WORLD GREEN ORGANISATION

After COP 21

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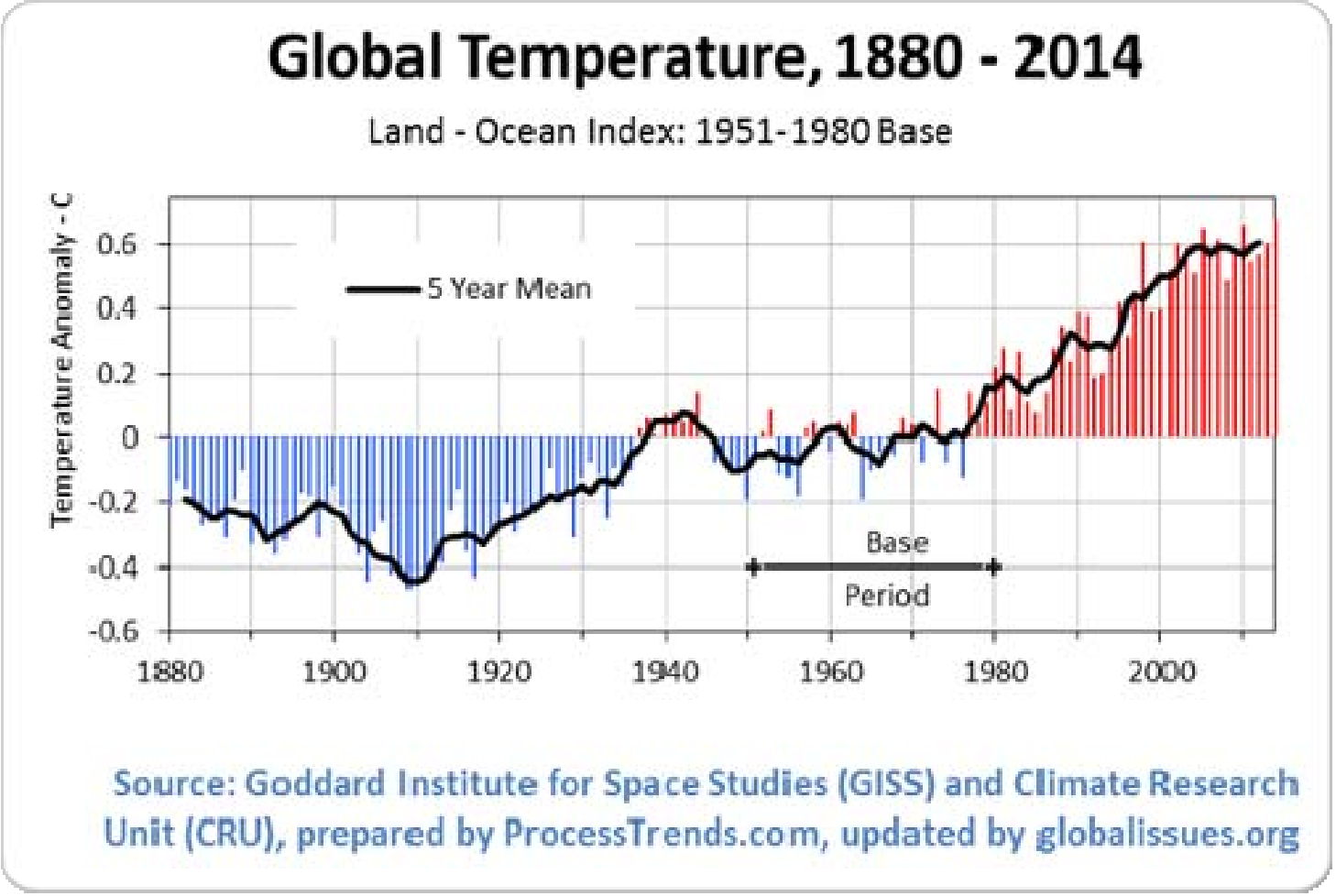
PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Turning Points

- Warming Evidence
- US-Sino close-door
- French determination
- INDC

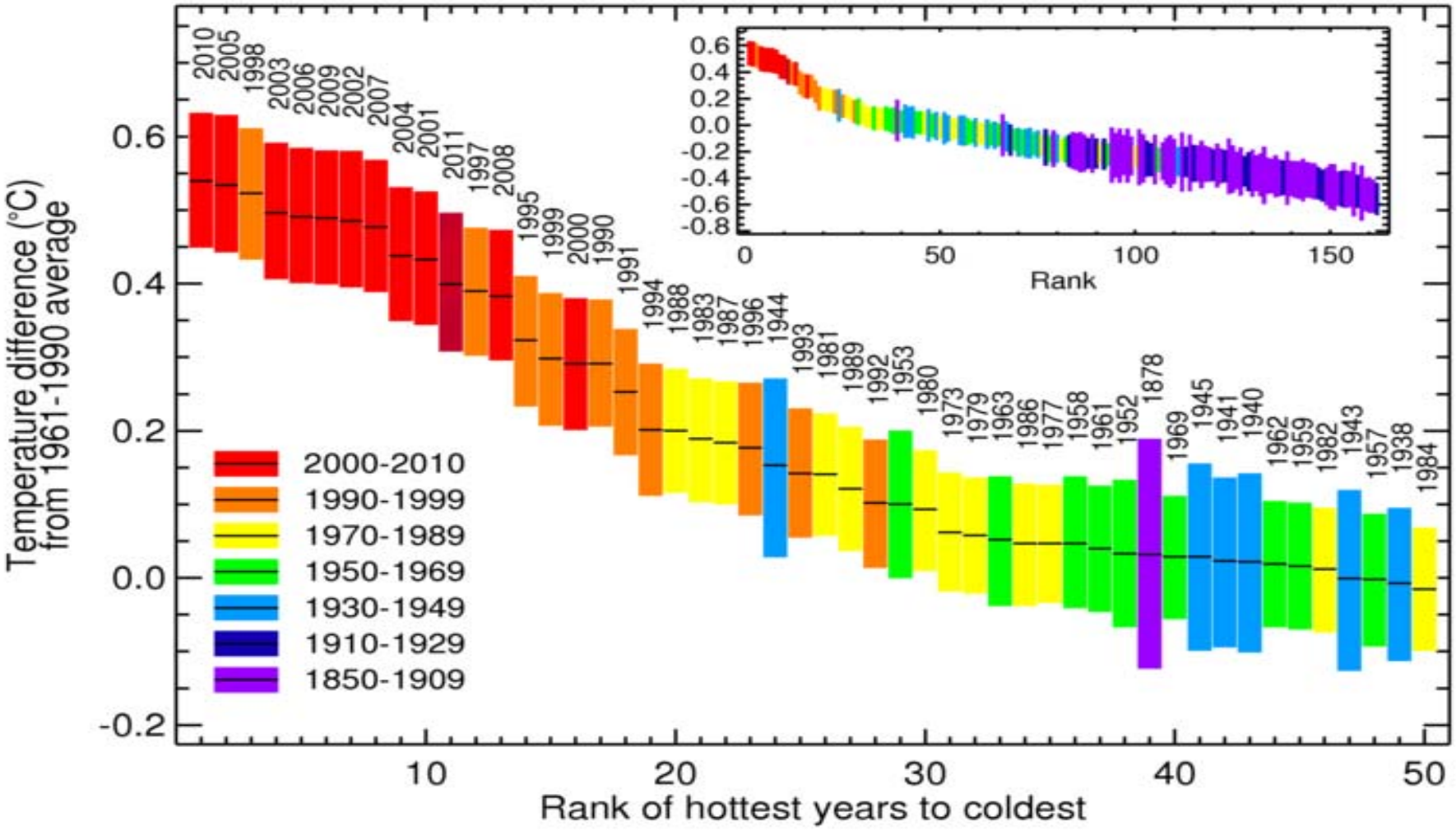
Source: Guardian UK

Global Temperature



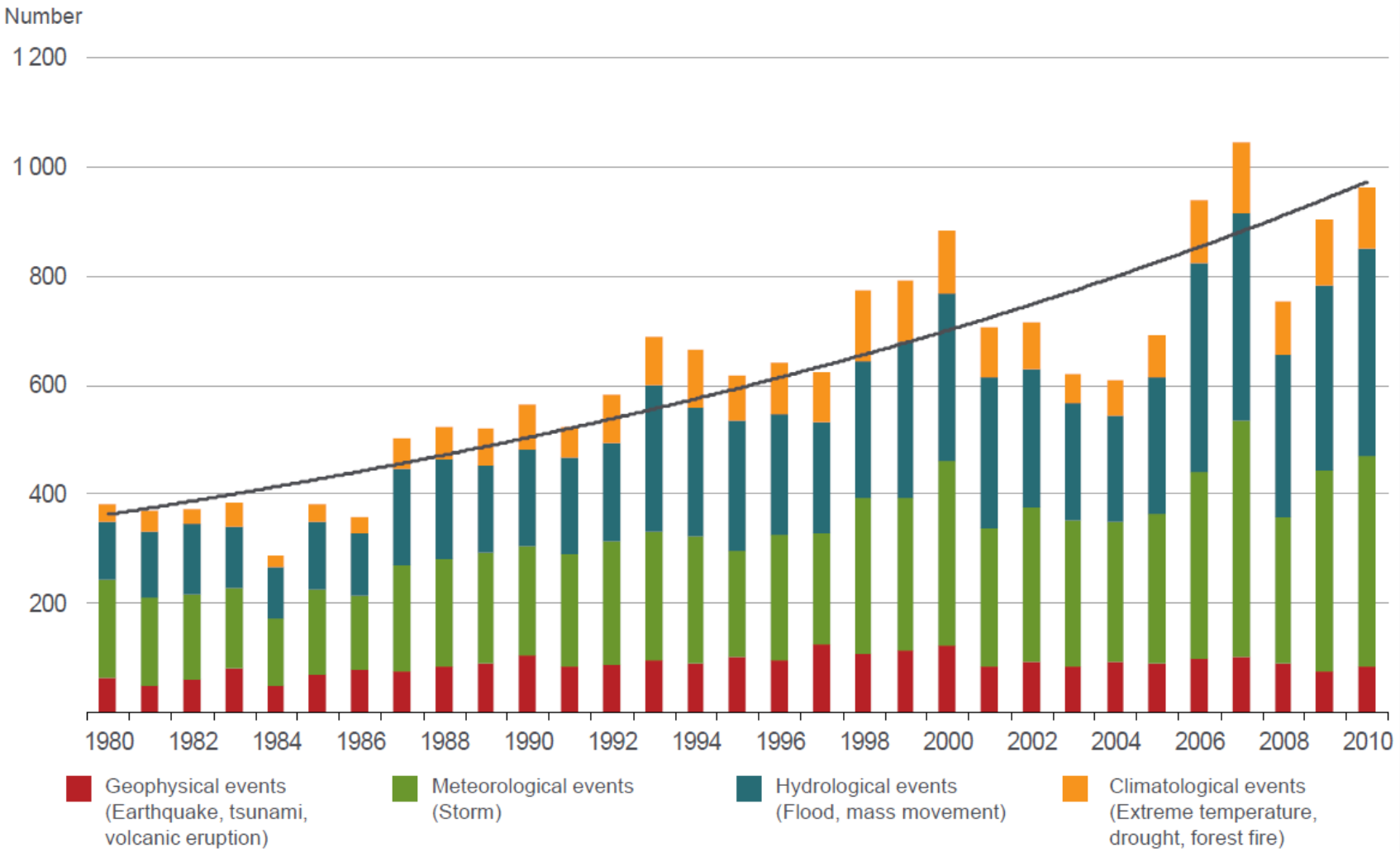
Source: Goddard Institute for Space Studies (GISS), CRU

