

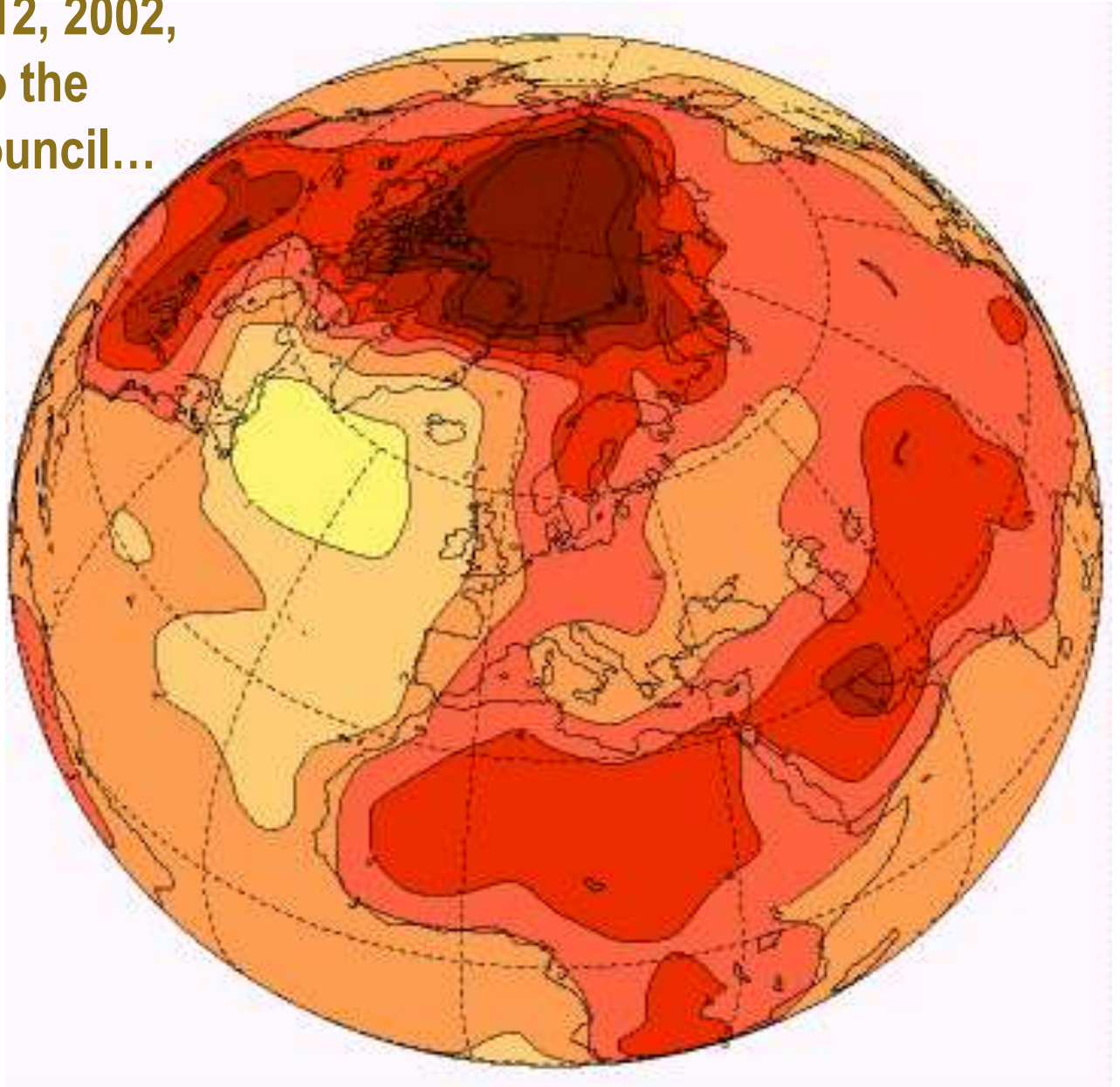
2002 – 2017 Water Management in Dresden



In the late afternoon of August 12, 2002,
I talked about climate change to the
Environmental Board of City Council...

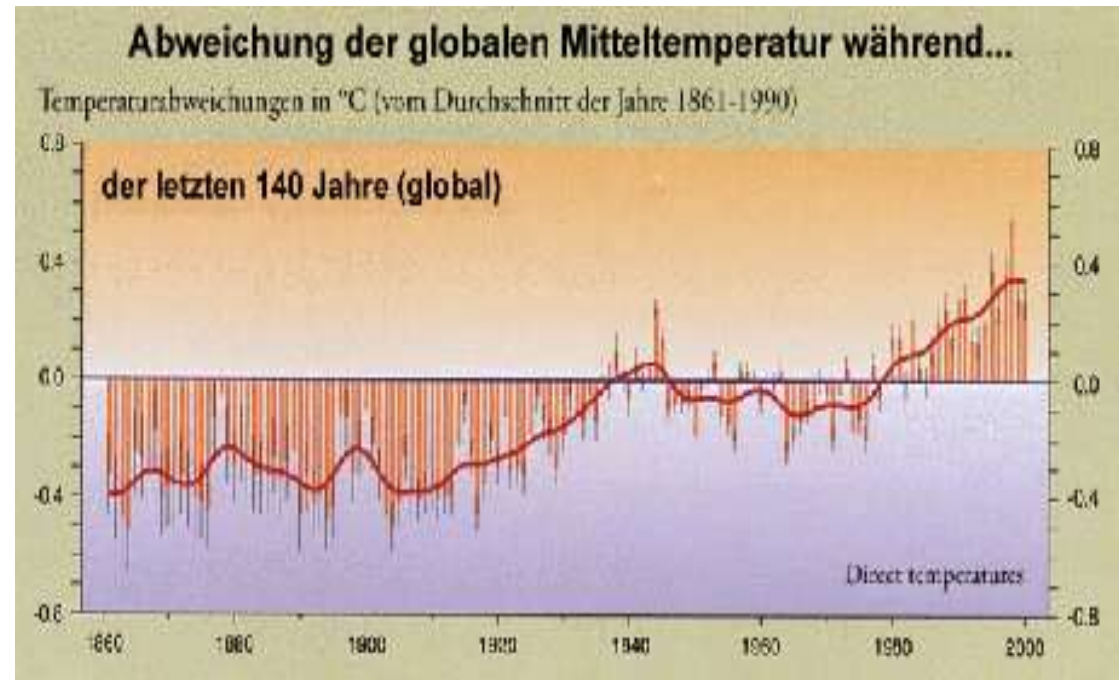
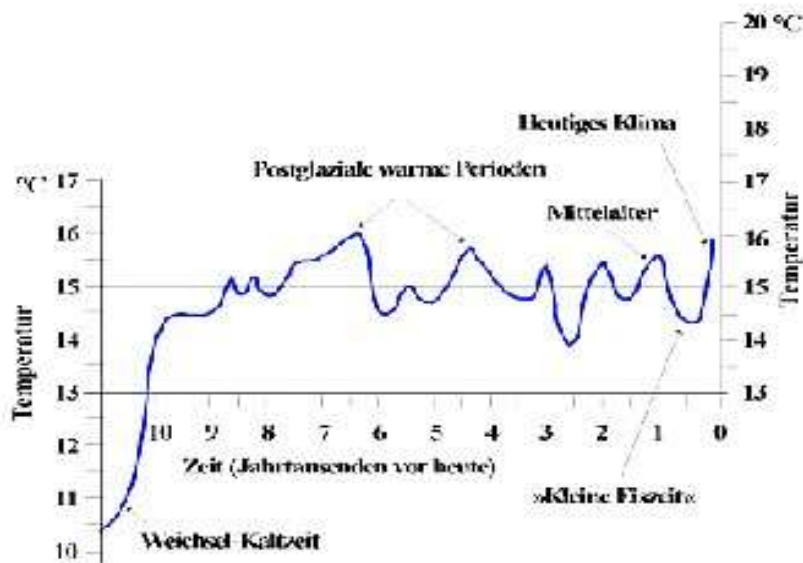
There is no doubt
anymore
that climate is
changing.

