

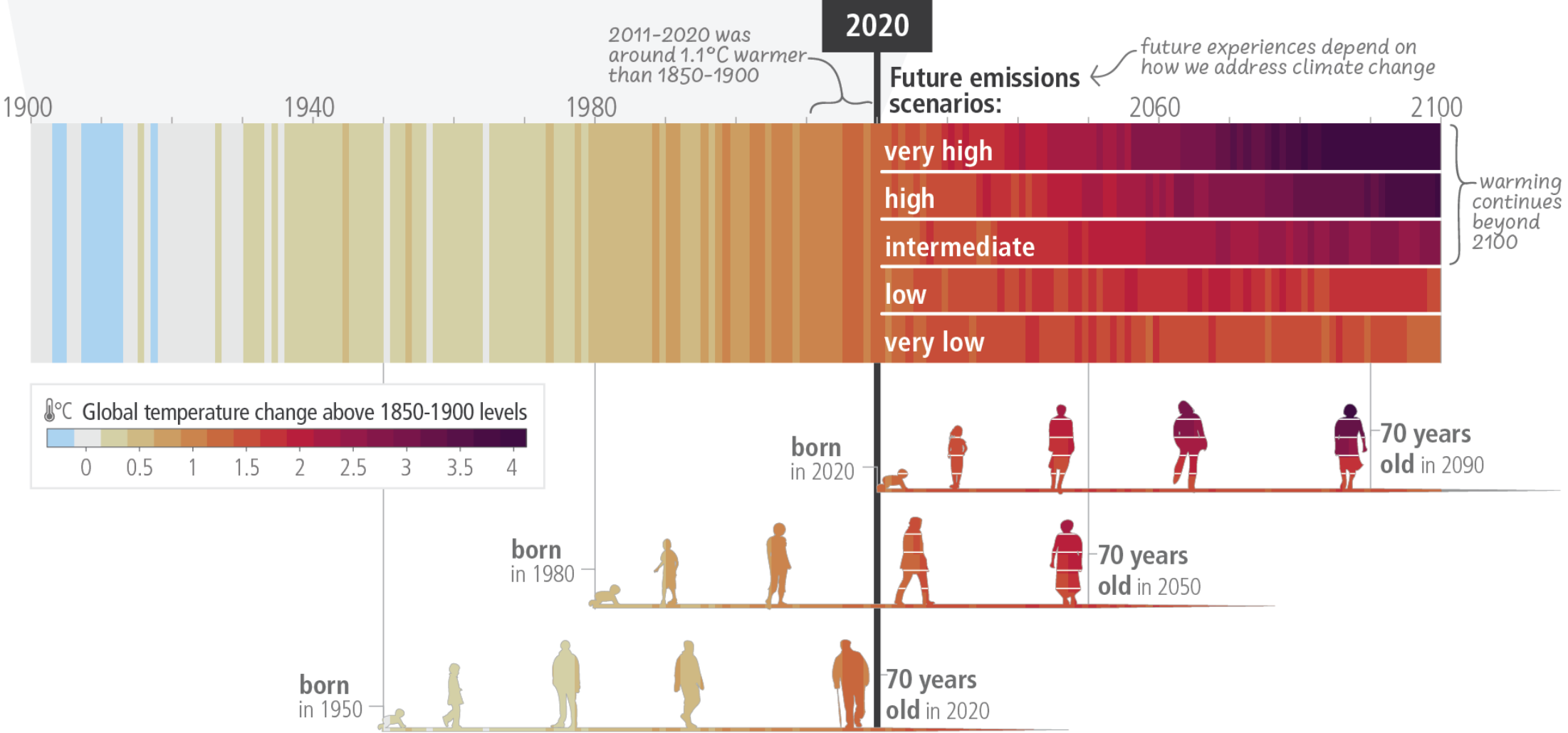


Hvordan kan vi redde verden?

Klimaendringer, utslippskutt,
tilpasning - og nye spørsmål

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SFI Klima 2050

c) The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term



Adverse impacts from human-caused climate change will continue to intensify

a) Observed widespread and substantial impacts and related losses and damages attributed to climate change





Water availability and food production

			
••	••	•	••
Physical water availability	Agriculture/crop production	Animal and livestock health and productivity	Fisheries yields and aquaculture production




Health and well-being

			
••	•••	•••	•••
Infectious diseases	Heat, malnutrition and harm from wildfire	Mental health	Displacement

Cities, settlements and infrastructure

			
•••	•••	•••	••
Inland flooding and associated damages	Flood/storm induced damages in coastal areas	Damages to infrastructure	Damages to key economic sectors




Biodiversity and ecosystems

		
•••	•••	•••
Terrestrial ecosystems	Freshwater ecosystems	Ocean ecosystems

Includes changes in ecosystem structure, species ranges and seasonal timing

Key

Observed increase in climate impacts to human systems and ecosystems assessed at global level

-  Adverse impacts
-  Adverse and positive impacts
-  Climate-driven changes observed, no global assessment of impact direction

Confidence in attribution to climate change

- *High or very high confidence*
- *Medium confidence*
- *Low confidence*

Hvordan redder vi verden?

Jo, vi...

