Tourism and climate change: Rethinking volume growth

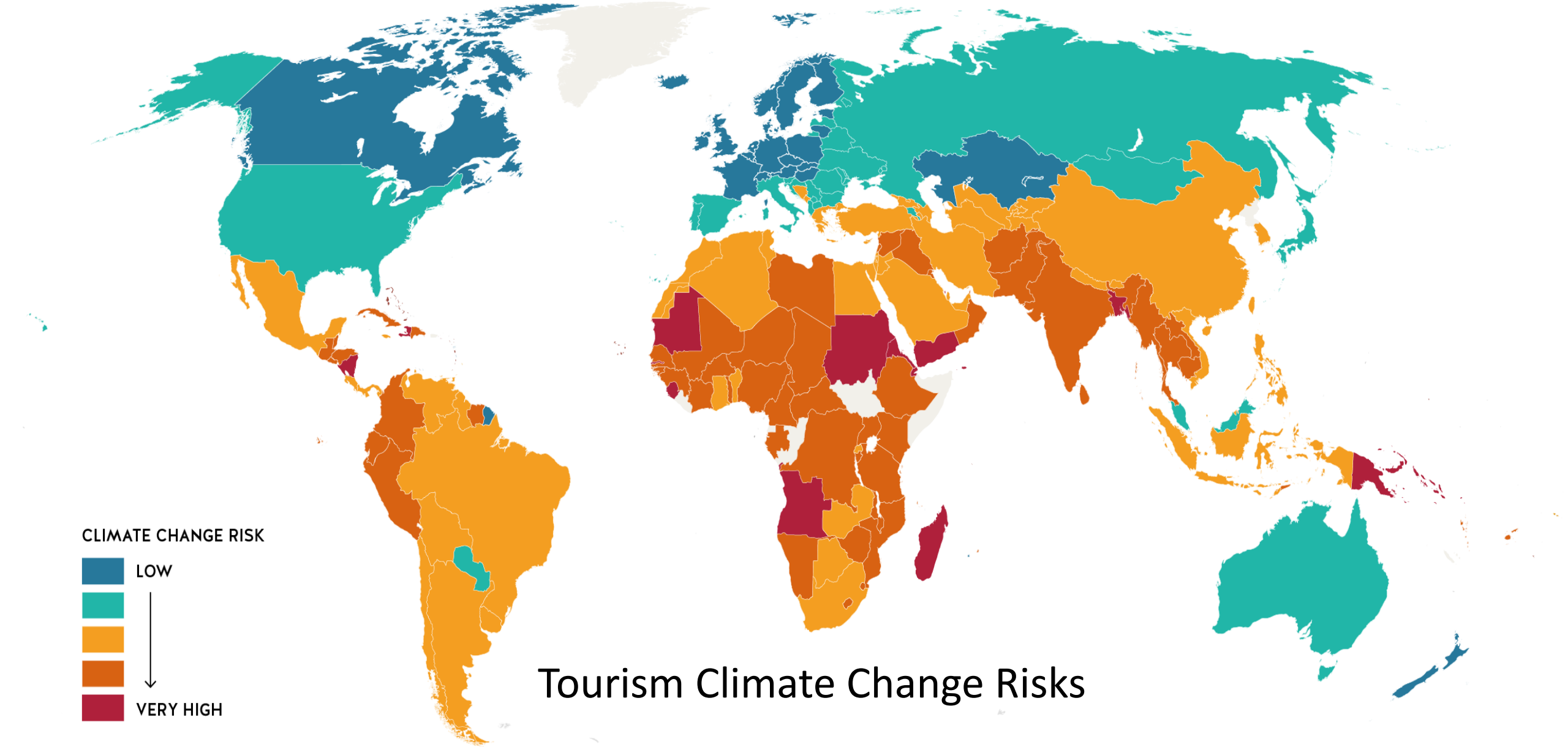
Stefan Gössling

Dept. of Service Management and Service Studies, Lund University,

School of Business and Economics, Linnaeus University, Kalmar, Sweden

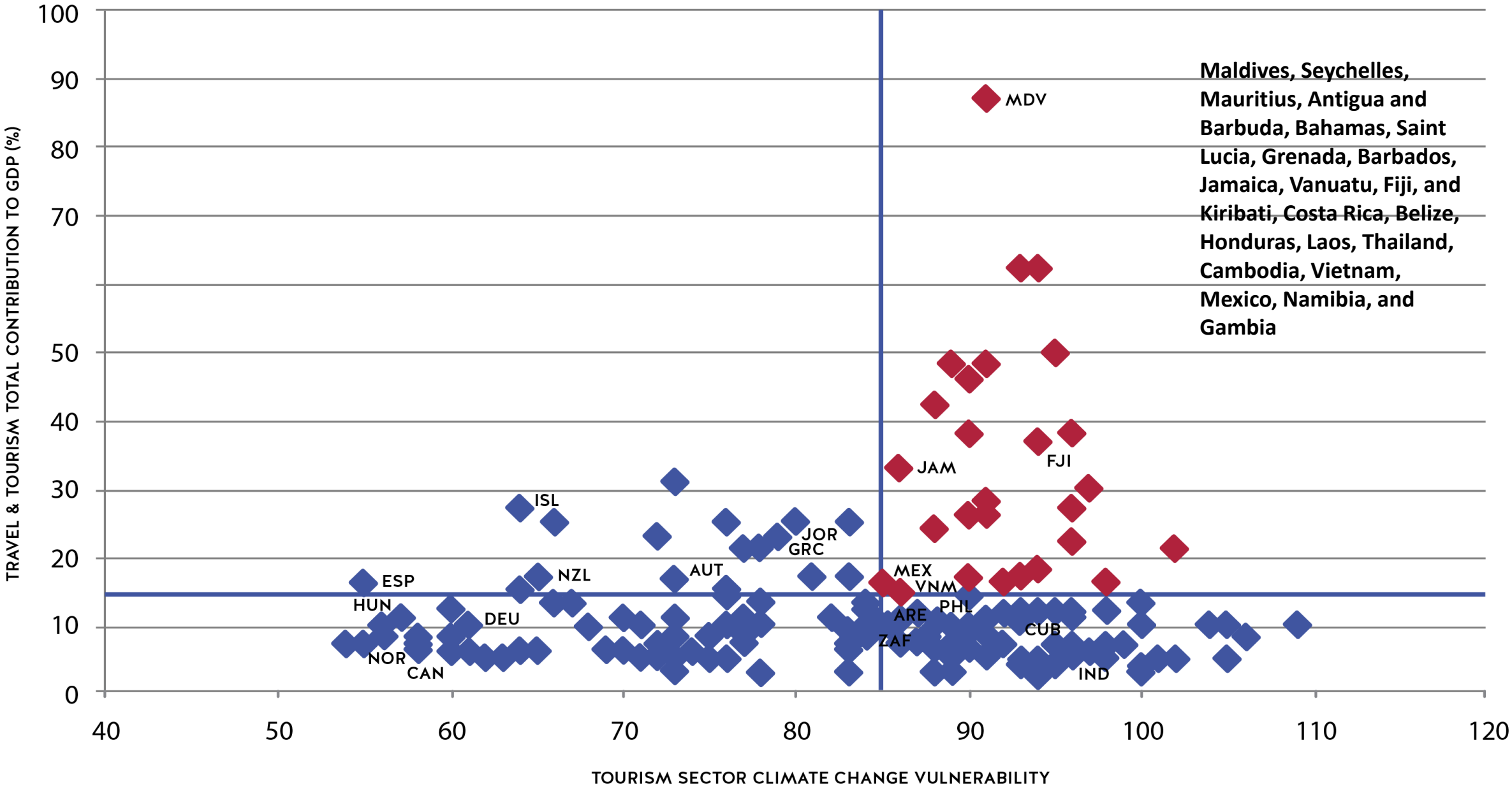