The question is how
fast and how much
it will do.



Climate Change

900 Years of temperature decrease follows 100 years of warming
1 K more provides 8% increase of water amount in atmosphere



The recent climate protection policy has failed.

Climate will change faster than 0,2K per decade und to a higher value than 2 K above the average temperature of the 20th century.

The efforts on climate protection must be forced and supplemented by adaptation measures on the effects of climate change.

12./13. August 2002



Rote Weißeritz - Kipsdorf



Hochwasser-Überlauf
TS Malter



Wilde Weißeritz - Rehefeld



Freital



Löbtau Straße –
altes Flussbett bis 1893



Dresden Hbf.

Four Flood Events in August 2002- Flood Damages in Dresden

- Inundation of 1sqkm of residential area and 8,1sqkm of industrial and business area
- 4 men died
- 304 Mio € to residential buildings
- 467 Mio € to business buildings and equipment
- 468 Mio € to public infrastructure
- 105 Building Plans had to be stopped

■ A state of the art flood protection has to be developed!

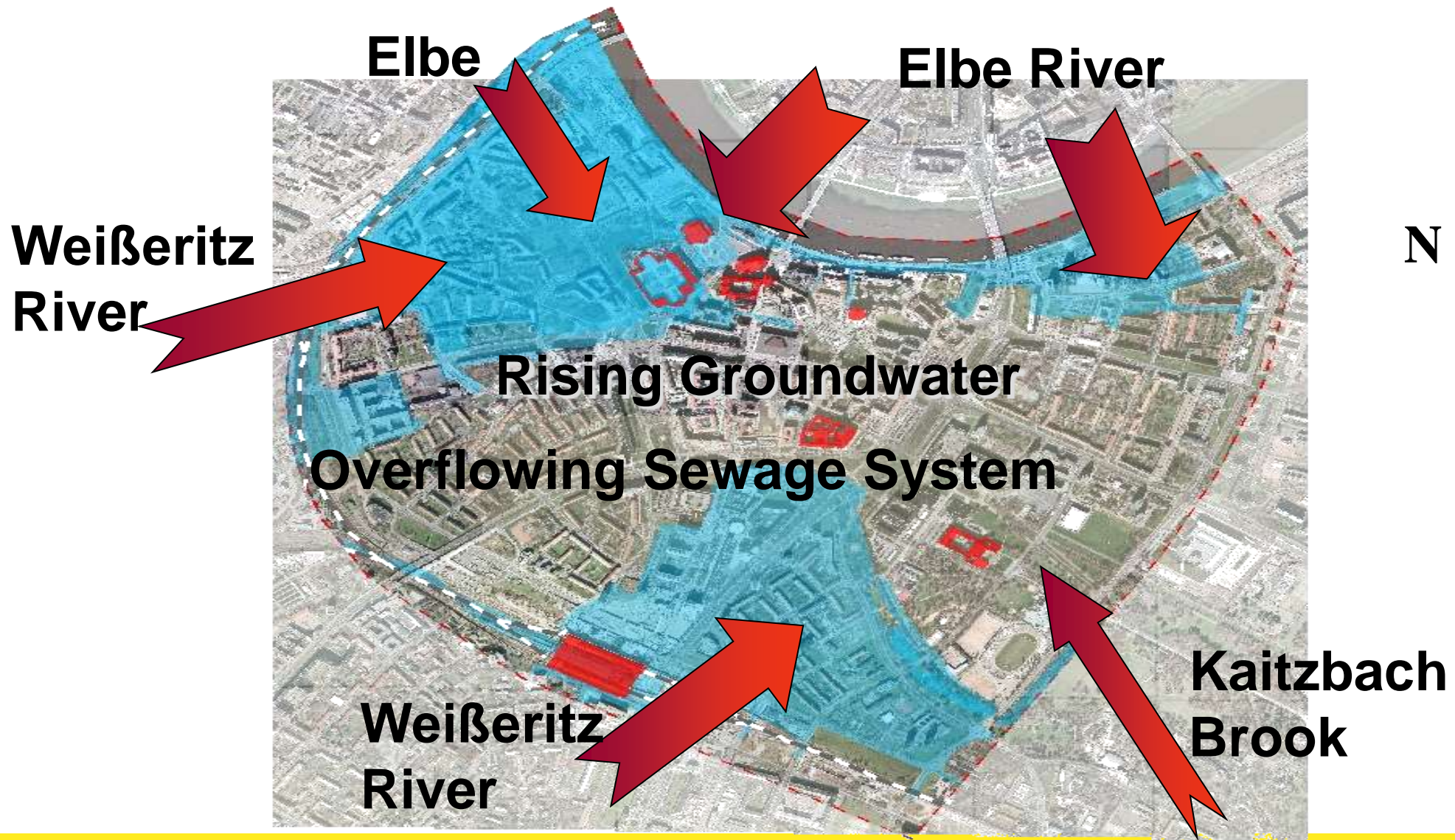
Comprehensive Plan on Flood Protection for Dresden (PHD)

Reduction of damages in case of future floods from all water system inclusive ground water and sewage system to an acceptable level,
Maintenance of further urban development by

1. Improving the resilience of the urban structure
2. Reducing the flood hazards (frequency and severance of flood events)
3. Improving the ability of citizen to protect and defend themselves

