About the Paris miracle
and
its implications for the economy

CENTER FOR CLIMATE CHANGE
AND SUSTAINABLE ENERGY POLICY

CENTRAL EUROPEAN UNIVERSITY

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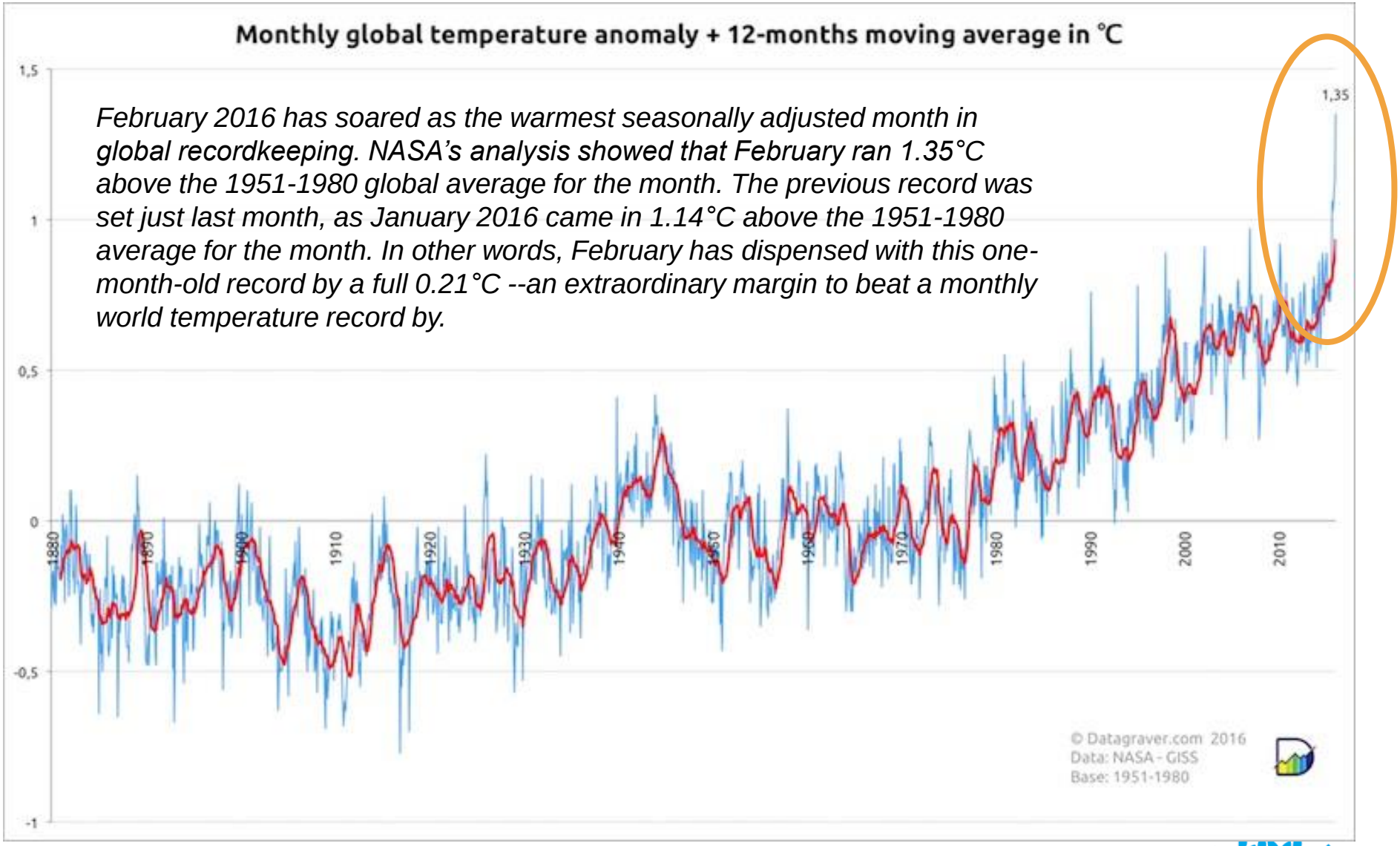
Overview

- Introduction: recent news in CC
- The miracle of Paris
  - What actually came out of Paris?
  - Why is this a milestone in world history?
  - How did the miracle happen? A few insider stories
- The economic implications and the Herculean tasks ahead
  - Why the tasks ahead are Herculean
  - Can we still do it?
  - How much will it cost?
- Business opportunities
- Conclusion

Recent news from CC

- By December 2015, WMO announced that global warming has reached 1 full degree Centigrade as compared to pre-industrial
- February 2016 was 1.35C warmer than mid-century average; exceeding by a significantly larger margin than ever before in recorded history



February 2016 has soared as the warmest seasonally adjusted month in global recordkeeping. NASA's analysis showed that February ran 1.35°C above the 1951-1980 global average for the month. The previous record was set just last month, as January 2016 came in 1.14°C above the 1951-1980 average for the month. In other words, February has dispensed with this one-month-old record by a full 0.21°C --an extraordinary margin to beat a monthly world temperature record by.

Monthly global surface temperatures (land and ocean) from NASA for the period 1880 to February 2016, expressed in departures from the 1951-1980 average. The red line shows the 12-month running average. Image credit: Stephan Okhuijsen, datagraver.com,

