Climate change and tourism

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Climate change and tourism

Climate change

Tourism

Tourism and climate change research

- Impacts of climate change on the economic activity (Economics)
- Adaptation measures (Administration)
- Impacts of climate change on the resources (Geography)
- Impacts of climate change on the social perception (Sociology / Psychology)

Climate change and tourism

"No destination should assume they will not be affected by climate change"

UNWTO-UNEP-WMO (2008).

Climate change impact on tourism means impact on **tourism activity** and on **tourism destinations** (this will be the framework of this speech).

Climate change and tourism

The importance of climate for tourism

Climate is a principal resource for tourism.

It determines the suitability of locations for a wide range of tourist activities.

It is a principal driver of seasonality in global tourism demand.

It has an important influence on operating costs (heating/cooling, snowmaking, water supply, insurance costs, etc.)

Climate change impacts on tourism

I. Direct climatic impacts

- Possible geographic and seasonal redistribution of visitor flows.
- Increased tourism infrastructure damage.
- Higher adaptation and operating expenses.

Climate change impacts on tourism

II. Indirect environmental change impacts

Different environmental changes will affect tourism to varying degrees, but largely negatively:

- Changes in water availability.
- Biodiversity loss and reduced landscape aesthetics.
- Increased natural hazards.
- Coastal erosion and inundation.
- Damage to infrastructure.
- Increasing incidence of vector-borne diseases.