PHD

Flood Hazards for Downtown Dresden Result from

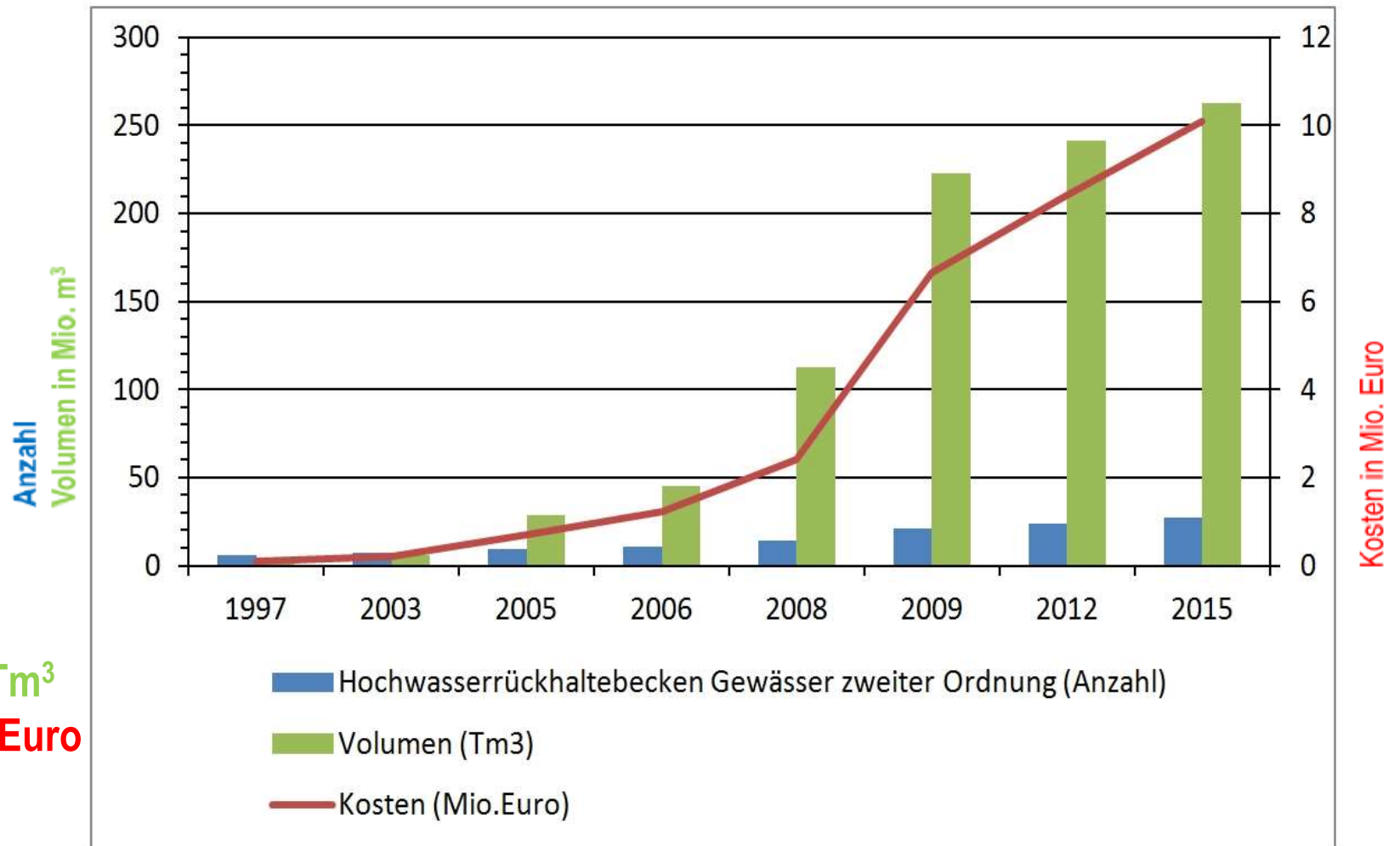


Local Water Courses:

**Bringing waters back to the surface by natural like design.
Establishing retention capacity (Green Basins).**



Retention Basins at Local Water Courses



Total Capacity: 348,4 Tm³
Total Cost: 10,1 Mio. Euro
Numbers: 27



Landeshauptstadt Dresden, Umweltamt

Stand 08/2010

Kaitzbach



Kaitzbach 2003

Sediment- und Treibgutfang Gustav-Adolph Platz 03.06.2013



Hochwasserentlastung Hugo-Bürkner Park 03.06.2013



Überfluteter Großer Garten 05.06.2013 (Foto: SBG)

Weißeritz River:

- Increase of River Bed`s Capacity from 175 to 400m³/s
- Retention of Flood, Driftwood and Sediments





**•13.8.02 Disastrous flood in the inner city by Weißeritz river
(2 victims, severe destruction of the infrastructure)**

Weißeritzhochwasser 13.08.02 ca.13:30 Uhr
Blick Richtung Bienertmühle



2013: The new erected Bridge is capable to come along with more than 100year flood

Elbe River:

- Conservation of Flood Retention Area
- Improvement of Flow Conditions
- Erection of a Flood Protection Wall



Railroad Bridge in the Ostra Flood Channel after Flood



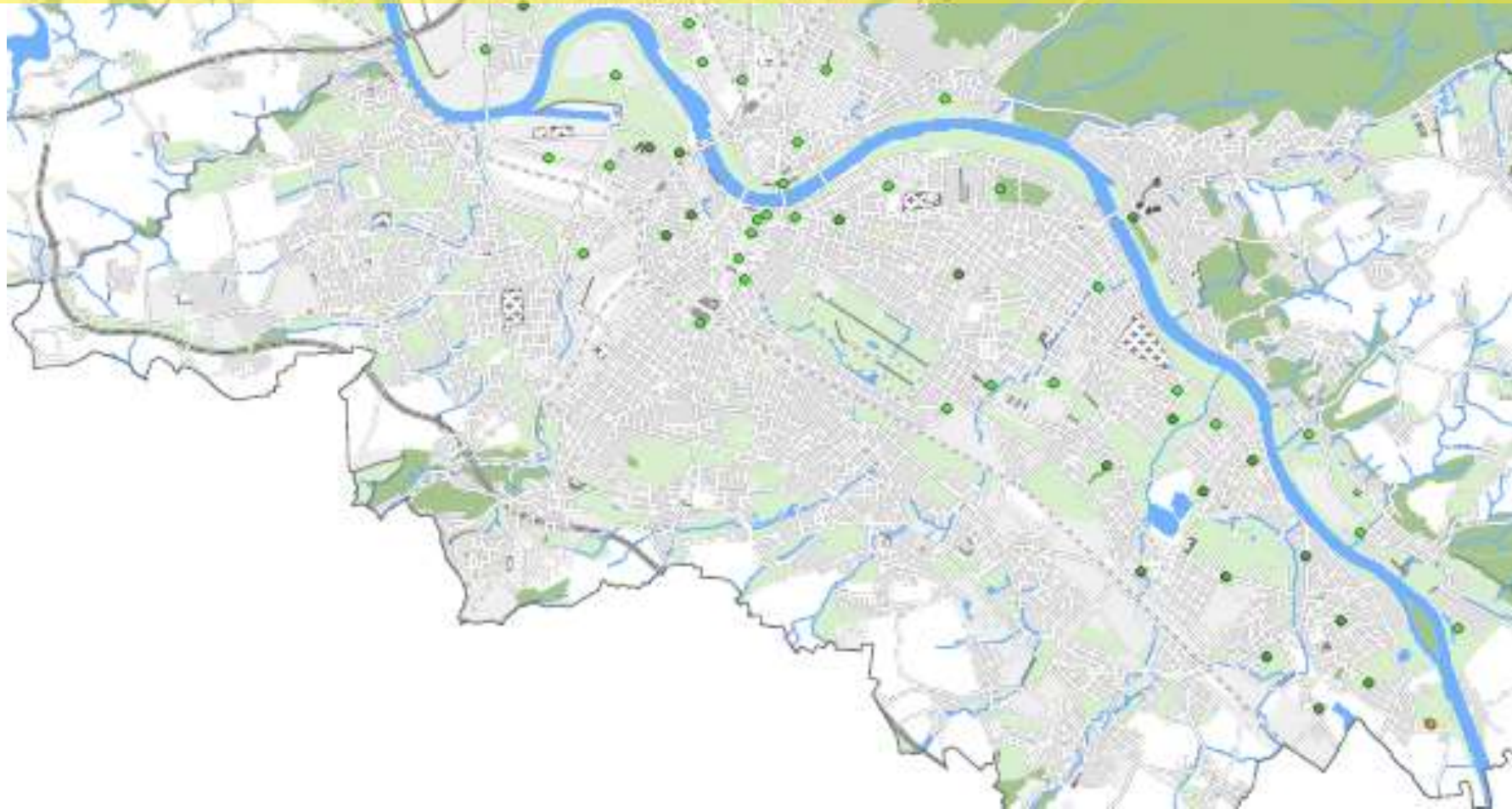
Flood Protection Wall properly safeguarding the Center of the City June 2013





