GREIFSWALD MIRE CENTRE

INTERNATIONAL MIRE CONSERVATION GROUP

The Great Rewetting

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Global Peatlands Initiative

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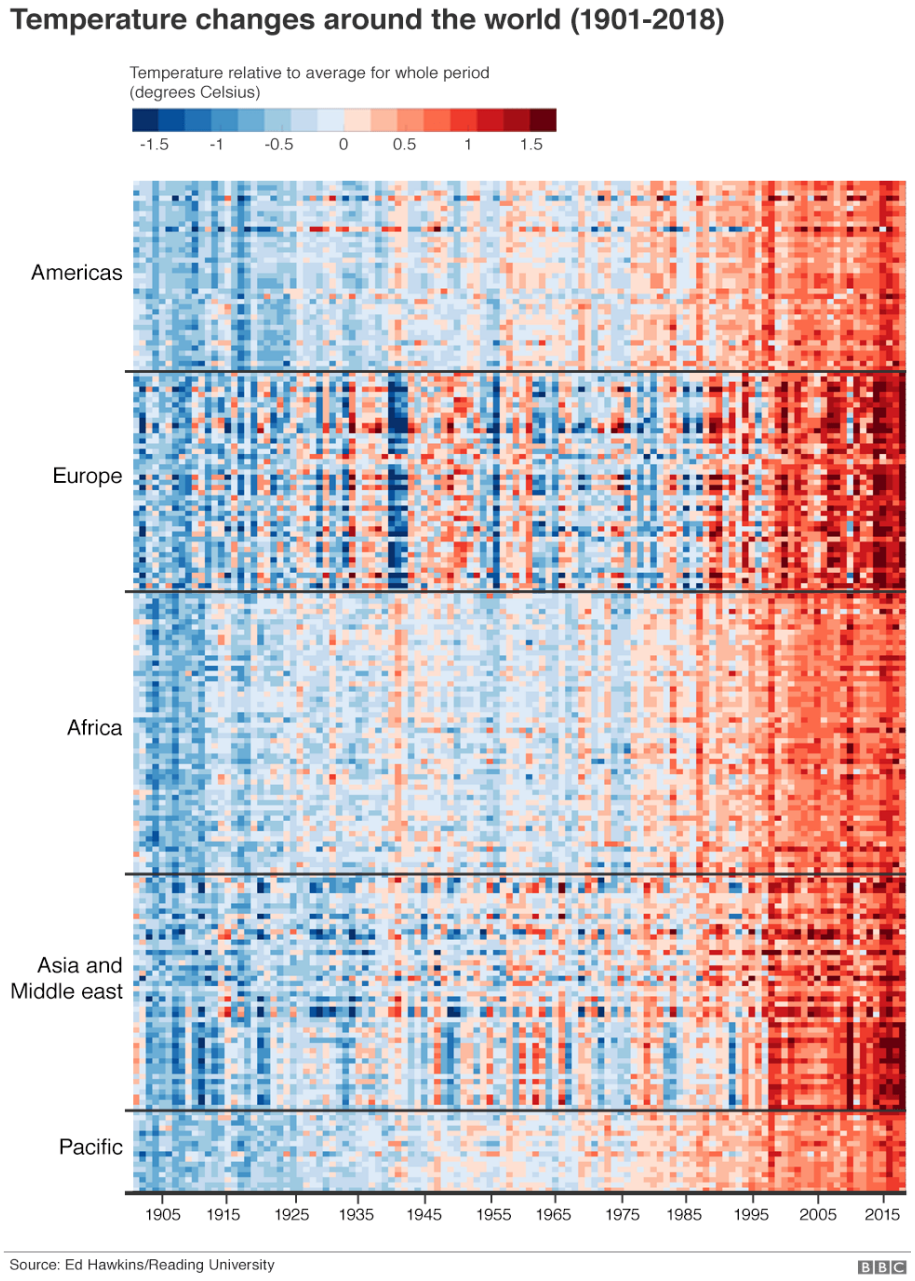
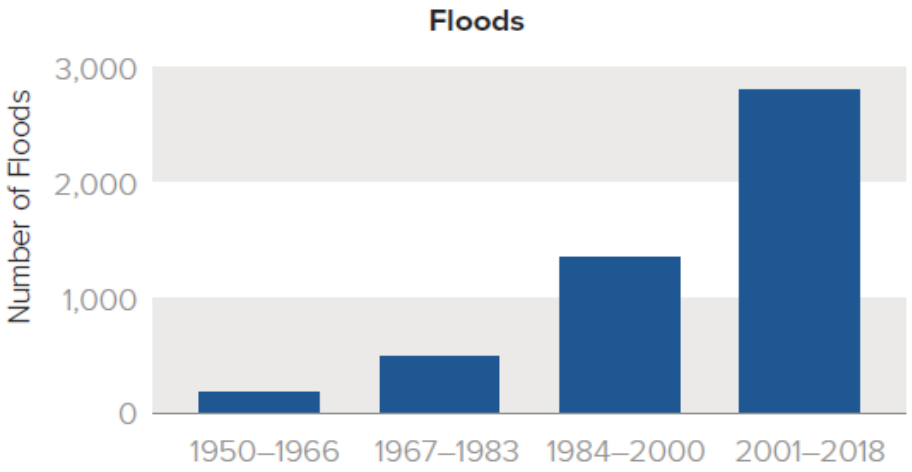
Our planet is getting warmer and warmer…

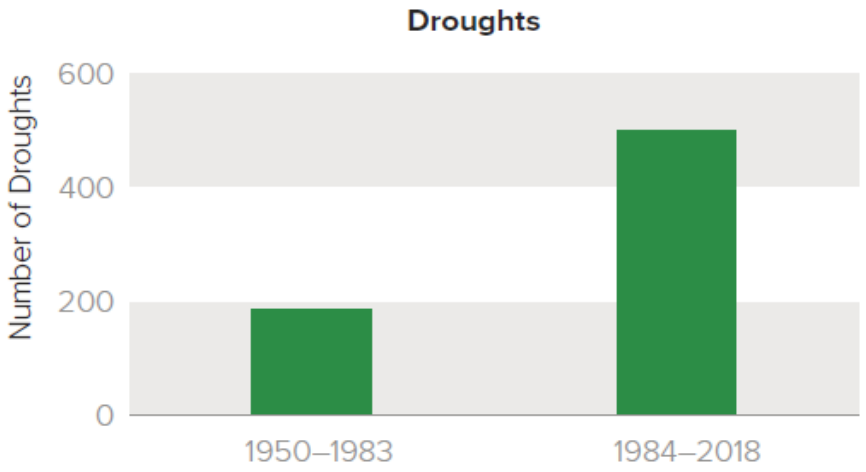


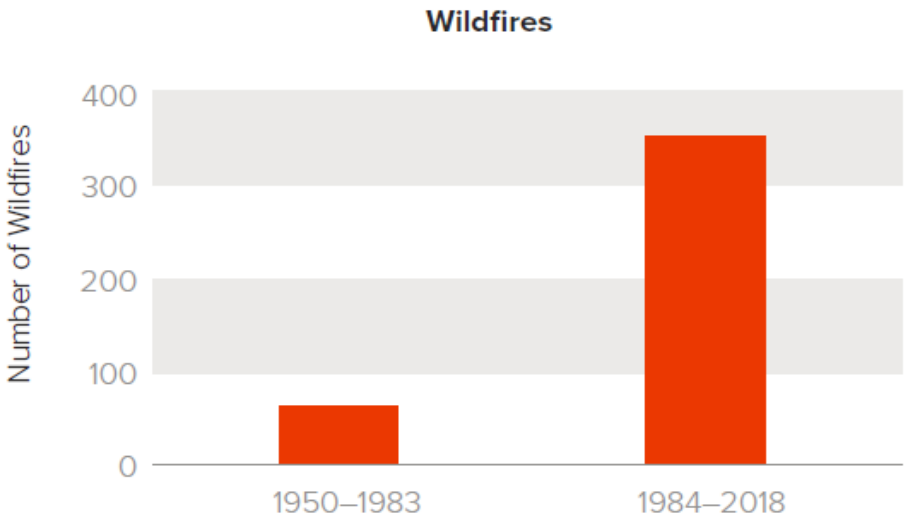
https://www.bbc.com/news/science-environment-48678196