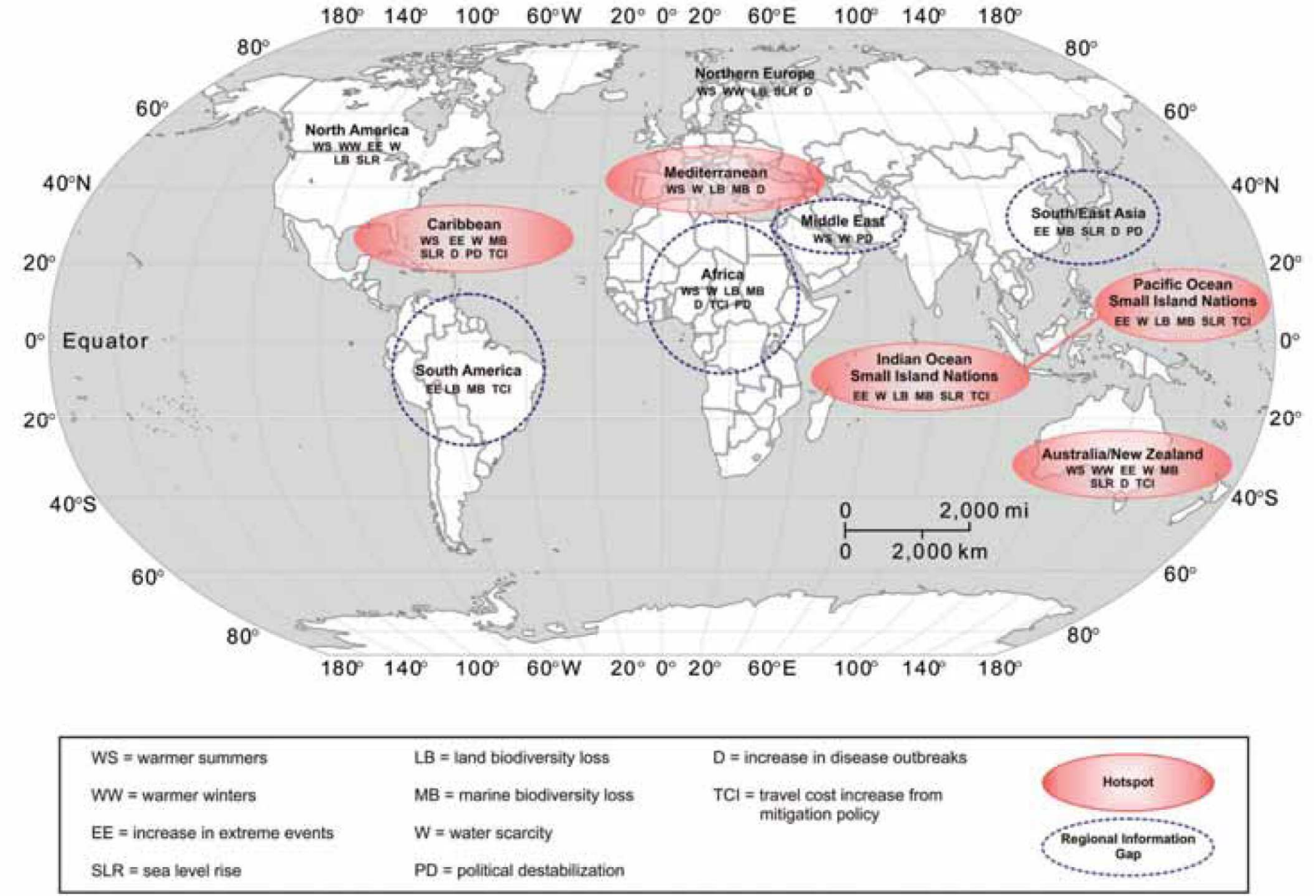
Tourism

+ vulnerability to climate change 

± exposure to climate change 

(depending on areas) 

Climate change vulnerability **hotspots** in the tourism sector



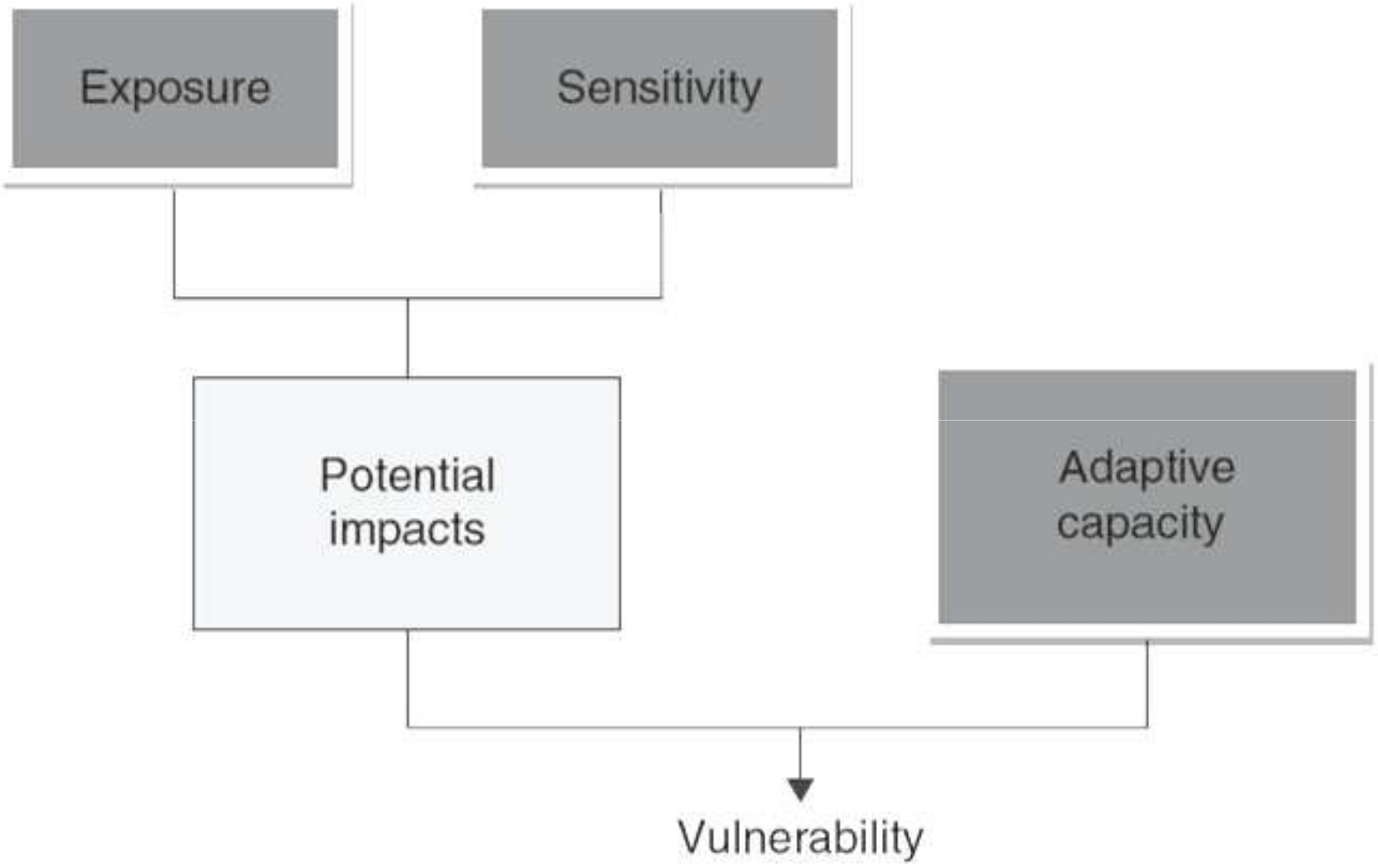
Source: UNWTO-UNEP-WMO (2008).