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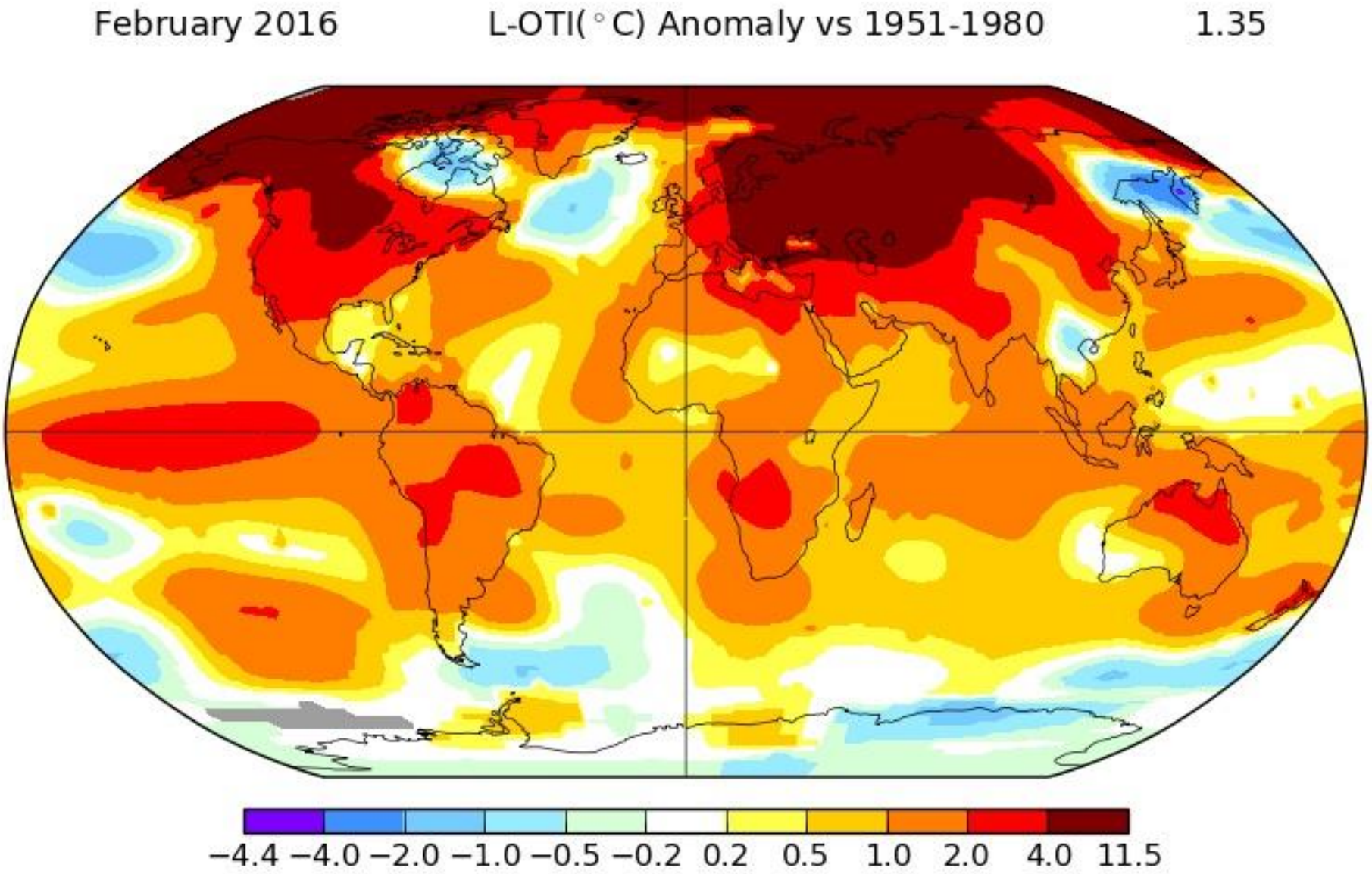

Anomalies (departures from average) in surface temperature across the globe for February 2016, in degrees Centigrade, as analyzed by NASA's Goddard Institute for Space Studies. Image credit: NASA/GISS.

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Not very promising implications for one industry….

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The 2016 drought in Zimbabwe caused a loss of app. 12% of their GDP

Zimbabwe has suffered $1.6 billion in damage from its 2016 drought. This is approximately 12% of their GDP, and beats the $200 million cost (2003 USD) of a February 2003 flood for most expensive disaster in their history. This photo taken on February 7, 2016 shows the fast-drying catchment area of the Umzingwani dam in Matabeleland, Southwestern Zimbabwe. Image credit: Ziniyange Auntony/AFP/Getty Images.

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The 2016 Feb Cat 5 cyclone caused app. 10% loss in Fiji's GDP

Fiji suffered $470 million in damage from Category 5 Cyclone Winston's impact in February. This is approximately 10% of their GDP. In this image, we see how Category 5 winds can completely flatten human-built structures: Image credit: My Fijian Images and Jah Ray.