www.stefangossling.de

@StefanGossling



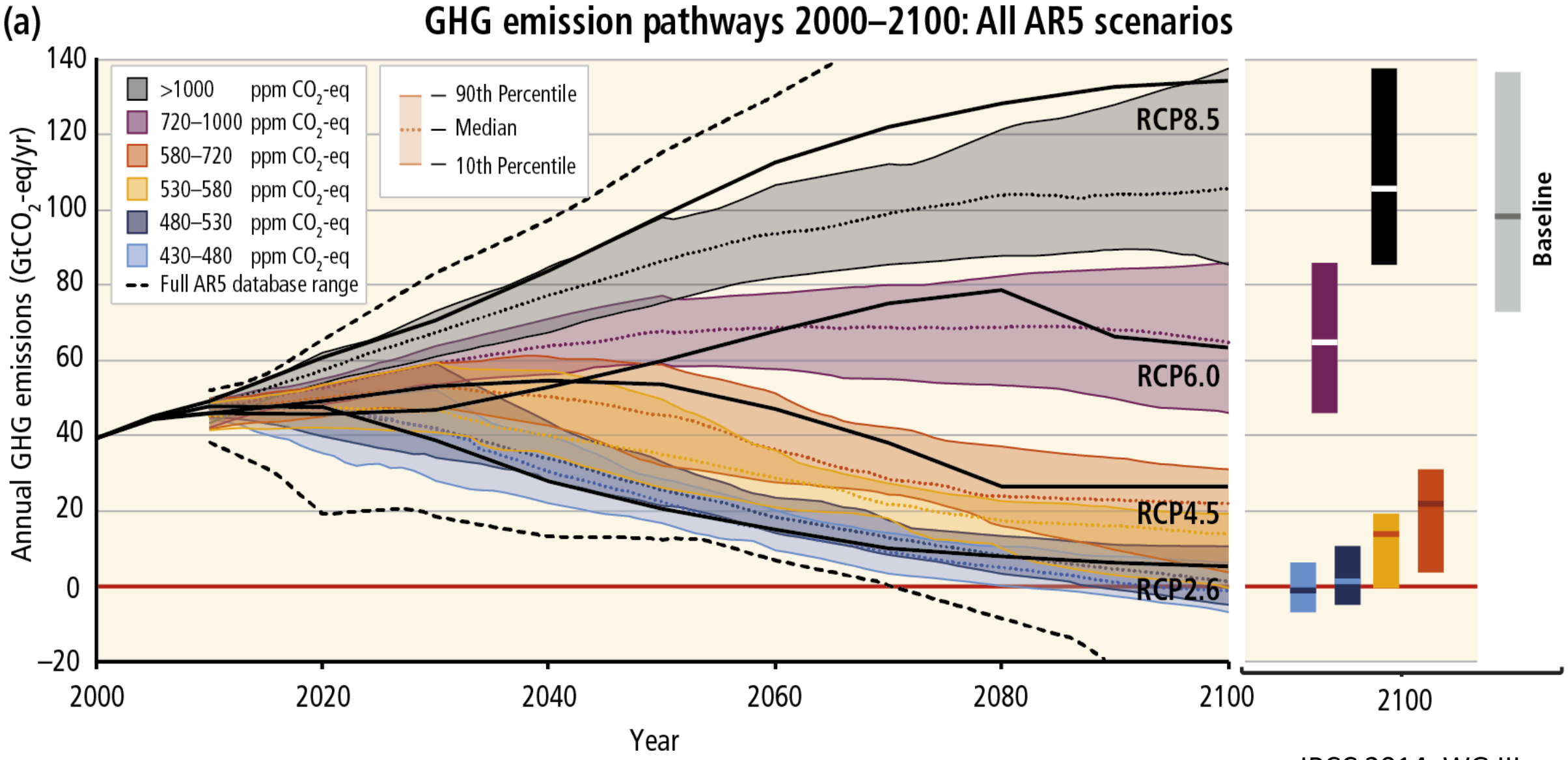
Tourism Climate Change Risks

Courtesy: Dr. Daniel Scott, Uni. Waterloo, Ca.



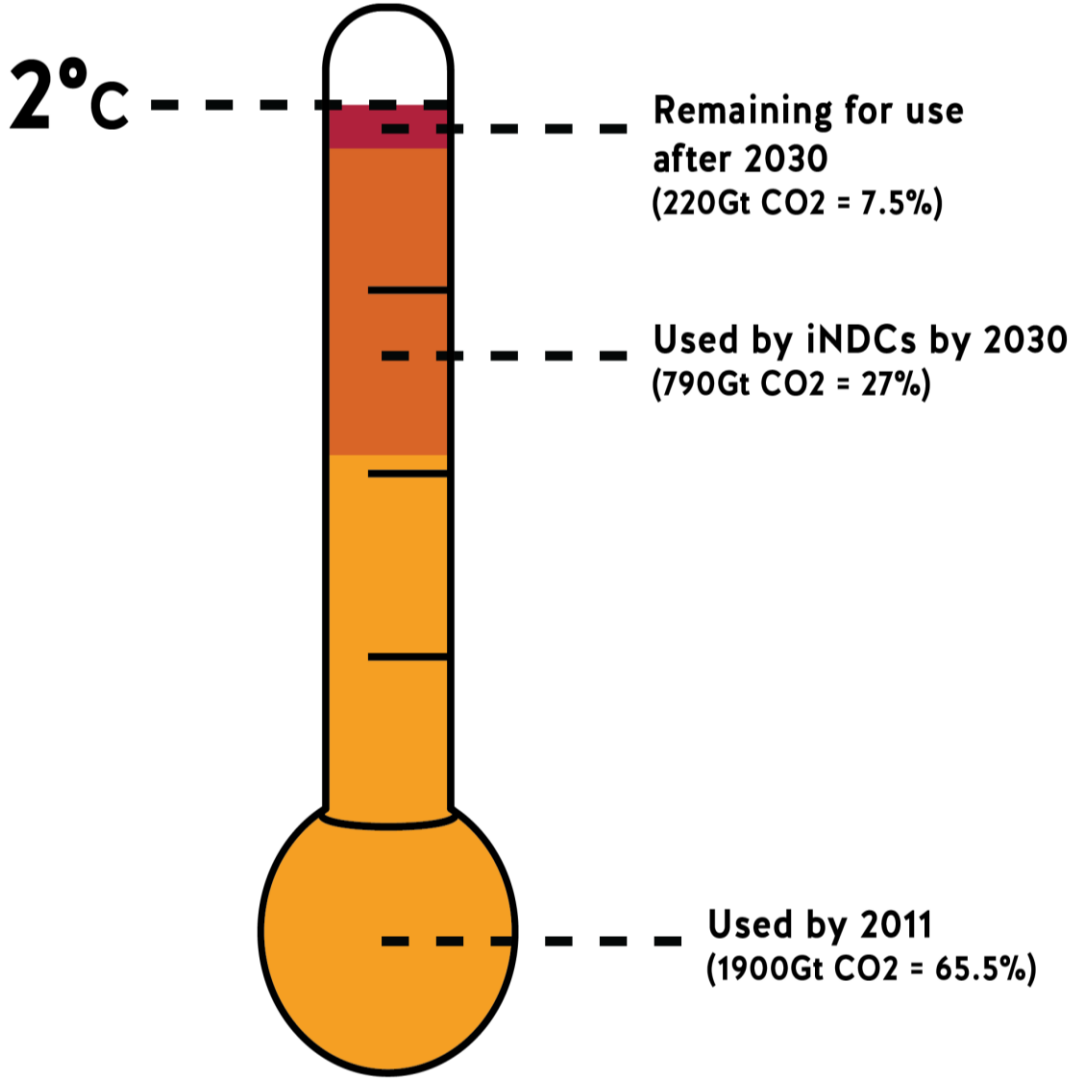
Courtesy: Dr. Daniel Scott, Uni. Waterloo, Ca.