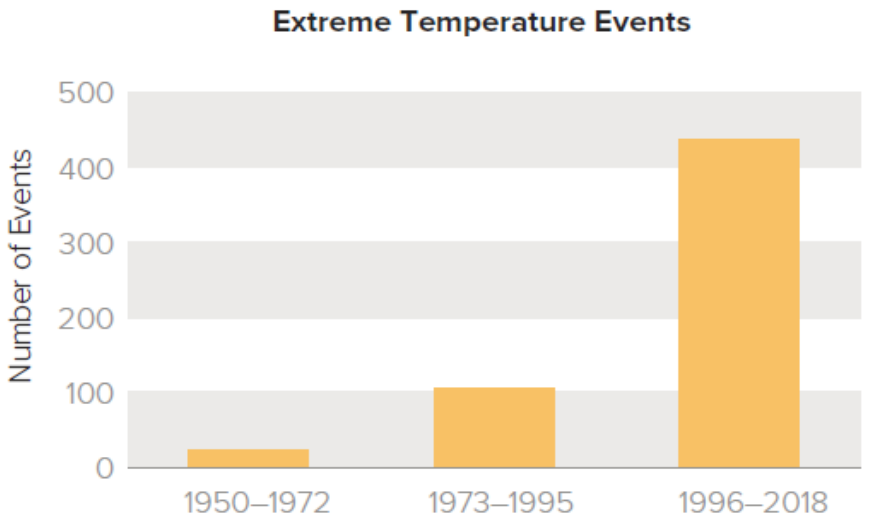
…with decreasing food and water security, and growing social breakdown, conflict and migration…

Frequency and severity of disasters are rapidly increasing with enormous losses of lives and money









These developments – we *all* have agreed – have to stop….

Paris

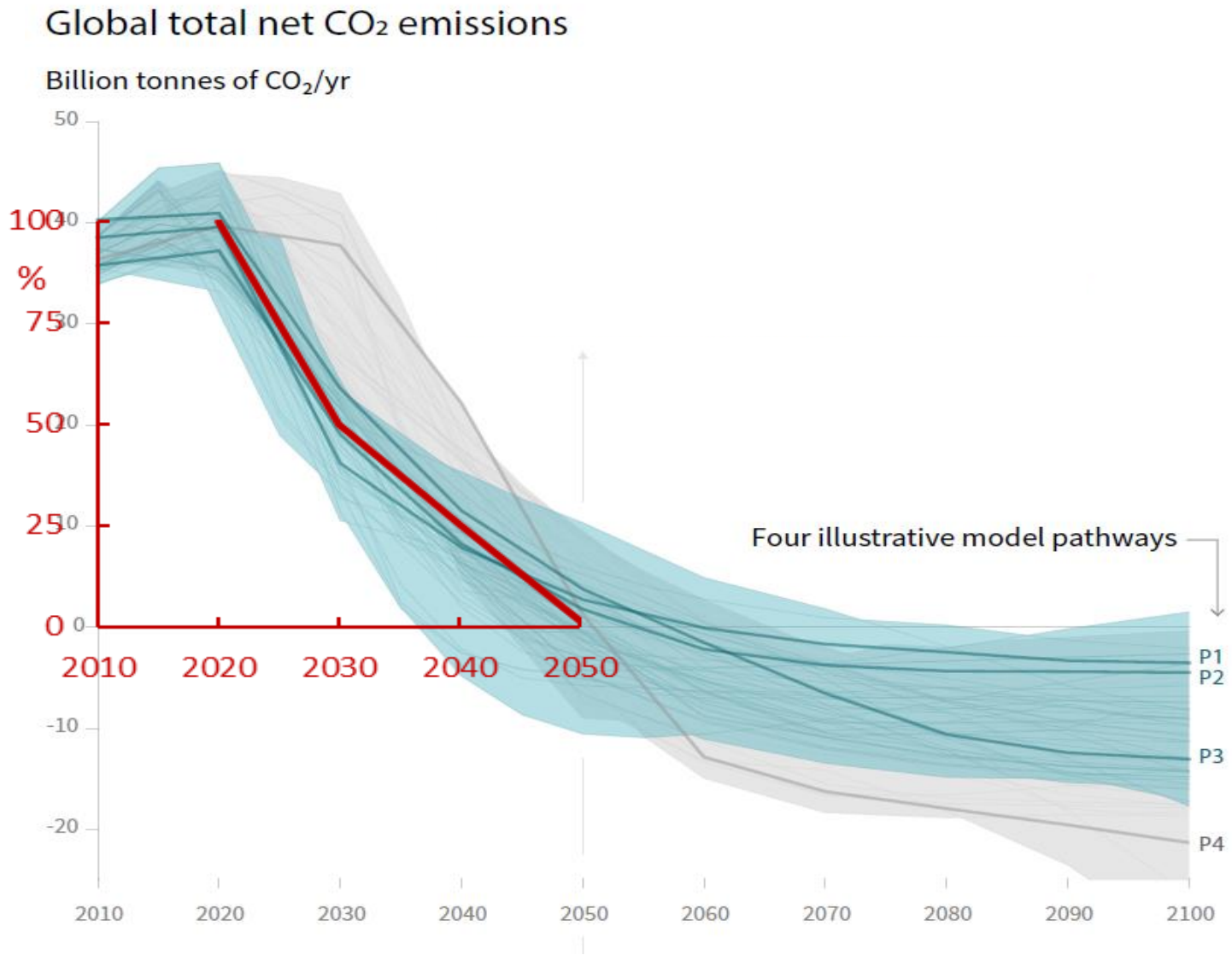
Paris has made the world simple: one common goal: < 2º

Georgia

Paris agreement (+ SDGs): “…in the context of sustainable development and efforts to eradicate poverty”…

North Korea

IPCC 1.5° Report (2018) spells out what this means for GHGs: CO_2 **Zero** in 2050, **net sink after 2050**, CH_4 -50%, N_2O - 20%



→ break radically with wrong developments from the past, also with respect to peatlands

Belarus

In living peatlands (‘mires’):

- Biomass production larger than decay
- Dead plants accumulate as ‘peat’

Georgia

Peat accumulates through water saturation…

Belarus

Peat accumulates during thousands of years and stores concentrated carbon in thick layers

Peatlands are most space-effective C stores of all terrestrial ecosystems: 1 average ha = 2 million liter of diesel

Java

A 15 cm thick layer of peat contains per hectare more carbon than a High-Carbon-Stock tropical rainforest

Gabon

On only 3% of the global land area, peatlands contain >500 Gigaton of carbon in their peat

