


# Tourism and climate change - challenges and opportunities

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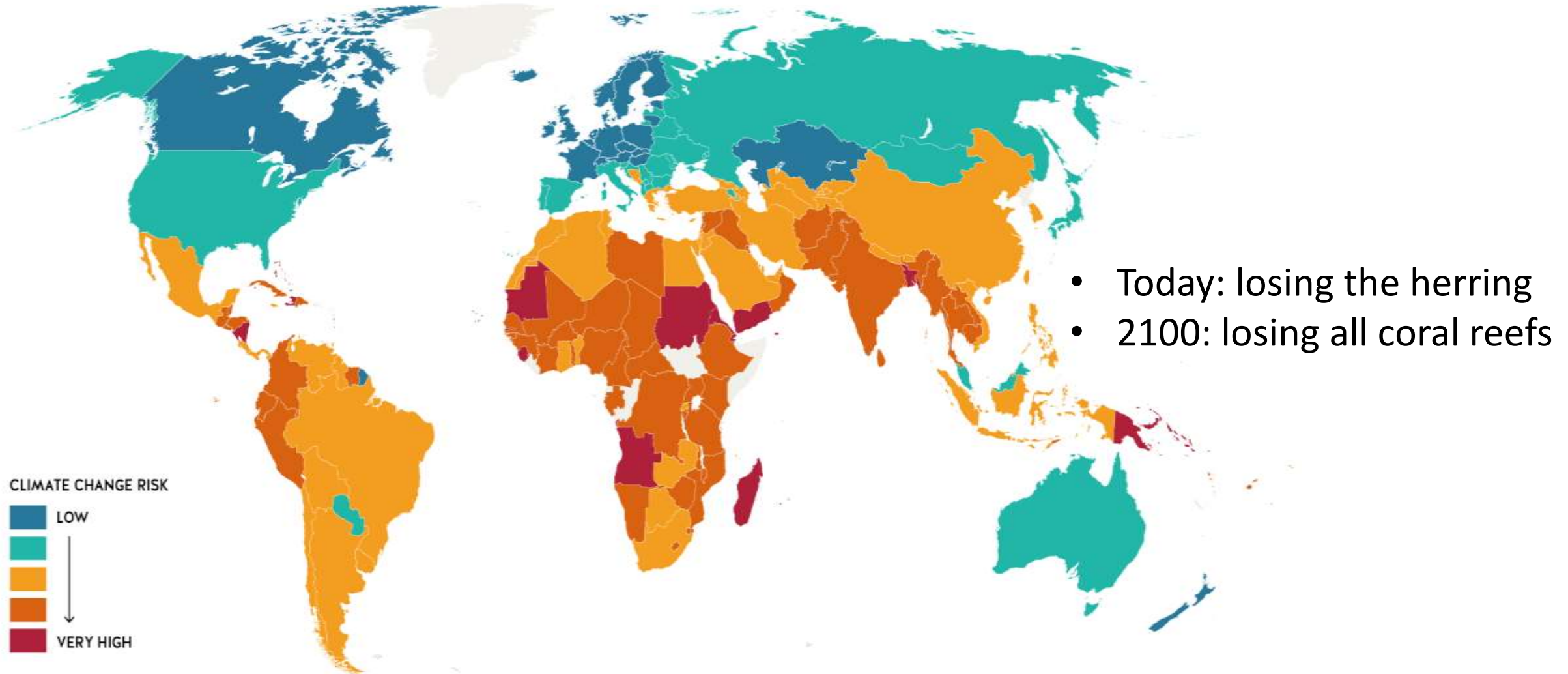
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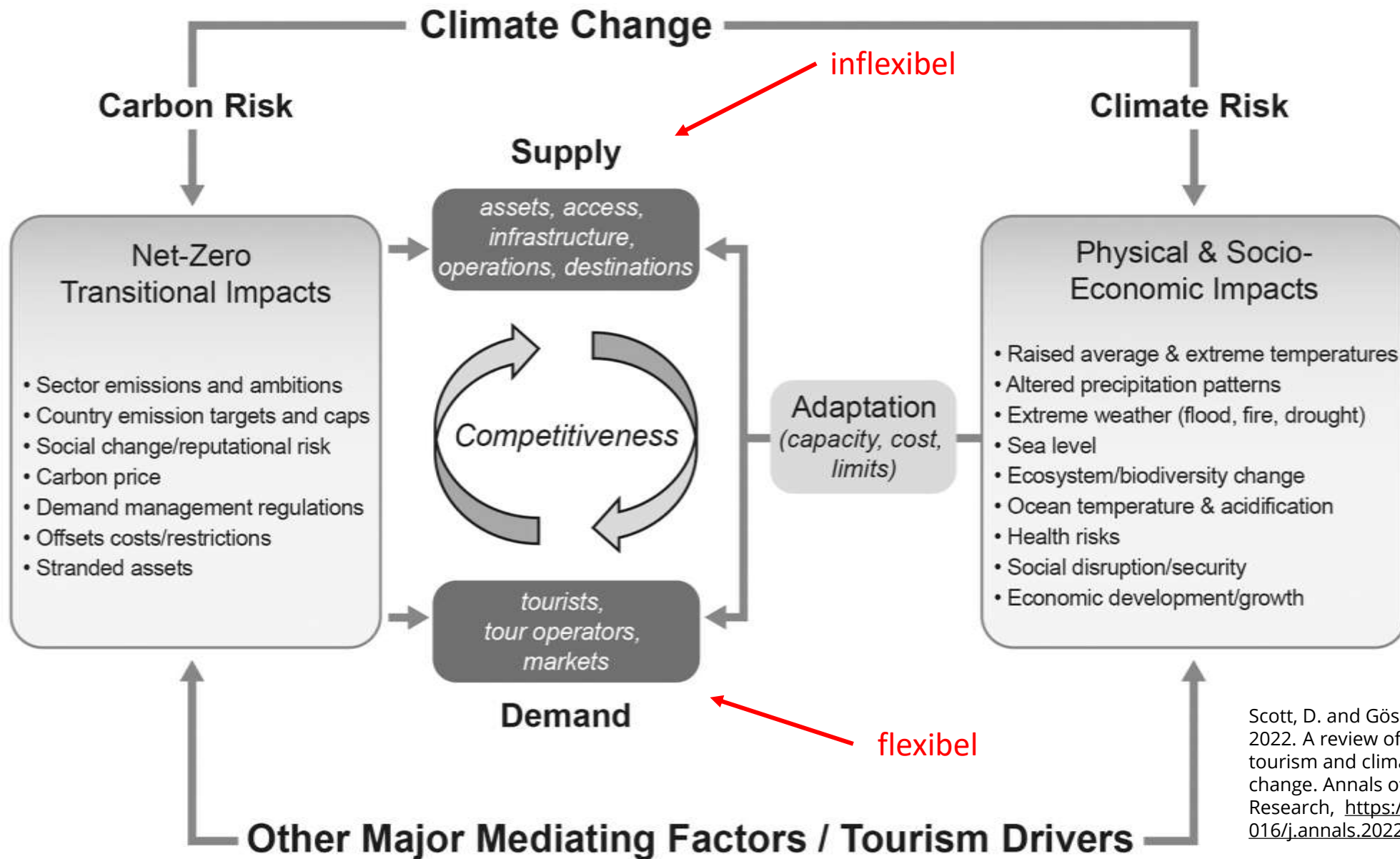
# The future is here.