Quelle: Leubener Zeitung, Dresden

Groundwater: Network of 63 Gauges for Monitoring and Controlling Groundwater Level



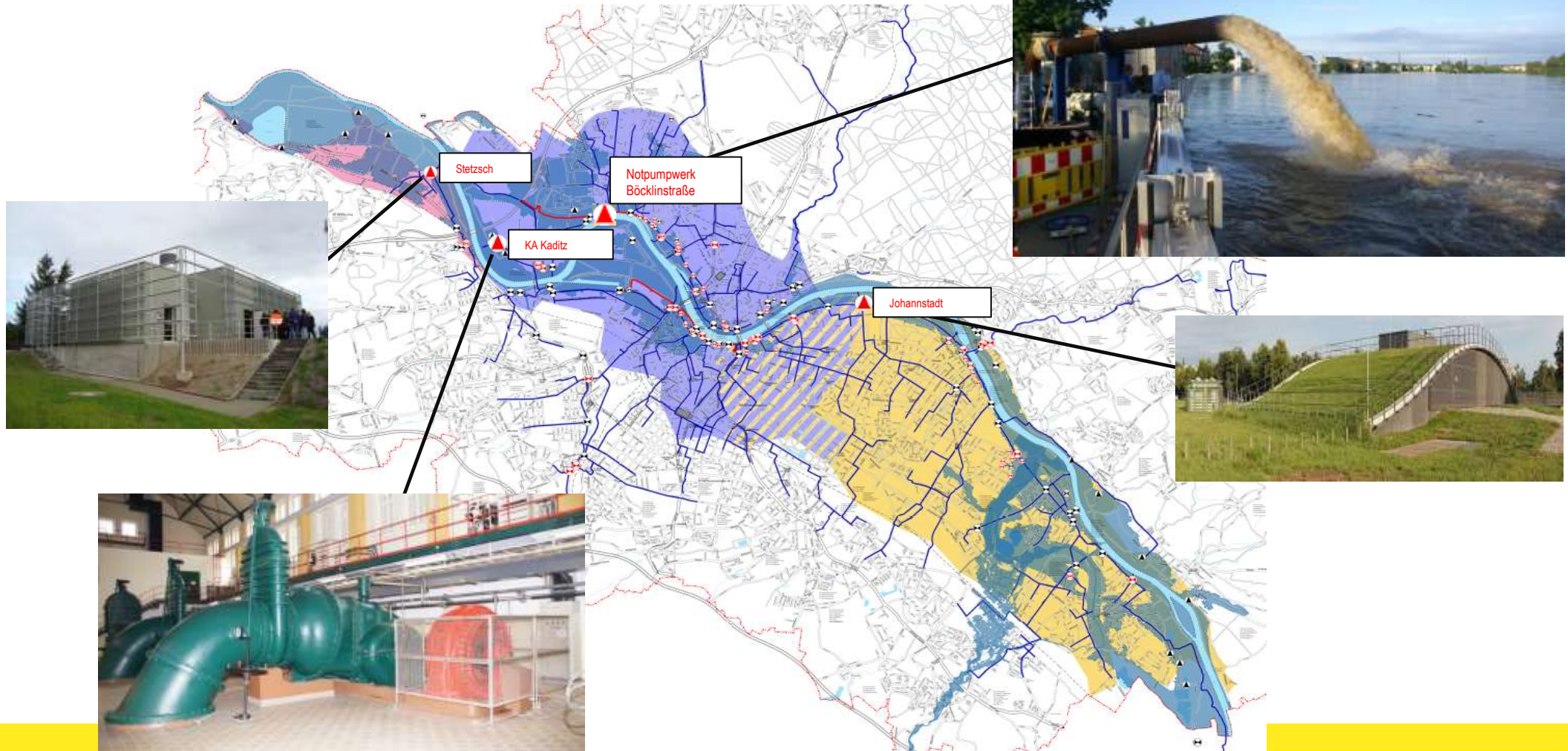


Sewage System:

- **Increase of Capacity of Channels/Storage capacity**
- **Change of Flow Direction in Case of Elbe Flood**
- **Erection of Waste Water Pumping Stations**

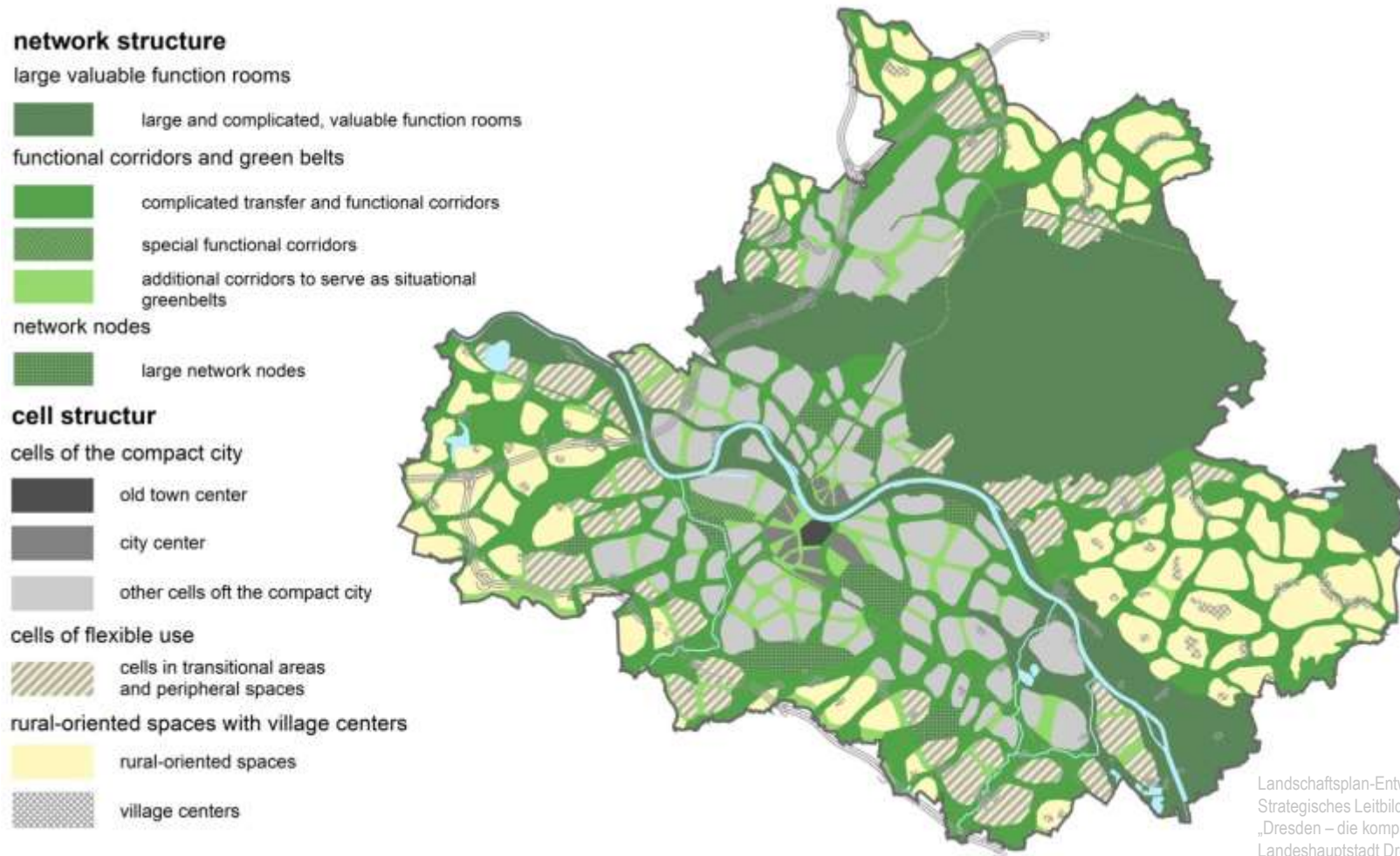
Emergency Waste Water Pumping 2003 proved to be successful

