



# Impact of climate change on food systems: solutions to protect and promote health

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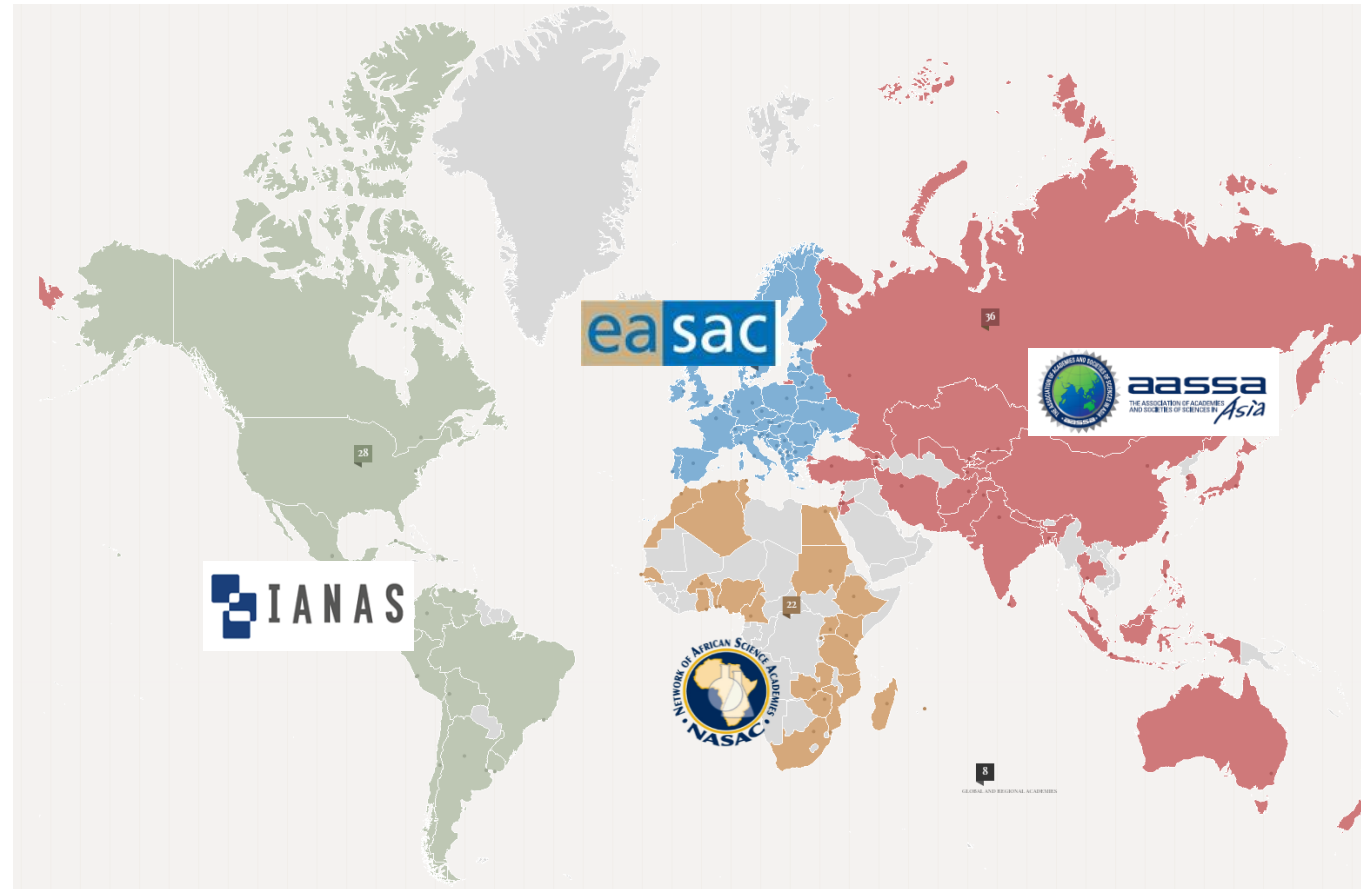


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An integrated food systems approach to Food and Nutrition Security and Agriculture: outputs from IAP project 2018

# IAP project on climate change and health

November 2019 – December 2022

Led by the German National Academy of Sciences Leopoldina, funded by BMBF

EASAC Regional report for Europe already available and helped in scoping the project