- Destination Squeeze (in time and space)
- Consumer demand responses: so far, booked is paid!

# Climate change risks for tourism

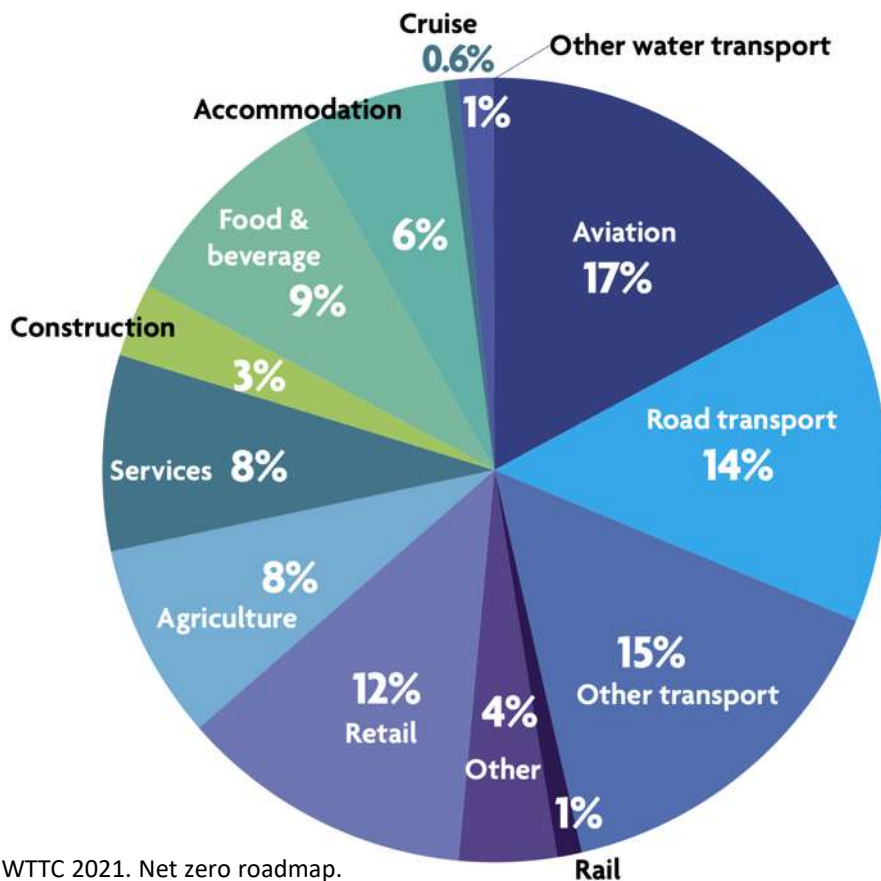




Scott, D. and Gössling, S. 2022. A review of research into tourism and climate change. *Annals of Tourism Research*, <https://doi.org/10.1016/j.annals.2022.103409>

# Tourism-related global warming

Exhibit 3: Split of tourism-related GHG emissions by industry (pre-pandemic)<sup>21</sup>



WTTC 2021. Net zero roadmap.