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The Miracle of Paris

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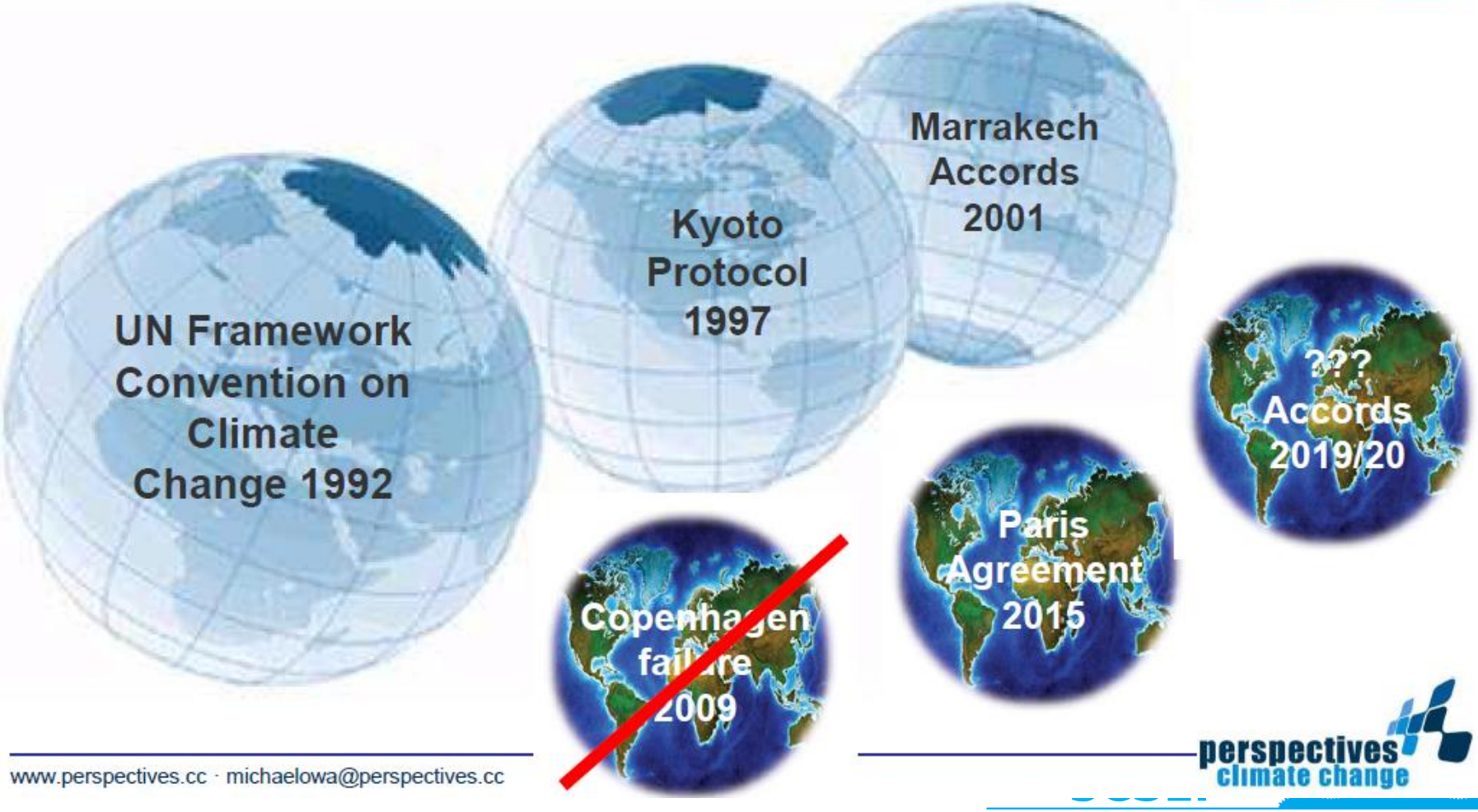
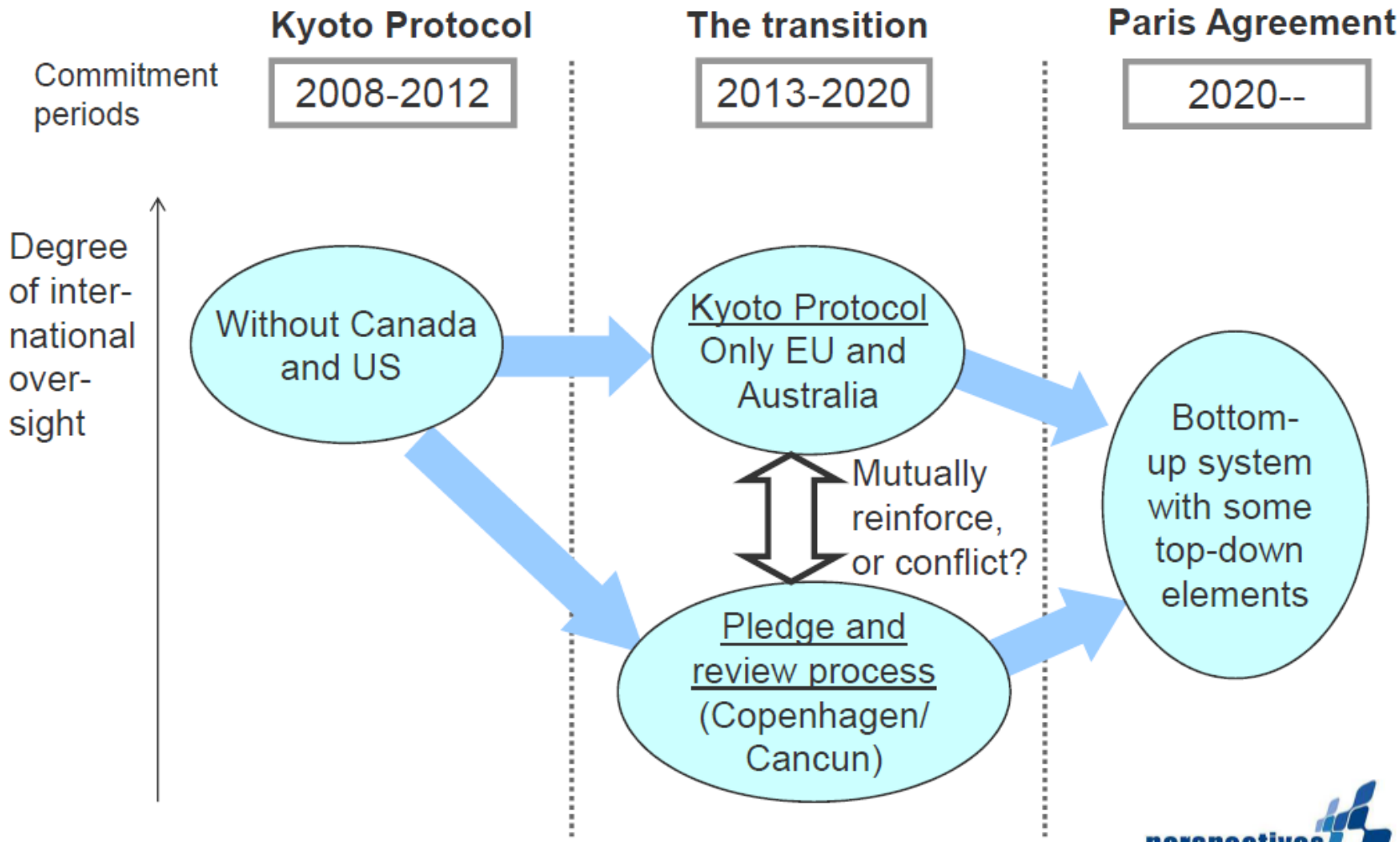
Key milestones of the international climate regime



perspectives climate change

From a top-down to a bottom-up regime



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Miért tűnt lehetetlen feladatnak a párizsi egyezmény?

- A legjobban szenvedők nem ugyanazok, akik a károkat okozták/okozzák,valamint akik legtöbbet tudnának tenni a mérséklésért, földrajzilag és időben, társadalmi csoport szempontjából
- Gazdagok nem akarták a versenyképességüket egyoldalúan lerontani a fejlődők javára az energiaárak otthoni drágításával *(inkább kifogás)*
- Fejlődők tartják magukat a fejlődéshez való jogukhoz, nem ők okozták a problémát, mondják
- A világ felosztása 1992-ben egész más volt, de a kedvezményezettek ragaszkodtak hozzá, hogy ne kerüljenek ki a kedvezményezettek köréből
- Pár nagyhatalom tradicionálisan nem megy bele semmilyen nemzetközi egyezménybe, ahol el kéne valamivel számolnia másoknak (USA, Kína)
- Nem lehetett a mérséklési feladatnak olyan „szétosztását” találni, ami mindenkinek megfelelt volna
- Az olaj- és szén nagyhatalmak módszeresen blokkolták a folyamatot
- A fejlődők hatalmas kompenzációkat követelnek az elszenvedett károkért
- Nagyjából az EU volt eddig, aki tolta ezt a szekeret, de az EU sem egységes (pl. Lengyelország), és a nagy összegeket ki fizesse…?
- Az alulról jövő kezdeményezések túl gyengék
- Az USA sosem tudná ratifikálni, ha alá is írna valami erős egyezményt, és mi van, ha republikánus siker lesz a választásokon…?