→ **three regional reports for Africa, Asia and the Americas** providing a snapshot of the current situation and presenting science-based recommendations for each region. **Published November 2021 – April 2022**

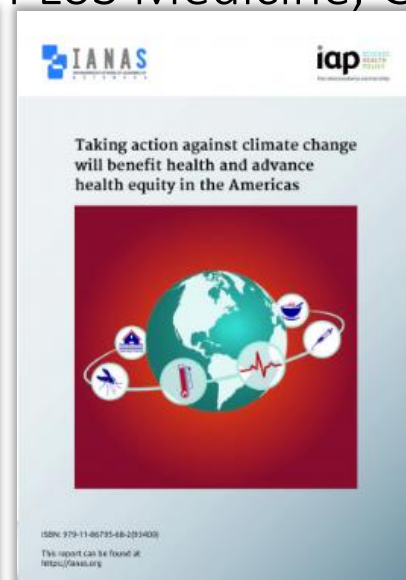
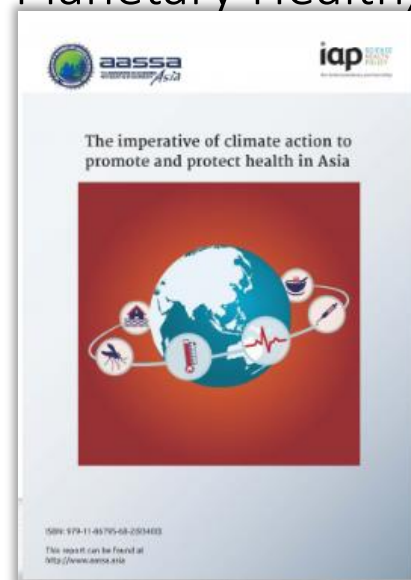
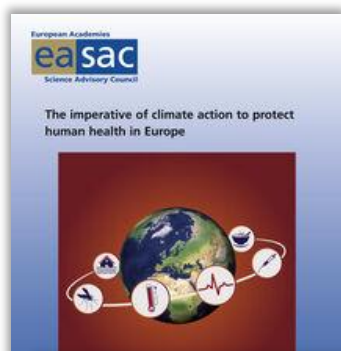
→ **Global synthesis report** highlighting regional similarities and differences, and providing advice for decision makers for implementation at global, regional and national levels, taking into account local circumstances and strategic needs. **Published May 25 2022**



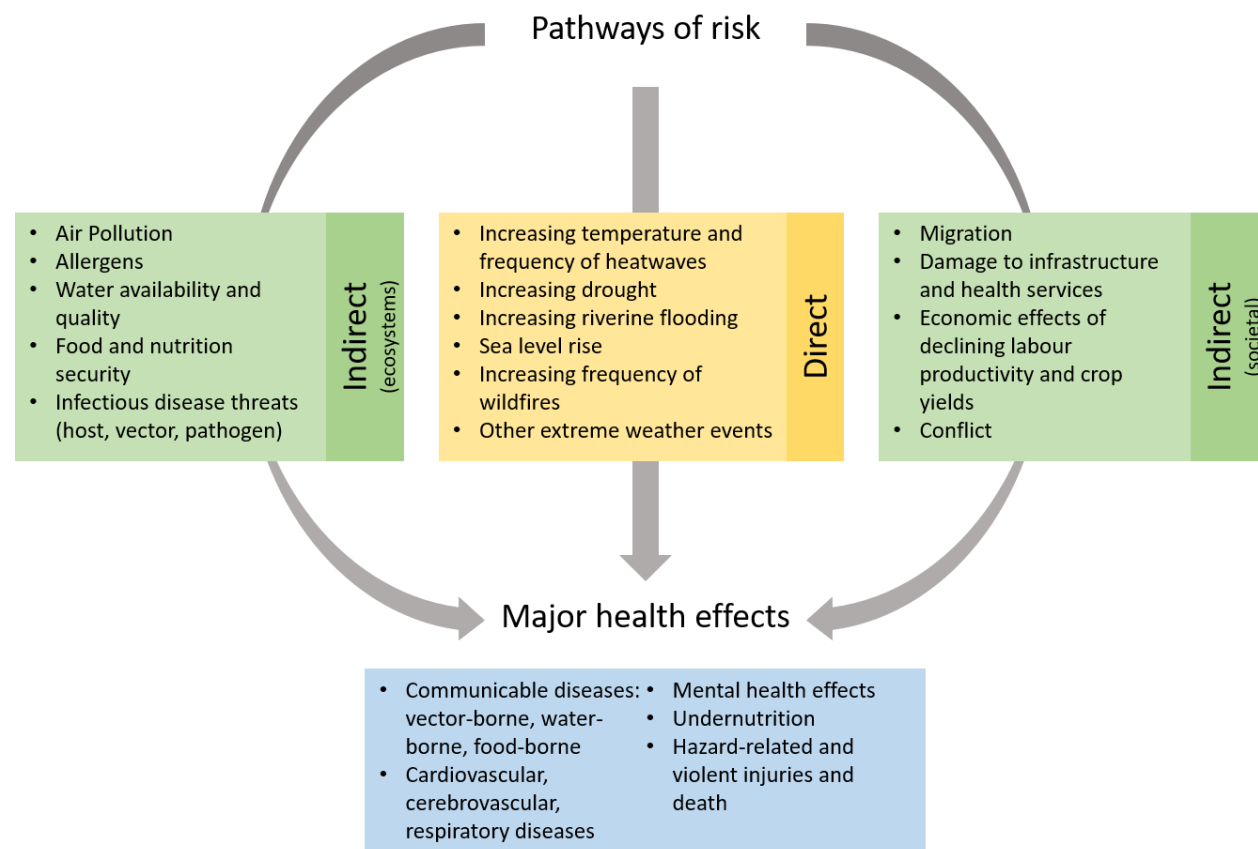
<https://www.interacademies.org/project/climate-change-and-health>