Exhibit 4: 2019 carbon emissions estimates per industry<sup>22</sup>

Industry	Carbon Emissions (million tCO <sub>2</sub> e)
Accommodation	324
Tour Operators	N/A
Aviation	915
Cruises	27
OTAs	<1
Travel Agencies	N/A

Note: Estimates exclude Scope 3 emissions. Aviation emissions reported in tCO<sub>2</sub>.

- According to WTTC: 5.3 GtCO<sub>2</sub> in 2019
- Aviation: + 2 GtCO<sub>2</sub>e
- ⇒ 7 GtCO<sub>2</sub>e in 2019
- ⇒ sector will emit equivalent of 200 Gt CO<sub>2</sub>e to 2050 (steady state scenario)
- ⇒ main issue is air transport

Gössling, S., Balas, M., Mayer, M. and Sun, Y.-Y. 2023. A review of tourism and climate change mitigation: The scales, scopes, stakeholders and strategies of carbon management. *Tourism Management* 95, <https://doi.org/10.1016/j.tourman.2022.104681>



1 hour of flight



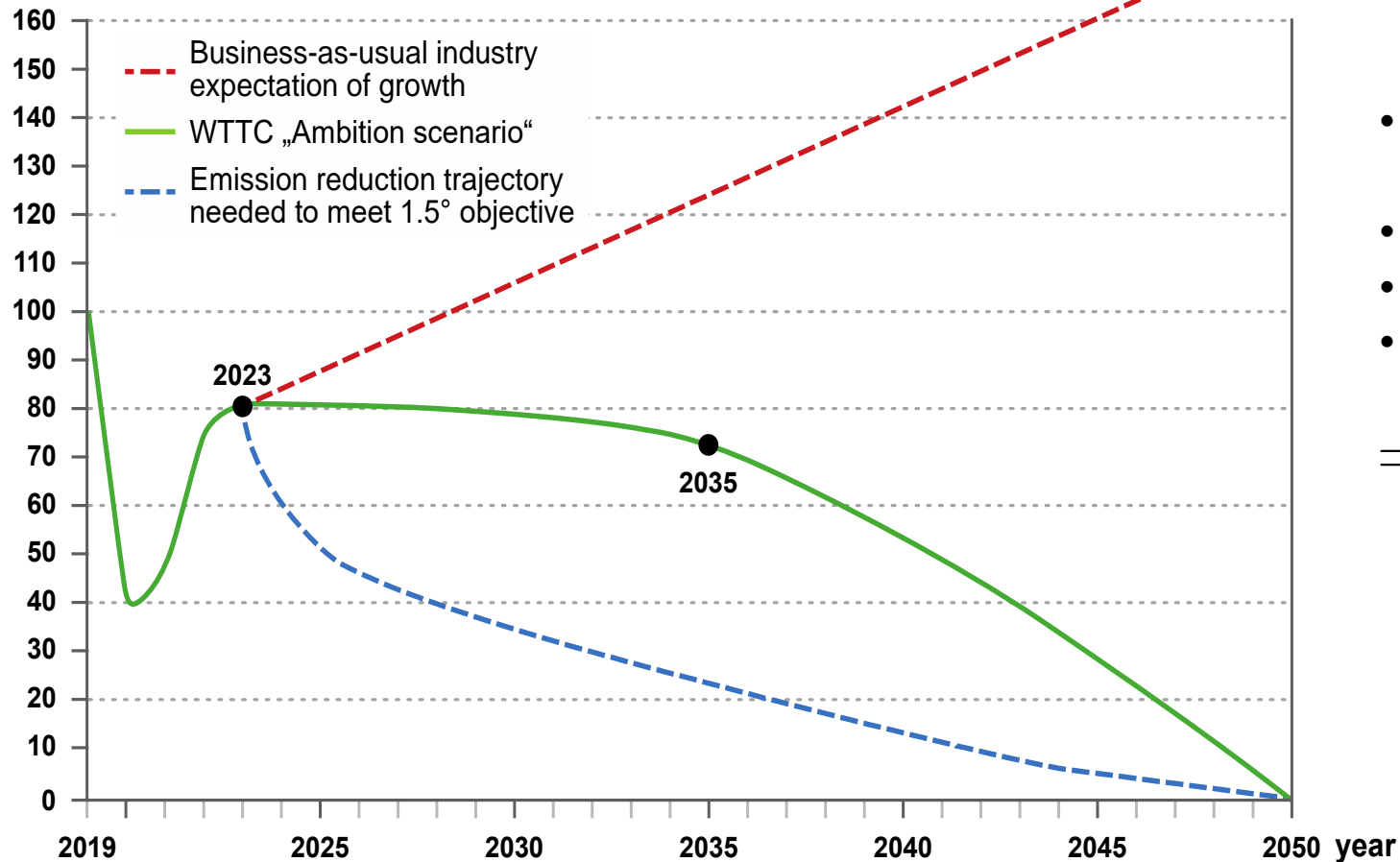
9 hours of flight



\*Global fuel use in commercial aviation divided by global RPK, 2018. This corresponds to 0.034 kg of fuel/pkm or 34.4 l per hour at a speed of 800 km/h. Buckets have a volume of 10 l.