Dresdner Hochwasser-Pumpwerke

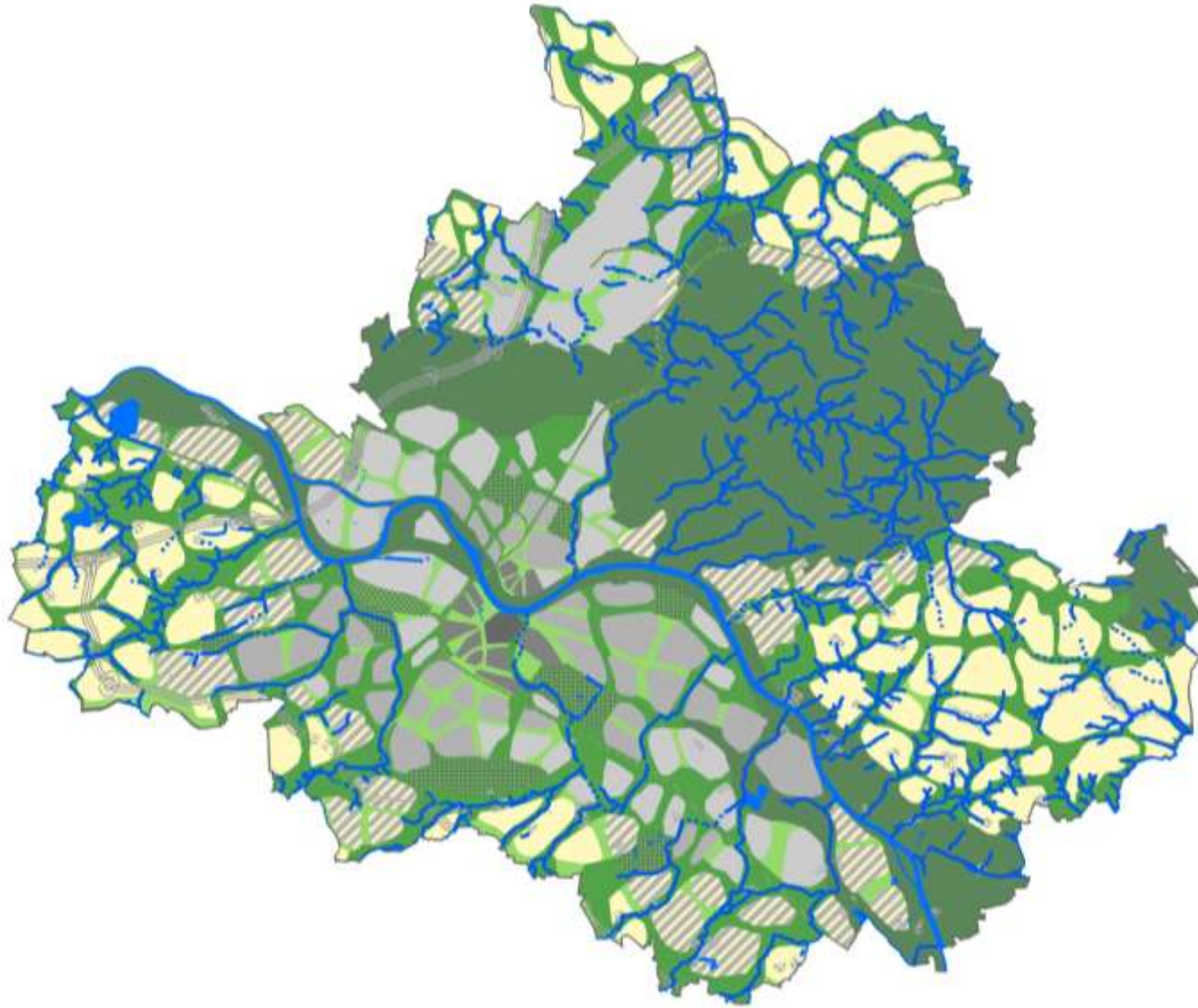


Plan for City Development:

“ The compact city within the ecological network”