Representative Concentration Pathways



IPCC 2014, WG III

How much can we emit until we exceed ‘limits’?



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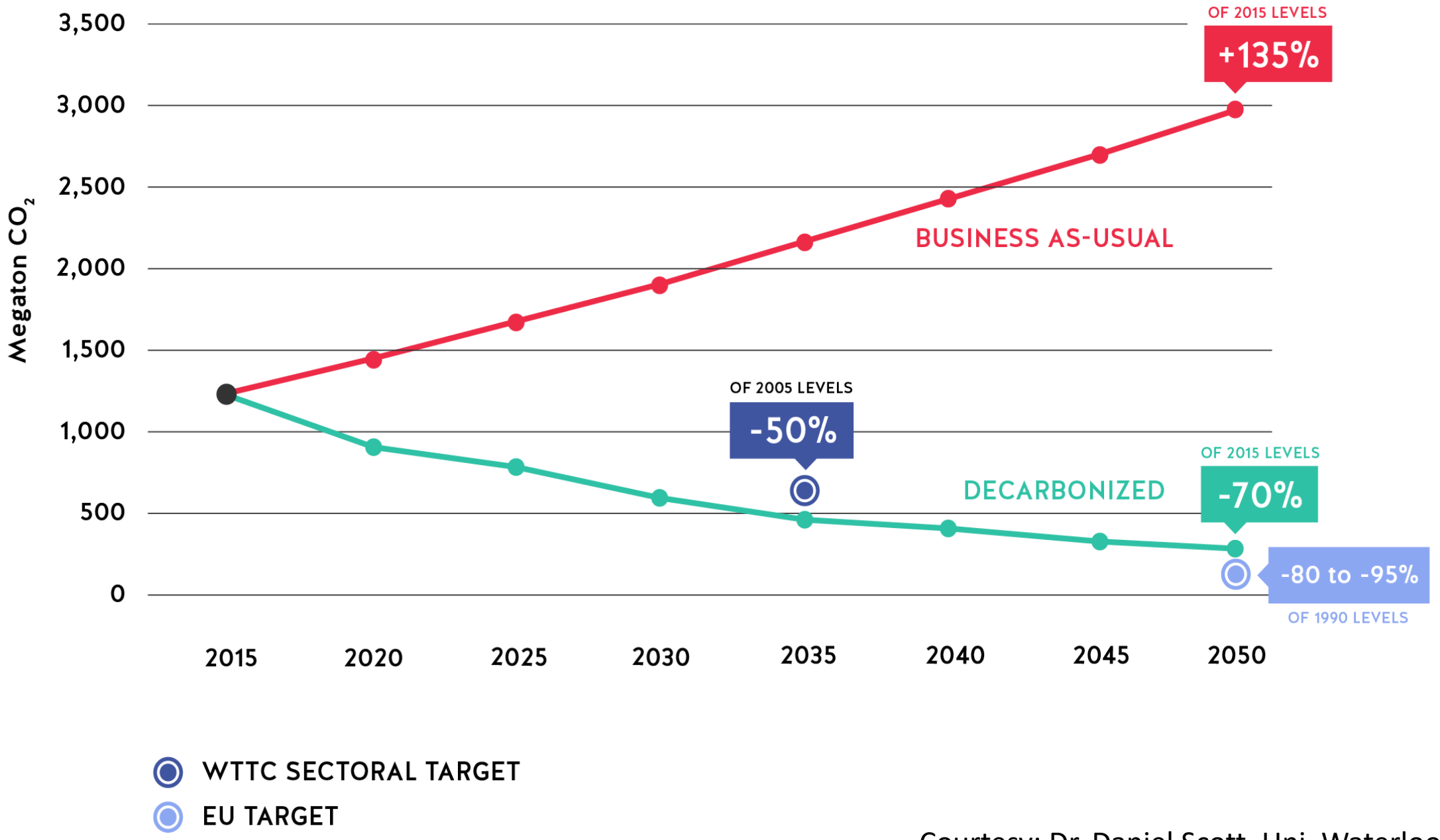
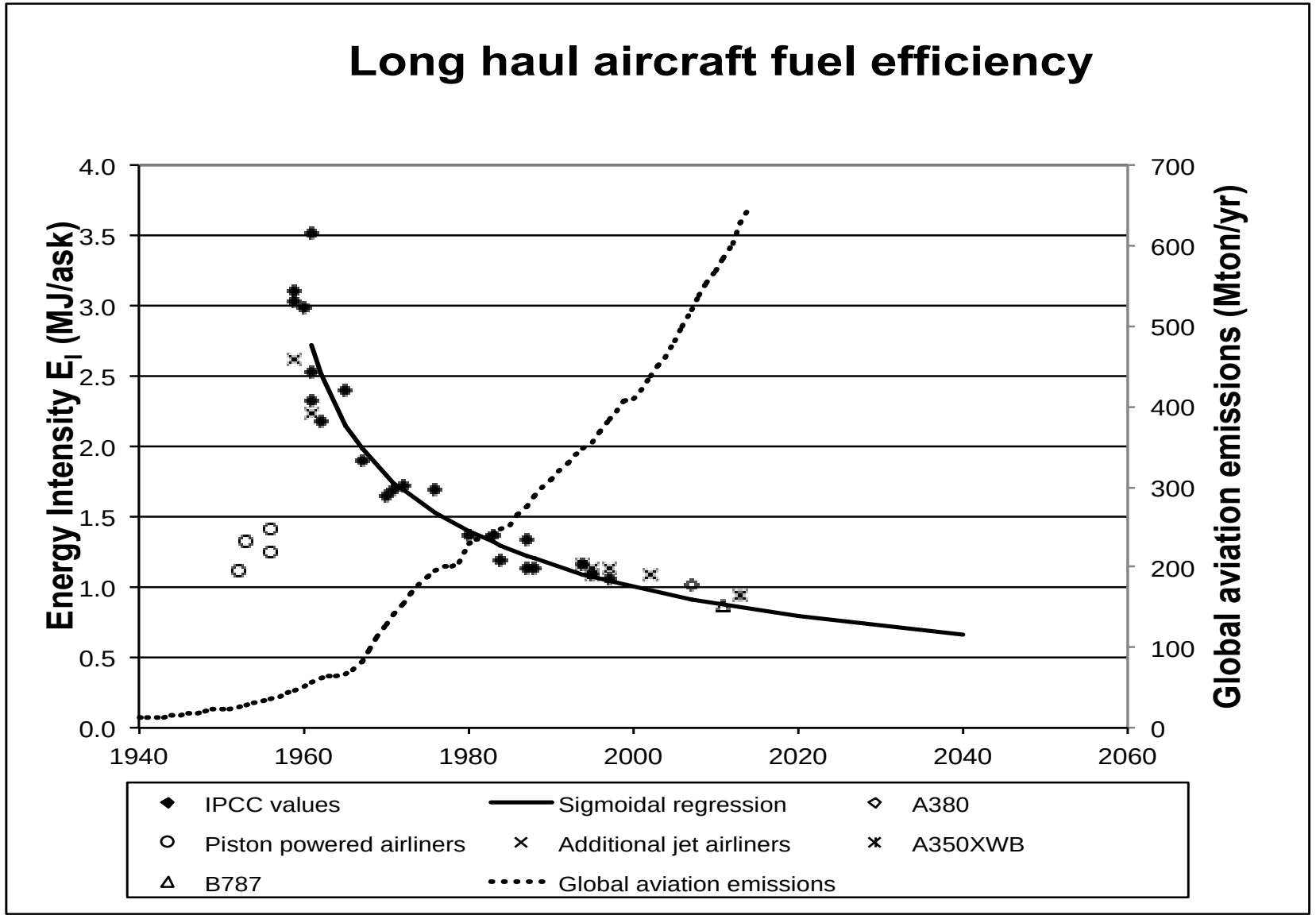