# Are we on track to net-zero?

Absolute Emissions Index (2019 = 100)

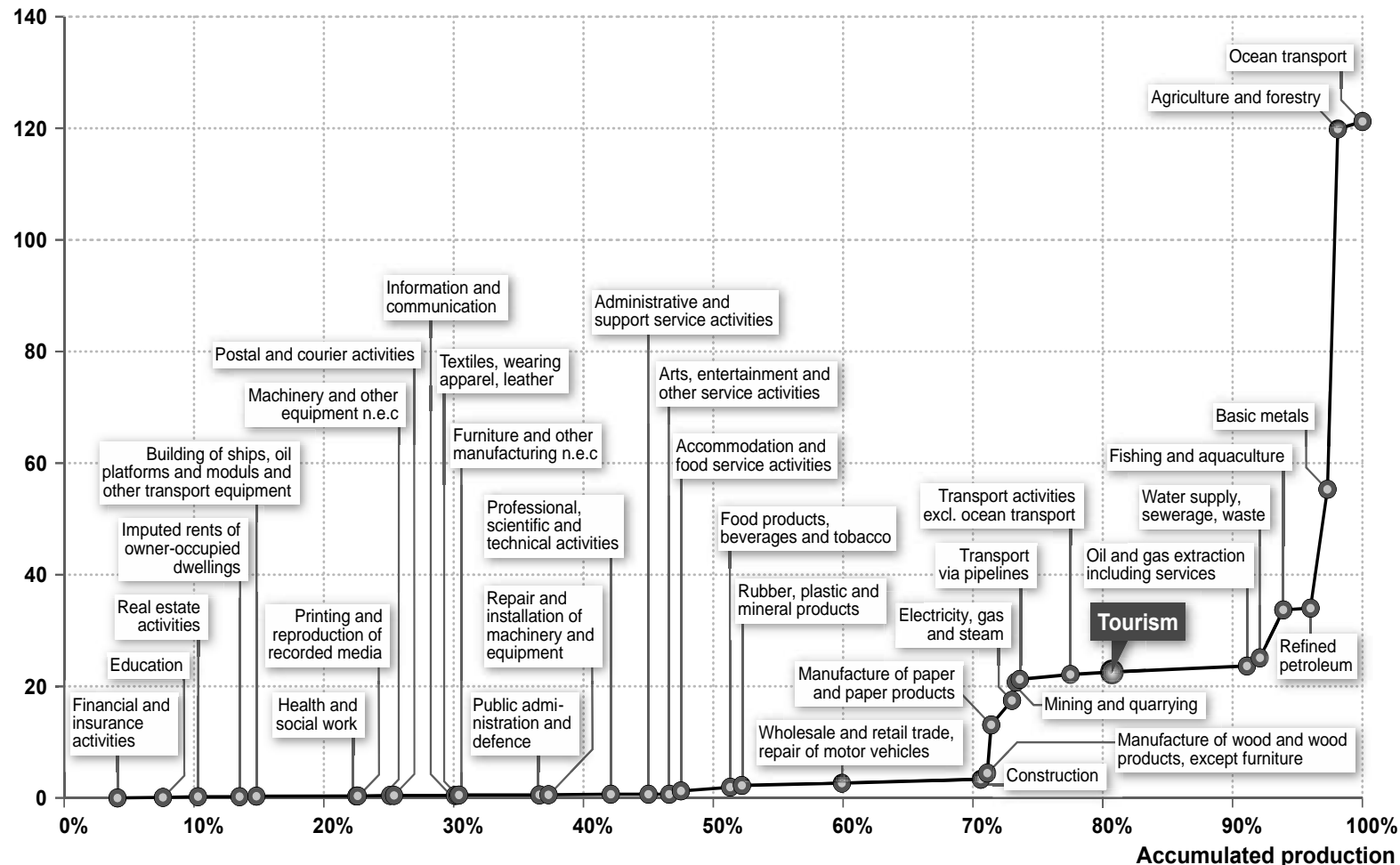


- All economic sectors have to be net-zero by 2050;
- Carbon Budgets:
- Remaining to 1.5°C (>50%): 510 GtCO<sub>2</sub>.
- Remaining to 2.0°C (>67%): 890 GtCO<sub>2</sub>.

⇒ If tourism emits 200 GtCO<sub>2</sub>e to 2050, this corresponds to 22% - 40% of global budget.

# The importance of tourism: Example Norway

Emission coefficient (tonnes CO<sub>2</sub>/million NOK)



- Tourism contributed **3.6% of GDP** and **8.8% of emissions** related to Norwegian economic activity in 2019
- Norwegian **GDP-related emissions declined by 0.2% per year** between 2007-2019
- **Direct tourism emissions increased by 3.2% per year** between 2007-2019
- **Aviation generation 17% of national revenue**, and **75% of direct tourism emissions**
- **Aviation is responsible for 80% of the net emission increase in tourism**
- Norway will have to **decarbonize 30 times faster to be net-zero by 2050**



# Key insights mitigation

- We need to rethink tourism – in radical ways
- Without massive change in air transport, no net-zero
- *Transport is everybody's responsibility*

For example:

- NTOs: stop long-haul marketing
- Destinations: replace volume growth with optimization models
- Hotel chains: stop pushing capacity into the market
- All accommodations: make offers related to sustainable transport
- All: push back at AirBnB

# NTOs & DMOs: Meaningful marketing strategies?

AUSLANDSMARKETING

## WELTWEITES NETZ FÜR MARKETING UND VERTRIEB

Stand 2020



Deutschland  
the Answer



Long-haul marketing does not make sense for European NTOs!