...stabiliserer klimaet,
ved så lav temperatur som mulig

...tilpasser oss det nye klimaet

...gjør dette på en måte som ikke
skaper andre problemer samtidig

...som innebærer

...dramatiske og raske kutt i utslipp
av drivhusgasser

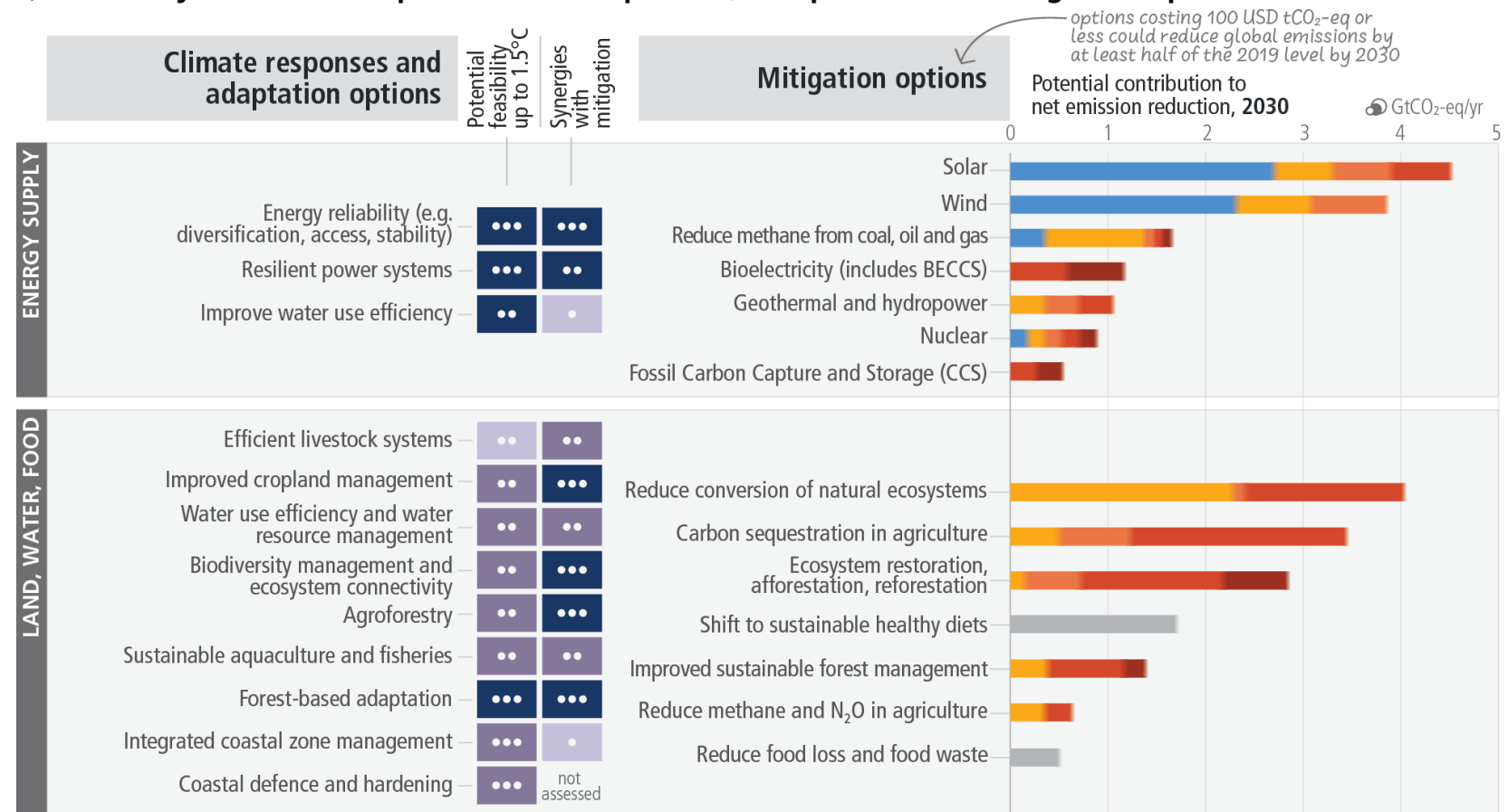
...å forstå og foregripe klimarisiko

...å se klima i sammenheng med
natur, ressurser, energi, areal,
og behovene til 10 milliarder mennesker

Tilpasning og utslippskutt henger tett sammen - og har positive synergier

There are multiple opportunities for scaling up climate action

a) Feasibility of climate responses and adaptation, and potential of mitigation options in the near-term



Feasibility level and synergies with mitigation

- High
- Medium
- Low
- Insufficient evidence

Confidence level in potential feasibility and in synergies with mitigation

- High
- Medium
- Low

Net lifetime cost of options:

- Costs are lower than the reference
- 0-20 (USD per tCO₂-eq)
- 20-50 (USD per tCO₂-eq)
- 50-100 (USD per tCO₂-eq)
- 100-200 (USD per tCO₂-eq)
- Cost not allocated due to high variability or lack of data