Courtesy: Dr. Daniel Scott, Uni. Waterloo, Ca.

Understanding efficiencies: Aviation

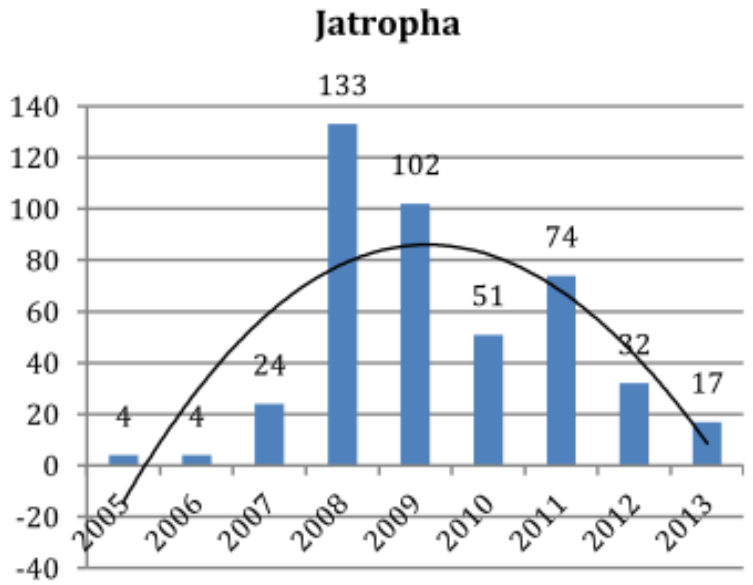


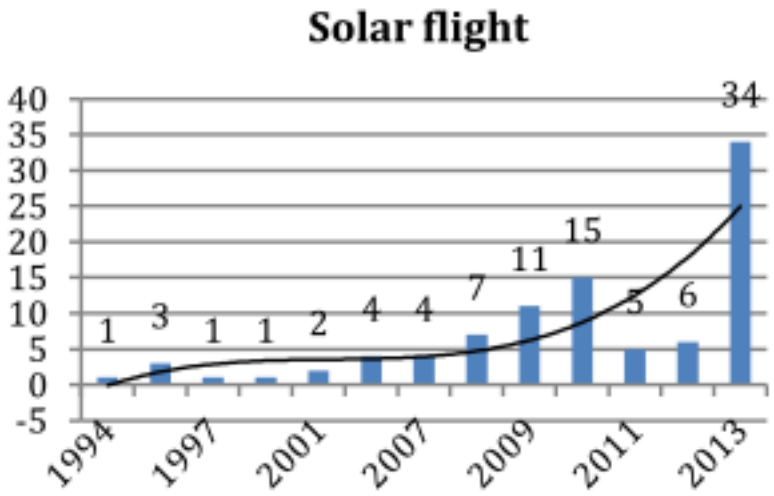
Peeters, P., Higham, J., Kutzner, D., Cohen, S. and Gössling, S. 2016. Are technology myths stalling aviation climate policy? Transportation Research Part D, http://dx.doi.org/10.1016/j.trd.2016.02.004

’Potential’ of new technologies

Aviation technology categories and items derived from Google Analytics (1994–2013).

Category	Item
Airframe	Laminar flow
	Composite aircraft
	Blended wing body
Engine	Solar flight
	Electric flight
	Open rotor or Propfan
Alternative fuels	Jatropha
	Animals fats
	Hydrogen
	Algae
	Camelina