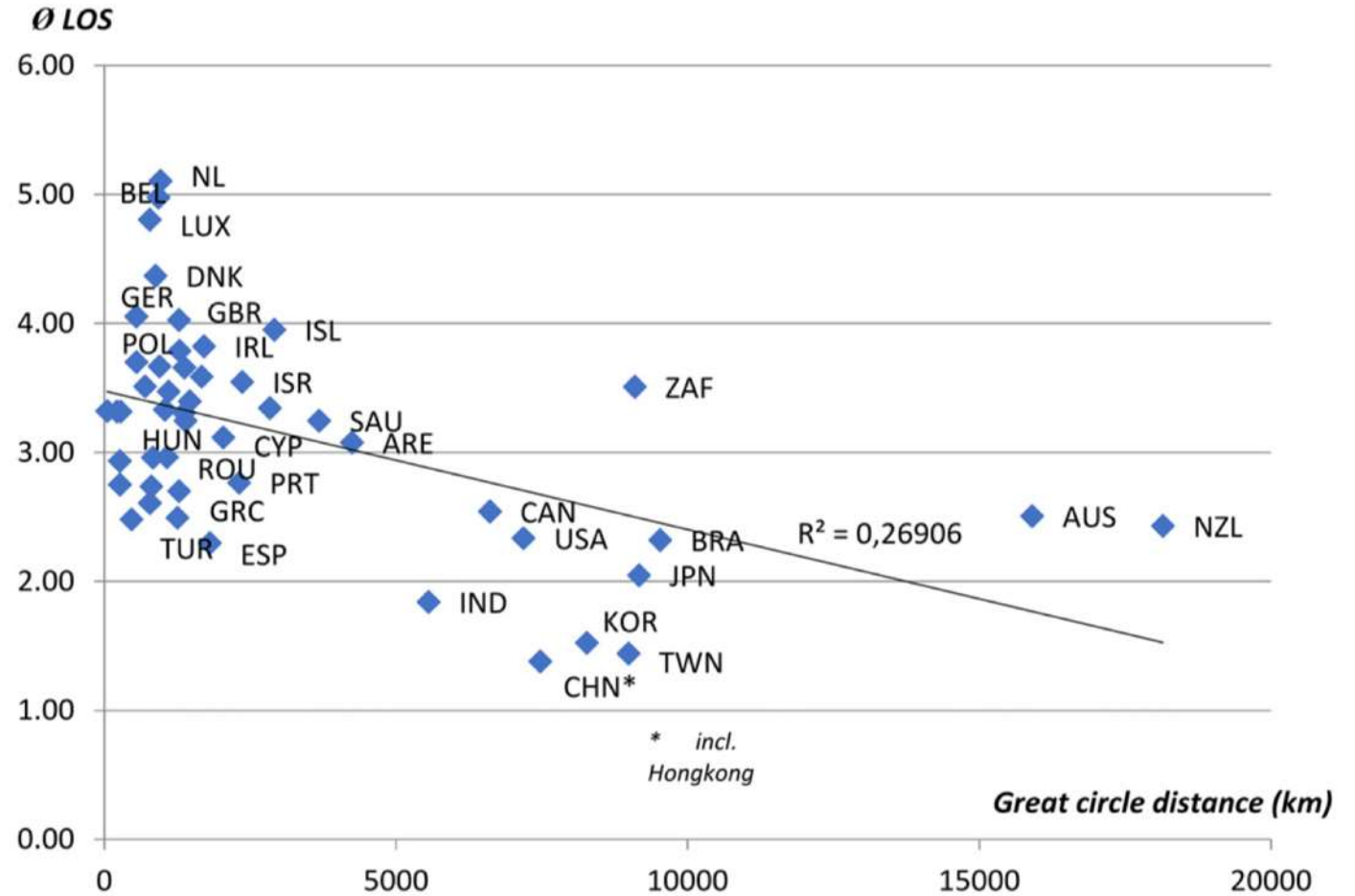


Figure 4. Length of stay, international tourist arrivals in Austria (2015). Source: Statistics Austria 2017.

