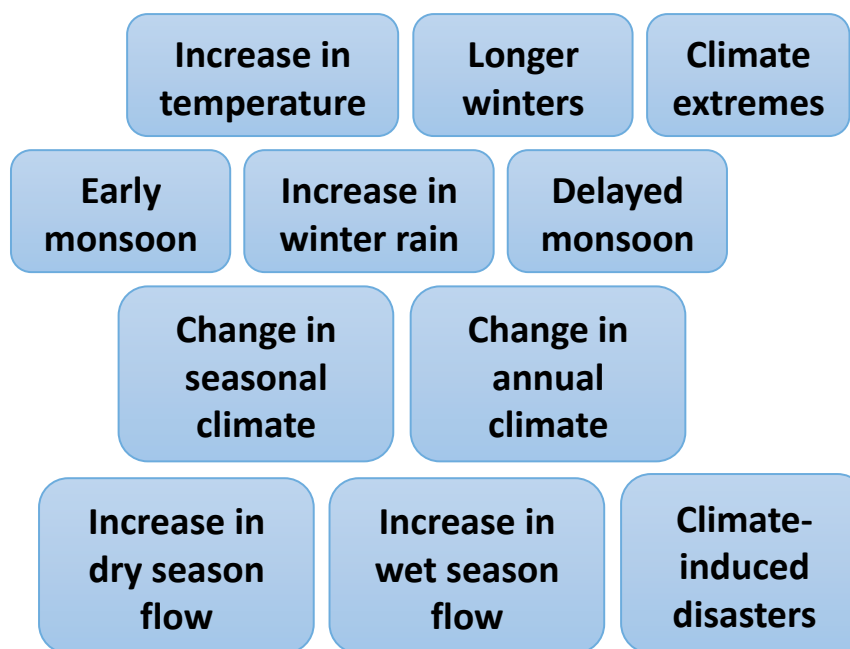
■ Biophysical stressors  
■ Resilience space  
■ Social stressors

**AND risks may not b**



## Climatic Factors Affecting the Future

- Magnitude, frequency and duration of climate components will change

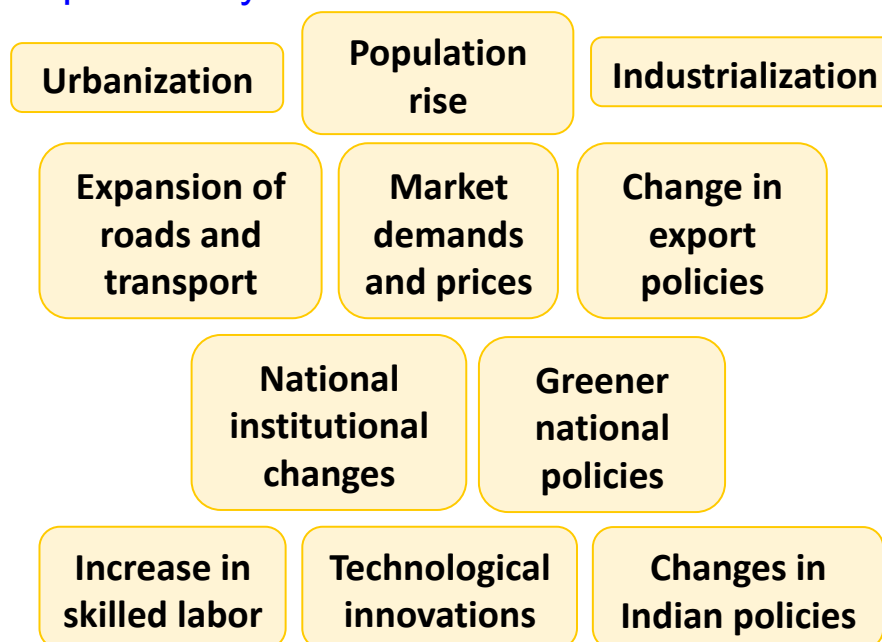


Source: <https://skepticalscience.com/print.php?n=1016>

## Non-Climatic Factors Affecting the Future

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- Anthropogenic factors will change the management context in the future
  - Socio-economic needs and values will change
  - Climate change impacts maybe accelerated or decelerated