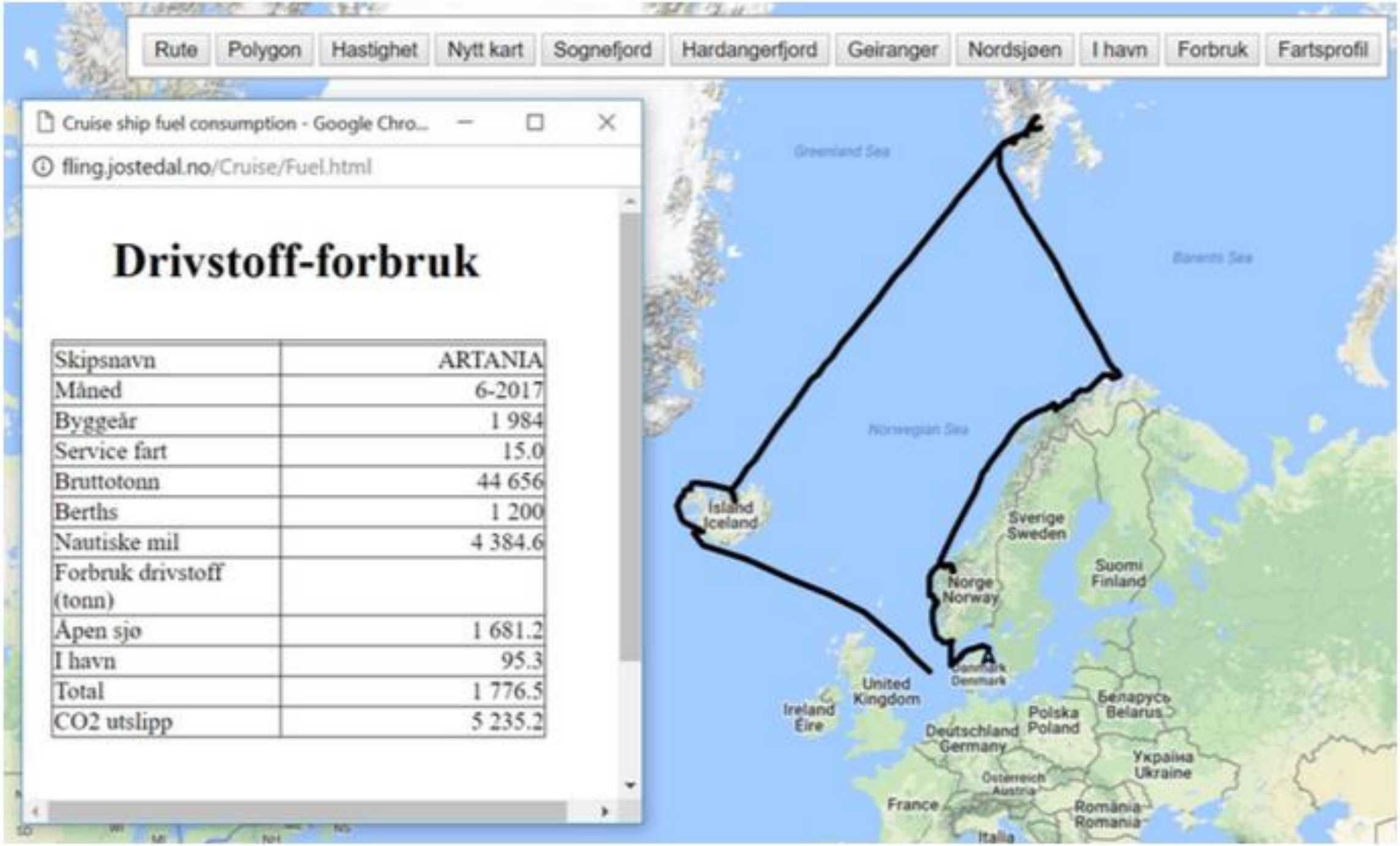


Will CORSIA be the solution?

- Only covers CO_2, ignoring non-CO_2 emissions
- Applies to only to 80% international air traffic, due to various exceptions, such as Small Island Developing States (EC 2017).
- Only covers emissions exceeding 2020 levels (i.e. it allows the sector to grow for another three years in emissions, before additional emissions will be 'covered' by the scheme).
- Is voluntary in its pilot (2021 through 2023) and first phase (2024-2026), involving only a share of airlines for at least another decade.
- Even though only a small share of emissions from aviation will be covered, the scheme would require offsetting at an unprecedented scale.
- Plans to source offset credits through low-cost projects. Forest projects have been criticized as highly unreliable offset projects, which in the case of REDD+ do not sequester carbon, rather than continue to maintain existing carbon pools.

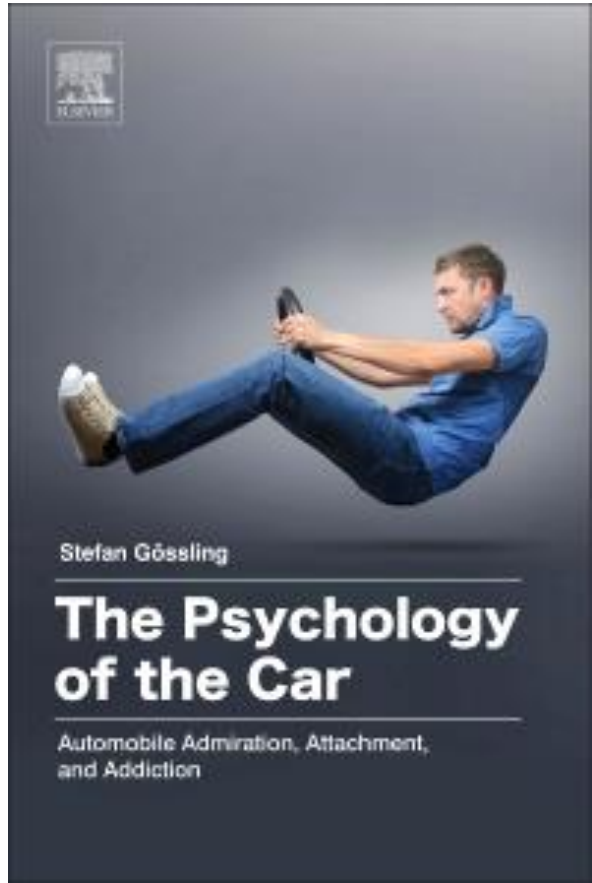
Cruise

- Emissions from cruises just very small share of global total, but more energy-intense than any other form of tourism (calculated per traveller)
- No reliable estimate of emissions from sector, nor any serious effort from sector to present such estimate
- Future technology change uncertain; LPG will only lead to insignificant change in emissions


Rute
Polygon
Hastighet
Nytt kart
Sognefjord
Hardangerfjord
Geiranger
Nordsjøen
I havn
Forbruk
Fartsprofil
Cruise ship fuel consumption - Google Chro...
fling.jostedal.no/Cruise/Fuel.html
Drivstoff-forbruk
Skipsnavn ARTANIA
Måned 6-2017
Byggeår 1 984
Service fart 15.0
Bruttotonn 44 656
Berths 1 200
Nautiske mil 4 384.6
Forbruk drivstoff (tonn)
Åpen sjø 1 681.2
I havn 95.3
Total 1 776.5
CO2 utslipp 5 235.2
Greenland Sea
Barents Sea
Norwegian Sea
Island
Iceland
Sverige
Sweden
Suomi
Finland
Norge
Norway
Danmark
Denmark
United Kingdom
Ireland
Éire
Deutschland
Germany
Polska
Poland
Беларусь
Belarus
Україна
Ukraine
Österreich
Austria
France
România
Romania
Italia

Cars

- Emissions in 1950: 0.5 Gt CO_2/yr, 5.5 Gt CO_2 in 2010
- Expectation: more than 11 Gt CO_2 by 2050
- Cars becoming more efficient? Very limited evidence



Decarbonization: An Action Framework

"We recognize there is a situation in which industry cannot maintain a business as usual approach in regard to CO_2, there is a need to decarbonize tourism. If climate policy is going to work for tourism, fossil fuels will have to become more expensive. In the longer term, energy intense forms of tourism will become unfeasible. Ignoring climate change will increasingly impose costs for tourism and make certain forms of tourism unfeasible."

OECD, 2017

Policy makers

- define decarbonisation targets for the tourism sector, including aviation and shipping, on supranational (aviation/shipping) and national (accommodation, ground transport) levels;
- introduce a price for carbon, with long-term price signal updated at each Paris Agreement stocktake cycle;
- support research and development of alternative fuels for aviation and other low-carbon technologies germane to emissions reduction in the tourism sector;
- work with tourism industry to establish monitoring systems for tourism sector emissions.

Tourism industry - stakeholders

- measure emissions;
- introduce carbon shadow pricing;
- increase eco-efficiencies to increase climate resilience and reduce emissions;
- use low-carbon fuels, renewable electricity;
- engage in energy co-production (renewables) with destination communities;
- invest in high-quality carbon offsetting;
- explore cross-sectoral partnerships to invest offsetting purchases in actions that decarbonize the tourism sector;
- increase investment in research and development of alternative fuels for aviation.