# Outputs from IAP project on climate change and health (2019-2022)

Also publications in Lancet Planetary Health, PLoS Medicine, Global Policy (In press)



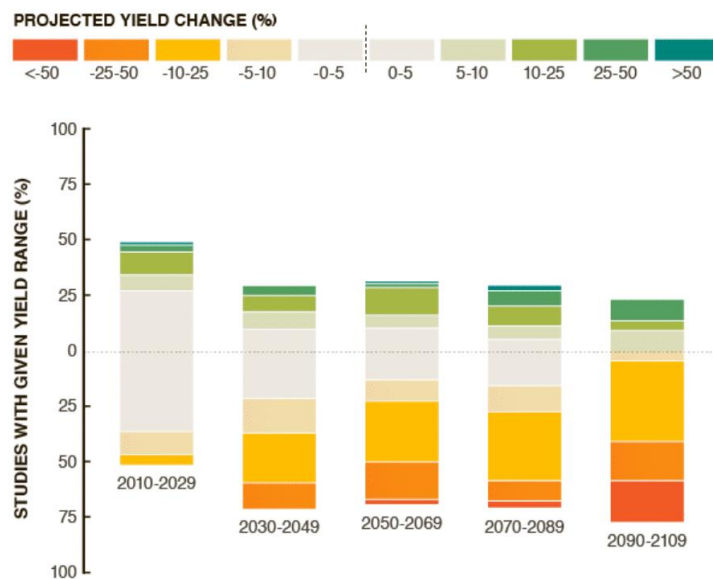
# Diverse pathways of climate change risk and potential health effects





# Impacts of climate change on agriculture

The majority of modeling studies agree that climate change impacts on crop yields will be negative from the 2030s onwards. Nearly half of projections beyond 2050 indicate yield **DECREASES GREATER THAN 10%**.