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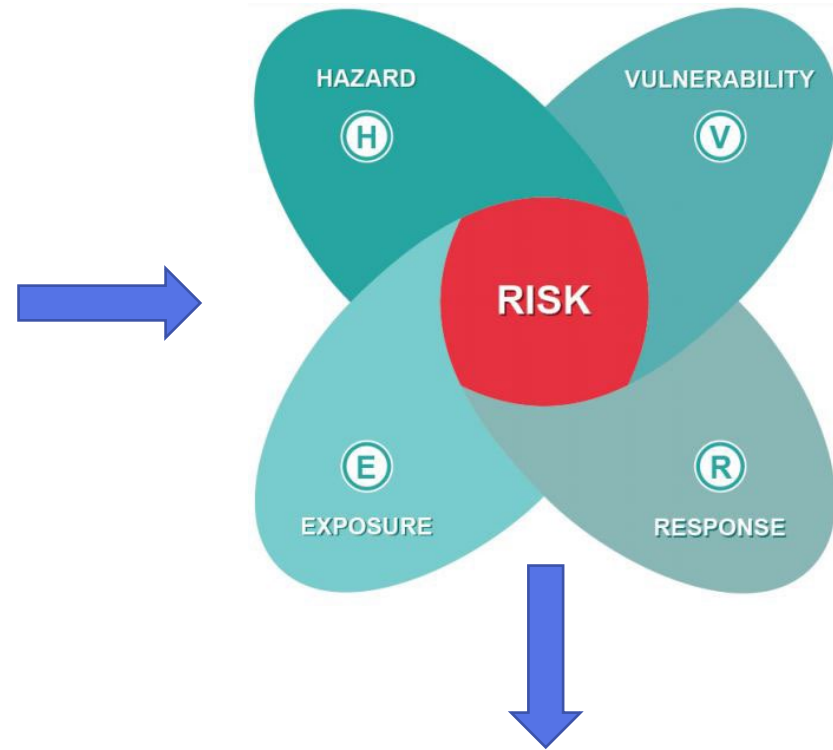
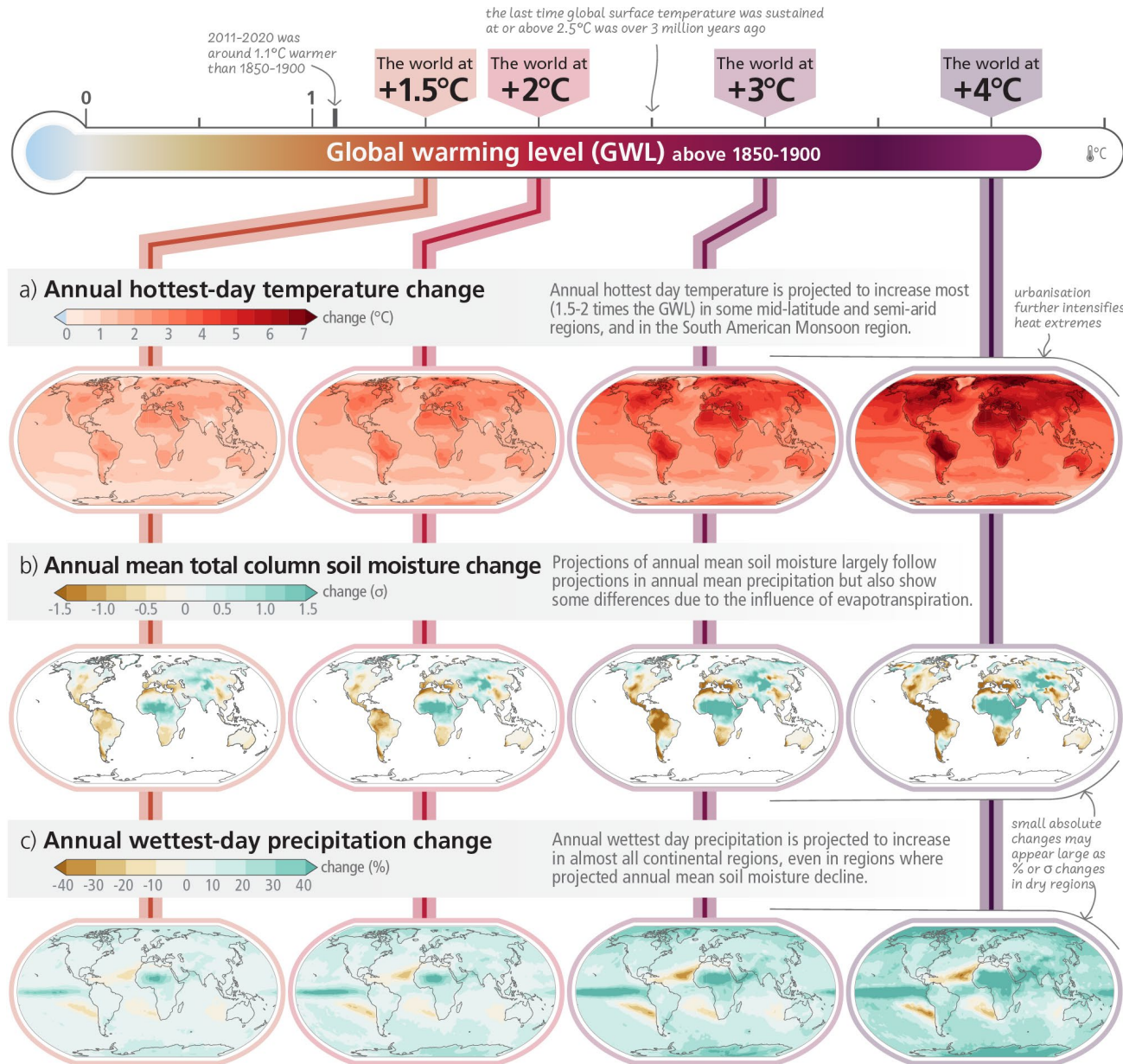
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With every increment of global warming, regional changes in mean climate and extremes become more widespread and pronounced



Stiller vi de riktige spørsmålene?

Klarer vi å forstå og foregripe

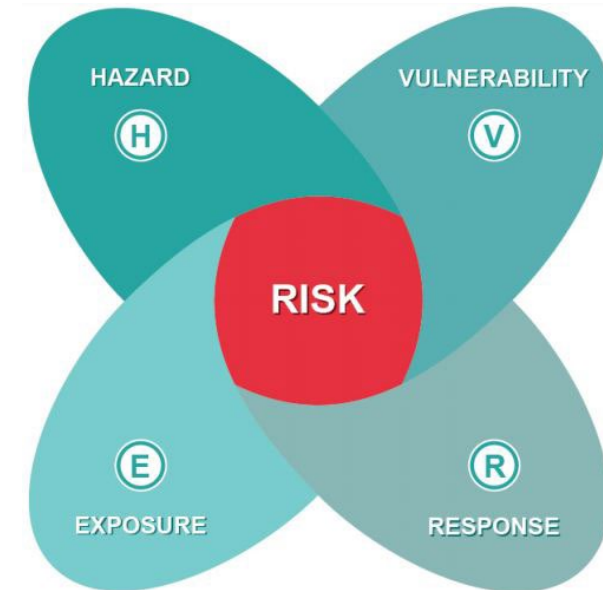
...hazards?

...exposure?

...vulnerability?

...response?

Uten det er faren til stede for
utilstrekkelig handling - og mistilpasning!

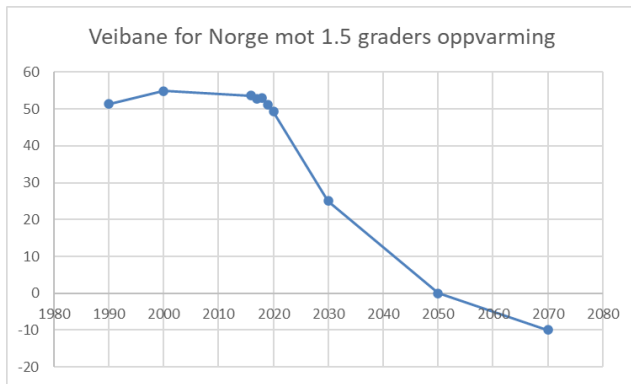


Norge i et varmere klima

- Langstrakt og variert
- Vil oppleve et antall ulike fysiske endringer
- Har ulik sårbarhet forskjellige steder

Fysisk klimarisiko må håndteres lokalt, med det nyeste av framskrivinger som underlag.