A warming planet



Source: www.metoffice.gov.uk

More extreme weather events



Source: Hoeppe, P. 2011. Extreme weather events: Are their frequency and economic impact rising? Munich RE.

Bottom-up Reduction Approach (I)

- Intended Nationally Determined Contributions (INDC)
- Examples by Countries
  - USA: We rate USA “medium”. The USA put forward the unconditional target to reduce economy wide emissions by 26% to 28% below 2005 domestically.
  - European Union: We rate the EU “medium”. The EU put forward a binding, economy-wide target goal to reduce greenhouse gases emissions by at least 40% domestic below 1990 by 2030.

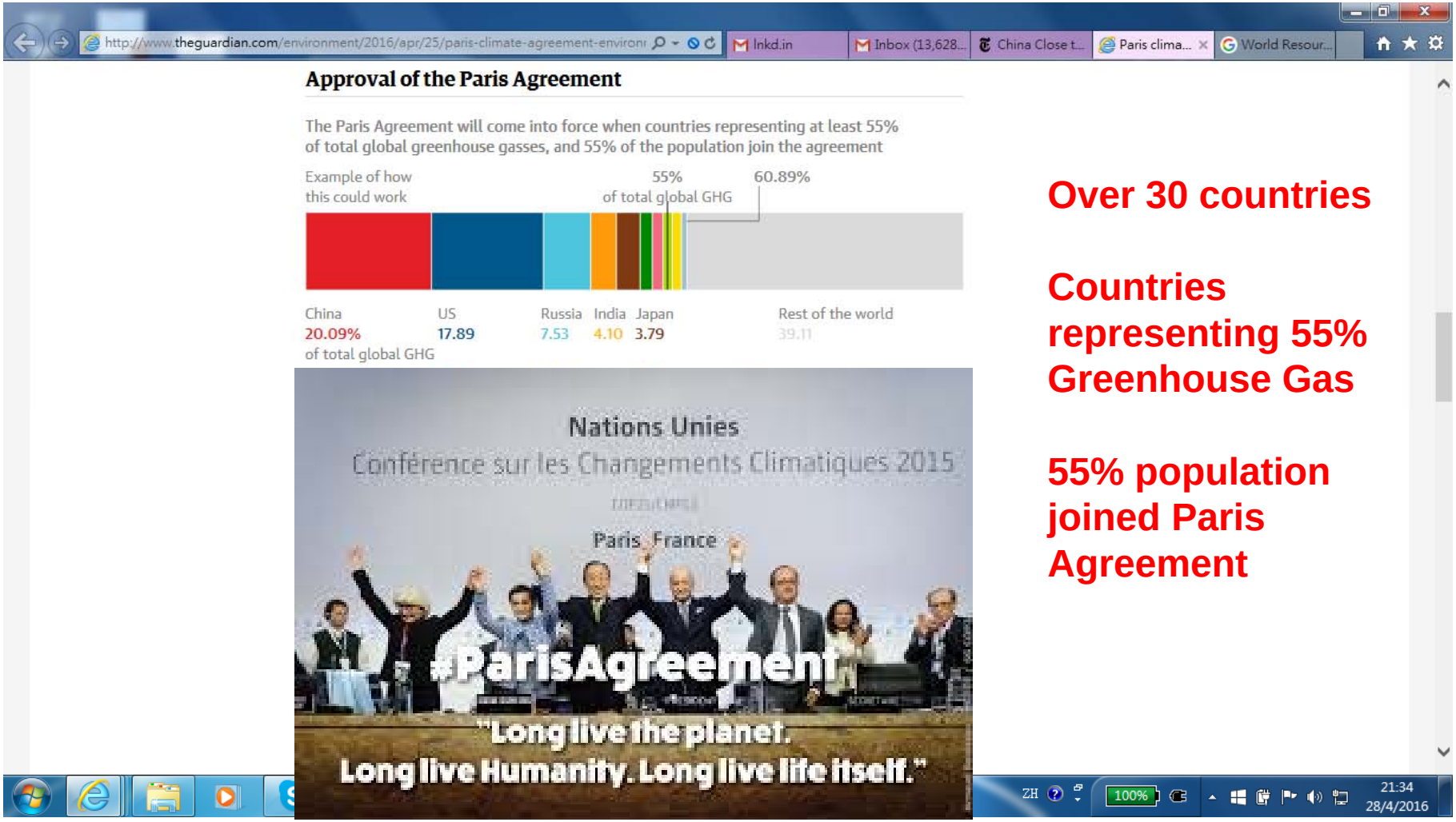
Source: Climate Action Tracker

Bottom-up Reduction Approach (II)

- Intended Nationally Determined Contributions (INDC)
  - India: We rate India “medium”. India has put forward the targets to lower the emissions intensity of GDP by 33% to 35% by 2030 below 2005 levels, to increase the share of non-fossil based power generation capacity to 40% of installed electric power capacity by 2030, and to create an additional (cumulative) carbon sink of 2.5–3 GtCO2e through additional forest and tree cover by 2030.
  - China: We rate China "medium with inadequate carbon intensity target". China has put forward a target to reduce carbon intensity by 60% to 65% by 2030 below 2005 levels, increase the share of non-fossil primary energy to 20%, increase th forest stock and peak by 2030 or earlier.