Media reactions on Paris outcome

COP21: Businesses hail Paris climate deal but voices of doubt emerge in oil and coal industry
International Business Times

Paris Agreement: No big losers at COP21, here's how everyone won something
Indian Express

Paris climate deal: nearly 200 nations sign in end of fossil fuel era
The Guardian

Cop21 talks 'great success' for UAE
The National

COP21: The Paris climate deal is our best chance to save the planet - but every nation needs to support it
The Independent

Big polluters see no short-term change
Financial Times

Tears of joy as historic deal passed: Politicians hail deal to halt climate change after the world FINALLY agrees to work together to cut emissions
The Daily Mail

温暖化対策の新枠組み「パリ協定」を採択　COP21
Asahi Shimbun

Grand promises of Paris climate deal undermined by squalid retrenchments
The Guardian

Nations Approve Landmark Climate Accord in Paris
New York Times

The miracle of Paris

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

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The Paris Agreement: a milestone in world history

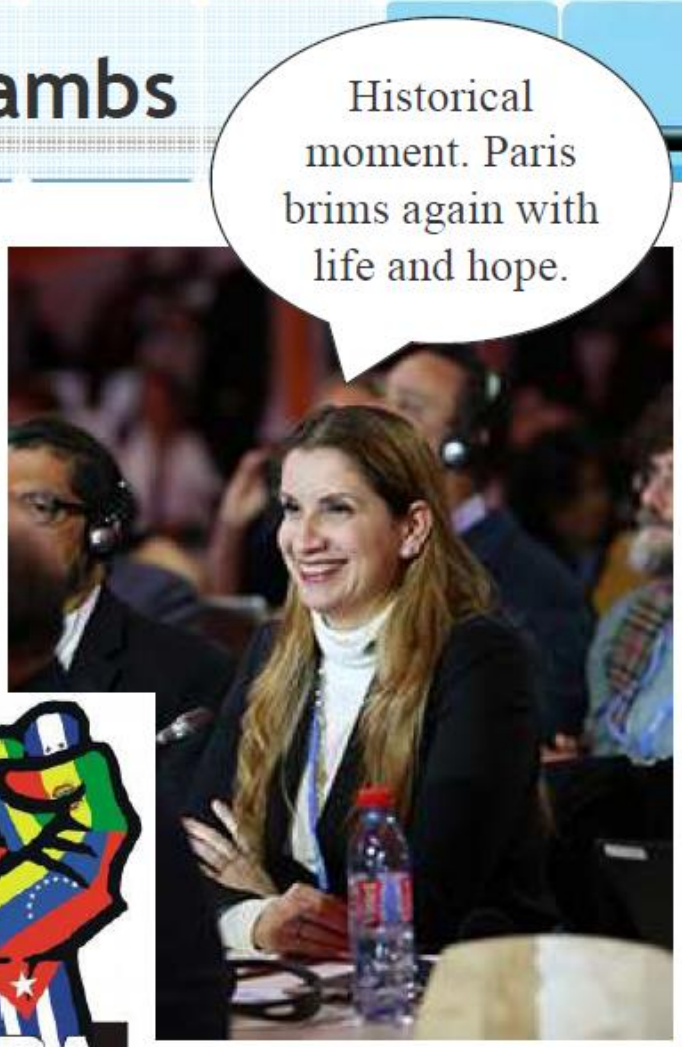
- Never in world history have been 150 Heads of State under one roof
- Key political figures, such as the US Secretary of State, stayed for the entire negotiations and have been very actively participating
- Noone dreamed of such an ambitious agreement to happen
- It will probably serve for decades as a model for how a very complex, major global challenge, with very diverse interests, can be solved (at least potilically) on a multilateral basis

The Paris Agreement: why a miracle?

- Nemcsak, hogy 2 fokon kell maximalizálni a melegedést, de törekedni kell a 1.5 fokra!!
- Az évszázad 2. felére gyakorlatilag nem bocsáthatunk ki CO2-t
- Mindenki tesz valamiféle vállalást
- Ezeket 5 évente felülvizsgálják
- Gyakorlatilag csak szigorodhatnak ezek, nem lazulhatnak
- Nem lehet könnyen kilépni
- El kell számolni a kibocsájtásokkal, ellenőrizhetően jelenteni
- Igen nagy pénzösszegek ígérve a károsultaknak
- Bár nincsenek szankciók, de jogilag kötelező érvényű
- És ezt 198 ország jóváhagyta….., beleértve az OPEC-eseket is….

Wolves become lambs

- The most dramatic outcome of the conference was that negotiators like Claudia Salerno (right) from Venezuela who had buried the Copenhagen Accord and consistently blocked the process now praised multilateralism and the balanced outcome



ALBA

Converting a tragedy into an opportunity

- Paris terror attacks of Nov. 13 unleashed an **unprecedented wave of solidarity** with France
- French did not cancel the COP but even **put more effort** into its preparation
- French message: united we show the world that we can solve big problems **peacefully** and **multilaterally**

What else was needed for the miracle?

- Ingenious negotiators and presidency the French leadership
- Meticulous diplomatic preparations by the French
- Lots of personal charisma (such as Laurent Fabius)
- Other miracles, such as very devoted, ingenious leadership of the G77+China by South Africa
- Several climate catastrophes in the recent past (such as California)