International tourism organizations

- advocate for low-carbon legislation, support mitigation governance;
- contribute to emissions measurement at global, national, business levels;
- provide advice on deployment of new technologies;
- develop models to assess cost of sector restructuring in a decarbonizing economy;
- share knowledge about best practice carbon disclosure, emissions reduction and climate resilience strategies;
- coordinate development of destination decarbonisation and adaptation strategies.

Iceland

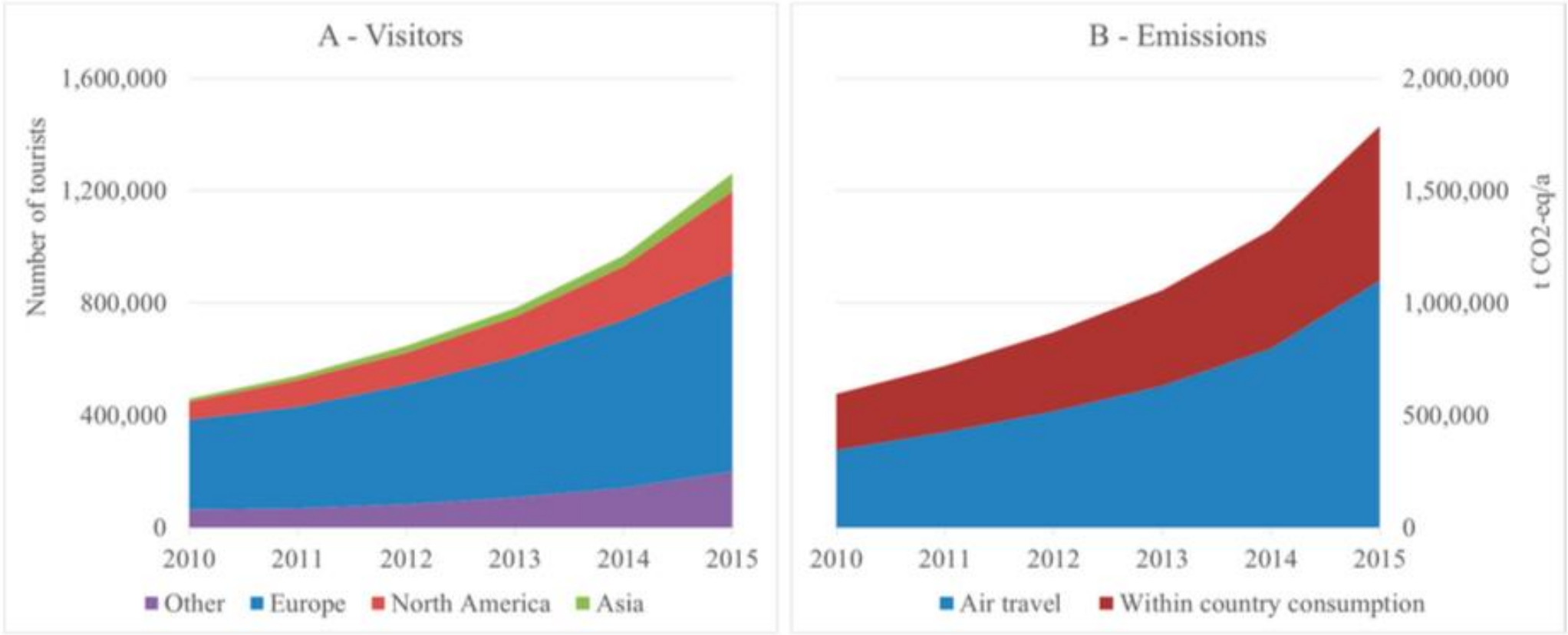
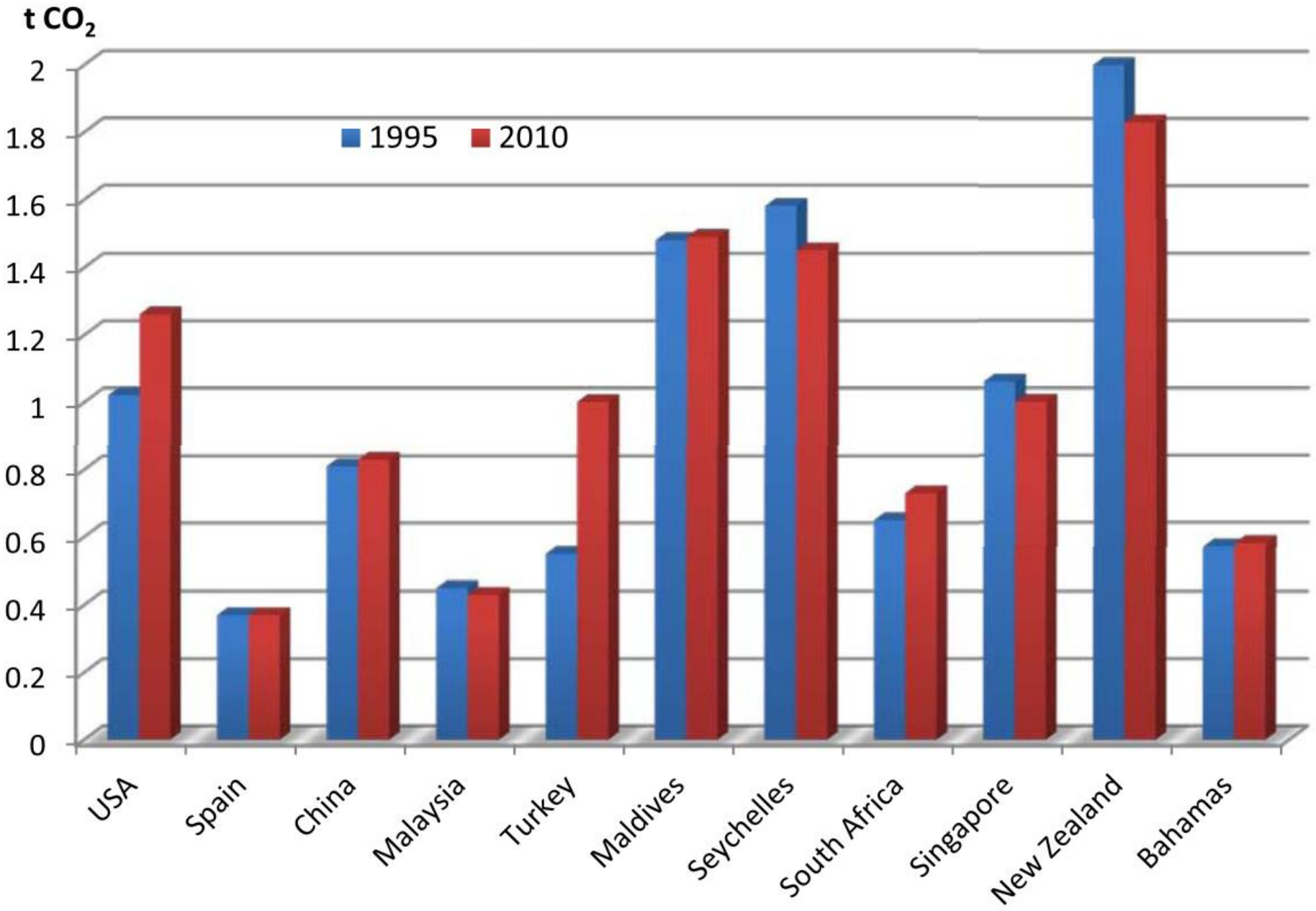


Figure 2. Number of tourists to Iceland in 2010–2015 and the overall GHG emissions: (**A**) number of tourists; (**B**) the annual GHG emissions.