Source: Climate Action Tracker

Paris Agreement - Commitment by Country



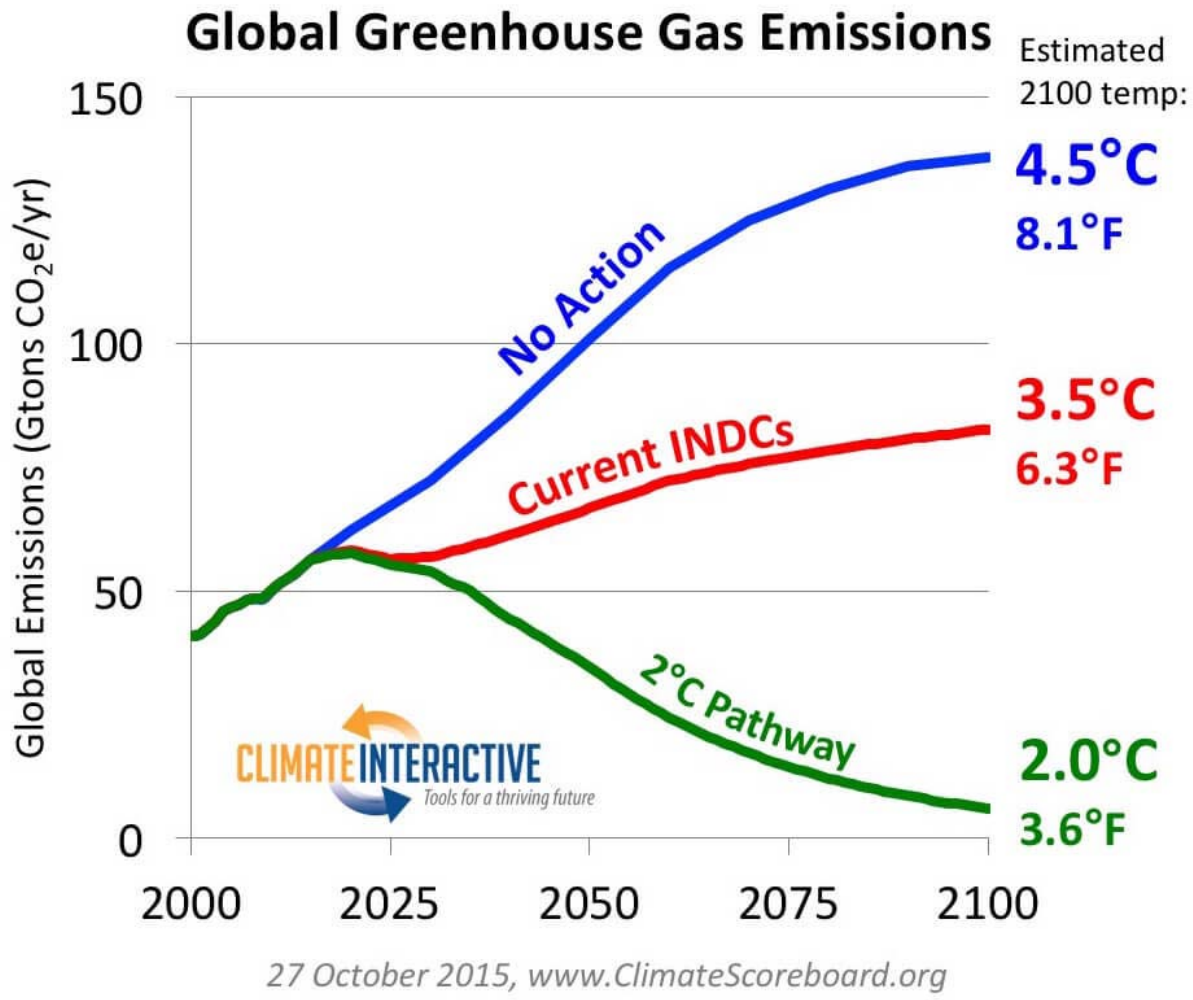
Over 30 countries

Countries representing 55% Greenhouse Gas

55% population joined Paris Agreement

Source: Guardian UK

BAU Vs INDC

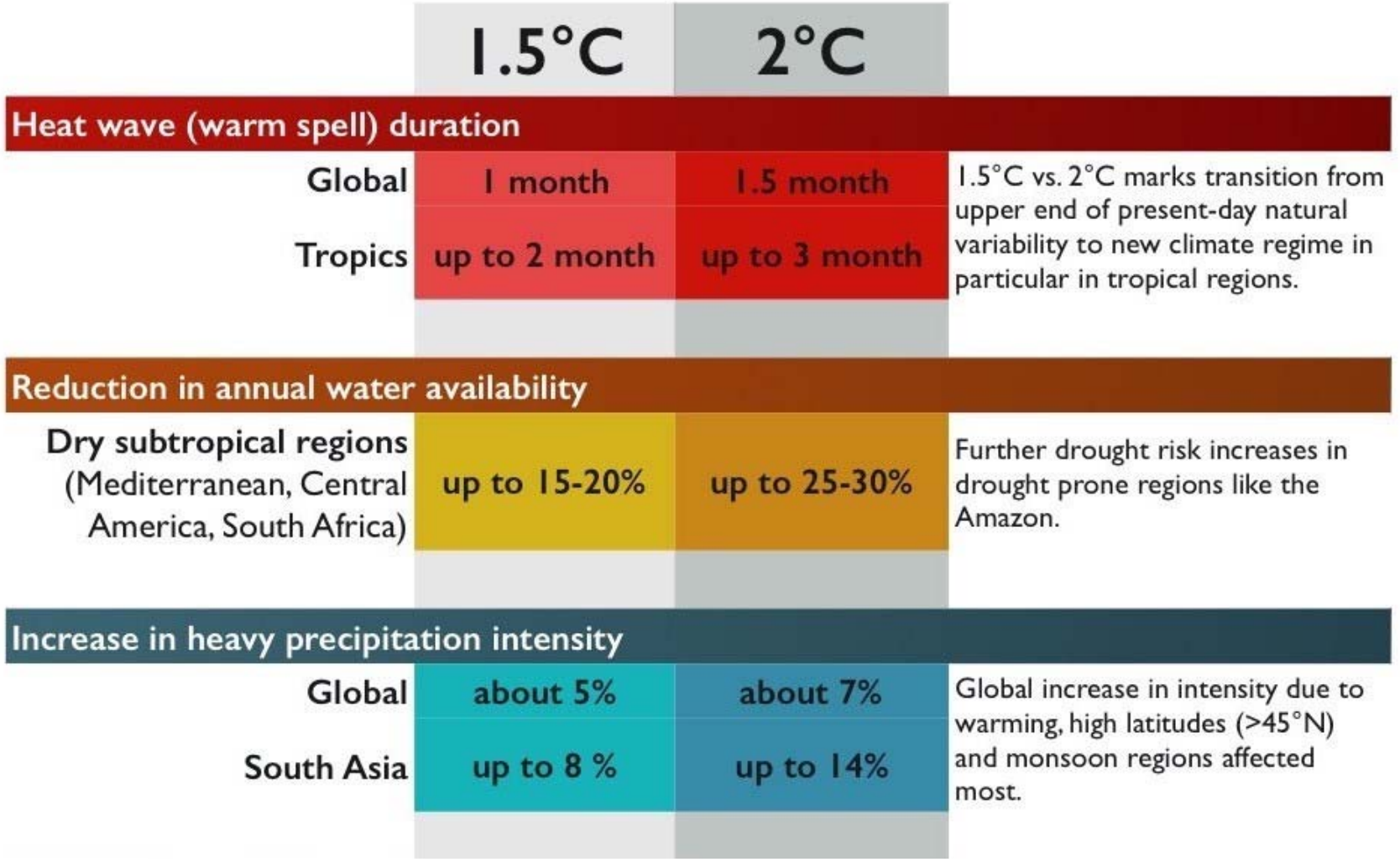


Source: Climate Interactive

Keeping Below 1.5C

Source: COP21 Climate Talk, Economist

Climatic Impact - 1.5C Vs 2C (I)



	1.5°C	2°C	
Heat wave (warm spell) duration			
Global	1 month	1.5 month	1.5°C vs. 2°C marks transition from upper end of present-day natural variability to new climate regime in particular in tropical regions.
Tropics	up to 2 month	up to 3 month	
Reduction in annual water availability			
Dry subtropical regions (Mediterranean, Central America, South Africa)	up to 15-20%	up to 25-30%	Further drought risk increases in drought prone regions like the Amazon.
Increase in heavy precipitation intensity			
Global	about 5%	about 7%	Global increase in intensity due to warming, high latitudes (>45°N) and monsoon regions affected most.
South Asia	up to 8 %	up to 14%	

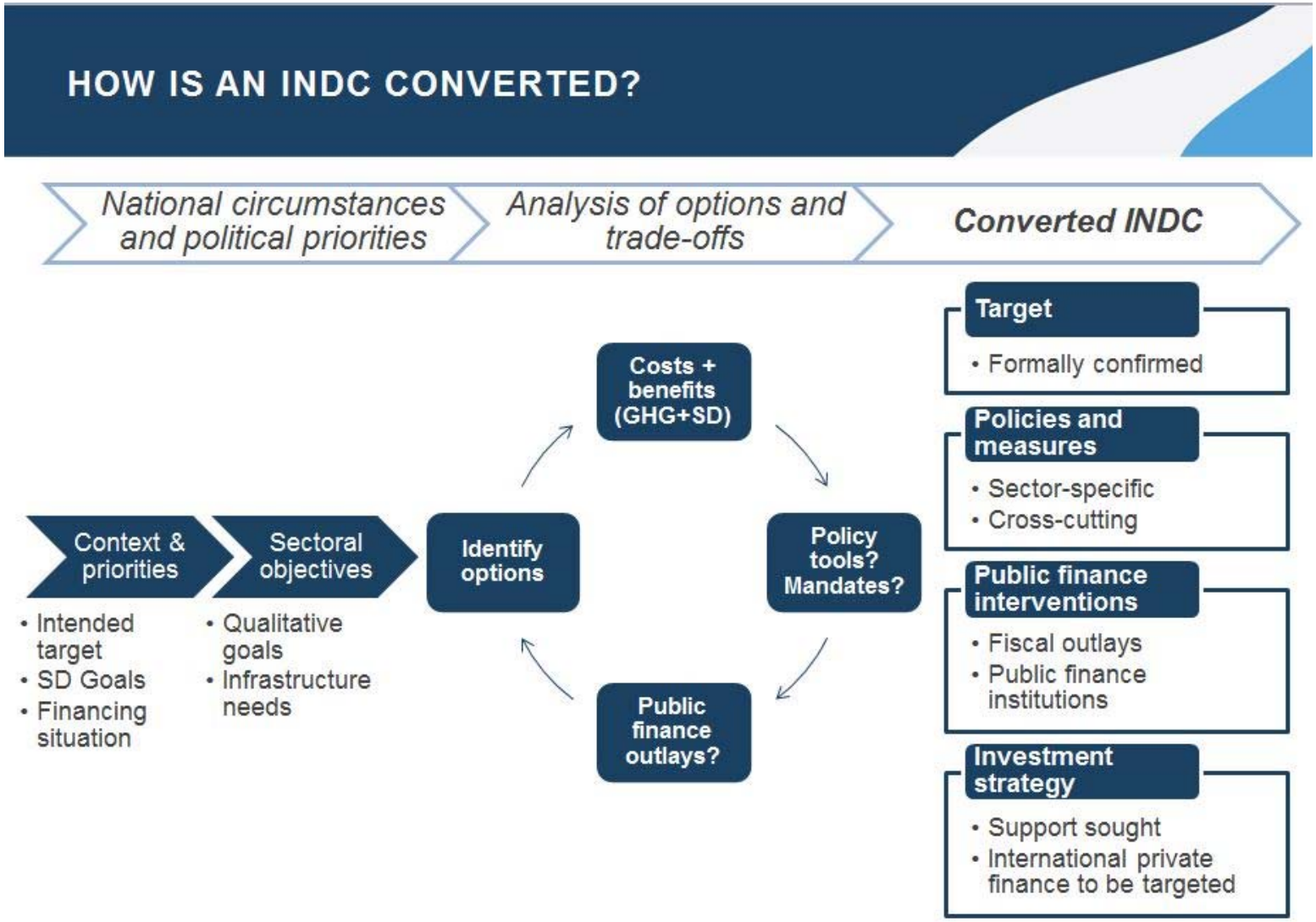
Source: Climateanalytic.org

Climatic Impact - 1.5C Vs 2C (II)

Global Sea-level Rise			
in 2100	about 40 cm	about 50 cm	1.5°C end-of-century rate 30% lower than for 2°C greatly reducing long-term SLR commitment. Steep rise in long-term risks between 1.5°C and 2°C
2081-2100 rate	about 4 mm/yr	about 5.5 mm/yr	
Fraction of global coral reefs at risk of annual bleaching			
2050	about 90%	near 100%	1.5°C vs. 2°C decisive for the future of tropical coral reefs. Only limiting warming to 1.5°C may leave window open for some ecosystem adaptation.
2100	about 70%	near 100%	
Crop yield reduction risk			
50% of current crop-producing regions may experience yield reductions of	Wheat: 14% Maize: 8% Rice: 8% Soy: 10%	Wheat: 19% Maize: 12% Rice: 16% Soy: 12%	Projections not including highly uncertain positive effects of CO_2-fertilization. Risks largest for tropical regions, while high-latitude regions (e.g. Siberia, Canada) may benefit.