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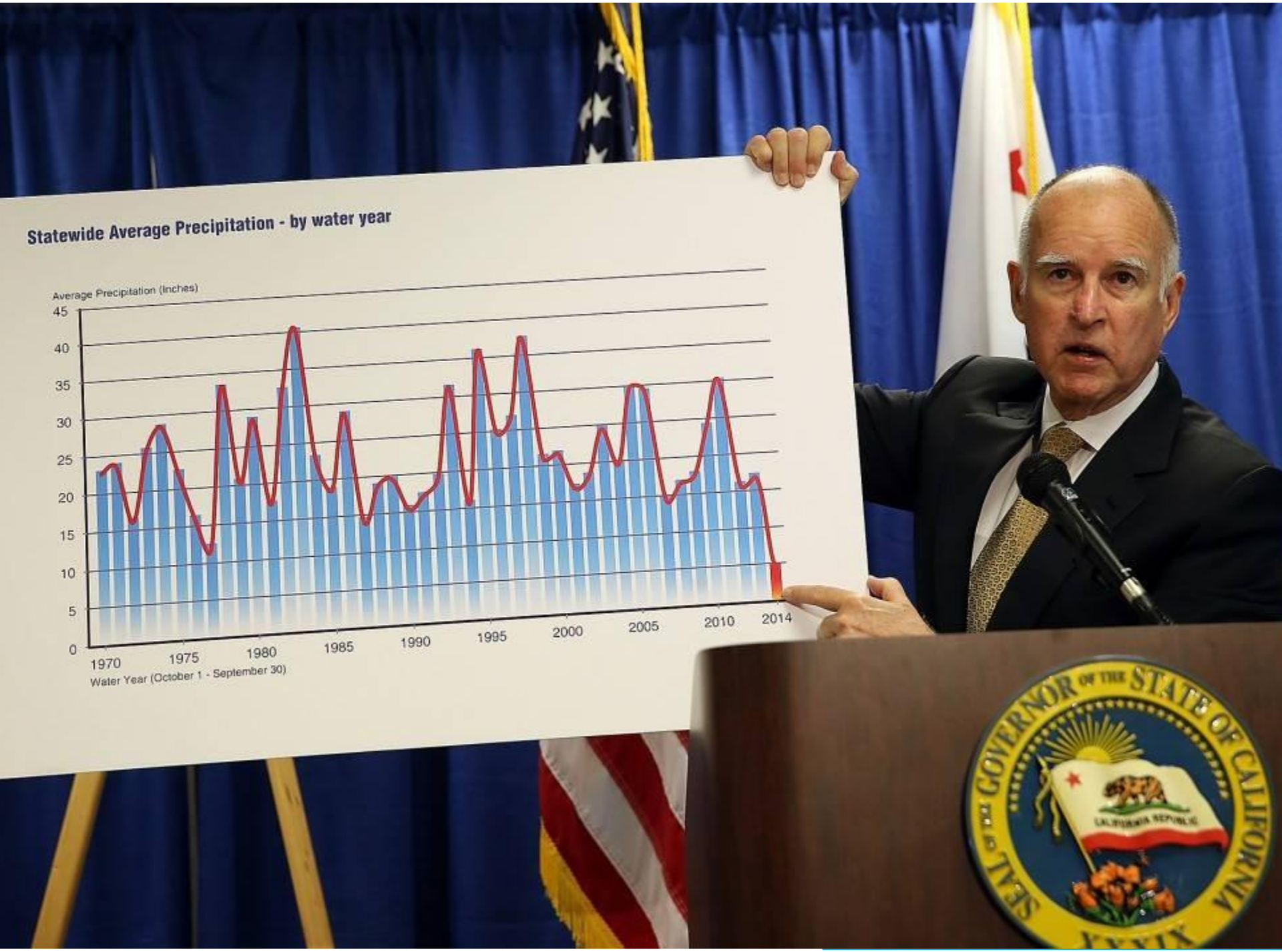
Californians Don't Waste.
Taking steps to conserve water during the drought.
DGS
GENERAL SERVICES


Statewide Average Precipitation - by water year
Average Precipitation (Inches)
45
40
35
30
25
20
15
10
5
0
1970
1975
1980
1985
1990
1995
2000
2005
2010
2014
Water Year (October 1 - September 30)
SEAL OF THE GOVERNOR OF THE STATE OF CALIFORNIA
CALIFORNIA REPUBLIC

Observed Increase in Frost-Free Season Length

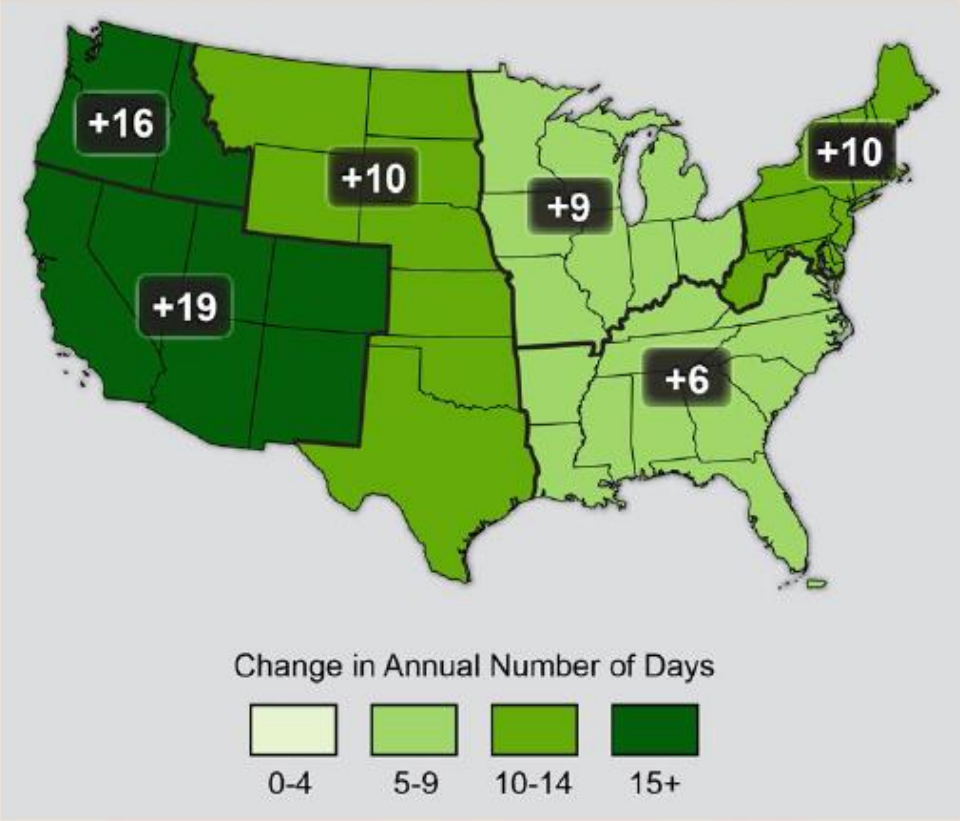


Figure 2.10. The frost-free season length, defined as the period between the last occurrence of 32°F in the spring and the first occurrence of 32°F in the fall, has increased in each U.S. region during 1991-2012 relative to 1901-1960. Increases in frost-free season length correspond to similar increases in growing season length. (Figure source: NOAA NCDC / CICS-NC).