## Risks in each sector

**What factors pose the highest risk to your sector?**

RISK SCALE

LOW  
RISK

HIGH  
RISK

Increase in  
temperature

Longer  
winters

Climate  
extremes

Early  
monsoon

Increase in  
winter rain

Delayed  
monsoon

Change in  
seasonal  
climate

Change in  
annual  
climate

Increase in  
dry season  
flow

Increase in  
wet season  
flow

Climate-  
induced  
disasters

Urbanization

Population  
rise

Industrialization

Expansion of  
roads and  
transport

Market  
demands  
and prices

Change in  
export  
policies

National  
institutional  
changes

Greener  
national  
policies

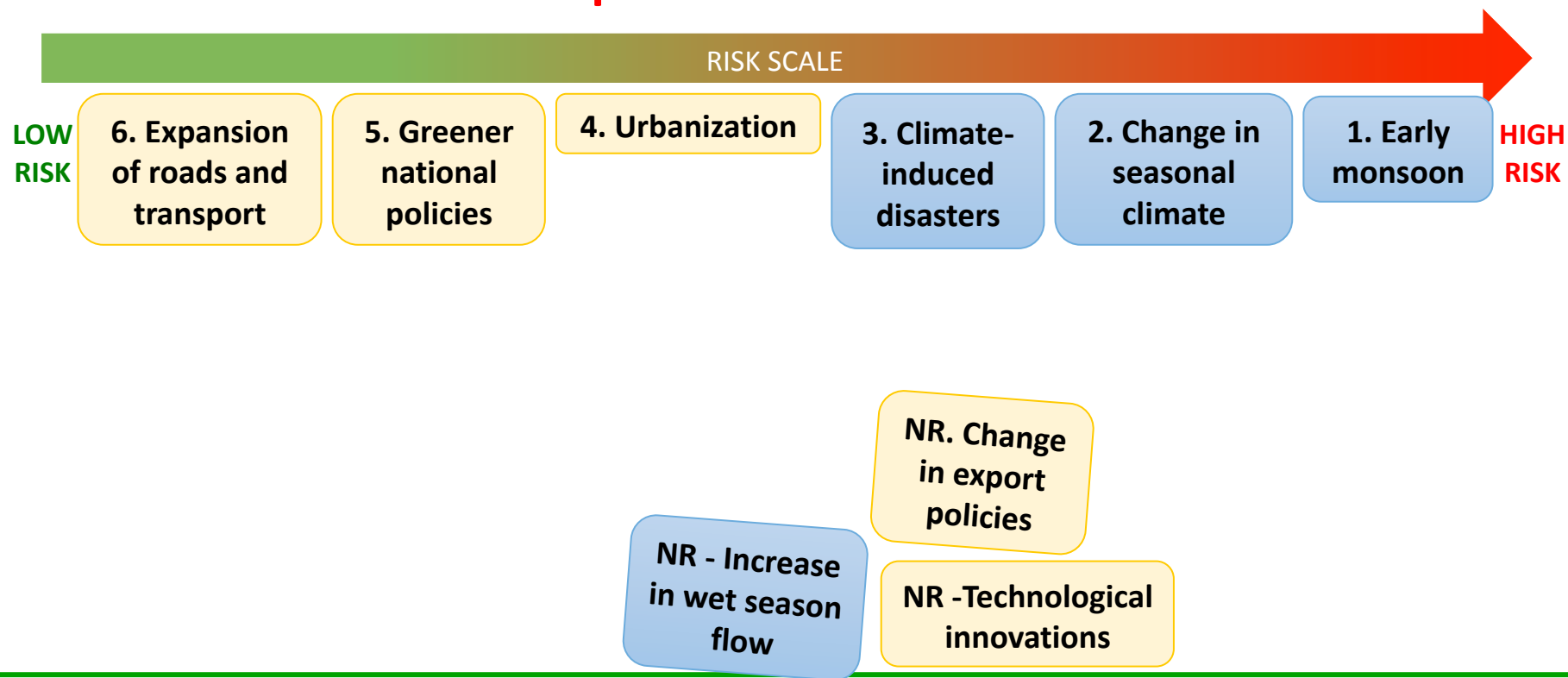
Increase in  
skilled labor

Technological  
innovations

Changes in  
Indian policies

## Risks in each sector

### Example: TREKKING SECTOR



## Your Inputs

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- Are the 3 development scenarios reasonable/sufficient?
- How can our results help your decision making?
  - What data visuals and outputs can we provide?
  - What format?
- What future scenarios should we consider?
  - What is high/low risk in your sector?
- Do you have data/reports that can help us?
  - Groundwater
  - Market prices
  - Valuation of non-traditional services (e.g. ecotourism, recreation activities in hydropower reservoirs.)



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# Thank you!