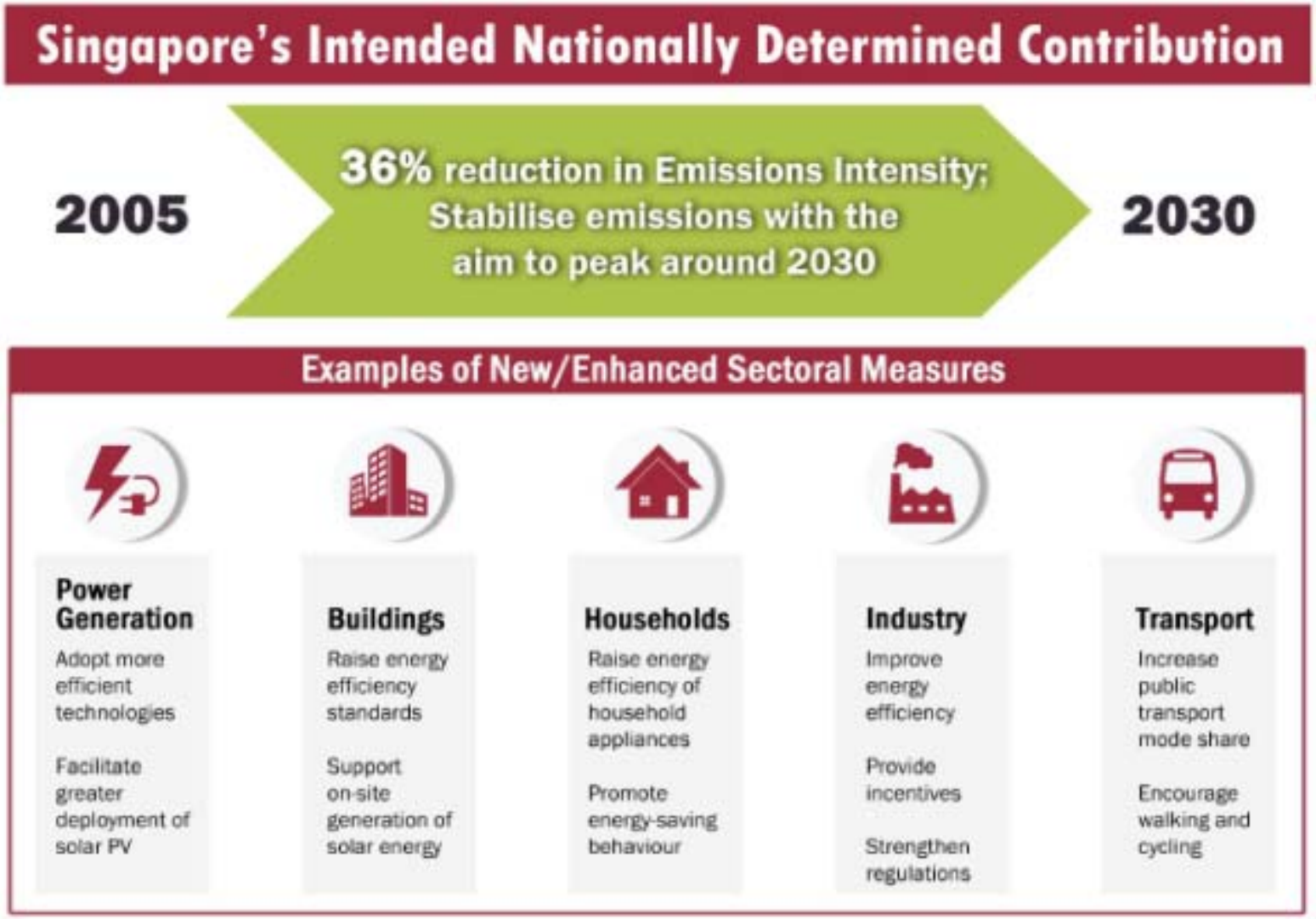
Source: Climateanalytic.org

Target and Policy



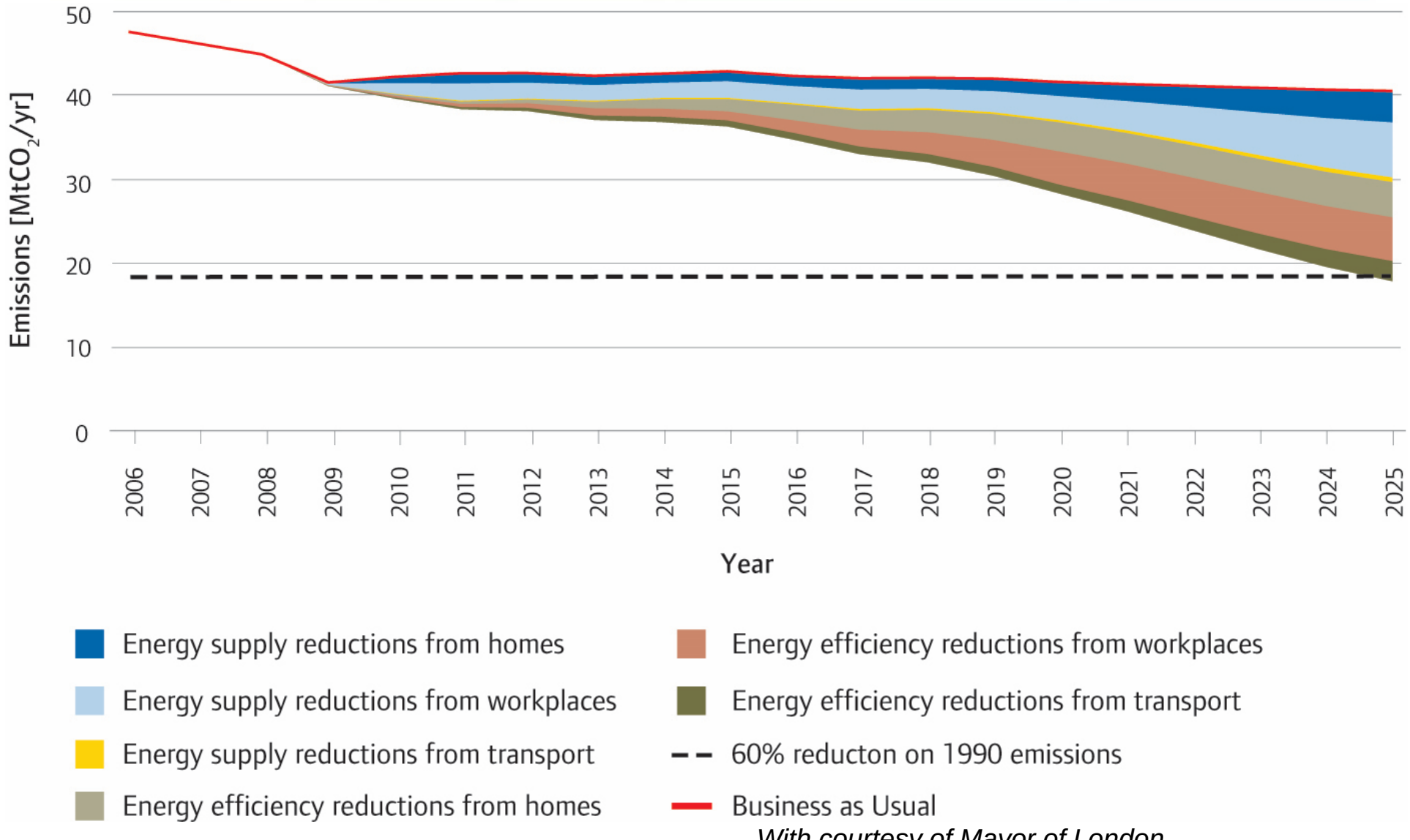
Source: CCAP.org

INDC Example - Singapore



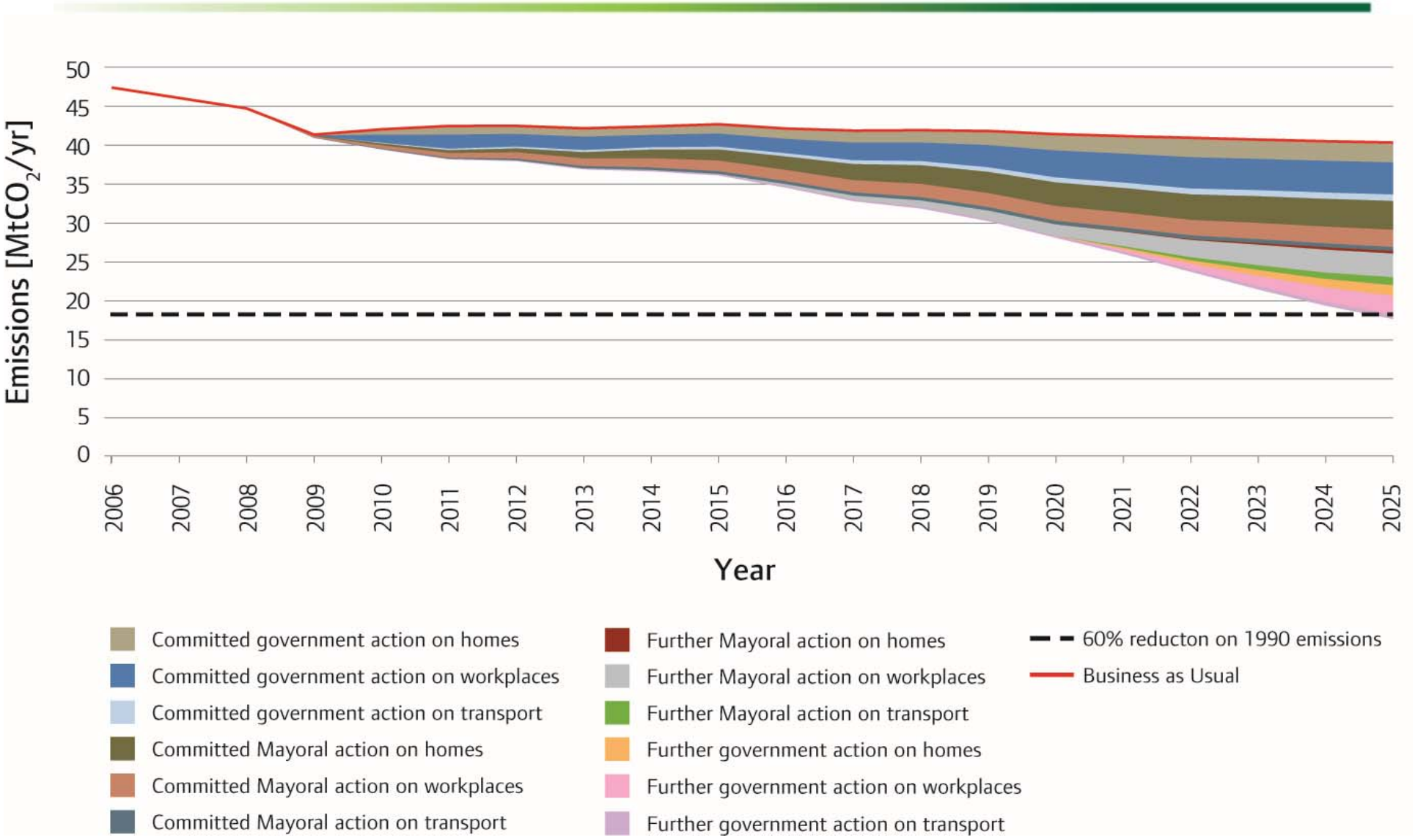
Source: www.greenfuture.sg

London: Breakdown of the 60% reduction
Energy efficiency vs energy supply



With courtesy of Mayor of London

London: Breakdown of the 60% reduction By sector



With courtesy of Mayor of London

City – 80 x 50 GOALS