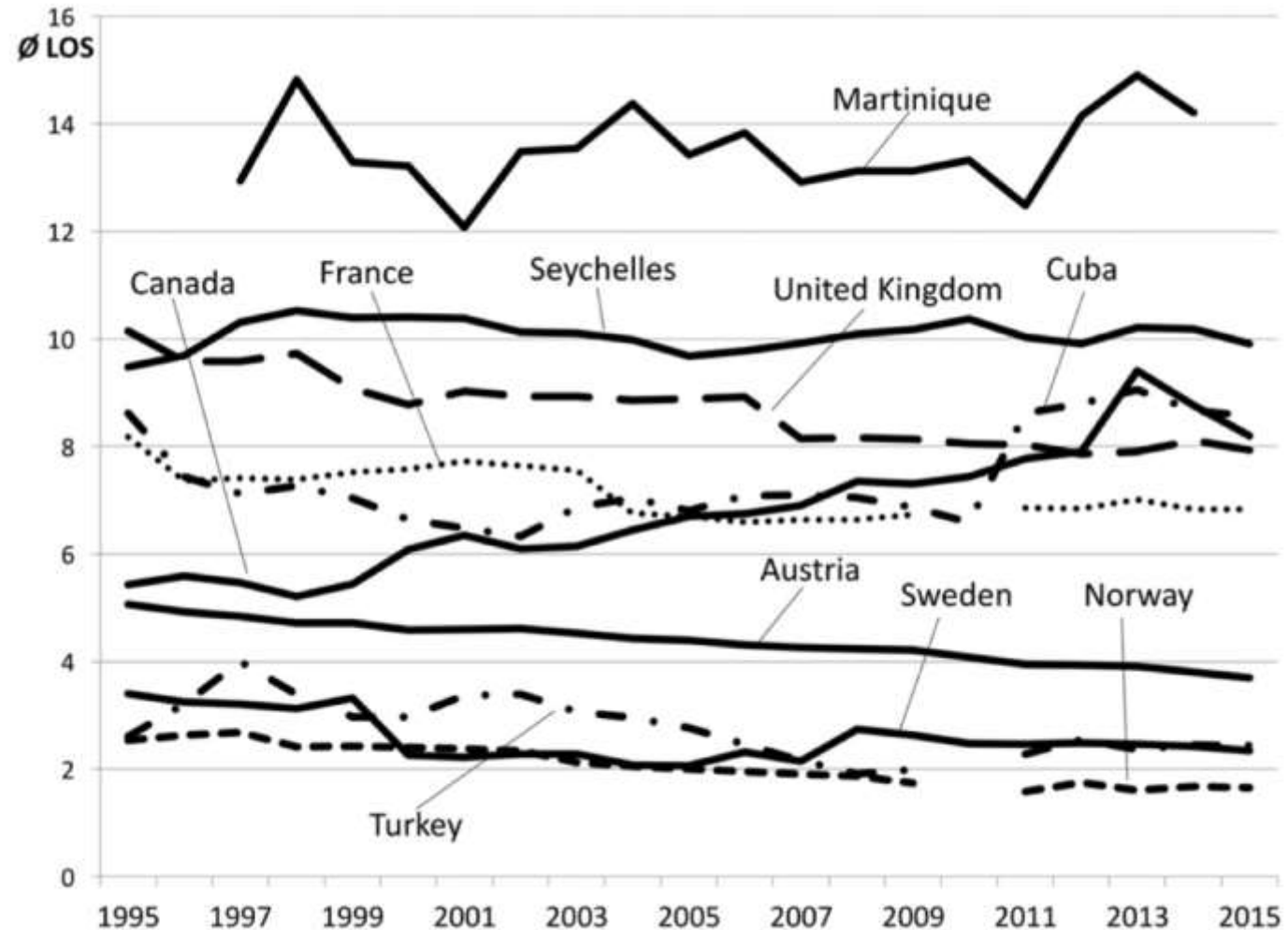
Gössling, S., Scott, D., & Hall, C. M. (2018). Global trends in length of stay: implications for destination management and climate change. *Journal of Sustainable Tourism*, 26(12), 2087-2101.

# Average length of stay

- Declined by 14% over period 1995-2015
- Does however not decline in all destinations

## *Example Austria:*

To generate 100 m bed nights, 19.6 m arrivals necessary in 1995, and 27 m in 2015.



Gössling, S., Scott, D., & Hall, C. M. (2018). Global trends in length of stay: implications for destination management and climate change. *Journal of Sustainable Tourism*, 26(12), 2087-2101.