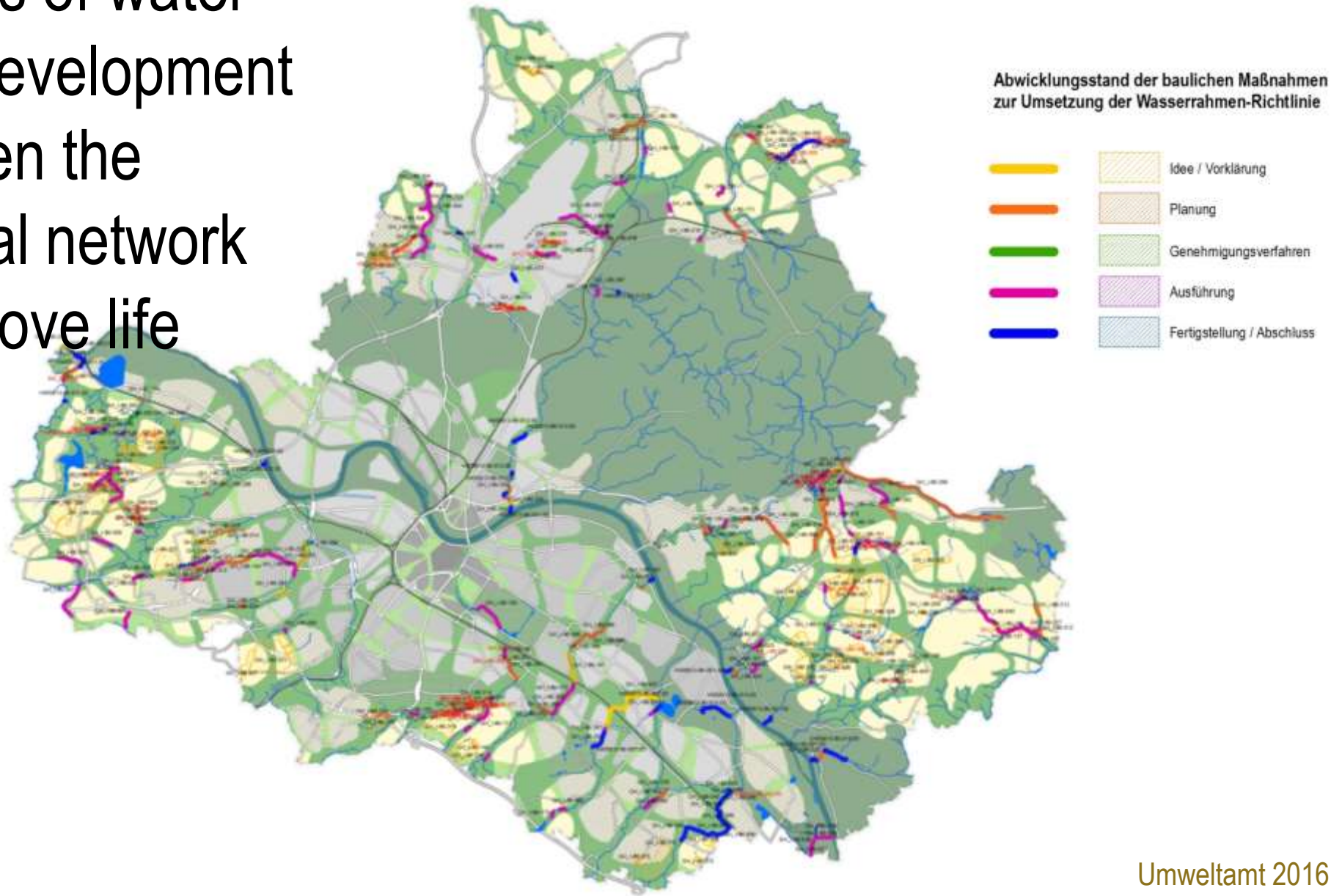


The water courses is the base of the ecological network



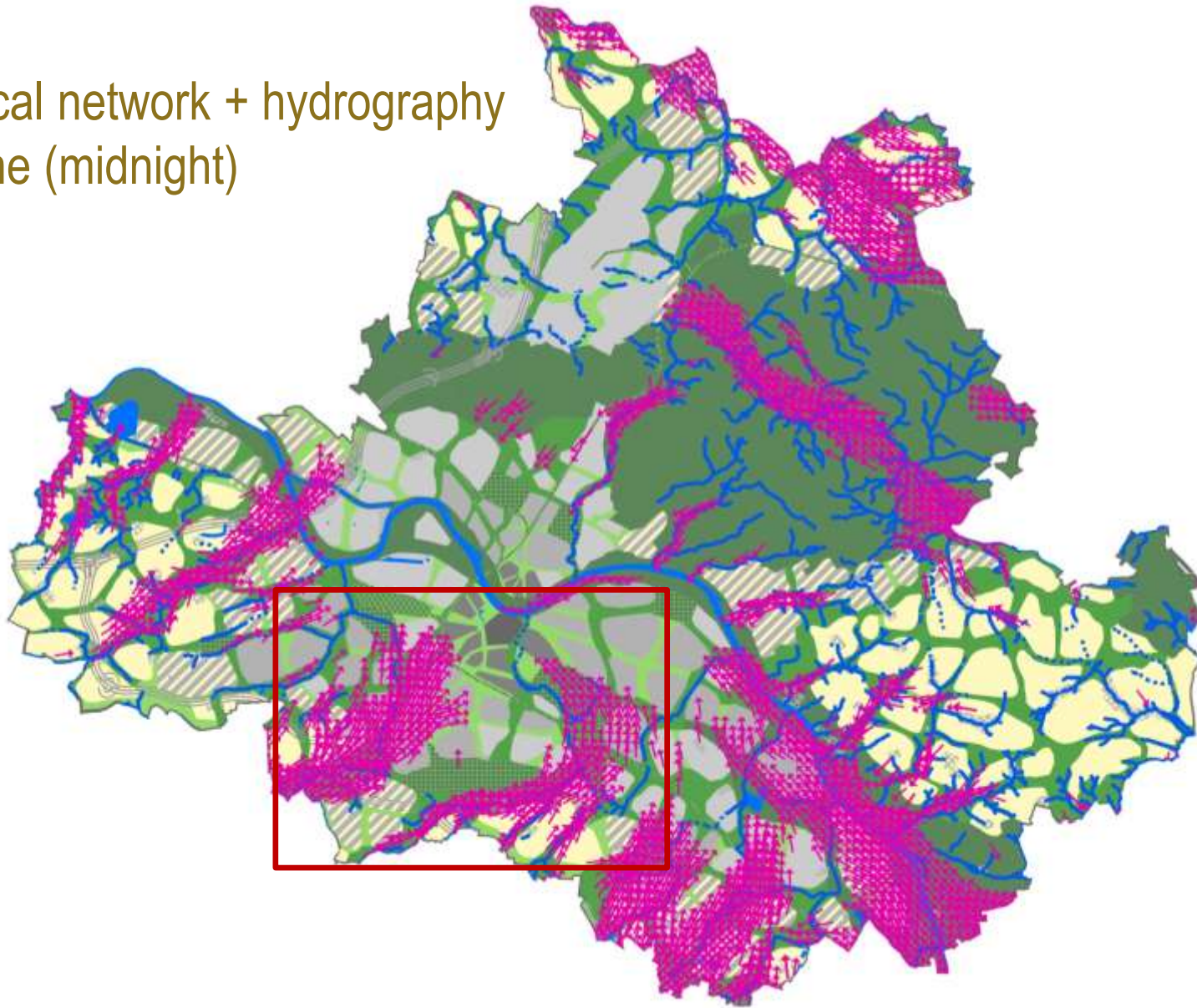
Umweltamt 2016

Measures of water
course development
strengthen the
ecological network
and improve life
quality



Umweltamt 2016

ecological network + hydrography
+ air lane (midnight)



Umweltamt 2016

Brown field remediation of the former Weisseritz River Bed: Green link and path for fresh and cold air to the inner city and Flood retention volume for extreme flash flood events



pictures Umweltamt Dresden



Weidigtbach Schlehenstraße 2013

Weidigtbach Schlehenstraße



pictures Umweltamt Dresden



Lessons learned?

**Thanks to Czech Partners from
Povodi Labe, Povodi Vltava, VRV Prague, DHI
Prague and others for great assistance.**

Thank you for your kind attention.