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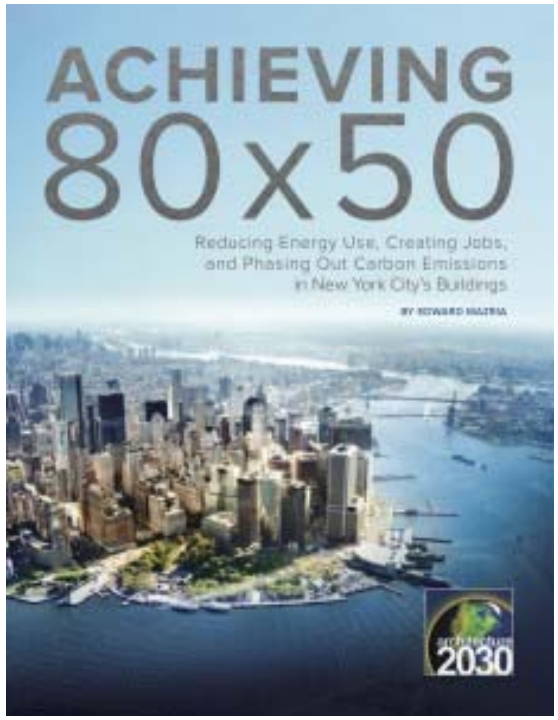
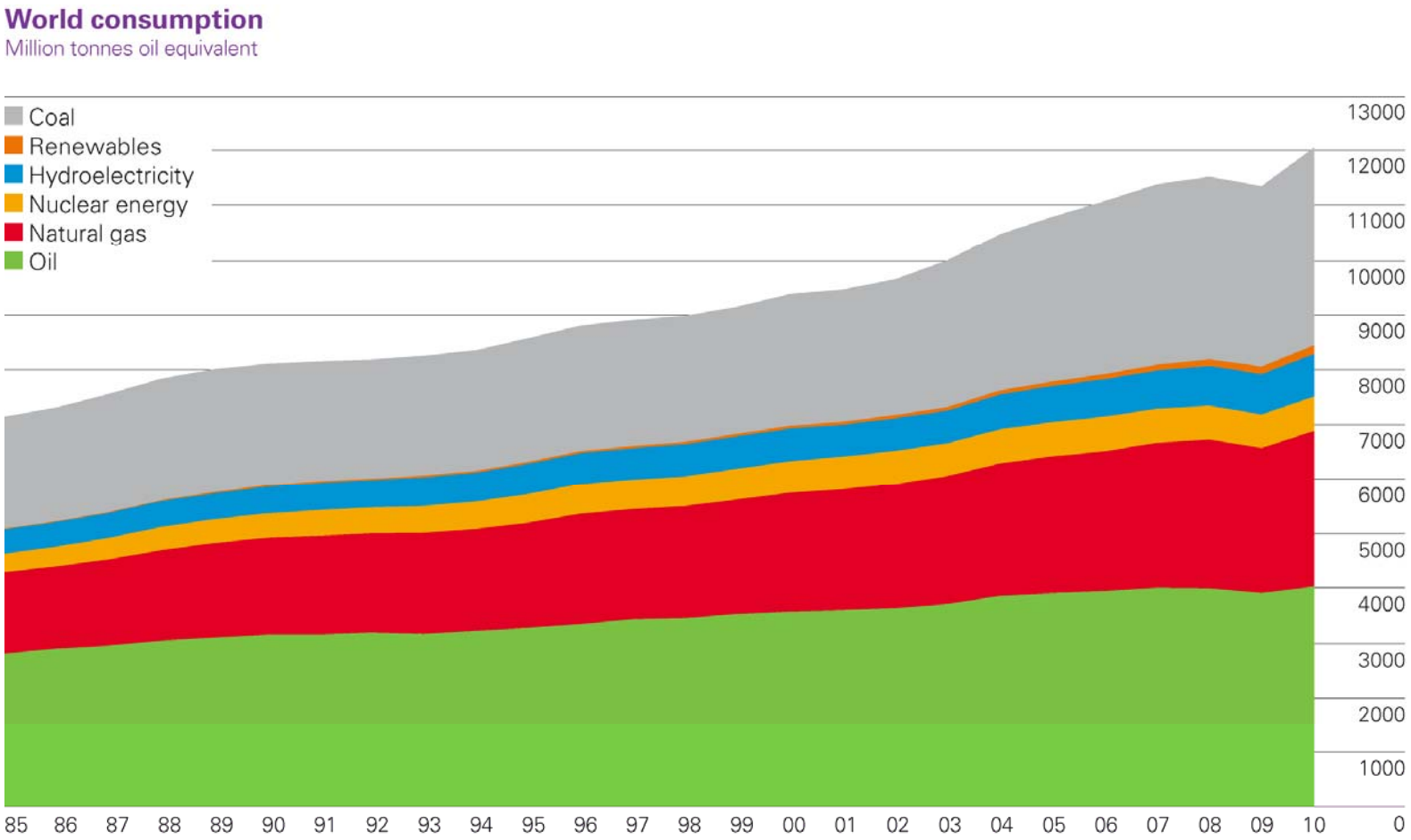
- 80% reduction in Greenhouse gas emissons by 2050

- New York City
  - Renovating New York City's buildings to high-performance standards
  - New York City contains about one million buildings comprising 5.75 billion square feet of building stock
  - Its buildings are responsible for 71% of the city's greenhouse gas emissions (GHG) and 94% of its electricity consumption.