Sharp, H., Grundius, J., & Heinonen, J. (2016). Carbon Footprint of Inbound Tourism to Iceland: A Consumption-Based Life-Cycle Assessment including Direct and Indirect Emissions. *Sustainability*, *8*(11), 1147.



Development of per tourist emission intensity in various destinations, as a result of changes in market composition (1995-2010; arrivals by air)

Gössling, S., Scott, D., and Hall, C.M. 2015. Inter-market variability in CO2 emission-intensities in tourism: Implications for destination marketing and carbon management. Tourism Management 46: 203-212 doi:10.1016/j.tourman.2014.06.021

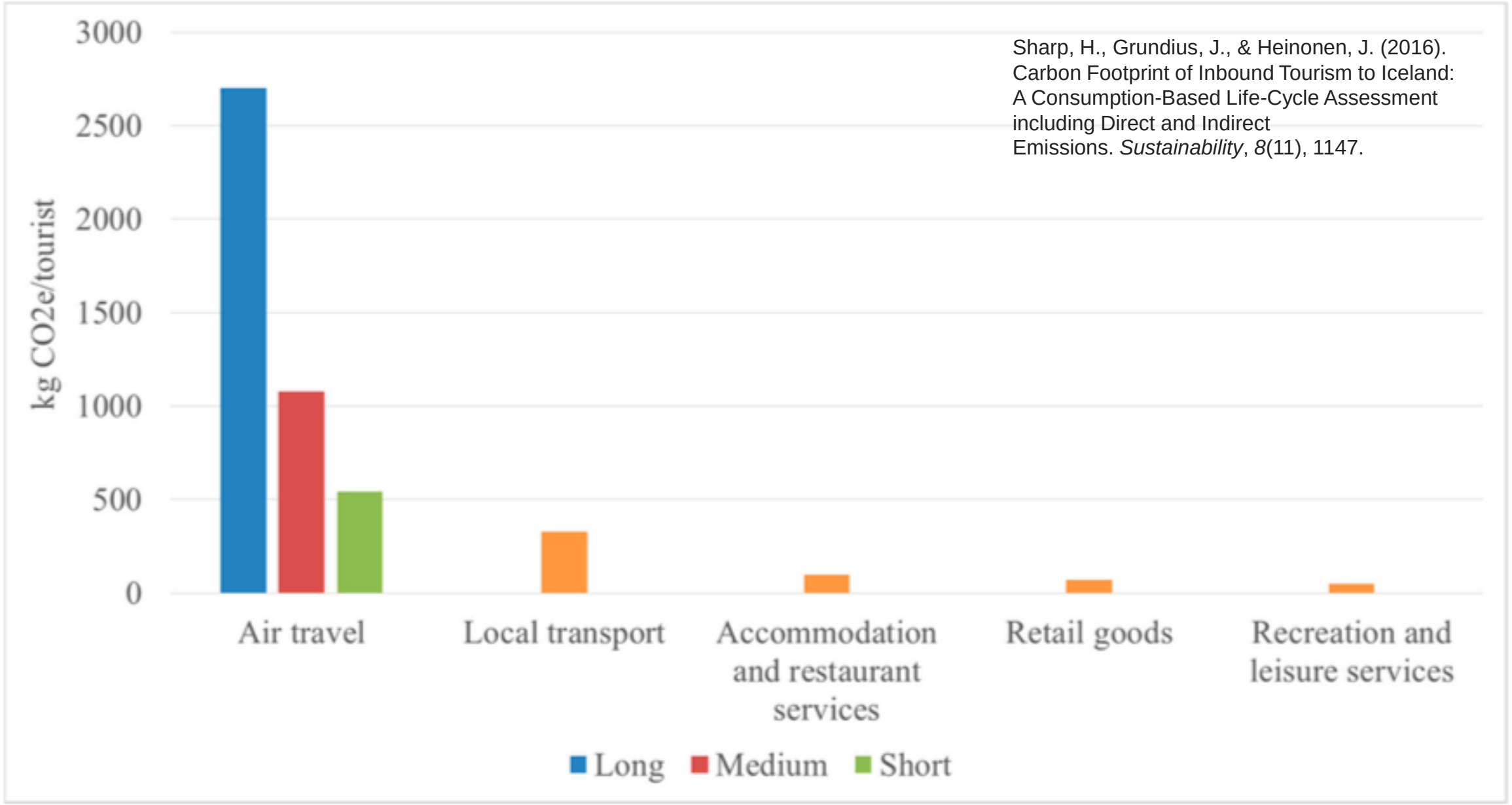


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Figure 1. The distribution of the carbon footprint of the average foreign tourist in Iceland for 2013.

Iceland:

Most important markets

Region	Country	City	Distance (km)
Asia	China	Beijing	7880
	Japan	Tokyo	8790
Europe	Denmark	Kopenhagen	2110
	Finland	Helsinki	2430
	France	Paris	2240
	Germany	Frankfurt	2380
	Italy	Rome	3300
	The Netherlands	Amsterdam	2010
	Norway	Oslo	1740
	Poland	Warsaw	2770
	Russia	Moscow	3300
	Spain	Madrid	2900
	Sweden	Stockholm	2130
	Switzerland	Geneve	2640
	United Kingdom	London	1900
North America	Canada	Toronto	4200
	USA	Chicago	4760
-	Other	-	3220

Sharp, H., Grundius, J., & Heinonen, J. (2016). Carbon Footprint of Inbound Tourism to Iceland: A Consumption-Based Life-Cycle Assessment including Direct and Indirect Emissions. *Sustainability*, *8*(11), 1147.