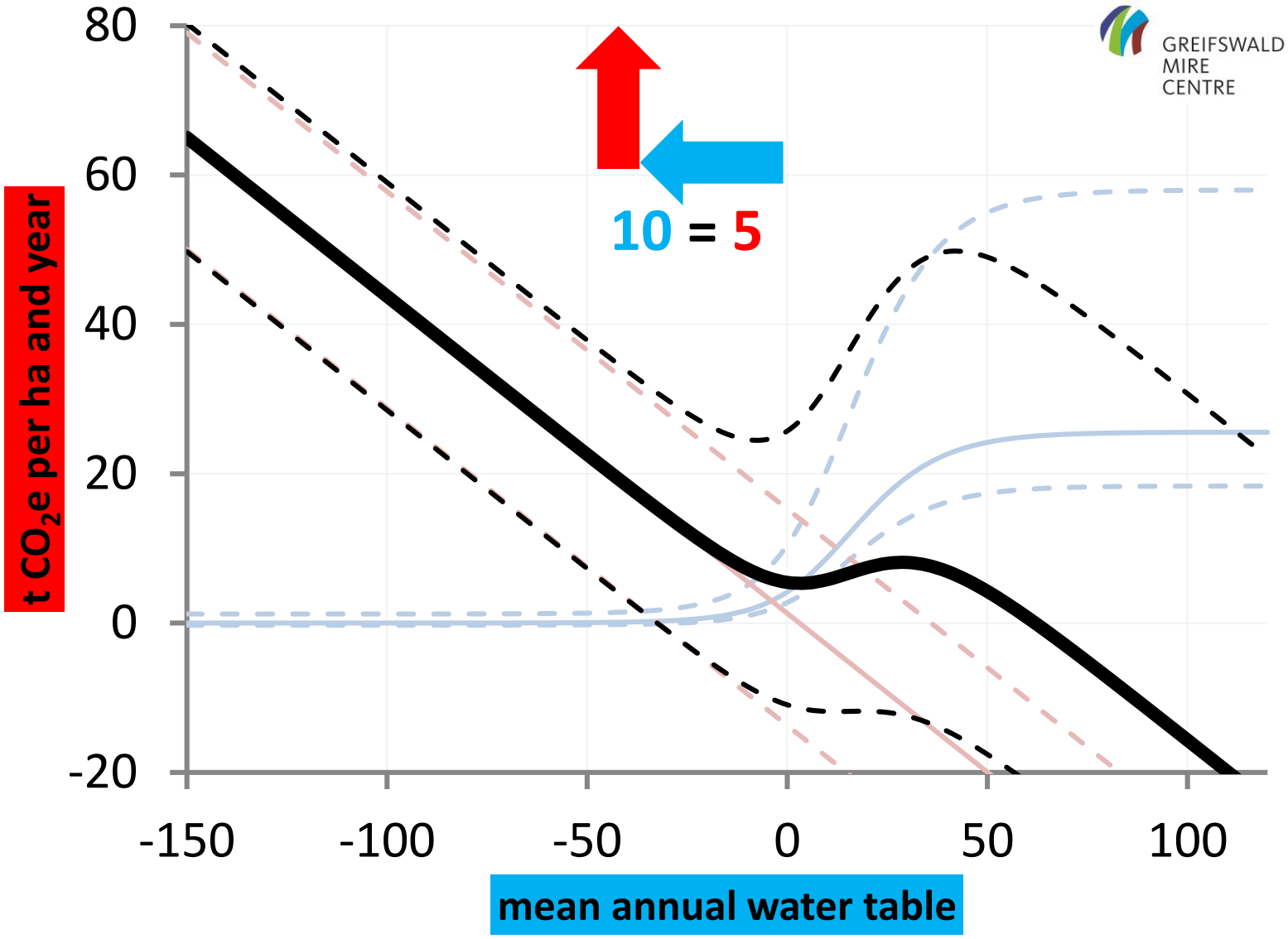
Rwanda

i.e. twice the carbon stock of the World's total forest biomass on 30% of the land

Sabah

Peat is like atjar tjampoer or herring: when you remove the conserving water, the organic matter rots away

Deeper water table → more greenhouse gas emissions:
In C-Europe: every 10 cm deeper → 5 tons per ha more,



Deeply drained grassland on peat in Germany emits 29 T CO_2e per ha per year = 145,000 km with middle class car

Germany

Food print…

1 kg cheese = 55 kg CO_2

1 l milk = 2.4 l petrol

A potato field on peat in Europe emits 37 T CO_2e /ha/yr
= 2 x more C than the produced potatoes contain…

Peat potatoes are fossil resources...

Germany

Oil palm on peat emits 60 T CO_2e /ha/yr
= 50x flight Berlin-Jakarta v.v. (economy class)

Malaysia

Globally, drained peatlands emit 2 Gigatonnes CO_2e /yr,
i.e. 0.4 % of the land produces 5% of all global emissions

Indonesia leads the list of global top emitters…

Indonesia

But, and that is often forgotten: the European Union is a good second …

Netherlands

…with Germany being the largest polluter within the EU…

Vorpommern

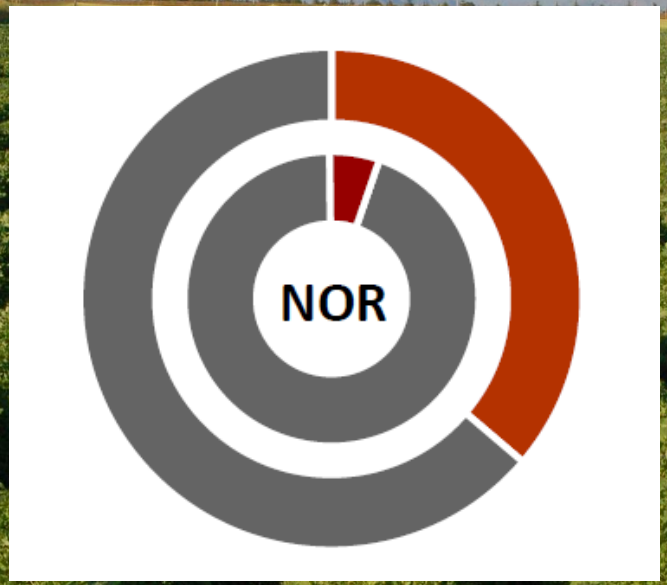
In Norway, 12% of all GHG emissions come from drained peat soils (8% from drained for agriculture)

Worldwide, agriculture is main cause of peatland drainage and emissions (80%)

Indonesia

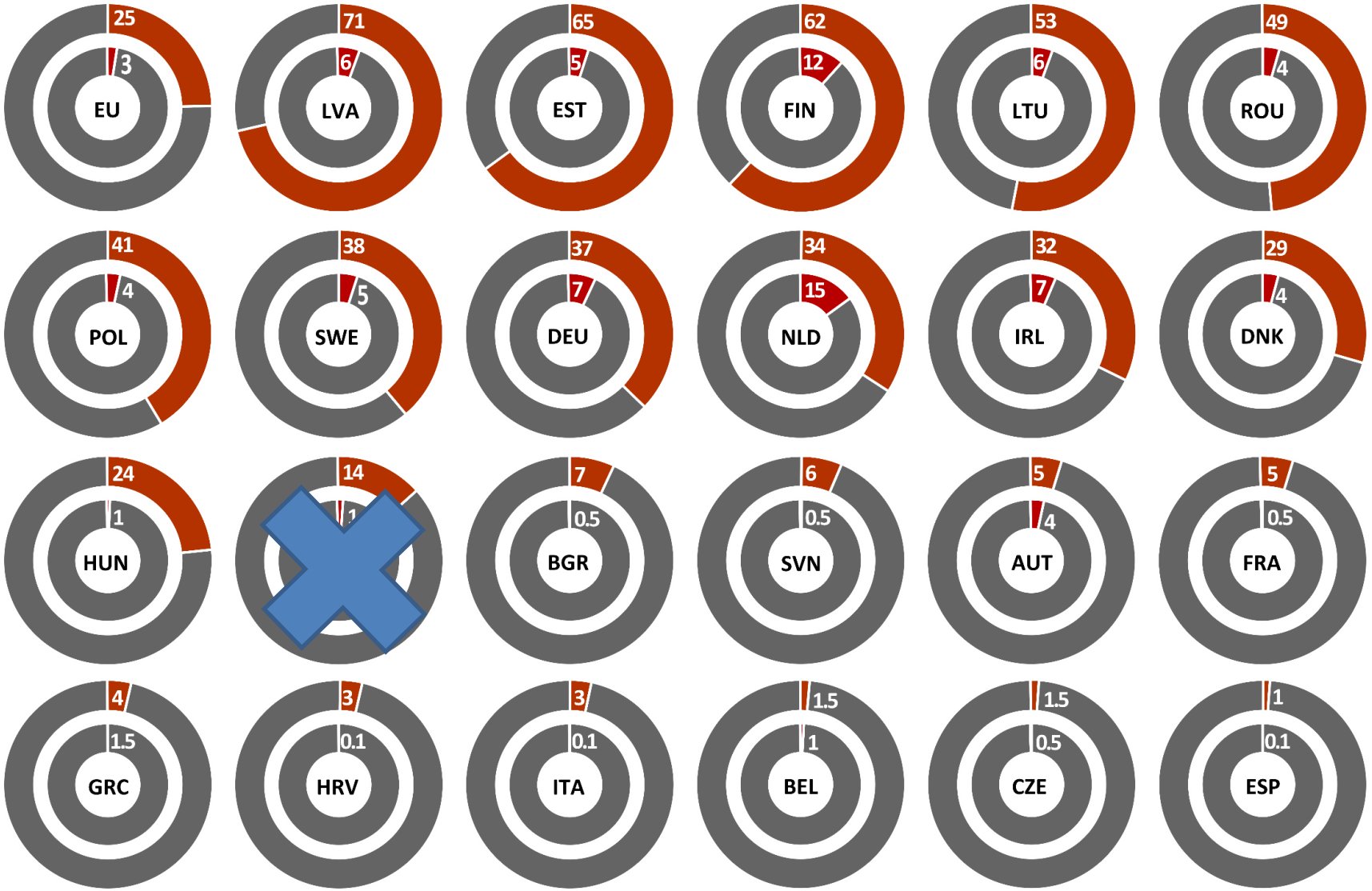
DEU: 7% of agricultural land causes 37% of <u>all</u> agricultural emissions (incl. CH_4 from animals and N_2O from fertilizers)

In NO, **5.5%** agricultural land on organic soil produces **36%** of <u>all</u> agricultural emissions (husbandry 49%, fertilizer 18%)