Source: ARCHITECTURE 2030

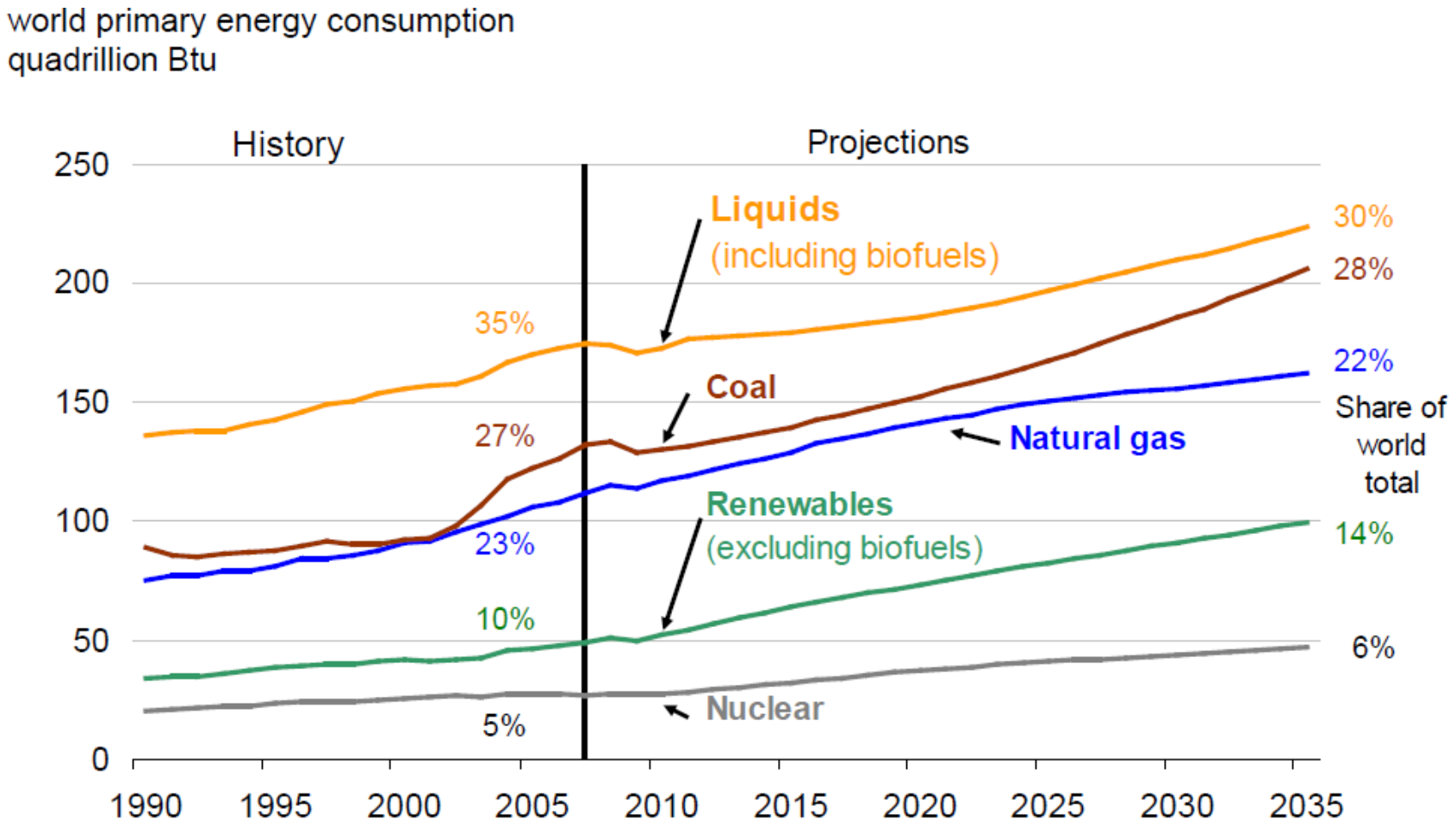
World Primary Energy Consumption 2010



World primary energy consumption grew by 5.6% in 2010, the strongest growth since 1973. Growth was above average for oil, natural gas, coal, nuclear, hydroelectricity, as well as for renewables in power generation. Oil remains the dominant fuel (33.6% of the global total) but has lost share for 11 consecutive years. The share of coal in total energy consumption continues to rise, and the share of natural gas was the highest on record.

Source: BP Statistical Review of World Energy 2011

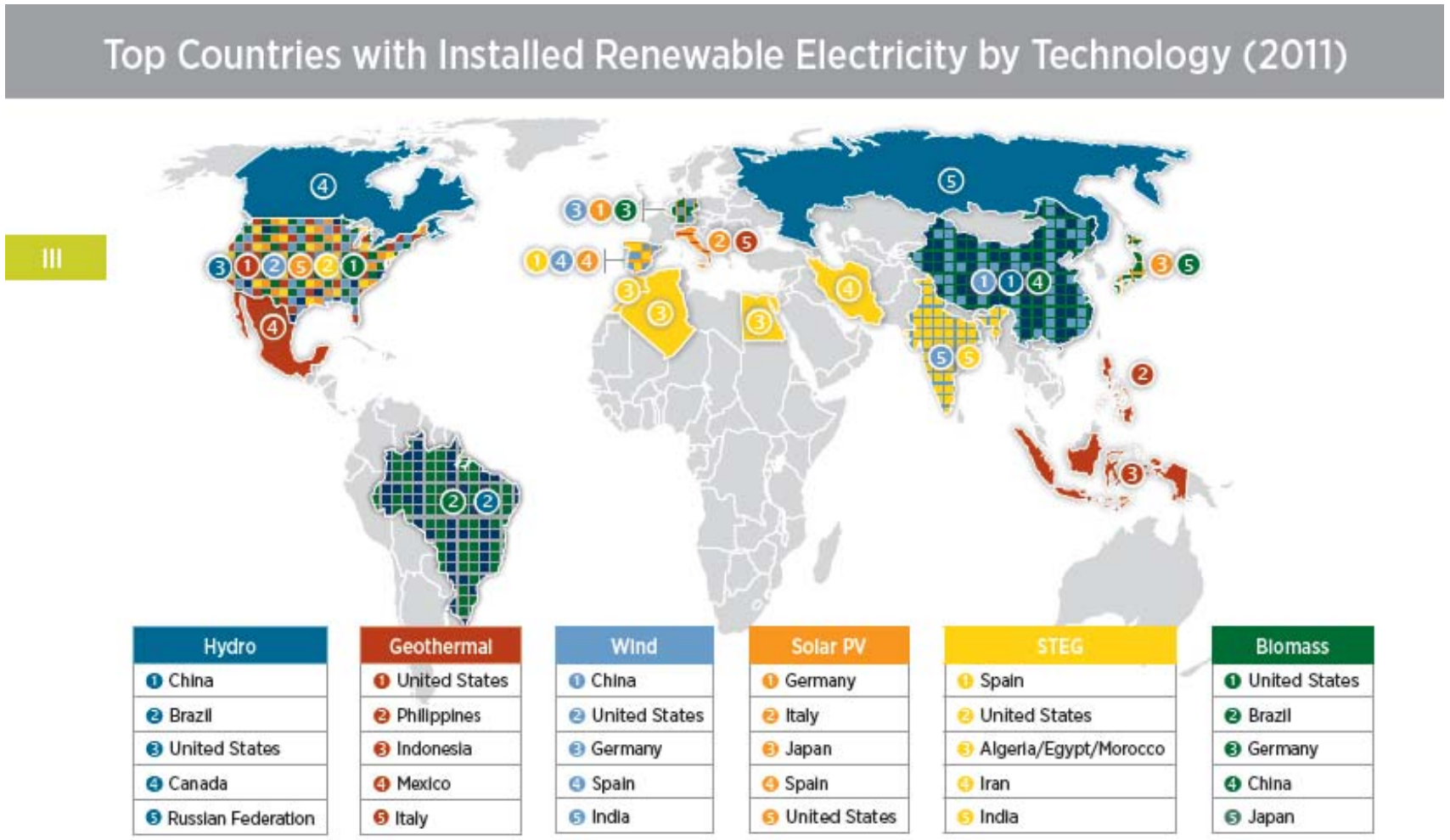
Projection of Renewable Energy Consumption to 2035



Renewable energy is the fastest growing energy source

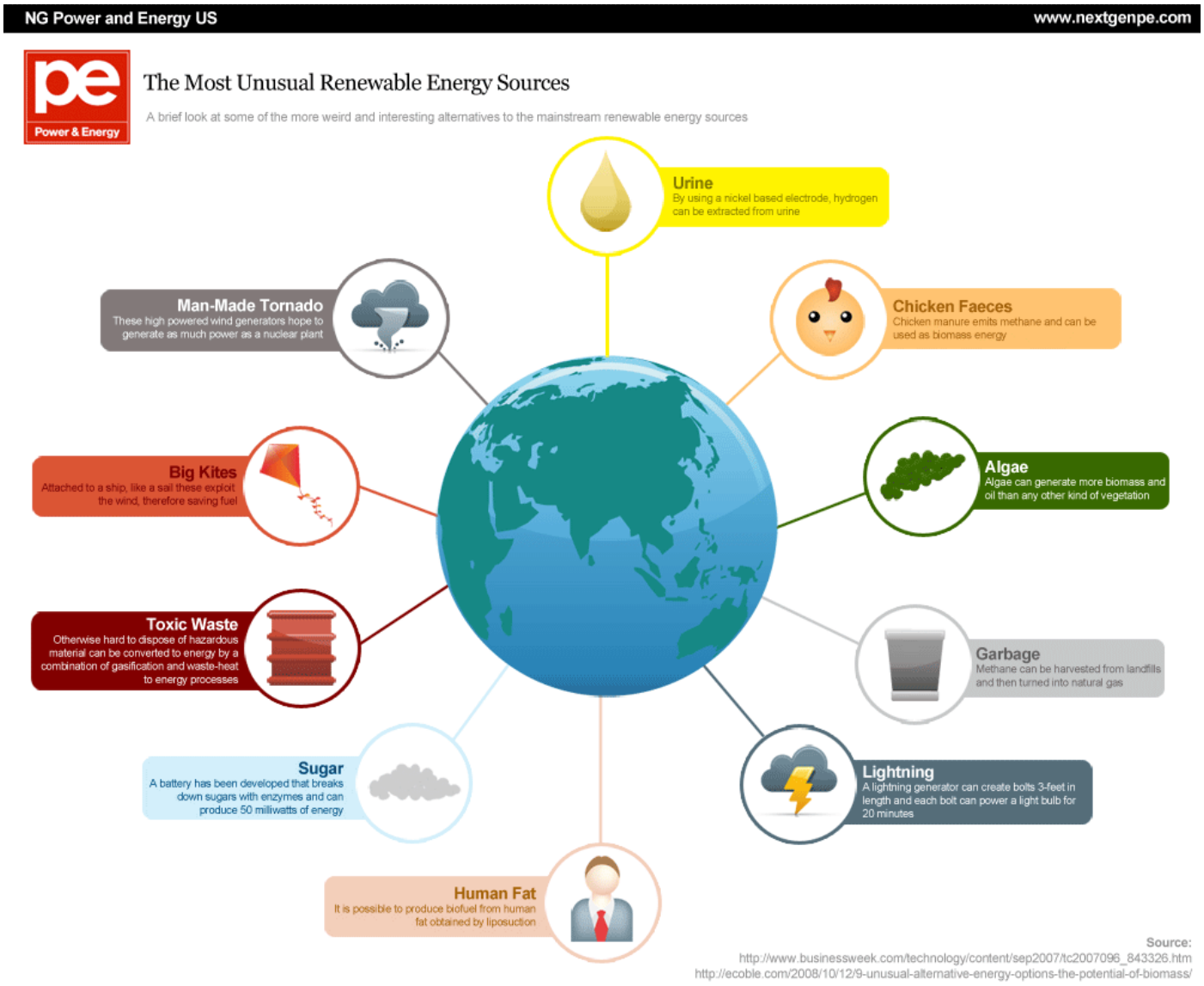
Source: EIA International Energy Outlook 2010