I tillegg må også våre utslipp til (netto) null. Det innebærer **omstillingsrisiko** – og muligheter.



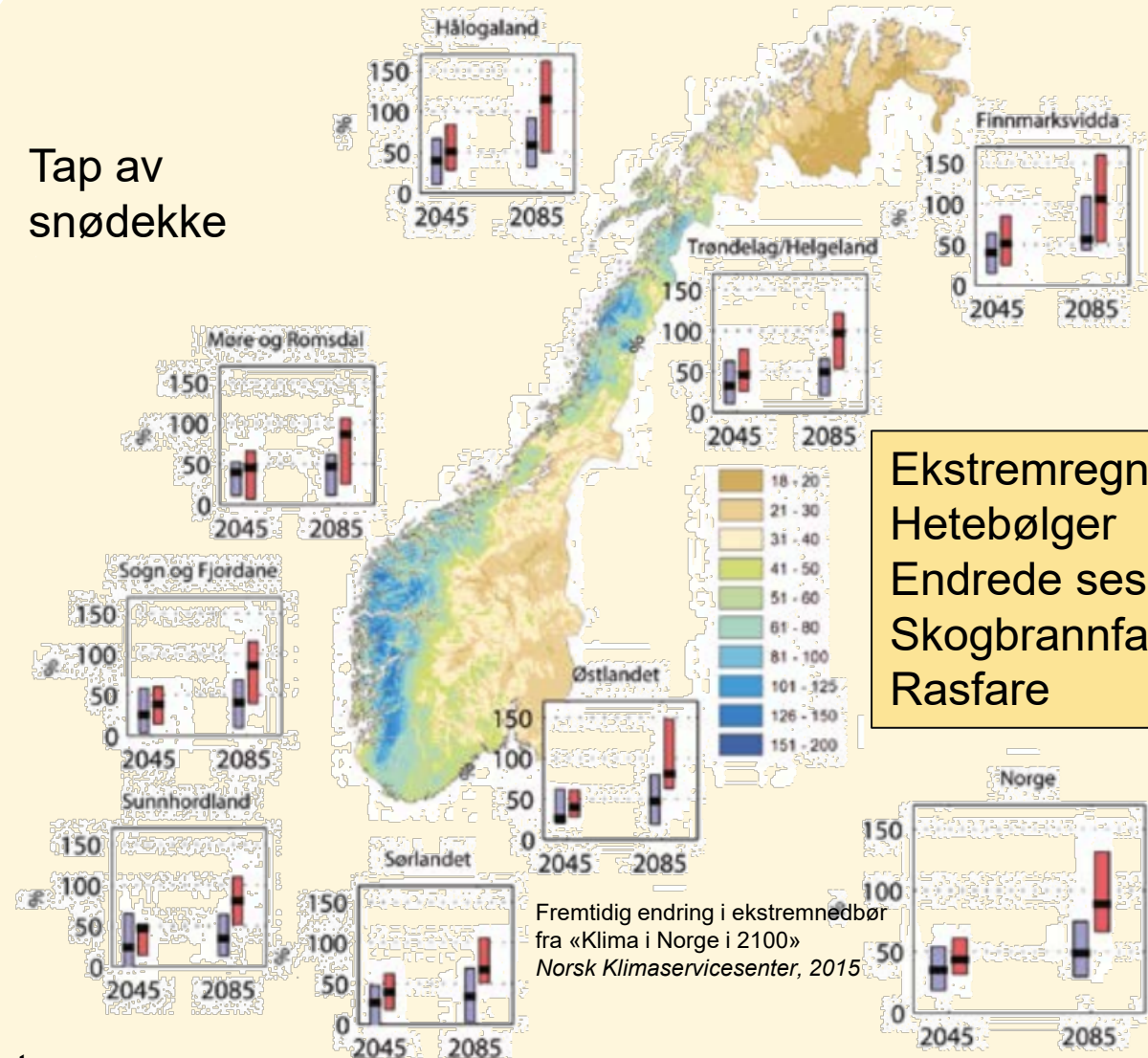
Flom
Ekstremregn

Lengre vekstsesong

Kortere vintre

Tap av snødekke