Norway

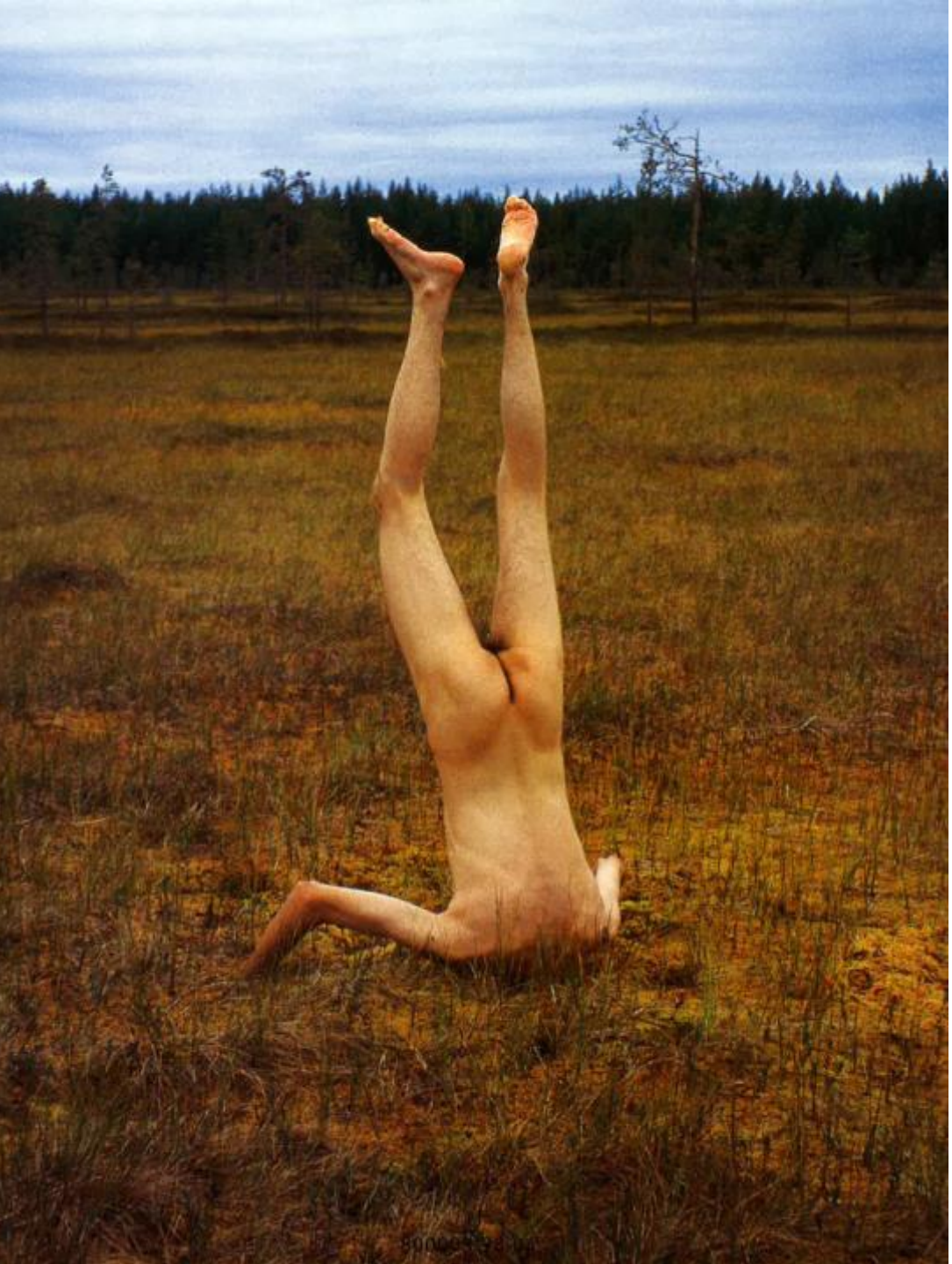
For several EU countries the picture is even worse…



In Germany peatland agriculture causes annually a climate damage of € 7.4 billion, and gets > 410 million EU-subsidies

€ 7,4 billion climate damage equals the total net value-added of total German agriculture

“Biogas” from maize on peat causes 8x more climate damage than burning coal, but is in EU promoted as ‘biofuel’



The ‘polluter pays’ principle is put on the head:

We pay peatland agriculture while causing massive climate damage

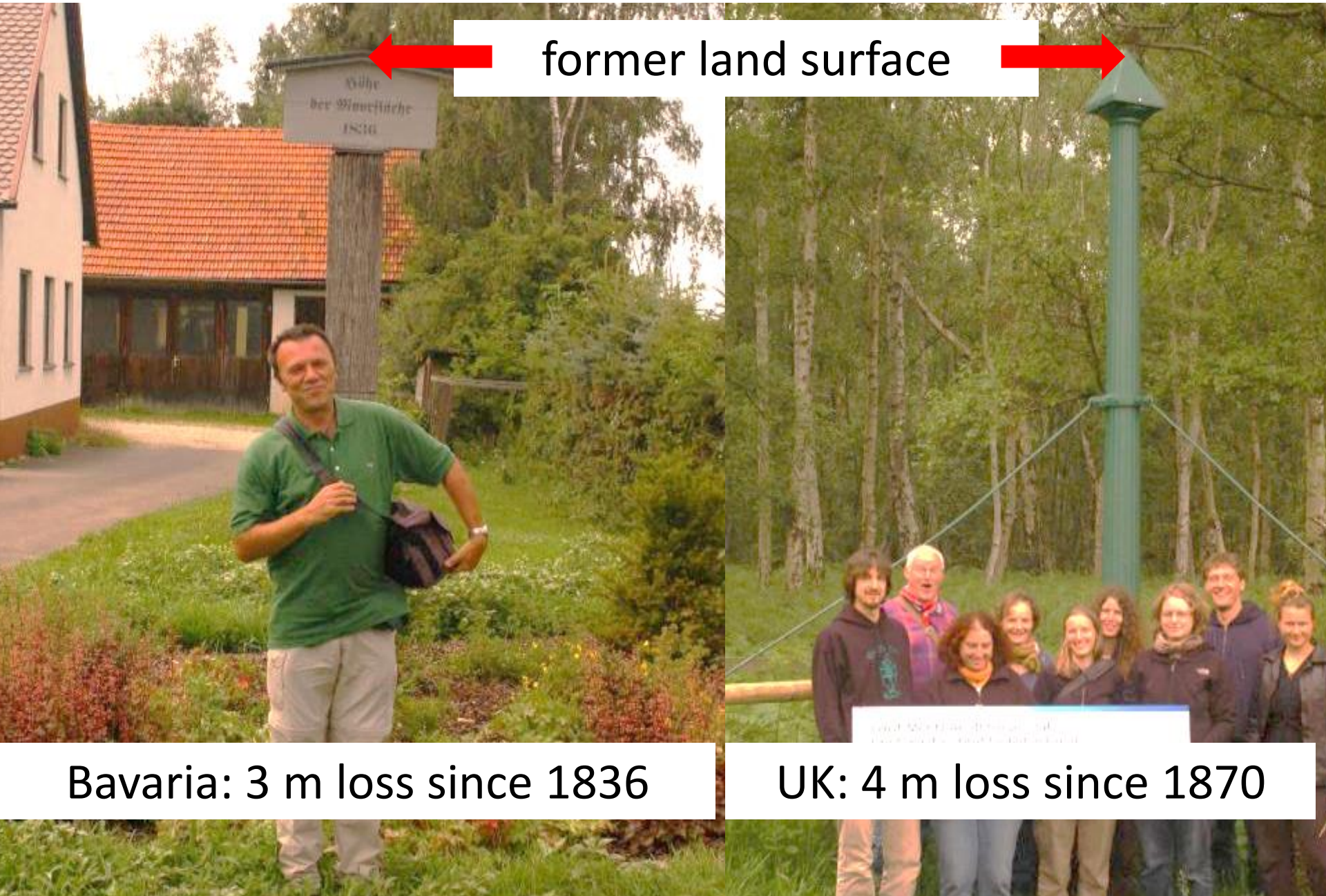
… and frustrate in this way sensible solutions