Renewable Energy 2011

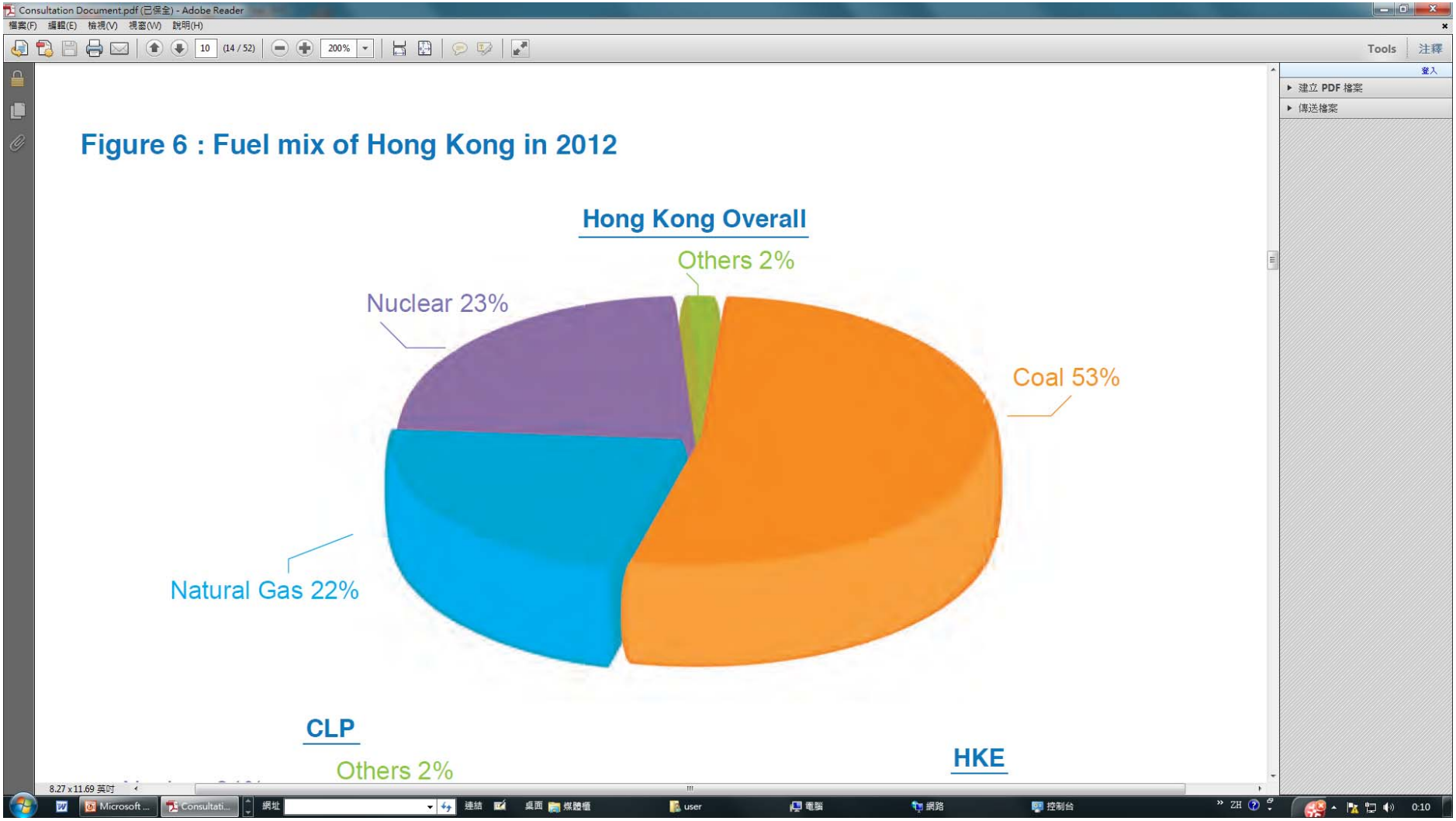


Source: EIA, Bloomberg New Energy Finance

Unusual Renewable Energy



Overview of Supply Side Management in HK



Building Resilience to Climate Change

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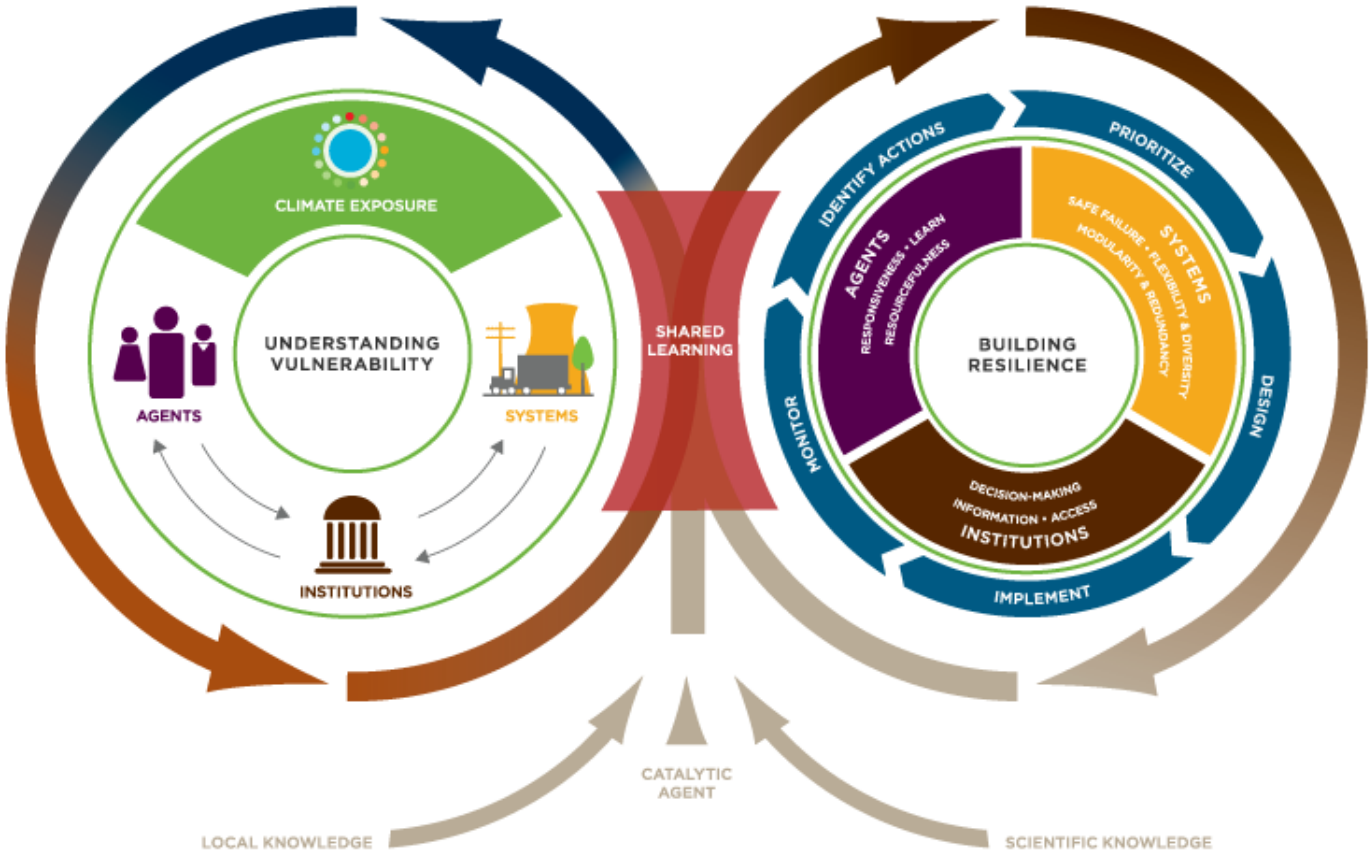
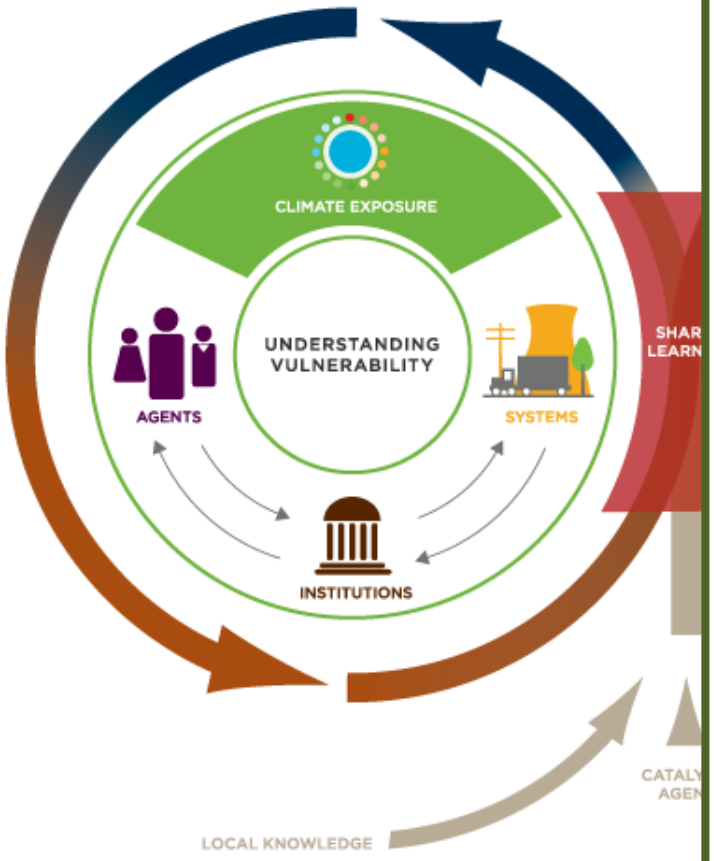
- Climate Resilience Framework [4]



Source: [4] ISET-International, 2014

Building Resilience to Climate Change (I)

- Climate Resilience Framework [4,15]



Understanding Vulnerability

- Factors necessary for diagnosis of climate vulnerability

Climate exposure – Experiences

Agents

- People and organisations
  - Individuals, households and communities
  - Private and public sector organisations
  - Business companies