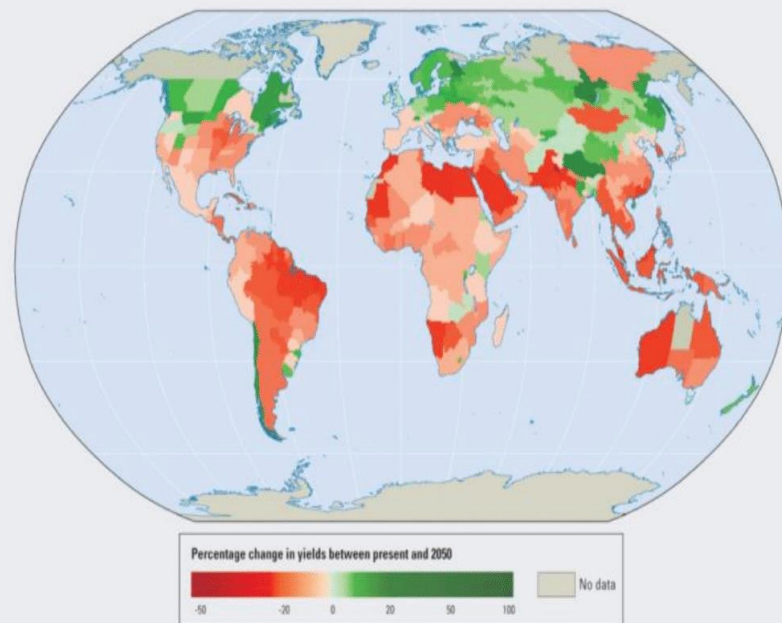


Source: Challinor et al. 2014

**BIG FACTS**  
ccafr.cgiar.org/bigfacts

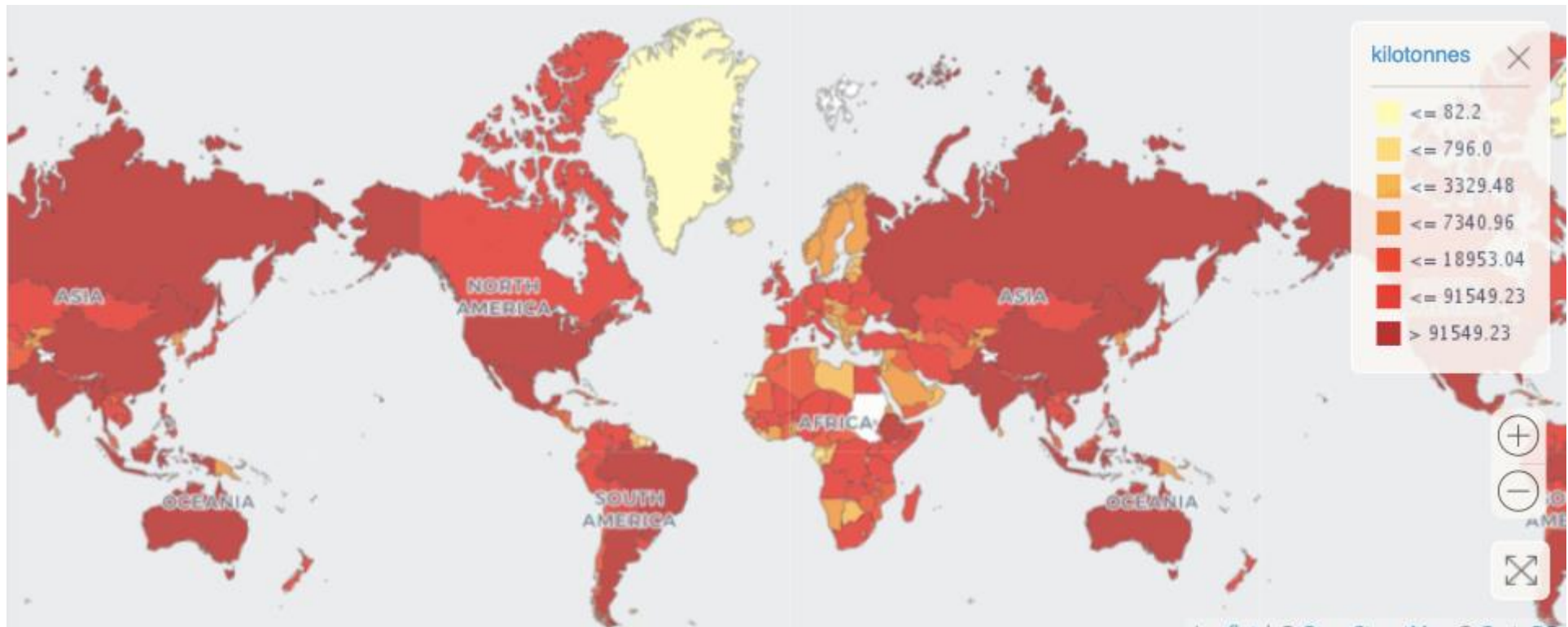
## Impacts of climate change on the productivity of food crops in 2050

World Bank Publishers  
World bank Development report 2010  
<http://wdronline.worldbank.org/>