In hot/continental regions peatland drainage creates deserts…

…with soils like made of stone (without capillarity)…

…and dry peat that blows away like dust…

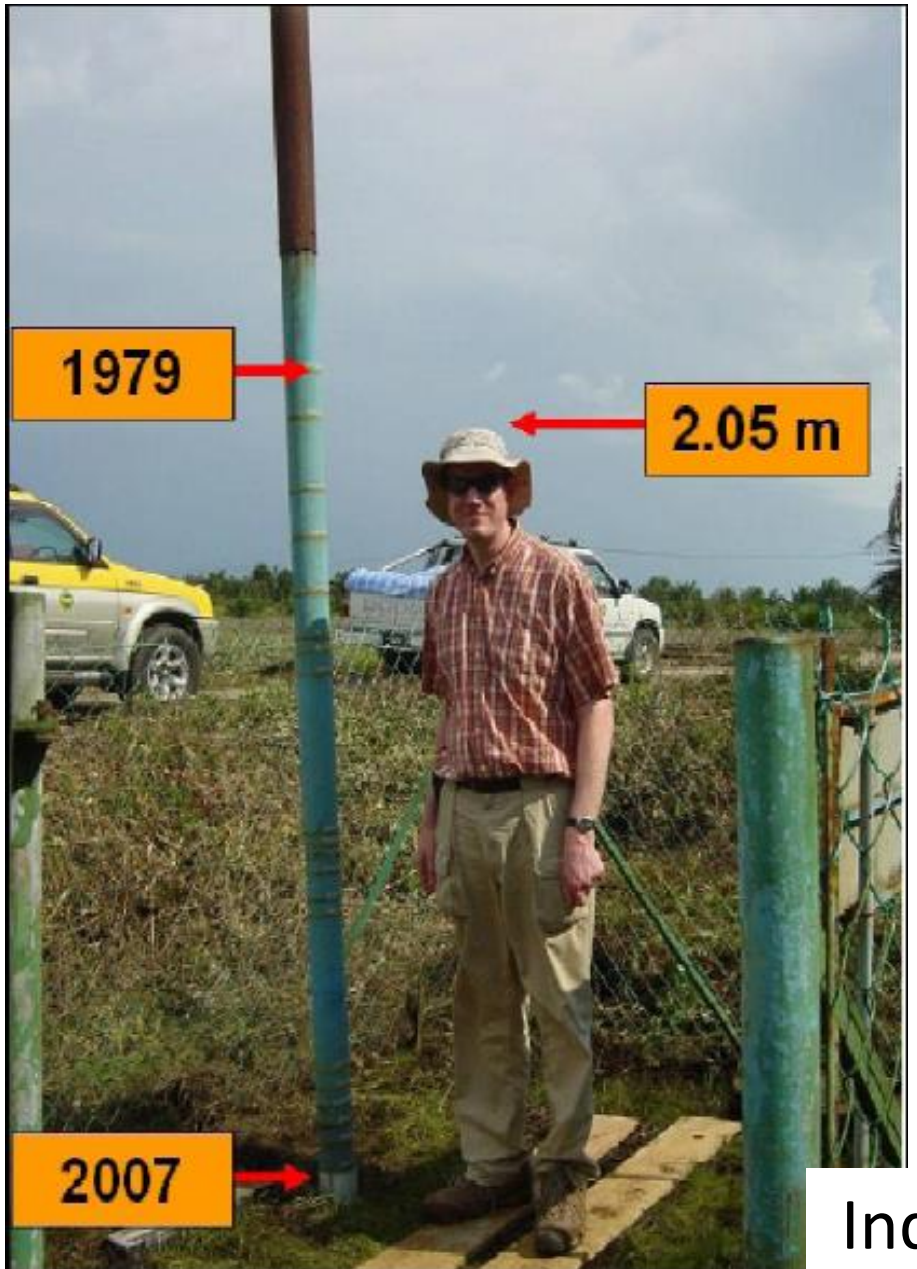
Drainage→ subsidence (loss of height): 1 -2 cm annually