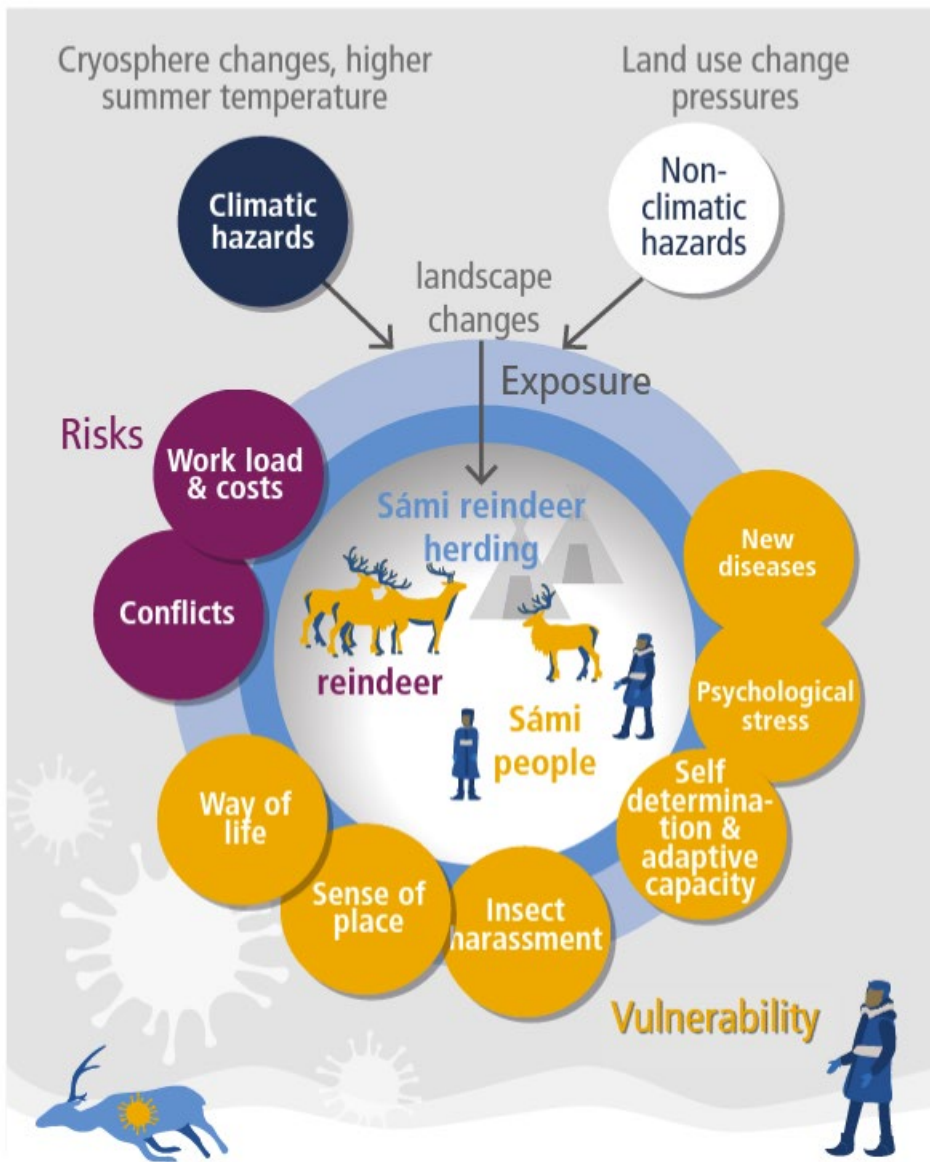
Tap av permafrost



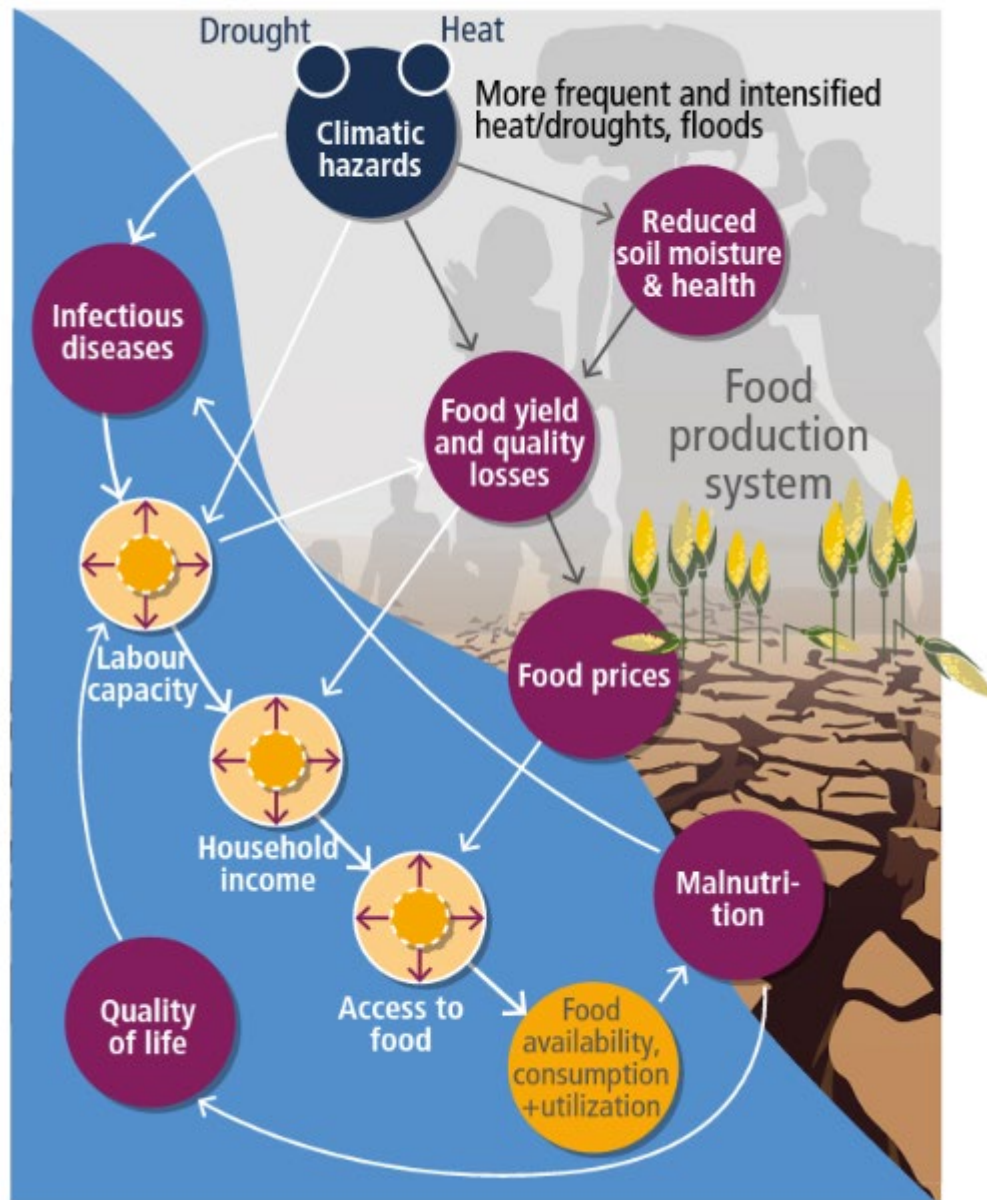
Ekstremtemperaturer

NB: Kun eksempler på konsekvenser. De fleste inntreffer over hele landet, men med ulik styrke.