# Agricultural carbon dioxide emissions

Average for period 1990-2019. Sources = FAO and IPCC





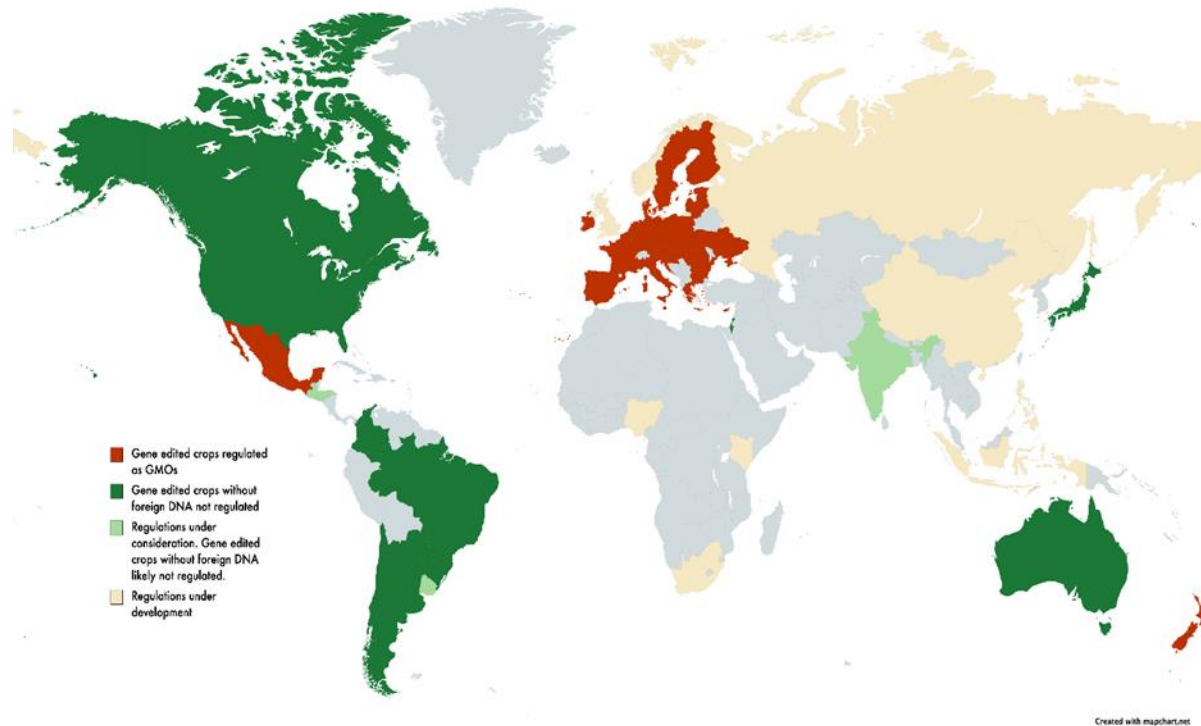
# Food systems and climate change: how can science inform policy for mitigation and adaptation solutions?

- For agriculture, policy objective is to develop climate-resilient food production while, at same time, reducing the contribution to GHGs
- **Mitigation** requires combination of science-based measures e.g for reducing waste, improving farming practices, changing diets to reduce GHGs
- Changing diets (e.g. more plant-based foods) brings health benefits for obesity and NCDs: issues for protecting vulnerable groups
- **Adaptation** opportunities throughout food chain: e.g. in agriculture, biosciences research and plant breeding for resistance to biotic and abiotic stress
- Social sciences research for understanding farmer and consumer behaviour

# Biosciences and the frontiers in nutrition: examples from IAP global/regional Briefs 2021

- How is a healthy diet constituted? Measured? Delivered?
- Orphan crops, new food sources and functional foods: defining new health properties; advances in food science and technology
- Personalised nutrition: coupled with smart monitoring of individual status
- Diet-gut-microbiome-disease linkages
- Soil-plant-microbiome linkages
- Improved breeding of plants and livestock

# Variation in the regulation of genome editing for plant breeding



## IAP overarching recommendations to policy makers: roles of the scientific community in taking concrete action

- Using evidence base already available to inform policy with greater urgency and ambition, with action integrated between countries, sectors and levels of governance
- Filling knowledge gaps by new, transdisciplinary, research: e.g. reform current skewed distribution in designing, generating and using research, and strengthen data linkages for climate and health
- Improving evaluation of solutions and their scale-up
- Health professionals have a responsibility to be champions of change
- Academies can catalyse action at national, regional and global levels to help address systemic inequalities