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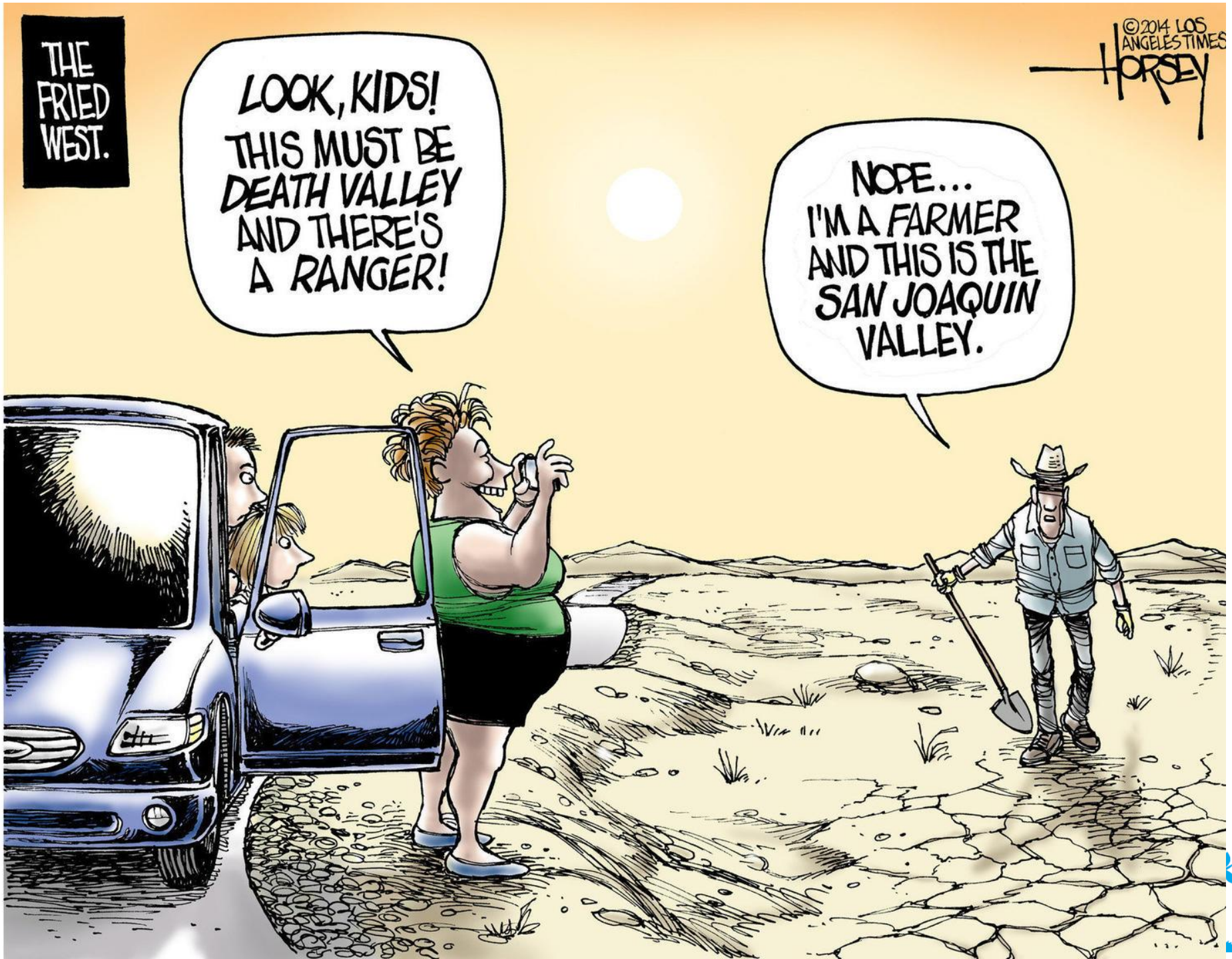
THE FRIED WEST.
LOOK, KIDS! THIS MUST BE DEATH VALLEY AND THERE'S A RANGER!
NOPE... I'M A FARMER AND THIS IS THE SAN JOAQUIN VALLEY.
©2014 LOS ANGELES TIMES
HORSEY

The 2015 drought crisis of California

- Reduced snow cover
  - 75 – 80% of CA's freshwater is from the Sierra Nevada snowpack; 2015 February it was 14% of average
  - More of the precipitation in rain than snow – running off rather than accumulating and being "stored"
  - In general, precipitation is going to be decreased
  - Increasing wildfires,
- agriculture badly affected
  - Southwest produces over half of the Nation's high value crops, depending on irrigation and water resources
  - Heat and water stress, combined with increasing pest outbreaks

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Ratification outlook

- Nothing can of course be guaranteed
- But the promise is very different from the Kyoto Protocol
  - The “ingenuity” of the French: the Agreement itself is in an Annex! So the US president may approve it alone, does not need to go through Congressional ratification
  - Three regions are enough for 55%
  - The political will is very very very different than was even a year ago….

The implications for the economy

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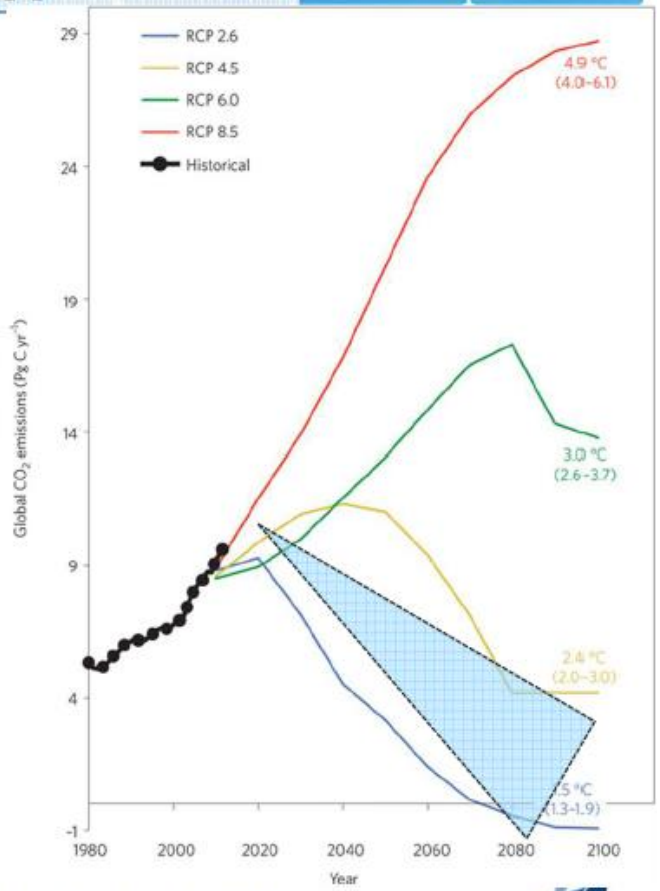
NOTHING LESS IS NEEDED THAN A NEW INDUSTRIAL REVOLUTION