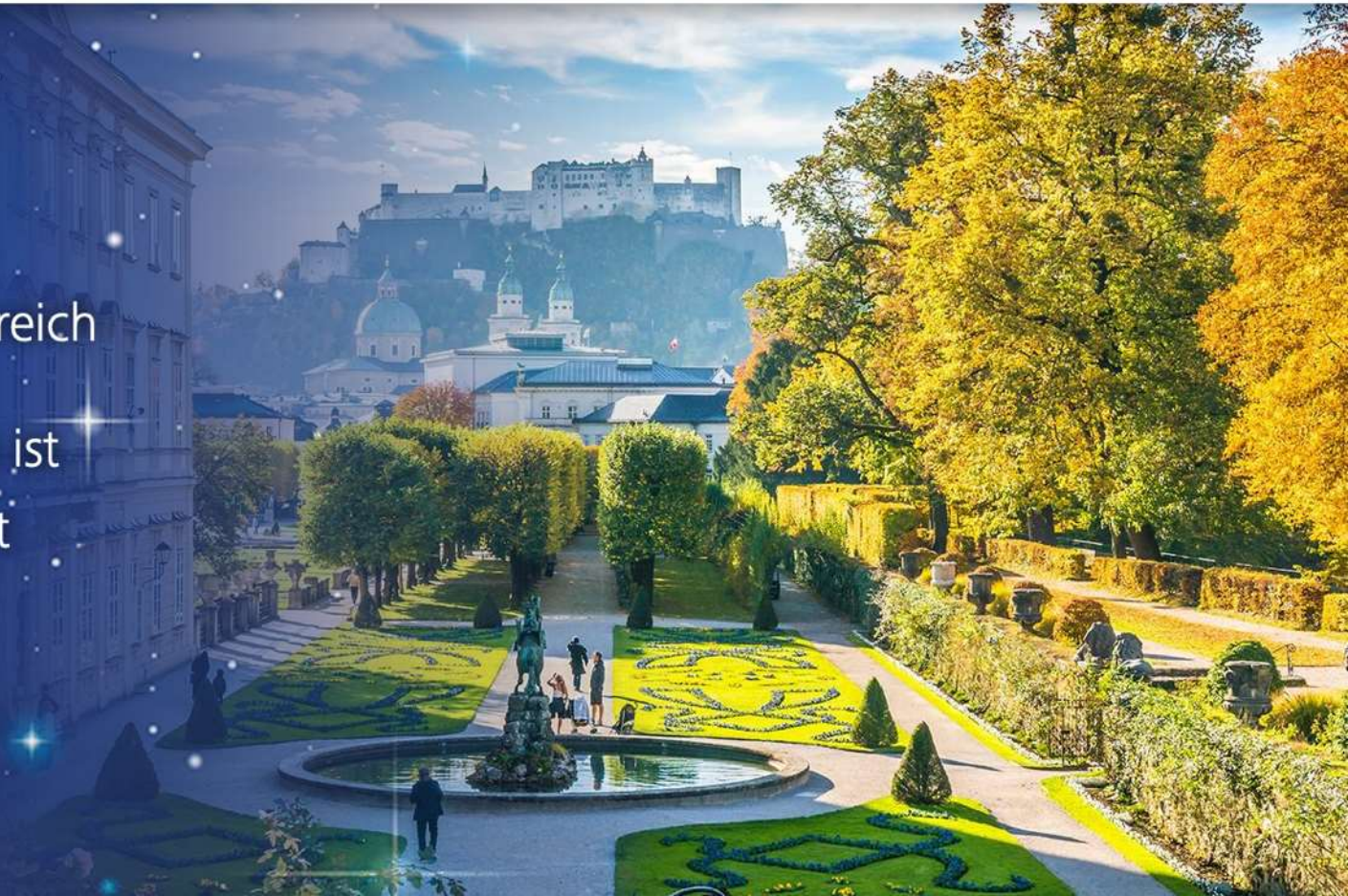
# Public transport: few leaders...



## Österreich

Nur kein Stress: entspannt durch Österreich

Das kleine Land mit den hohen Bergen ist bekannt für seine Gemütlichkeit. Die ist aber längst nicht nur in den Wiener Kaffeehäusern im Osten...

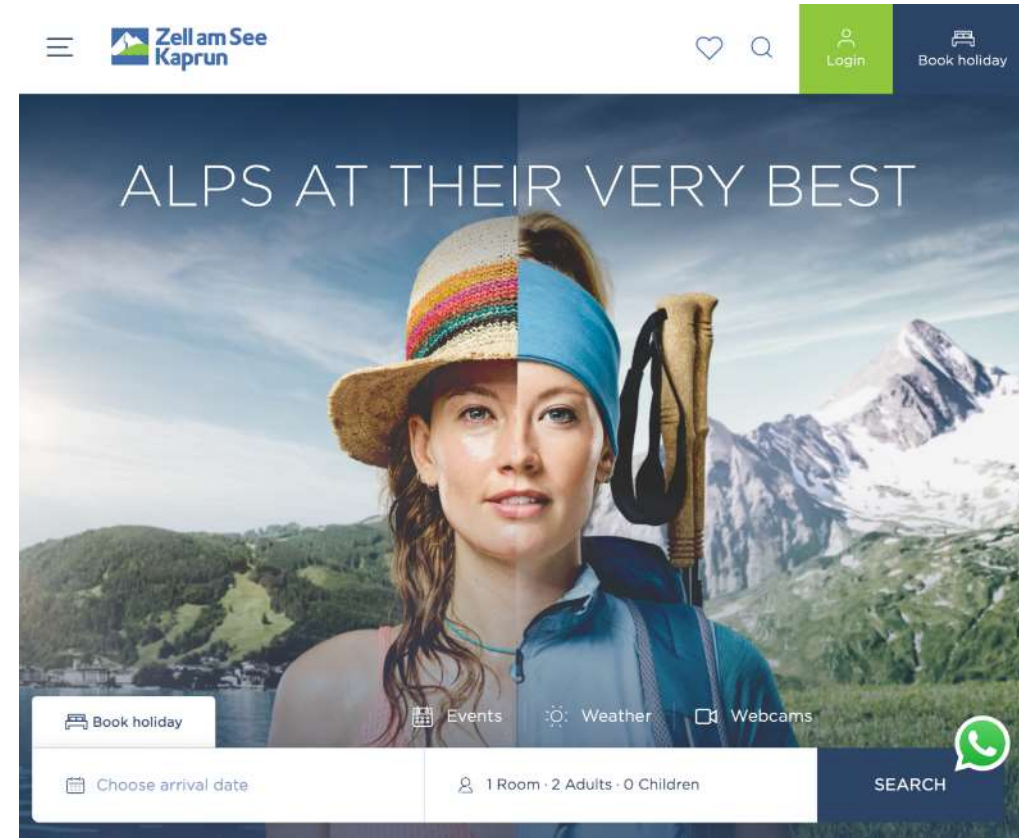


# Recommendations: National Tourism Organizations

- Seize activities in long-haul markets
- Optimize market mix
- Introduce departure taxes based on distance bands
- Adopt greenhouse gas inventory on an EEIO basis, monitor with annual updates
- Roll out national certification scheme (example Turkey: nationwide!)
- Develop national reservation platforms
- Provide guidelines and support to SMEs
- Finance sustainability managers for DMOs
- Build capacity