Bavaria: 3 m loss since 1836

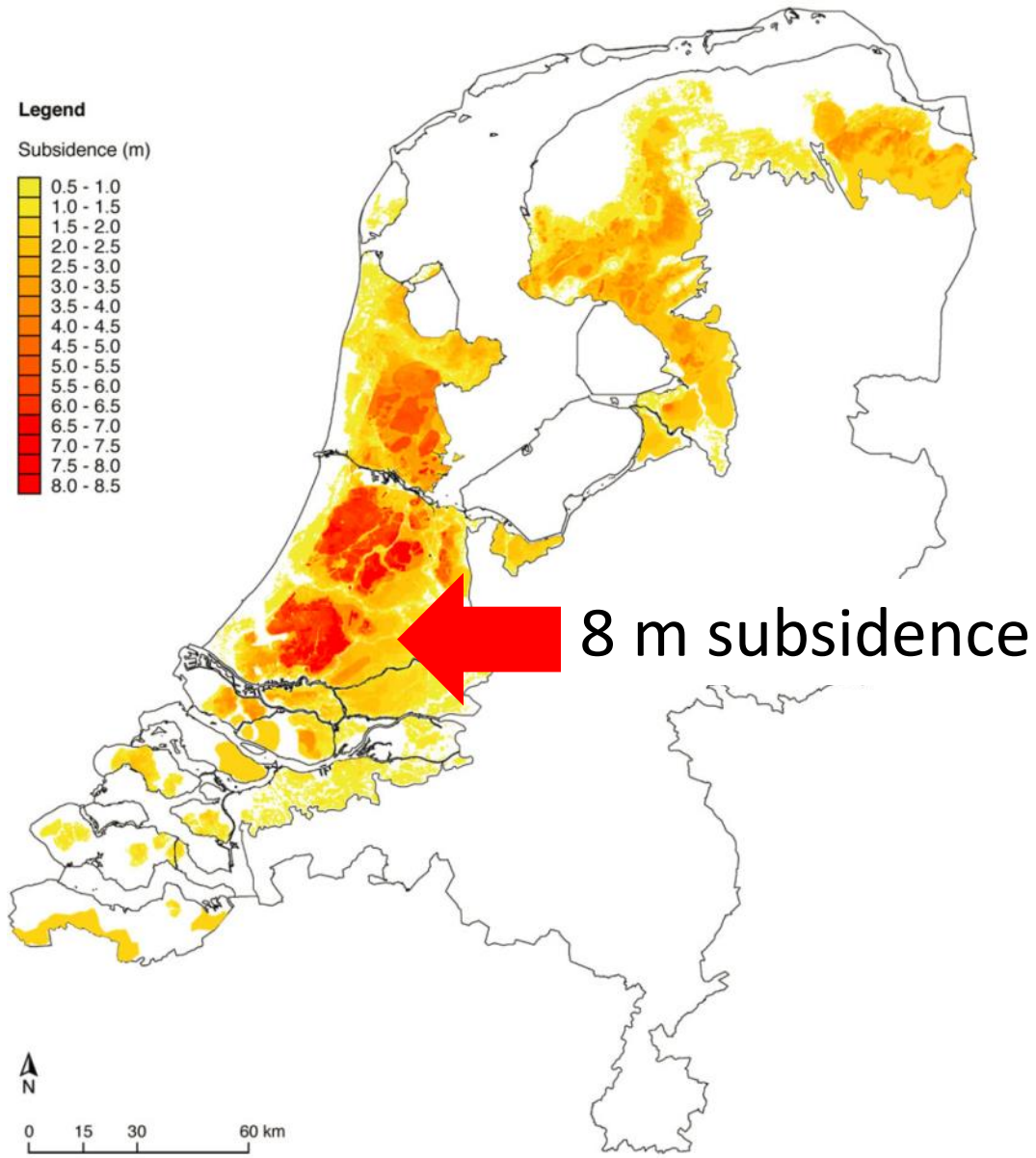
UK: 4 m loss since 1870

In de tropics subsidence goes 3-5 times faster



Indonesia

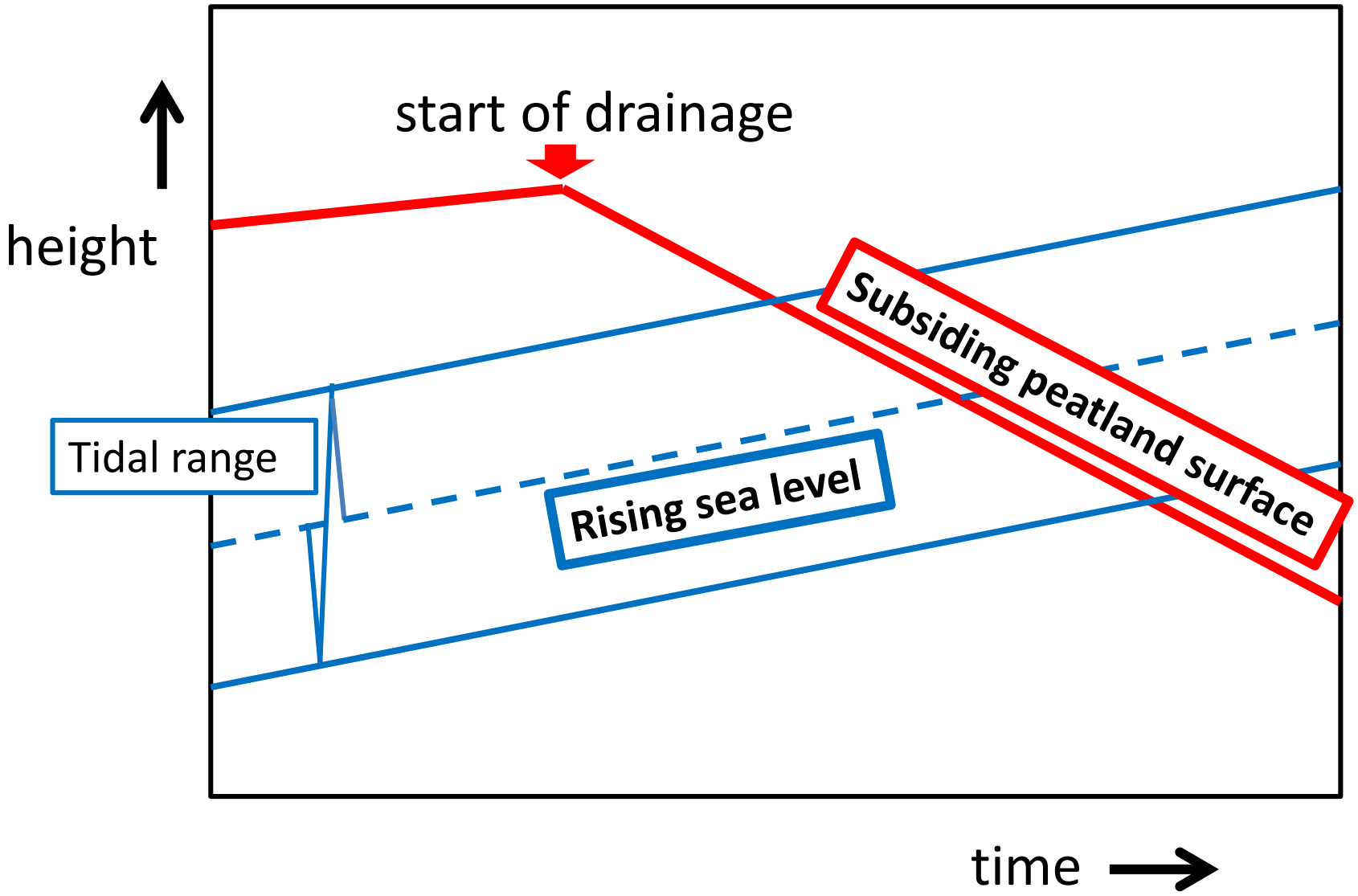
…*Nether*-lands: bogged down by 1000 yr of peatland drainage and subsidence



Netherlands: € 300 million annual damage to infrastructure and sewage systems because of subsidence

Netherlands

Whereas the sea level rises, we bog the peatlands down….

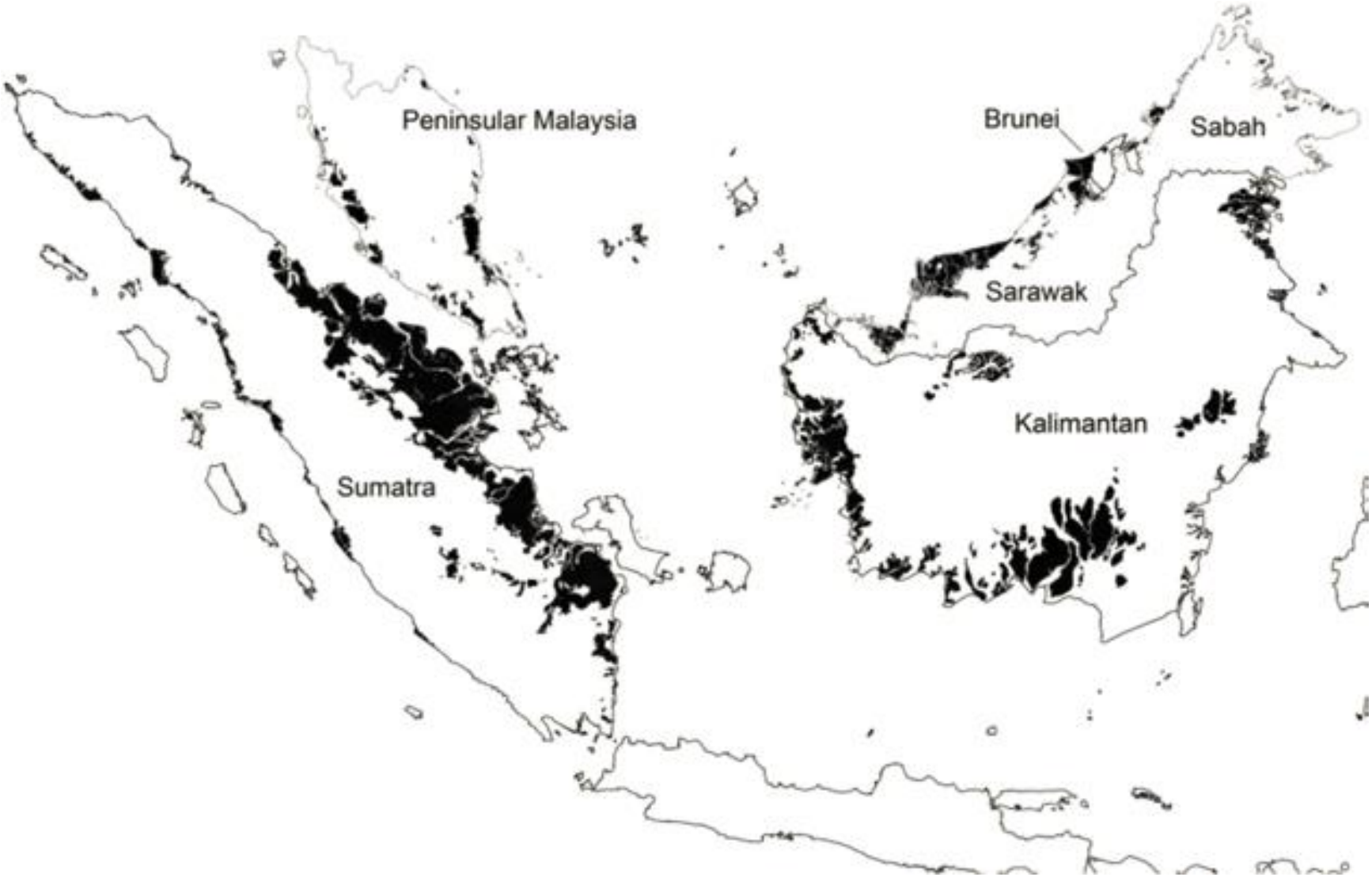


Irma could harm Florida's crops, especially sugar cane and citrus

BUSINESS By Susan Salisbury - Palm Beach Post Staff Writer

USA

Also in SE Asia, many coastal peatlands will - with continuing drainage - be flooded…