The Paris Agreement: Huge ambition

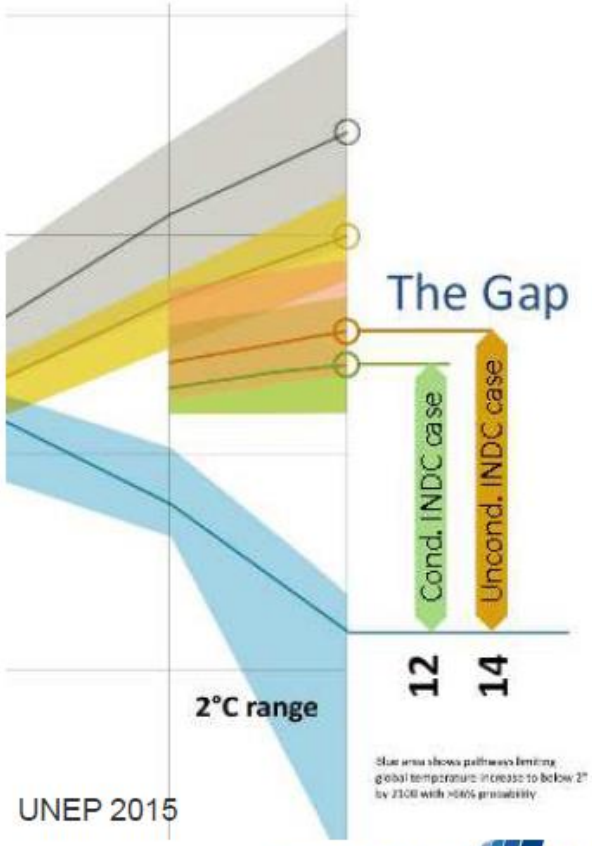
- Global goal of keeping warming between 2° and 1.5° C (Art. 2)
- Global peaking "as soon as possible" (Art. 4.1)
- Achieve balance of emissions and sinks by second half of century (Art. 4.1)
  - Excludes solar radiation management
- Global stocktake on progress towards these goals every 5 years from 2023 (Art. 14.1 and 2)



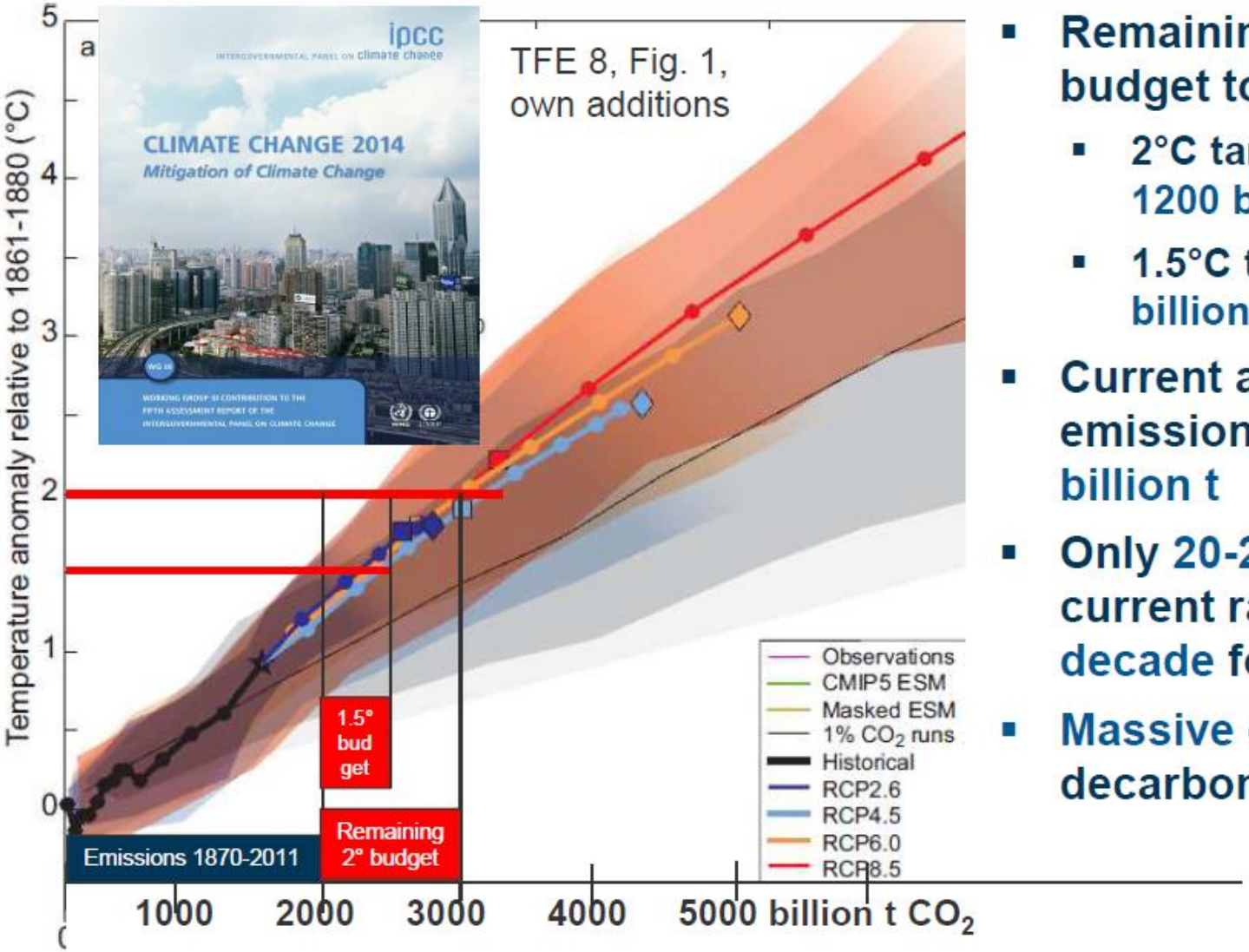
Sandford et al . 2014

The Paris Agreement: Mitigation by everyone

- All countries account for their emissions (Art. 4.13)
  - Environmental integrity, transparency, accuracy, completeness, comparability and consistency of inventories
- Countries can set up a joint NDC (Art. 4.16-18)
- REDD+ (Art. 5) : results-based payments "encouraged" (Art. 5.2)
  - Link to market mechanisms unclear
- *Challenge*: Huge gap to 2° path under current INDCs (17 dec.)



The mitigation challenge of the 1.5°-2° target



- Remaining emissions budget to reach
  - 2°C target is 1000-1200 billion t CO_2
  - 1.5°C target is 500-600 billion t CO_2
- Current annual global emissions are ~ 50 billion t
- Only 20-25 years left at current rate for 2°C, a decade for 1.5°C!
- Massive challenge for decarbonization

Estimates for mitigation costs vary widely.

- Reaching 450ppm CO_2eq entails consumption losses of 1.7% (1%-4%) by 2030, 3.4% (2% to 6%) by 2050 and 4.8% (3%-11%) by 2100 relative to baseline (which grows between 300% to 900% over the course of the century).
- This is equivalent to a reduction in consumption growth over the 21st century by about 0.06 (0.04-0.14) percentage points a year (relative to annualized consumption growth that is between 1.6% and 3% per year).
- Cost estimates exlude benefits of mitigation (reduced impacts from climate change). They also exclude other benefits (e.g. improvements for local air quality).