Contact Data: umweltamt@dresden.de

17.08.2002
Semperoper und Zwinger

Epilogue:

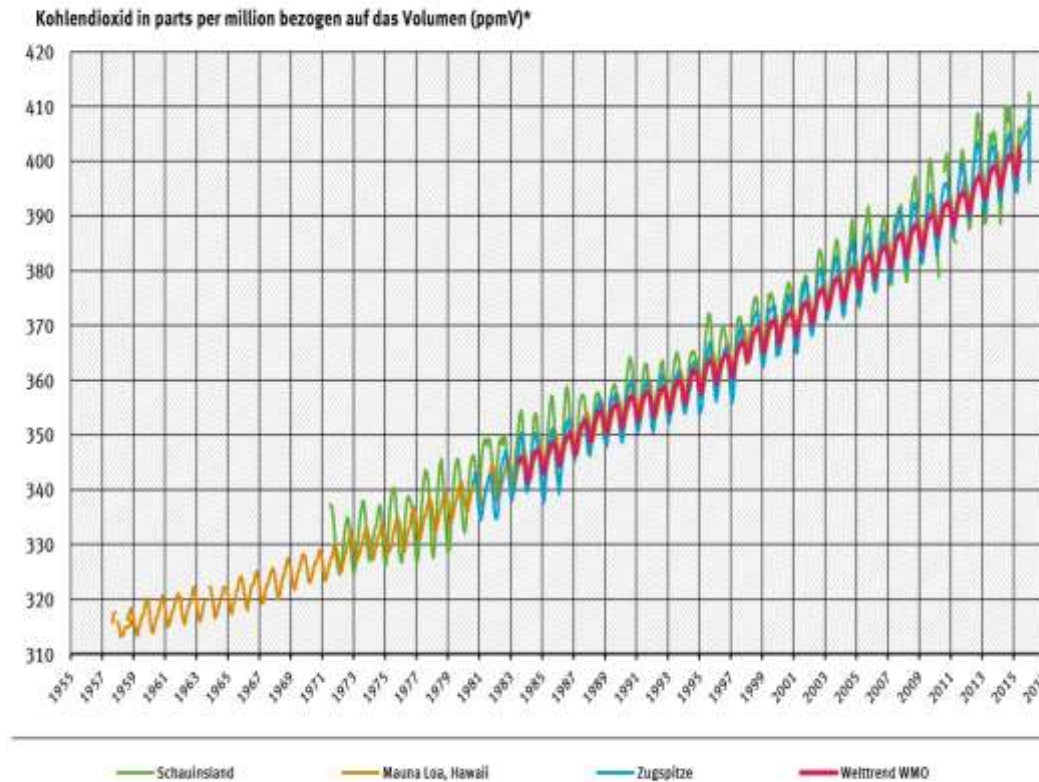
- **Everybody talks about the weather,
but nobody does anything about it.**

What about climate?

Mark Twain, 1897

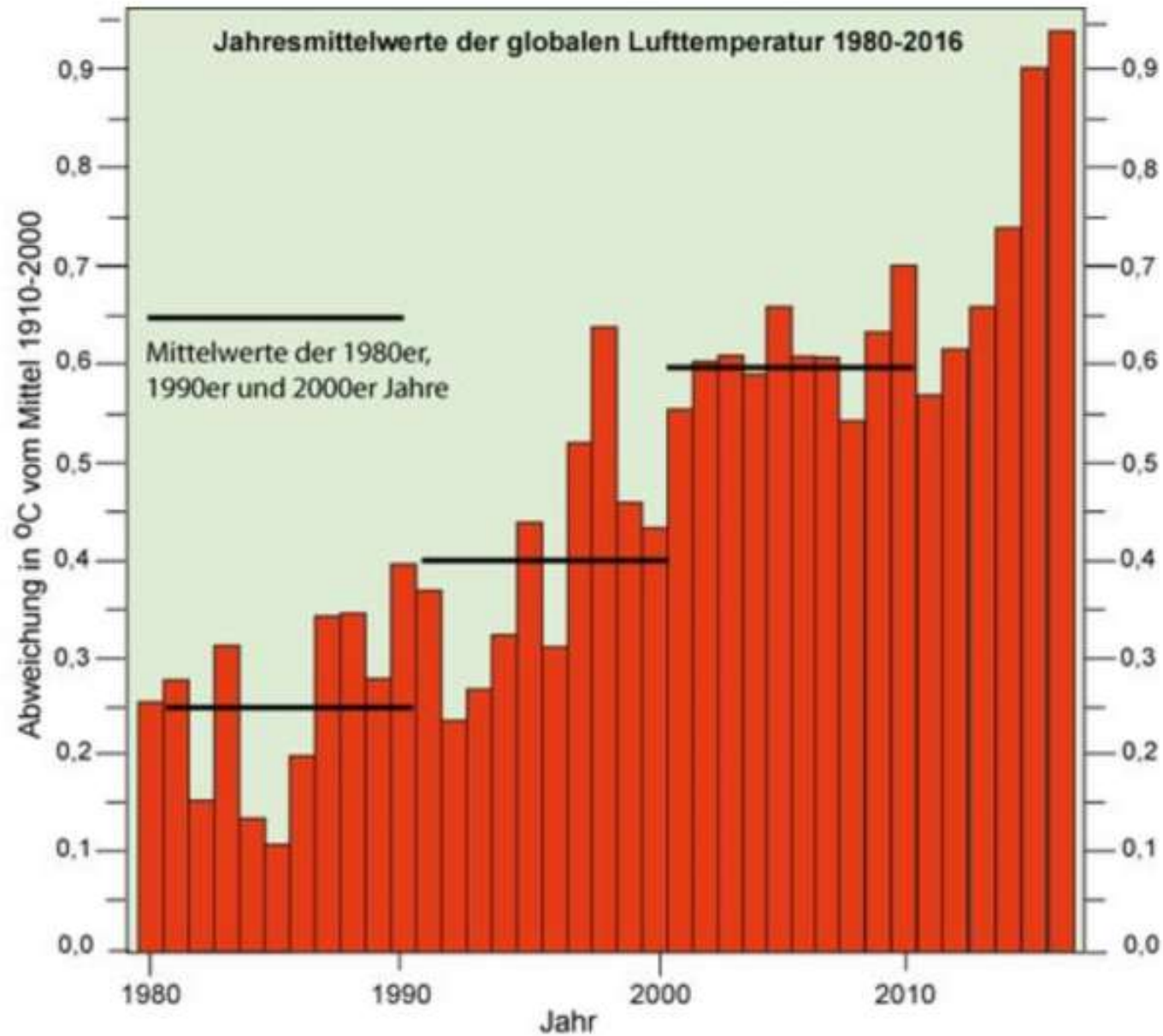
WMO: 2017 Top Level of CO₂ in Atmosphere

Kohlendioxid-Konzentration in der Atmosphäre (Monatsmittel)