Table 4: Relative level of tourism specific climate change knowledge and estimated impact of climate change on tourism by region.

Region	Estimated impact of climate change on tourism	Relative level of tourism specific climate change knowledge
Africa	Moderately-strongly negative	Extremely poor
Asia	Weakly-moderately negative	Extremely poor
Australia & New Zealand	Moderately-strongly negative	Poor-Moderate (high in Great Barrier Reef)
Europe	Weakly-moderately negative	Moderate (high in alpine areas)
Latin America	Weakly-moderately negative	Poor
North America	Weakly negative	Moderate (high in coastal and ski areas)
Polar regions	Weakly negative – weakly positive	Poor
Small islands	Strongly negative	Moderate (highest with respect to impacts on reef systems)

Sources: Hall 2008 derived from Gössling & Hall 2006a; IPCC 2007b; UNWTO-UNEP-WMO 2008.

Vulnerability and its components



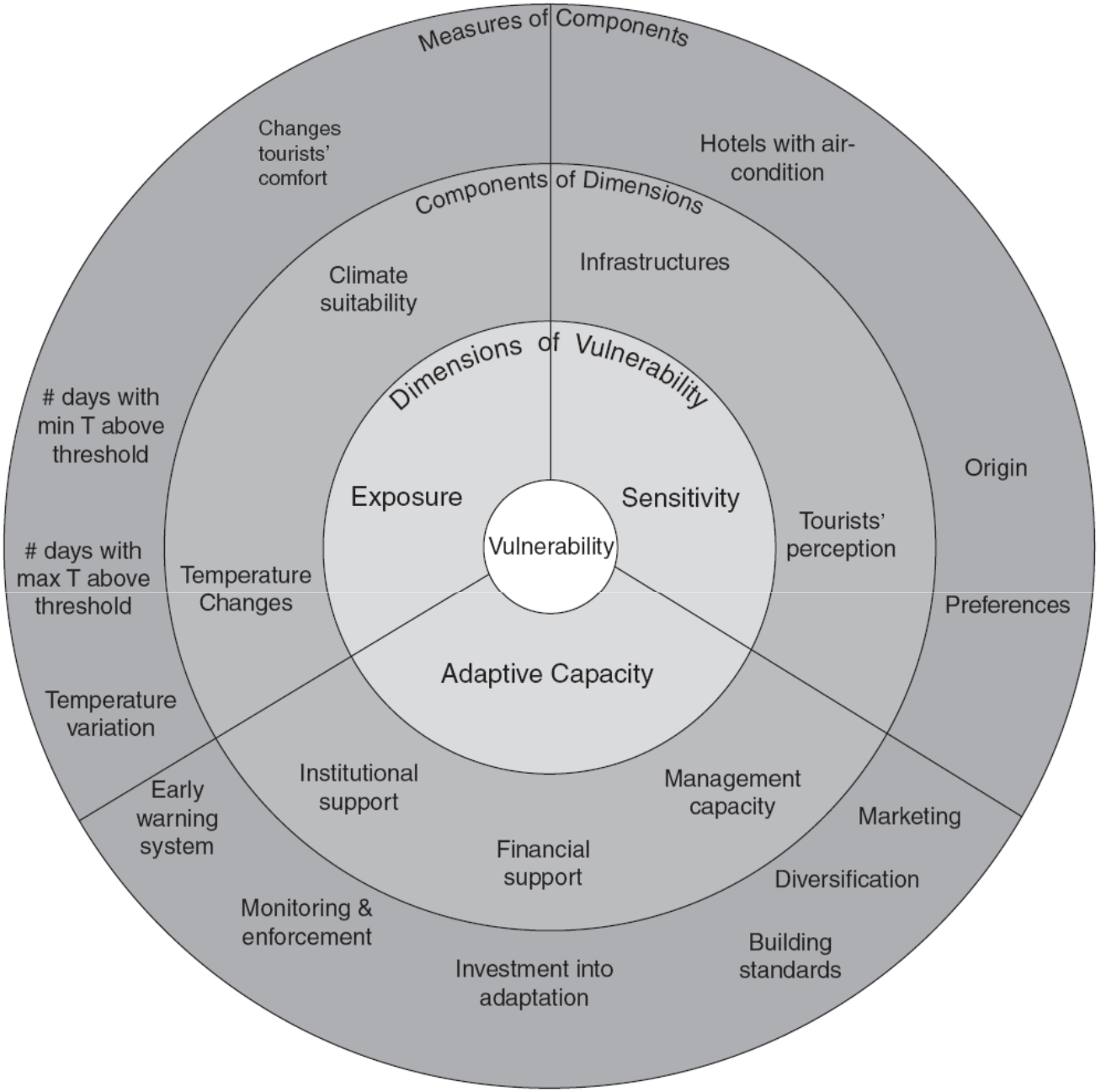
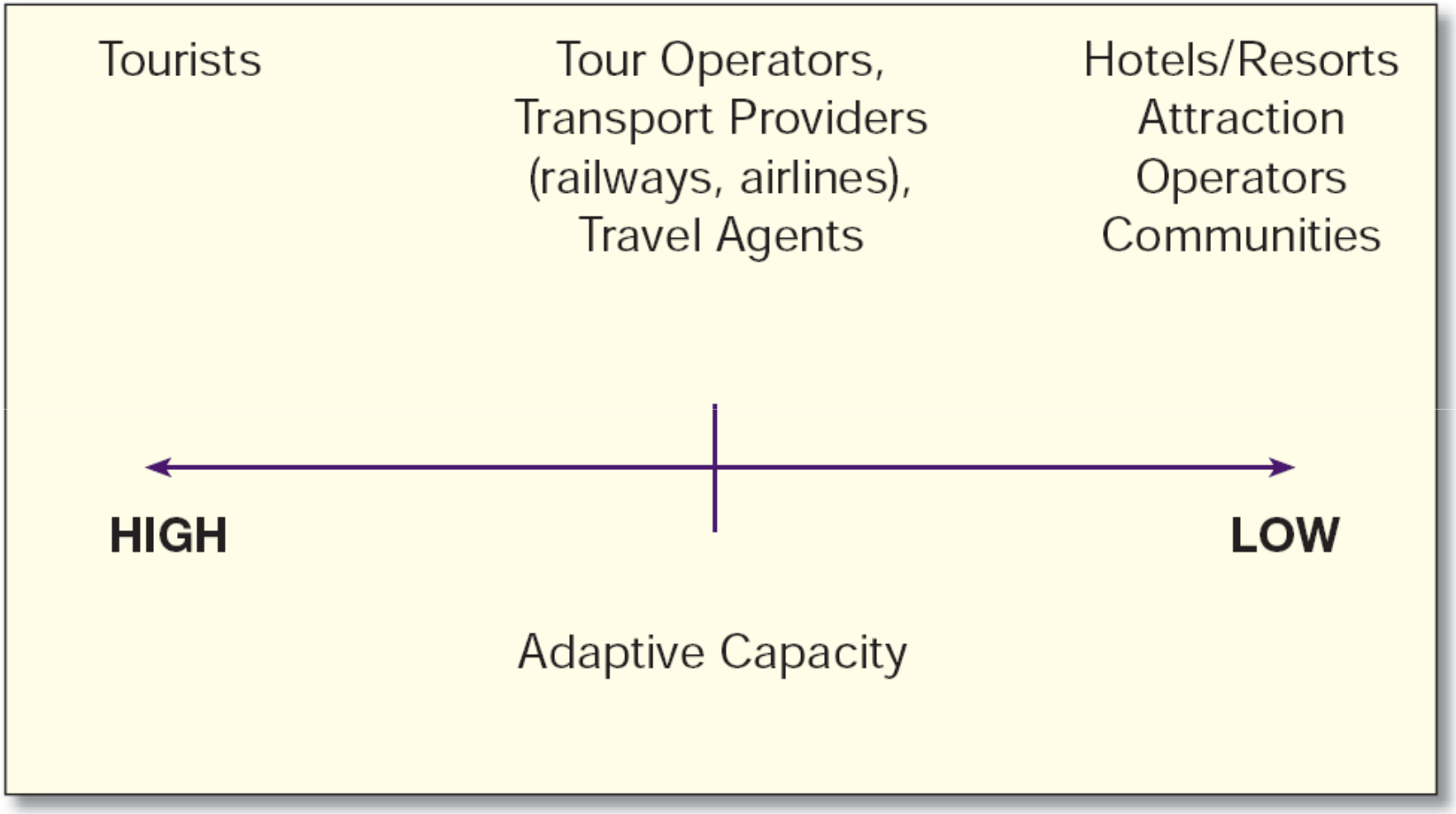