(a) Risks to livelihoods of Sámi Reindeer Herders in the Arctic



(c) Cascading impacts of climate hazards on food and nutrition



I sommer kom anbefalingene om å spare på vann. Nå må Oslo slippe ut vann for å unngå flom.

Tørken er over. Nå er vannstanden normal, og høy, for årstiden i hele Norge. For Oslo er situasjonen snudd på hodet.



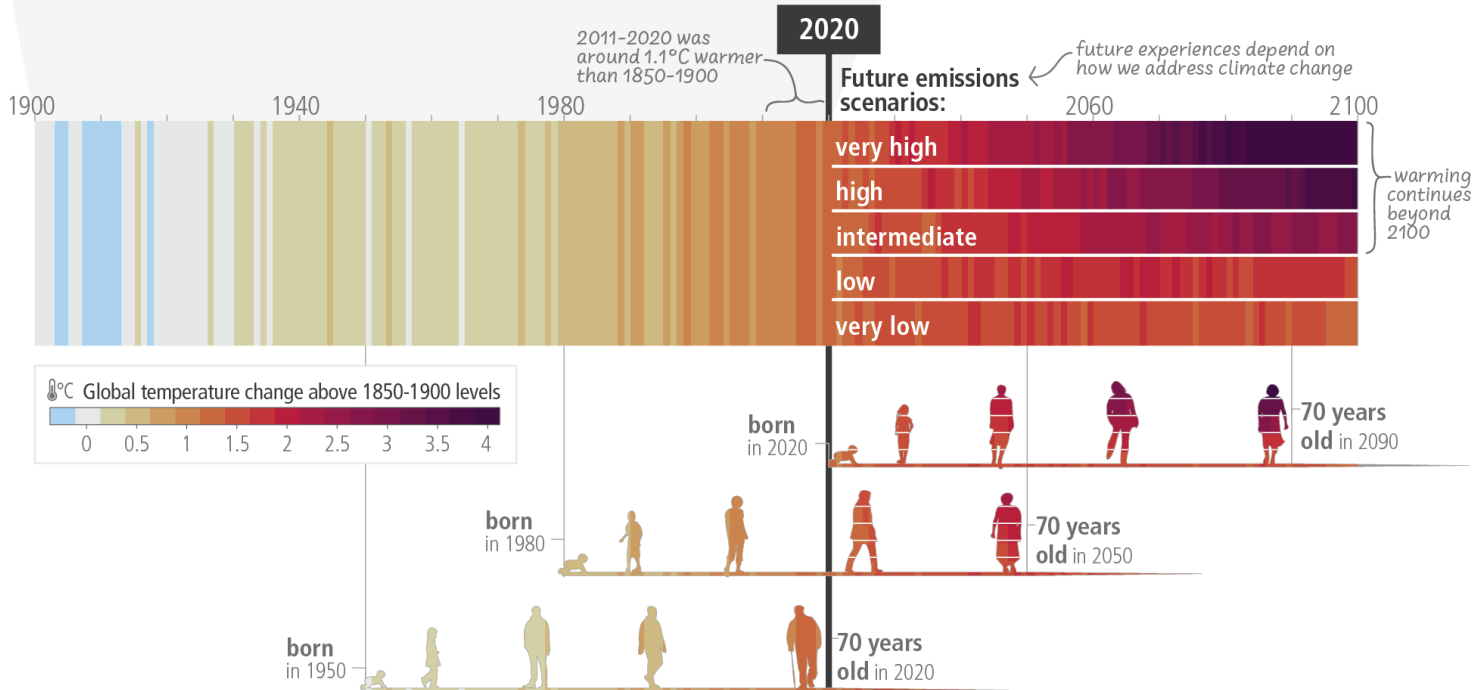
Dette bildet viser Akerselva ved Arkitektur- og designhøgskolen langt nede i Maridalsveien tirsdag formiddag. Nå har Oslo mer enn nok vann og må derfor slippe ut mye mer i Akerselva enn det som er normalt. Foto: Morten Uglum

Wasim Riaz Journalist

Morten Uglum Fotograf

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...tilpasser oss det nye klimaet