*1 ppmV = 10⁻⁶ = 1 Teil pro Million = 0,0001 %, angegeben als Massenbruch

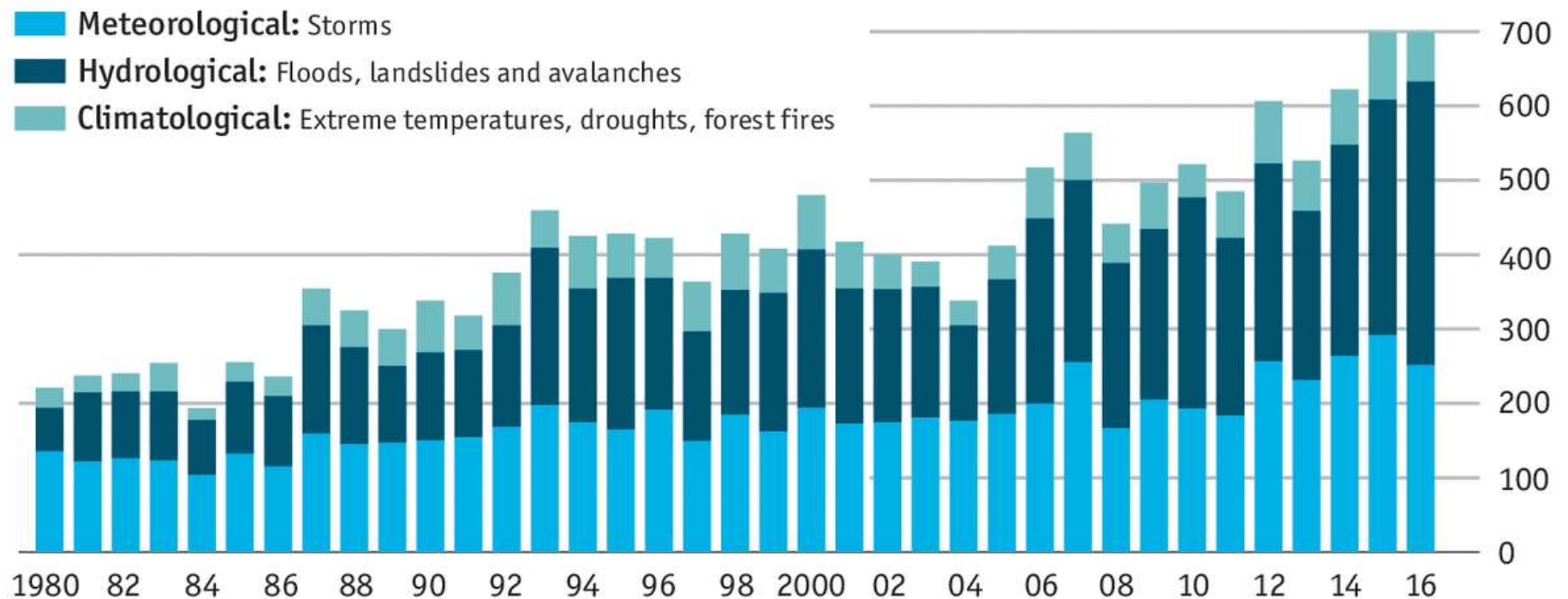
Quelle: Umweltbundesamt (Schauinsland, Zugspitze), NOAA Global Monitoring Division and Scripps Institution of Oceanography (Mouna Loa, Hawaii), World Meteorological Organization, WDCGG (World Trend)



The Frequency of Weather-Related Disasters

A rising tide

Natural disasters by cause

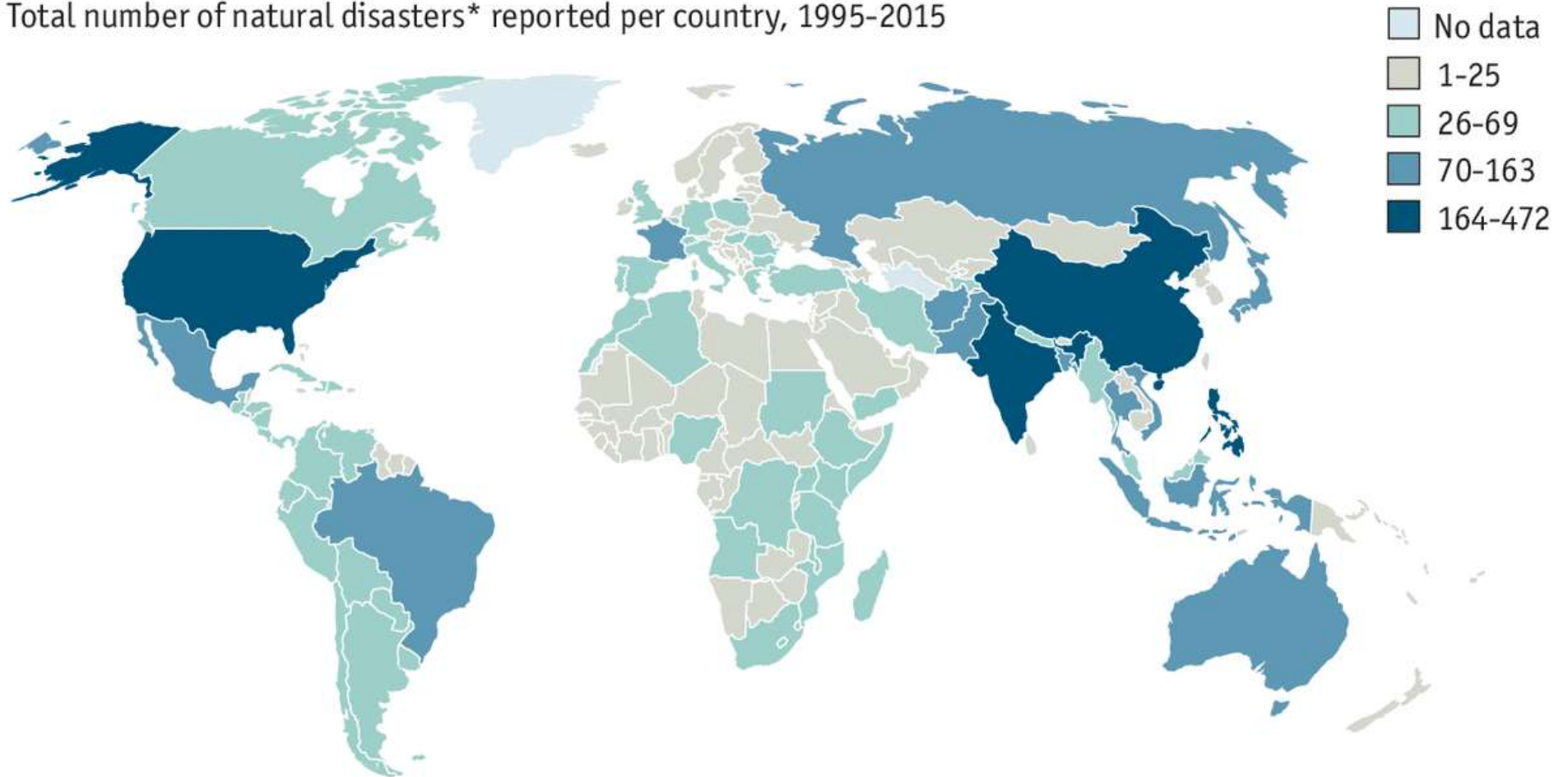


Source: Munich Re

Economist.com

Disaster zones

Total number of natural disasters* reported per country, 1995-2015



Source: UNISDR

*Hydrological, climatological and meteorological

Economist.com

Thank you for your attention!