# Destination Marketing Organizations (DMOs)

- Prioritize close markets
- Encourage arrival by public transport
- Optimize length-of-stay, leakage, sales
- Build local value chains
- Vegan & vegetarian food service offers
- Marketing & communication campaigns
- Destination carbon inventory
- Novel and innovative destination projects



# Accommodation

- Adopt net-zero commitments
- Get eco-certified
- Switch to renewable power
- Install solar panels
- Incentivize longer stays
- Involve staff
- Reduce food waste
- Phase out aluminium and giant prawns
- Communicate pro-environmental action
- Encourage direct bookings
- ...





Hotel

Test Hotel - Michelle

DASHBOARD PRELIMINARY VERSION 3.0.0 FILE CALCULATE AND SAVE

Auto-Calculate: Off

Results Last Updated: 1 minute ago

Embodied Energy Savings

4,248.13 GJ

Utility Cost Savings in USD

38,285 USD/Year

Utility Cost Savings in Local Currency

0.57 Million ZAR/Year

Base Case EPI

246.00 kWh/m<sup>2</sup>/year

Improved Case EPI

193.00 kWh/m<sup>2</sup>/year

Design Energy 21.63% Water 37.66% Materials 25.99% Operations

HIDE RESULTS

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- EEM01\* Window-to-Wall Ratio: 32%  
Base Case Value: 40%  
WWR (%)
- EEM02 Reflective Roof: Solar Reflectance Index 85  
Base Case Value: 45  
SRI
- EEM03 Reflective Exterior Walls: Solar Reflectance Index 85  
Base Case Value: 45  
SRI
- EEM04 External Shading Devices: Annual Average Shading Factor (AASF) 0.08
- EEM05\* Insulation of Roof: U-value 0.19 W/m<sup>2</sup>-K
- EEM06\* Insulation of Ground/Raised Floor Slab: U-Value 0.35 W/m<sup>2</sup>-K
- EEM07 Green Roof
- EEM08\* Insulation of Exterior Walls: U-Value 0.45 W/m<sup>2</sup>-K  
Base Case Value: 1.67 W/m<sup>2</sup>-K  
U-Value (W/...

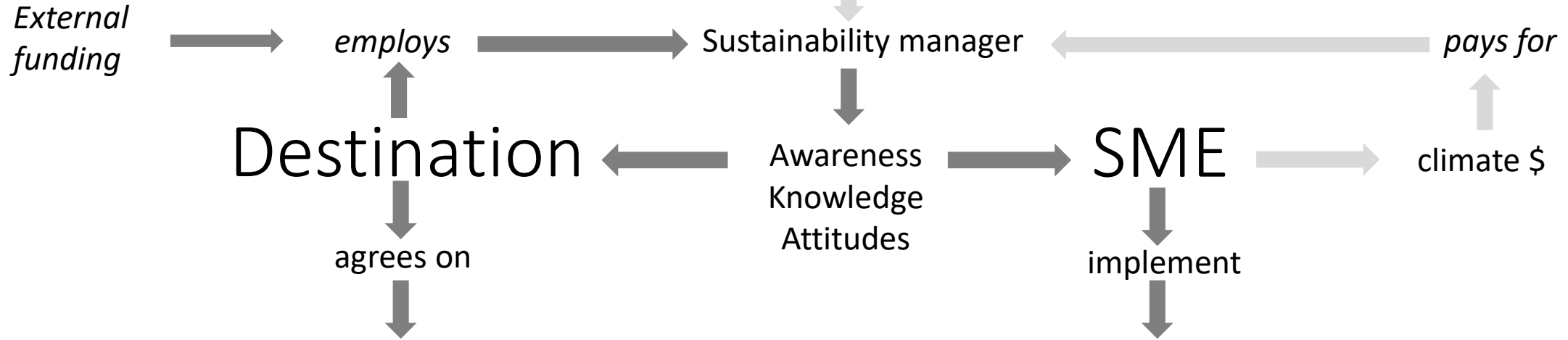
21.63% Meets EDGE Energy Standard



Hide the Carbon Emissions/Offset

Net Carbon Emissions: 1,268.6 tCO <sub>2</sub> e/Year	Base Case	Improved Case	Offsite Offset
1,100			

- Policies for push & pull
- Communication strategies
  - Legislation and regulation
  - Tools for SMEs, funding



*Recommendations for action*

- Prioritize close markets
- Encourage arrival by public transport
- Optimize length-of-stay, leakage, sales
- Build local value chains
- Vegan & vegetarian food service offers
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*Commitments and actions*

- Certification (GSTC or higher)
- Staff involvement
- Green power sourcing
- Solar power
- Local purchases
- Food improvements
- Communication with guests
- Guest WTP (e.g. climate \$ per guest night)