...gjør dette på en måte som ikke
skaper andre problemer samtidig

**...tar ansvar for å stille de
spørsmålene som lar oss ligge i
forkant av skadene.**

°CICERO

Thank you

Name, Nameson

www.cicero.oslo.no

@CICERO_klima

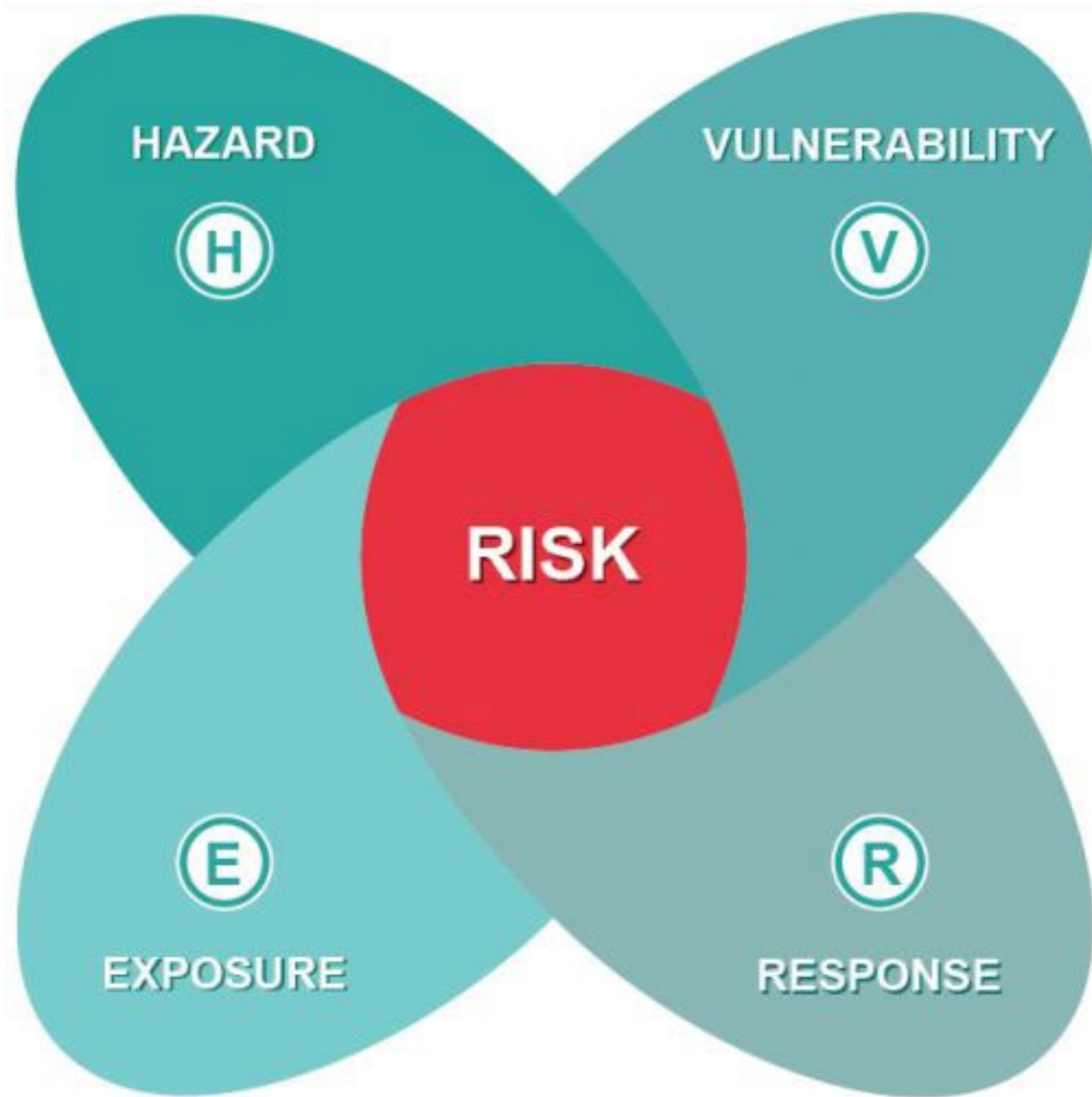
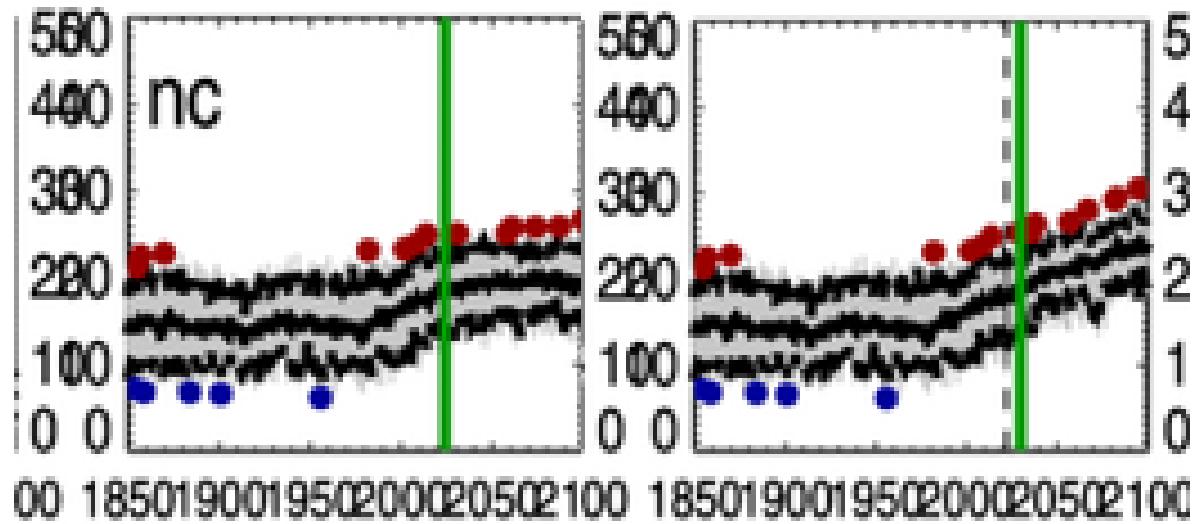
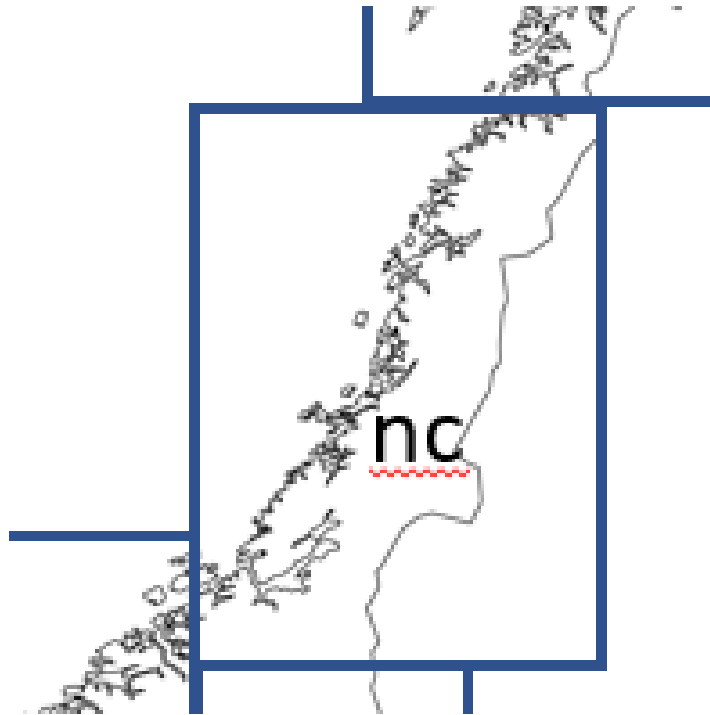


Table CCP6.5 | Key risks (KR) and illustrative examples in polar regions identified through the processes described in Chapter 16 and SMCCP6.4.