Source: IPCC 2014, AR5 WGIII

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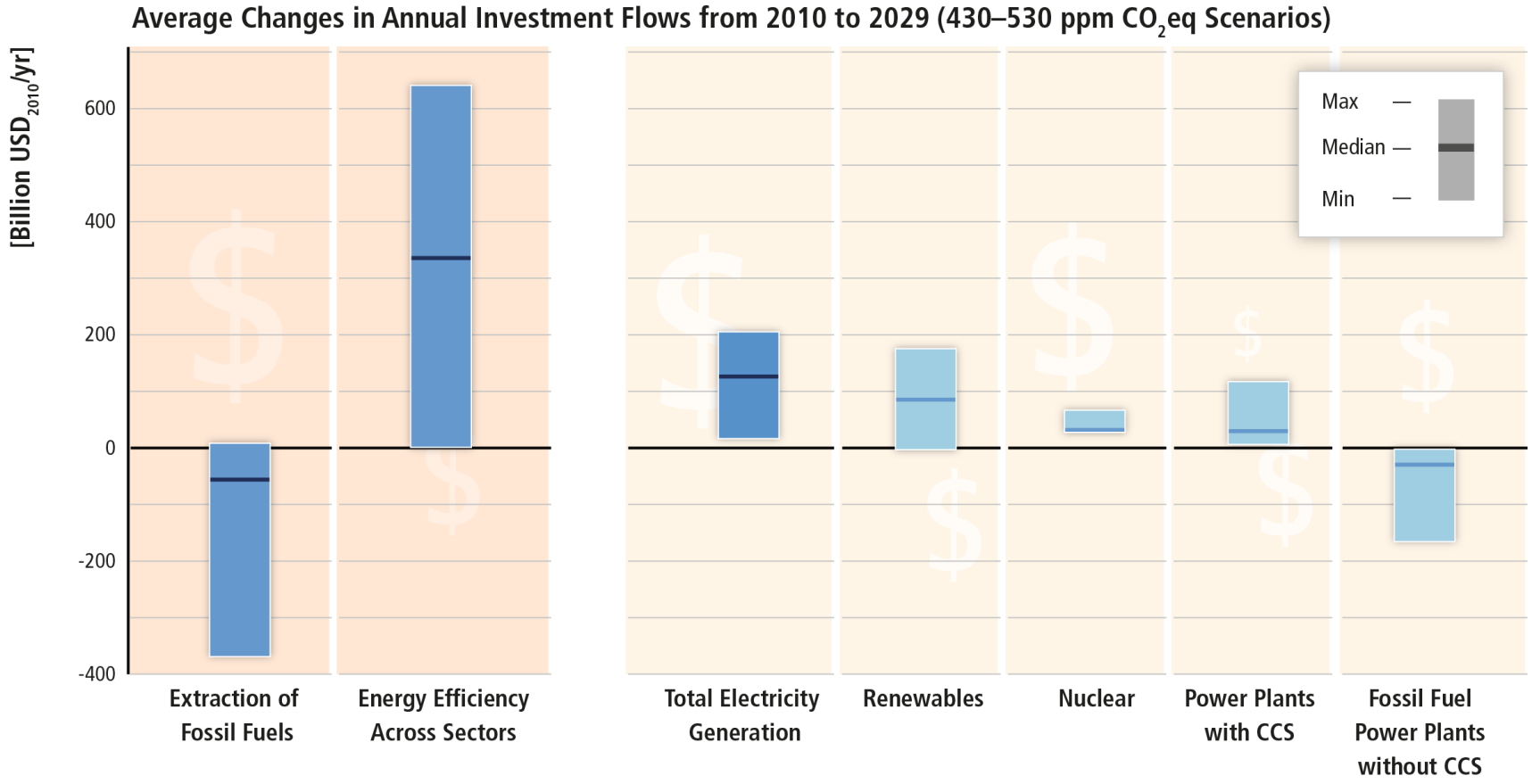
IPCC AR5: Substantial reductions in emissions will require large changes in investment patterns



Based on Figure 16.3

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Ingredients of this herculean task

- Our economies must be weaned from fossils by mid-century
- Alternatives will not be able to do it without a massive reduction in energy demand
  - Energy efficiency
    - Foremost nearly zero energy buildings
  - Renewable energy
  - Toughest task: transport, especially aviation
- Technology alone is unlikely to be sufficient to meet even the 1.5C, but probably not even the 2C target
- This agreement for the first time will seriously question our economic model that is so reliant on constant growth in consumption
- Potentially concepts such as sufficiency and behavioral change may need to be involved in implementation
- But we definitely need revolutionary changes on the sides of business

Likely implications for the economy and opportunities for businesses

- The agreement is the last nail in the coffin of the oil-based economy, although already signs of trouble
- investments and shareholder values towards the fossil industry are expected to go down
- But the task needs to be shared to help the losers of this transformation – otherwise we all lose out
- But: massive investments (and thus business opportunities) are needed in replacing the fossil fuels AND to reduce energy demand (such as retrofitting the building stock)
- Major financial flows towards the developing countries in terms of climate finance; also many new opportunities there

New business models are needed

- What we really need are ingenious **new business models** whose profits are not from converting raw natural resources to sellable consumer goods; but rather decouple (or minimize the link between) well-being from more resource consumption
- Recent ideas that come close but are not quite what I mean are:
  - Social media – replacing much travel? (good or bad…?)
  - Airbnb, Uber, etc – the sharing economy?
- More business platforms needed for utilizing unwanted, grown-out, etc products that have not reached the end of their lifetimes but cannot easily find their new owner
  - Also needs a cultural change, but partially ongoing
- More business profiting form repair and good maintenance, lending, rather than selling new and encouraging early breakdown or replacement
- Business ideas utilizing or minimising waste streams – such as the 50% of the food in the EU that we ends up as waste
  - are there solutions that still supply the choice of fresh food an hour before closure but eliminate waste? Could we better predict demand?
- More utilization of IT for more optimization (such as traffic jams, unnecessary trips to where we do not want to go but have to; more teleworking, teleeducation; more optimization in transport and aviation)
- Can businesses profit from a more quality spending of time rather than consumption? (community-building, family, local travel, eco-tourism, etc)

Conclusion

- The Paris Agreement marks a milestone in world history
- It is extremely ambitious in terms of the tasks that lie ahead of us
- While the total costs do not represent a major burden on the economy, a significant techno-economic and social/institutional change is required; nothing less than a new industrial revolution to wean us from fossil fuel
- Requires major shifts in investment patterns
- …and in business models
- Away from the fossil-based economy to one that is less (natural) resource intensive, less focused on consumption of products, towards one that is more (energy) service- and well-being oriented, and very highly (energy and carbon) efficient
- This requires very significant investments and thus new business opportunities, especially those who step first
- Major innovations are required in
  - Business models
  - Shared economy type businesses
  - How to utilise IT and social media more to reduce wasted resources
  - ….and….?
- Individual charisma and dedication (craziness…? :-) by persons holding influential positions has been shown to make the real difference

Thank you for your attention

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