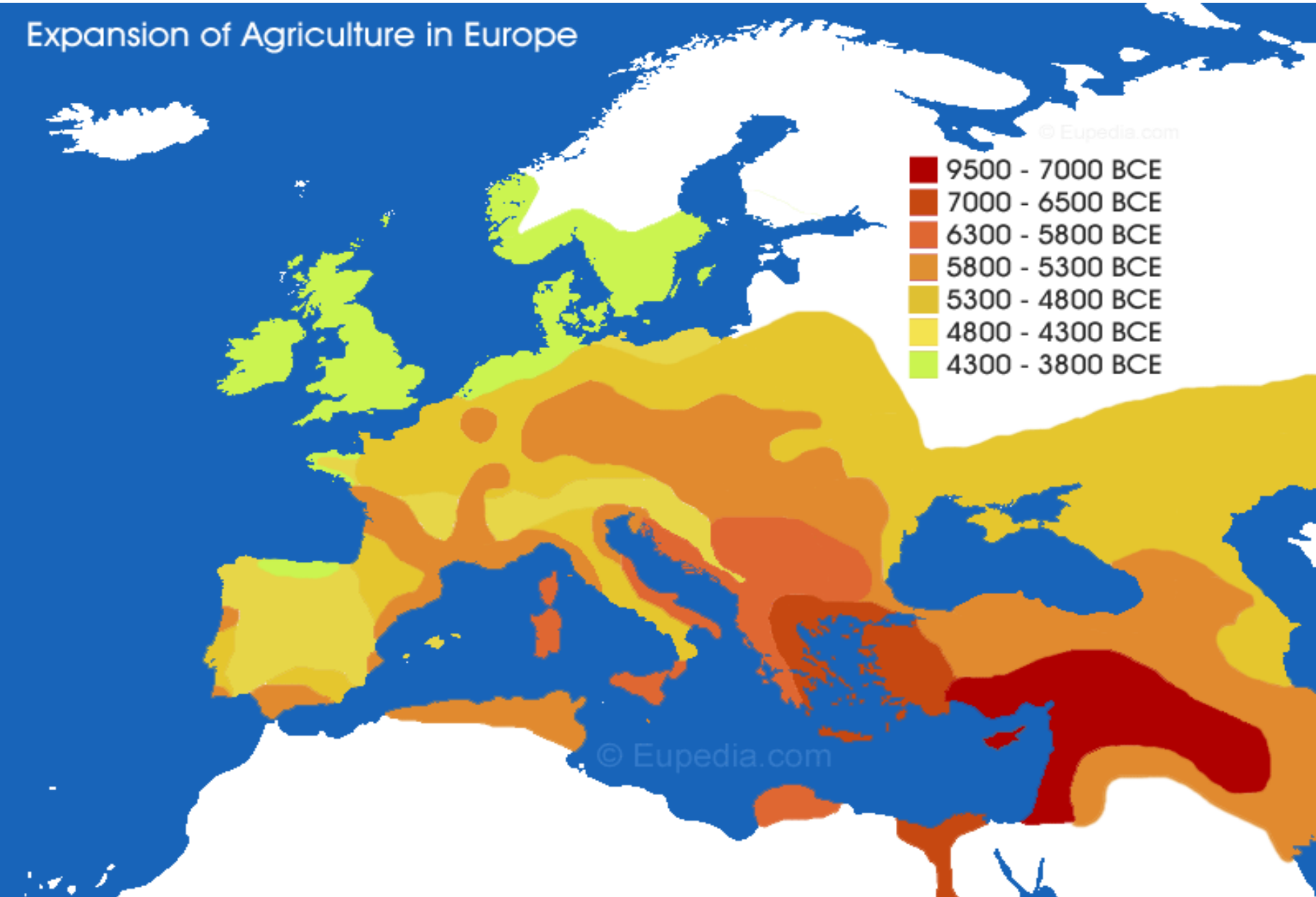


Peatland subsidence will in this century lead to uncontrolled flooding of 10-20 million ha of productive land worldwide

We are loosing land, now that we need it most: for more people, for less poverty, and for replacing fossil resources

Kalimantan

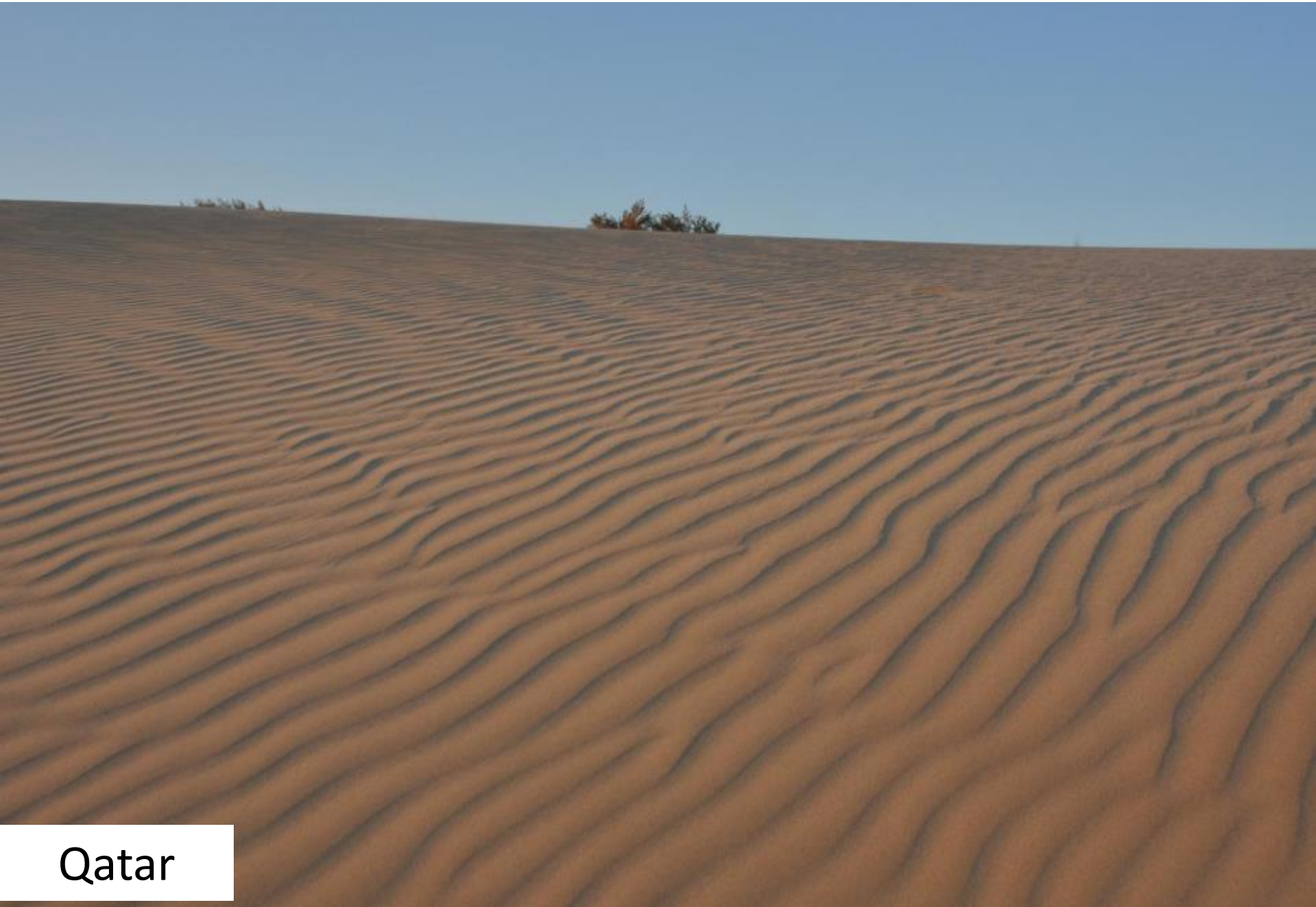
Root problem: western agriculture had semi desert as cradle…



