

Food Security and Food Production Systems Facing Climate Change

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- ❁ Climate Change 2014: Impacts, Adaptation and Vulnerability, the Working Group II Contribution to the IPCC AR5 was launched at Yokohama, Japan in March 31, 2014

About WGII AR5 ...

- ❁ The report evaluates how patterns of **risk** and potential **benefits** are shifting due to climate change, and considers how **impacts** and risks related to climate change can be reduced and managed through **adaptation** and mitigation



About Food ...

- ❁ The effects of climate change on crops, animals and fishery are evident in most regions of the world, and negative impacts have been more common than positive ones
- ❁ The effects act on not only production process, but also non-production elements, such as food access, utilization and price stability



What happened ?

- ❁ Negative impacts on crop yields have been more common than positive
 - Negative effect on cereal yields
 - Current markets is sensitive to climate extremes
- ❁ CO₂ has a stimulatory effect and O₃ has a damaging effect on crop yields
 - The interactions between CO₂ and O₃, water, and nitrogen are nonlinear



- ❁ Climate change affected the abundance and distribution of harvested aquatic species and aquaculture production
 - Negative impacts on nutrition and food security for some tropical developing countries
- ❁ All aspects of food security are affected, including food access, utilization, and price stability



Enlightenment

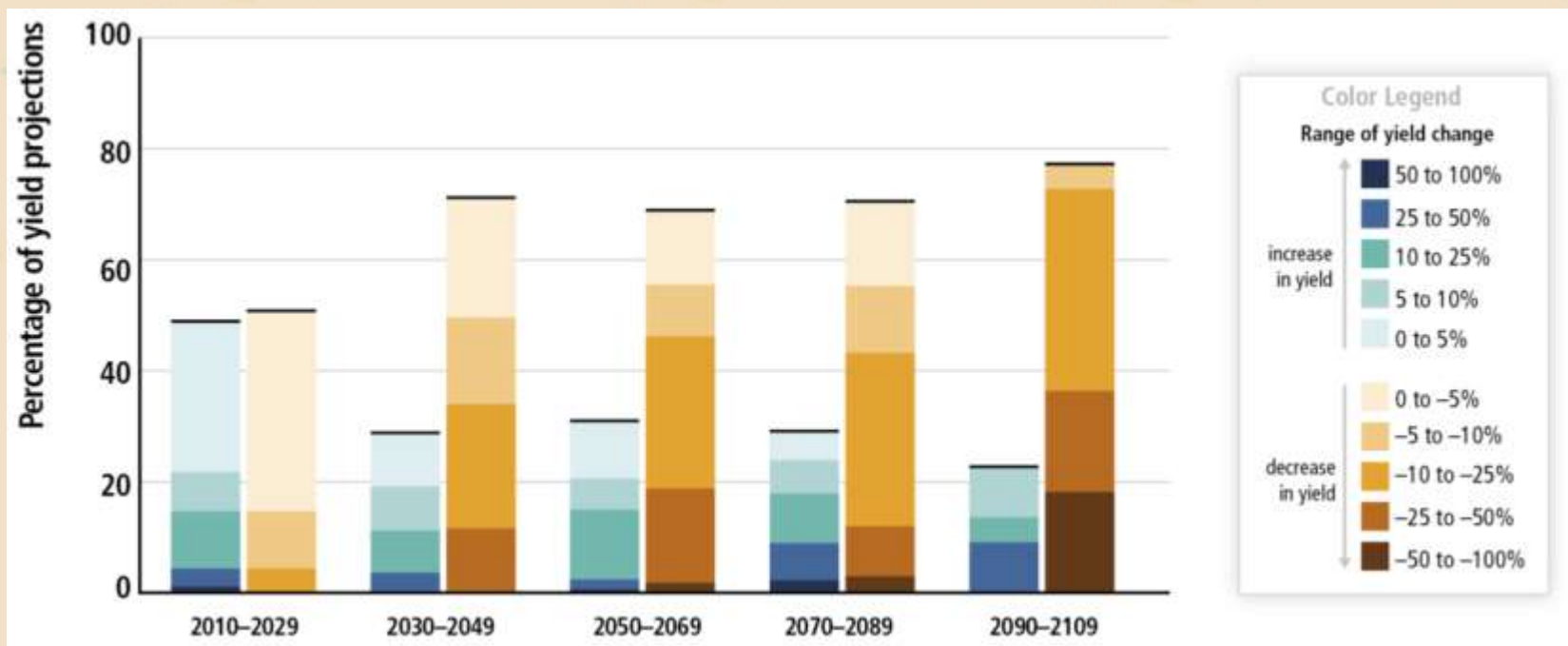
❁ The impacts of climate change on food has been occurred

- YES or NO (X)
- TAKE ACTION (V)



What will happen?

- ❁ Crop production will consistently and negatively affected in low-latitude countries
- ❁ Climate change will increase inter-annual variability of crop yields



- ❁ Redistribution of marine fisheries catch potential towards higher latitudes poses risk of reduced supplies, income, and employment in tropical countries, with potential implications for food security

Enlightenment

- ❁ The risk of climate change in the future is exiting, its intensity depend on human activity
 - FACING to FACT (V)
 - OSTRICH MENTALITY (X)



Any opportunities?

- ✿ Agronomic adaptation improves yields by the equivalent of 15-18% of current yields
- ✿ Adaptation benefits are greater for crops in temperate than tropical, wheat-and rice-based systems more adaptable than those of maize
- ✿ Adaptation in fisheries, aquaculture and livestock production will minimize negative impacts

🌸 Take action more early, more less budget

- WAIT and SEE (X)
- ACTION PROMPTLY(V)



Discussion

- ❁ Researches on non-production elements, such as food processing, distribution, access, and consumption need to be improved
- ❁ Comprehensive researches should be strengthened, including intergrated responses of crops to CO₂, O₃, T, water and weeds
- ❁ Adaptation studies are not sufficient, more observational evidence is needed



Working together