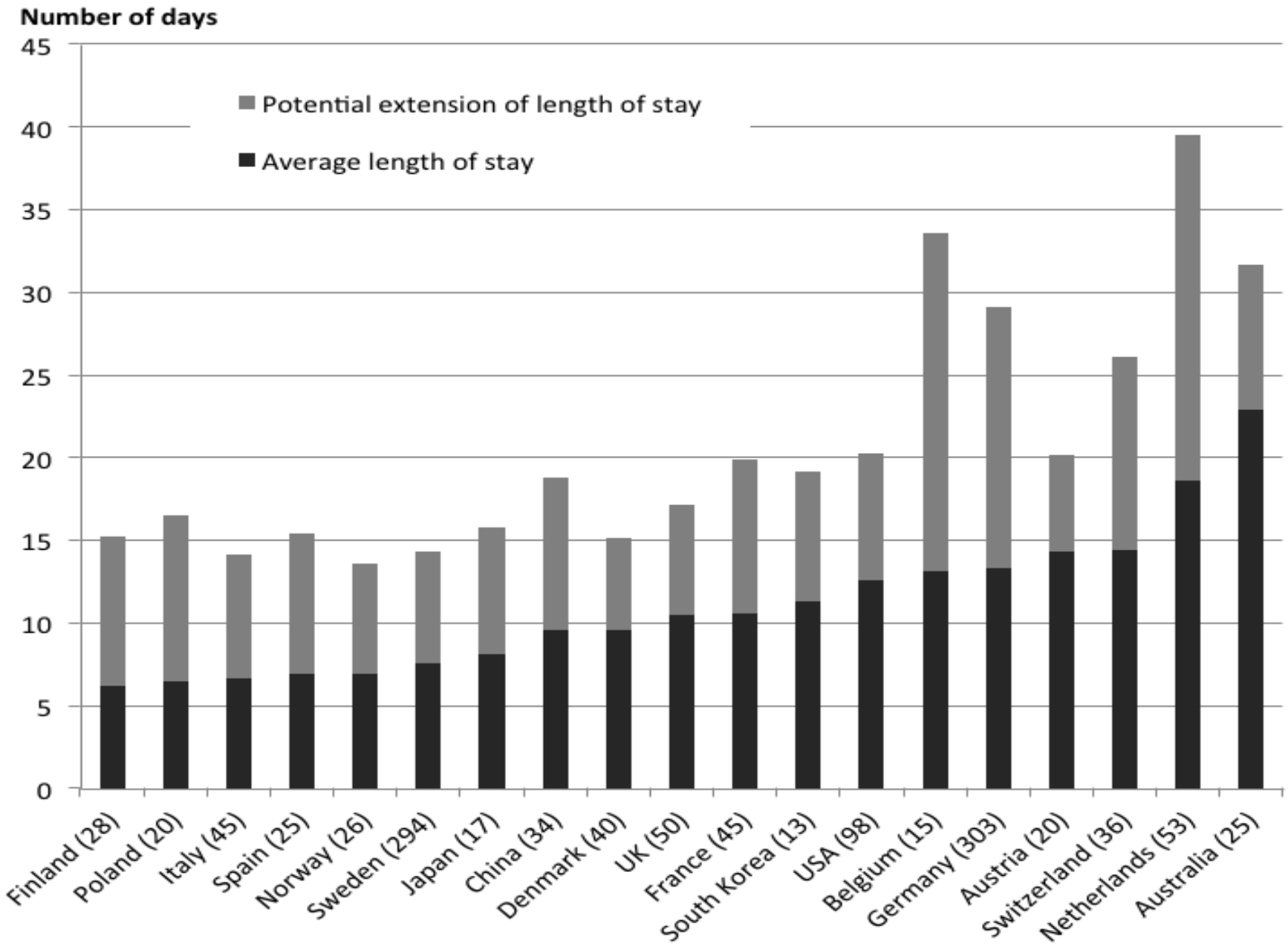
As a destination…

- Do you want to continue to maximize?
- Where will this lead you?
- Can you imagine to think differently, in terms of optimization?

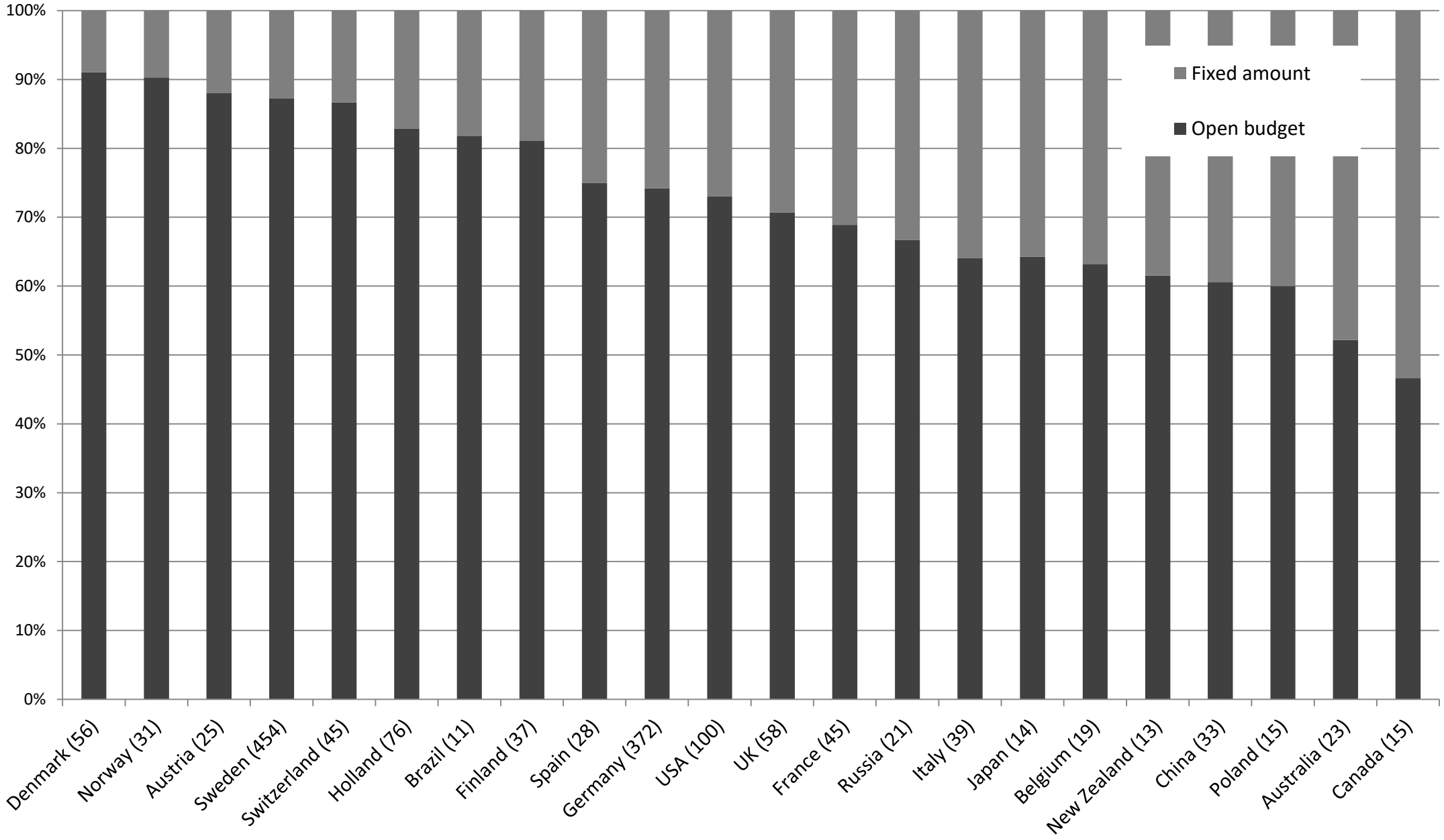

NEWS

Tourists Find Geysir and Glacial Lagoon Overcrowded

BY PÁLL STEFÁNSSON | SOCIETY | March 24, 2015 16:54 Updated: March 24, 2015 16:59



Gössling, S., Ring, A., Dwyer, L., Andersson, A.-C. and C.M. Hall. 2015. Optimizing or maximizing? A challenge to sustainable tourism. Journal of Sustainable Tourism, http://dx.doi.org/10.1080/09669582.2015.1085869



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Introduction of an APD

- Follows initiatives in UK, Germany, Norway, France, Sweden
- Will have an insignificant impact on tourism
- Is reflective of potentially very large WTP (Swedish study)
- Will be internationally recognized, bring the world on track to decarbonisation
- €50/passenger would yield about €60 million per year (6.5 billion ISK)
- Could finance low-carbon society, show way ahead