…and has since the idea that productive land must be dry…

Qatar

…and soils continuously moved…



Qatar

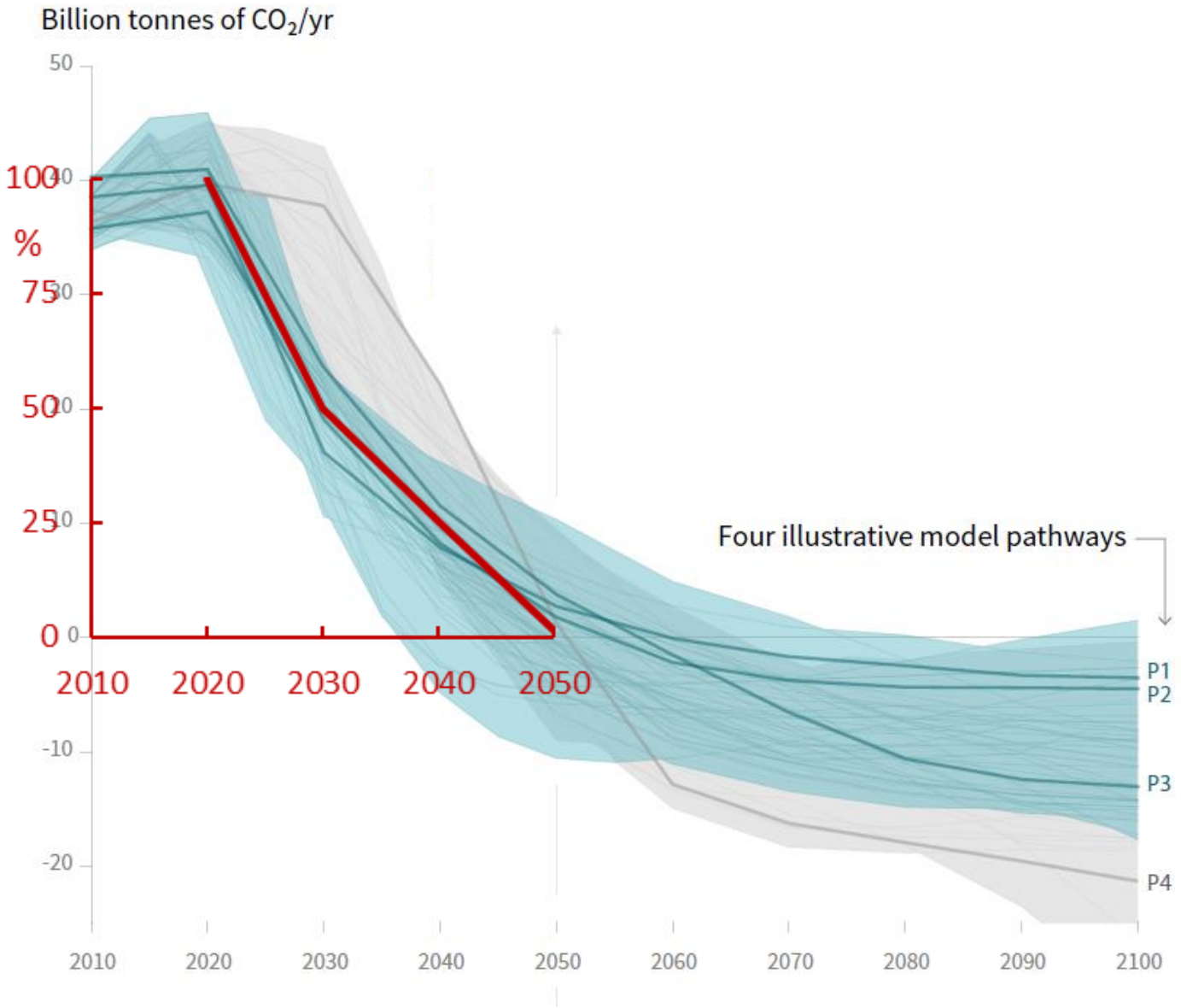
…illusions that we worldwide apply to wet, organic soils…

with desert plants on drained peat in Indonesia: *Aloe vera*

… or semi-arid Maize on drained peat in Europe…

Rewetting drained peatlands solves most of the problems and provides additional ecosystem services

Paris implies for the world: We must rewet 500,000 km^2 of drained peatland until 2050 = 17,000 km^2 per yr!



Rewetting in Europe has hitherto focused on the easy stuff: abandoned and low productive land with few emissions

Scotland

… but we have to go to the core problem: intensive agriculture and forestry on drained peat...

Norway

However: we cannot flood all drained peatlands worldwide or in Europe and take them out of production

Lower Saxony

We can only solve the drainage problems while maintaining production…

Germany

Tobias Dahms, lensescape.org

i.e. with *paludiculture*: wet agriculture/forestry

Miscellaneous biomass: for heating and energie generation…

Malchin Mecklenburg

Reed cultivation: biomass ánd peat accumulation

Poland

Philipp Schroeder, lensescape.org

Reed: high-quality construction materials

Schleswig-Holstein

Cattail (Typha) for very many products…

Bavaria

…for construction, insulation, fodder, growing media, plastics alternative, packaging, pest control, …

Vorpommern

Sept. 2019: establishment of cattail, one day later flooded

Alder cultivation: biomass ánd peat accumulation

Alder wood: for furniture and furneer

Peatmoss cultivation to replace fossil peat in horticulture

Water buffalos: for meat and mozerella…

Vorpommern

EU: until 2050 rewet 5,000 km^2 per year…

Illusorious, naive…?

Germany

Finland drained in the 1970s 3,000 km^2 every year!

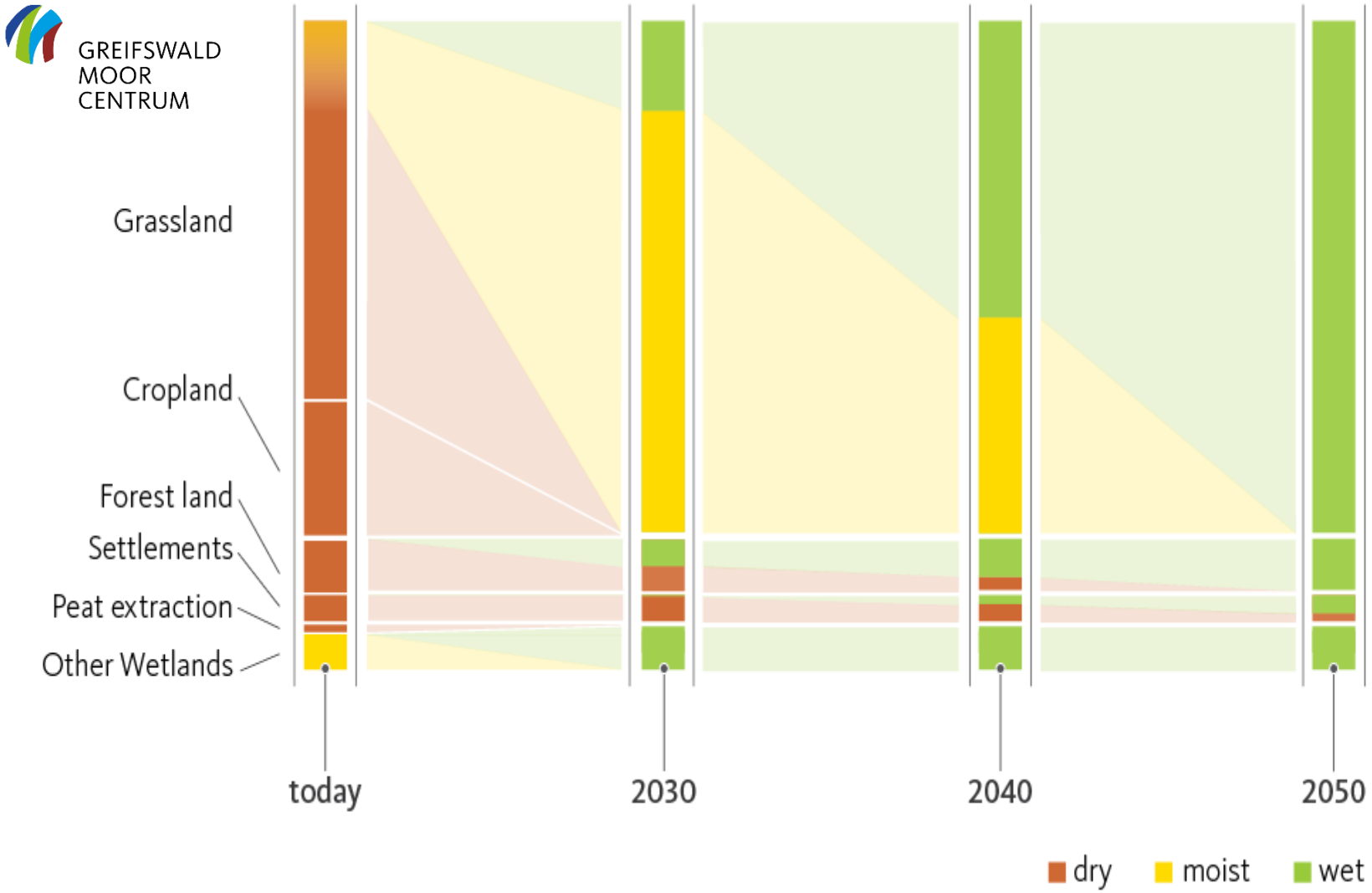
Indonesia 2015: 20,000 km^2 peat fires : 100,000 people killed, 0.5 million in hospital, US$ 16-40 billion domestic damage

Indonesia has in 2017-2019 rewetted 8,000 km^2 of peatland, i.e. 4x as much as *entire* Europe in its *entire* history!

Sumatra

We in Europe live at the best time in history on the best place on Earth: if we cannot manage, who can???

Goal is clear. But how to reach?
Transformation pathway for peatlands in Germany



Paris-conform peatland transition until 2030

- Stop arable use of peat soils, stop subventions in 2021
- Raise water level in all grassland
- Rewet 50% of the drained forest
- Stop peat extraction
- Include paludiculture in EU agricultural subsidies
- Stop drainage in all state-owned peatlands
- Establish paludiculture demonstration sites
- Build capacity for rewetting 50.000 ha per year

We have to turn back the „meliorations“ of the past with similar large efforts…

Emsland

Peatlands must be wet: for the climate, for the land, for the people, for ever…