Institutions

- Rules, norms, beliefs and conventions
- Social construct and cultural norms

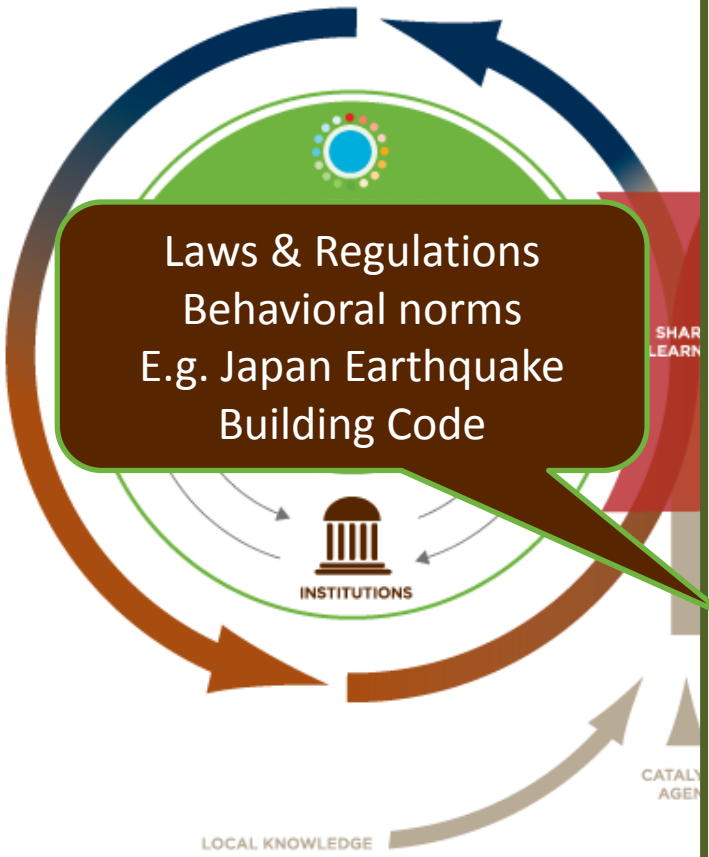
Systems

- Infrastructure
- Ecosystems

Source: [4] ISET-International, 2014; [15] ISET-International, 2013

Building Resilience to Climate Change (III)

- Climate Resilience Framework [4,15]



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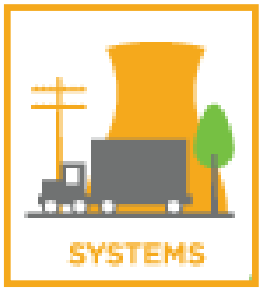
Source: [4] ISET-International, 2014; [15] ISET-International, 2013

Lessons from New York (I)

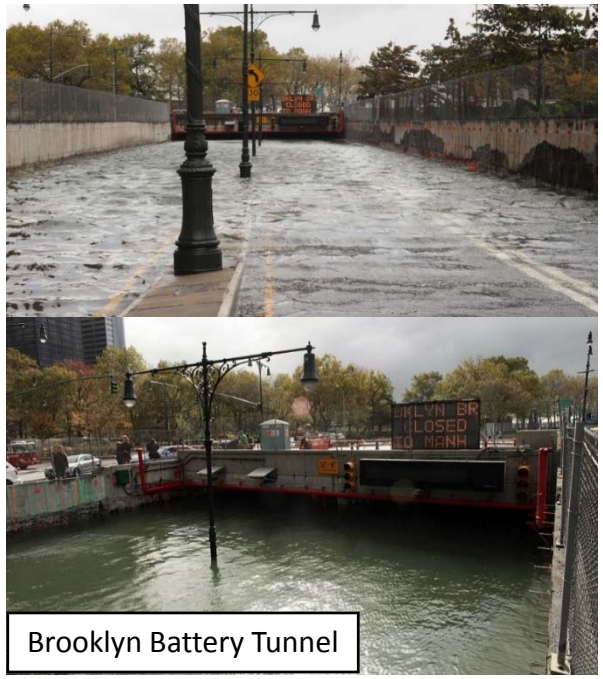
- Hurricane Sandy swept up the East Coast of the USA in 2012
  - **Infrastructure : Public Utilities**
  - Power outage [20]
    - Overhead line failure, mostly caused by falling trees
    - One instance of a sub-station being flooded, resulting in an explosion

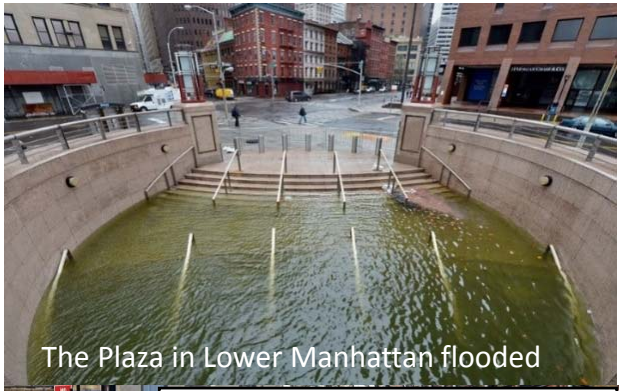


Source: [20] National Geographic, 2012 *Images: Daily Mail, 2012*

Lessons from New York (II)

- Hurricane Sandy swept up the East Coast of the USA in 2012
  - **Built-in flooding prevention / adaptation measures**
  - Flooded roads and tunnels
  - Flooded underground areas
  - Grounded ships and boats





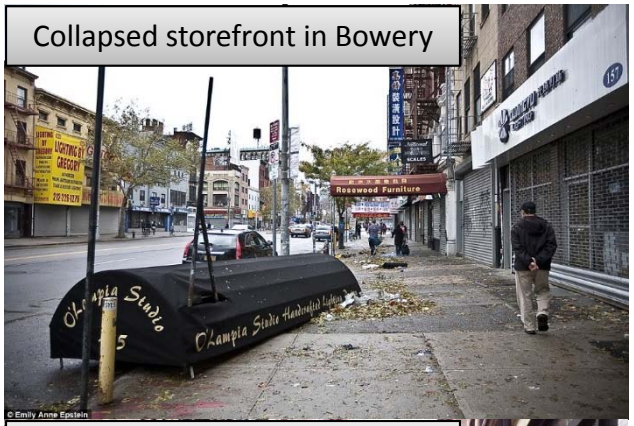
Images: The Telegraph, 2012; Daily Mail, 2012*

Lessons from New York (III)

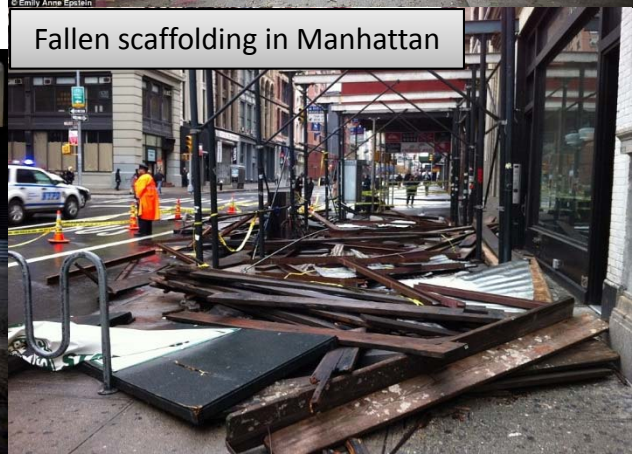
- Hurricane Sandy swept up the East Coast of the USA in 2012
  - **Human safety & Community operations**
  - Companies, Shops, Districts

Car crushed by tree in Brooklyn

Collapsed storefront in Bowery



Fallen scaffolding in Manhattan

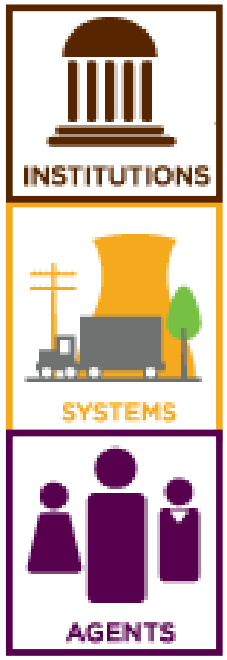


Garbage bin blown over fire hydrant

Images: The Telegraph, 2012; Daily Mail, 2012*

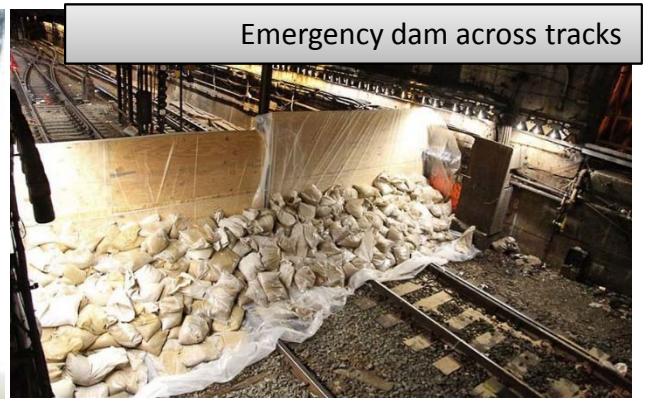
Lessons from New York (IV)

- Hurricane Sandy swept up the East Coast of the USA in 2012
  - Flooded subway system
    - Scientists identified nearly 1.700 species of bacteria, viruses and eukaryotes in the flooded stations
      - Nearly half of the DNA came from as-yet undocumented organisms
    - South Ferry station was filled with 57 million liters of seawater, 25 meters deep
      - Identified microbes from as far as the North Sea
      - Saltwater damaged nearly all of the station's electronic systems
      - Estimated cost of rebuilding just this station was USD $600 million




Flooded subway station in Hoboken


South Ferry station in Lower Manhattan


Emergency dam across tracks

Source: [16] Scientific American, 2015 *Images: The Telegraph, 2012*; Scientific American, 2015*

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U.S. + China = 40% Emissions

Donald J. Trump
✔@realDonaldTrump

The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive.
3:15 AM - 7 Nov 2012

CCOUC

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香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

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Climate Change Forum

Jointly organised by WGO and Hong Kong Observatory

School Talks for Primary & Secondary Schools

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