Key risk	Direct and indirect factors contributing to risk
KR1. Risk to marine ecosystems and species (CCP6.2.2; CCP6.2.3)	<ul style="list-style-type: none"> – Warming, MHW, sea ice loss, glacial and IS melt, OA, invasive species, harmful algae blooms – Narrow thermal niches, altered marine habitat, hampered calcification, higher corrosivity for CaCO₃ shell/skeleton, phenological mismatch, physiological/life history effects, sensitive food web relationships, reduced trophic (energy) transfer efficiencies, increased light availability, nutrient limitation, and changes to salinity, stratification, oxygen levels
KR2. Risk to terrestrial and freshwater ecosystems and species (CCP6.2.4)	<ul style="list-style-type: none"> – Warming, hydrological changes, terrestrial heat waves, change in rain and snow events, increased wild- and mega-fire events in Arctic, permafrost thaw, and erosion – Vegetation browning/greening, narrow thermal niches, physiological/ life history effects, sensitive food web relationships, parasites and disease
KR3. Risk to commercial and private infrastructure (CCP6.2.6)	<ul style="list-style-type: none"> – Permafrost freeze–thaw, extreme heat and precipitation, rapid warm-thaw events, storms, increased wave activity, storm surges, flooding, landslides and erosion – Roads, airstrips, railways, ports, commercial buildings, private homes, ice cellars, traditional snow/ice/water travel routes, other infrastructure – Permafrost freeze–thaw and SLR impacting cultural assets, including cultural heritage sites
KR4. Risk to food and nutritional security (CCP6.2.5)	<ul style="list-style-type: none"> – Warming, OA, sea ice loss, permafrost loss, changes to precipitation, wildfires, hydrological changes – Access to marine areas increased, to coastal and terrestrial areas decreased; effects on subsistence and commercial species
KR5. Increased polar shipping traffic with cascading risks for navigation, safety, ecosystems and culture (CCP6.2.4; CCP6.2.5; Box CCP6.2; FAQ CCP6.1)	<ul style="list-style-type: none"> – Substantial reduction in sea ice extent and thickness – Marine subsistence species; coastal communities; Inuit hunters; ship operators; tourism operators; mining companies
KR6. Increased mental health challenges and impacts on Indigenous Peoples and culture (CCP6.2.6.4; CCP6.2.7; CCP6.2.8. Box CCP6.2; FAQ CCP6.3)	<ul style="list-style-type: none"> – Warming temperature; heatwaves; ice changes; changes in snow cover; permafrost thaw; coastal erosion; changing landscapes
KR7. Risk from polar change for global processes and SLR (FAQ CCP6.1)	<ul style="list-style-type: none"> – Reduction in Arctic sea ice, sheets and glaciers have implications for planetary albedo and ocean stratification and salinity, acceleration of global warming, potential effects on global overturning circulation and Northern Hemisphere weather patterns – Cultural and resource connections to global sustainable development

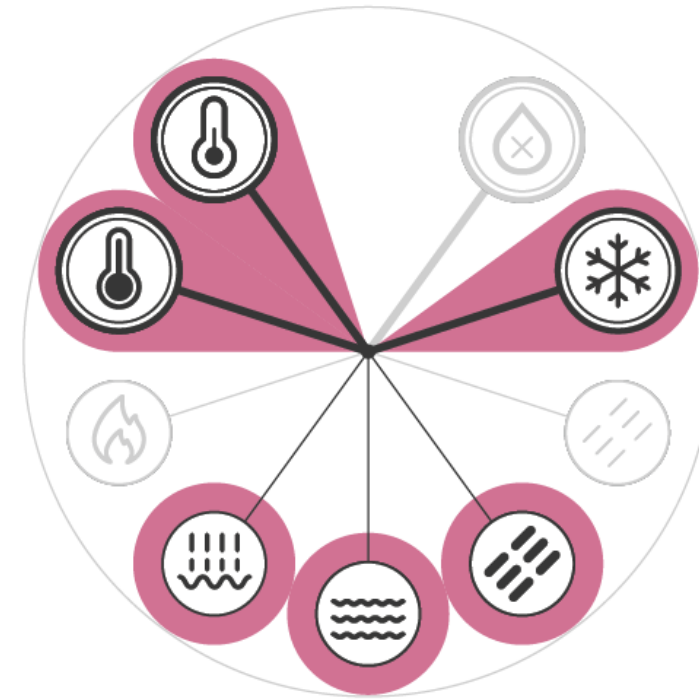
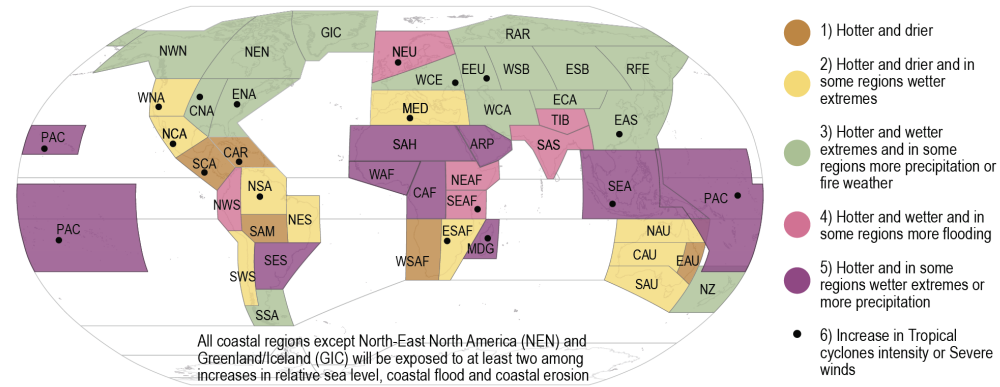
Varmeste dag i midt-norge?



While changes in climatic impact-drivers are projected everywhere, there is a specific combination of changes each region would experience

(a) World regions grouped into five clusters, each one based on a combination of changes in climatic impact-drivers

Assessed future changes: Changes refer to a 20–30 year period centred around 2050 and/or consistent with 2°C global warming compared to a similar period within 1960–2014 or 1850–1900.



(4) **Hotter and less snow/ice**
and in some regions more pluvial flooding or river flooding or mean precipitation or both

Combinations of future changes in climatic impact-drivers (CIDs)