Fig. 16.5. Hypothetical operationalization of the tourists' comfort-temperatures changes subsystem (adapted from Moreno and Becken, 2009).

Relative Adaptive Capacity of Major Tourism Sub-sectors



Source: UNWTO-UNEP-WMO 2008

Climate change in the Mediterranean sea and coastal areas

Relationship between climate and tourism (Besancenot, 1990)	Climate change trends in the Mediterranean	
Enjoyment	More sunny days	
Comfort	More heat, more athmospheric extreme events	
Security	More uncertainty	

Climate change in the Mediterranean sea and coastal areas

Main implications of climate change on the coastal tourism

- Tourists' comfort may change negatively bringing about changes in the demand (less atractive destinations).
- Increase of drought risk may bring about water availability problems (water shortages and conflicts).
- Beach and coastal erosion may bring about large efforts to restore / mantain beaches and shorelines.

Effects on tourism demand: Predictions of future climate change impacts on international travel flows from Western and Northern Europe to the Mediterranean region (I)

ORIGIN MARKET CLIMATE CHANGE	DESTINATION REGION CLIMATE CHANGE
- Much warmer, wetter winters - Warmer, drier summers - More "reliable" summers	- Warmer, wetter winters - Much warmer, drier summers - Changes more marked in Eastern Mediterranean - Increased heat index - More days above 40°C - More arid landscape - Small tidal range means greater sea level rise impact

Source: Travel Research International

Effects on tourism demand: Predictions of future climate change impacts on international travel flows from Western and Northern Europe to the Mediterranean region (II)

IMPLICATIONS FOR DESTINATION REGION	POSSIBLE MARKET REACTIONS
- Greater drought and fire risk - Increased water shortages - Greater personal heat stress - Beach degradation and habitat loss due to sea level rises - Vulnerability to more tropical diseases (eg malaria) - More flash floods - Poor urban air quality in cities	*Overwhelmingly a leisure travel market* - Improvement of Northern European summers triggers more domestic holidays - Decreased incentive for Mediterranean summer holidays - Increased incentive for shoulder month Mediterranean holidays - Increased incentive for southerners to go north

Source: Travel Research International

Climate change in the Mediterranean sea and coastal areas

Evidences

+ sea water temperature (and time with warm temperature)

↓

+ bathing season ✓

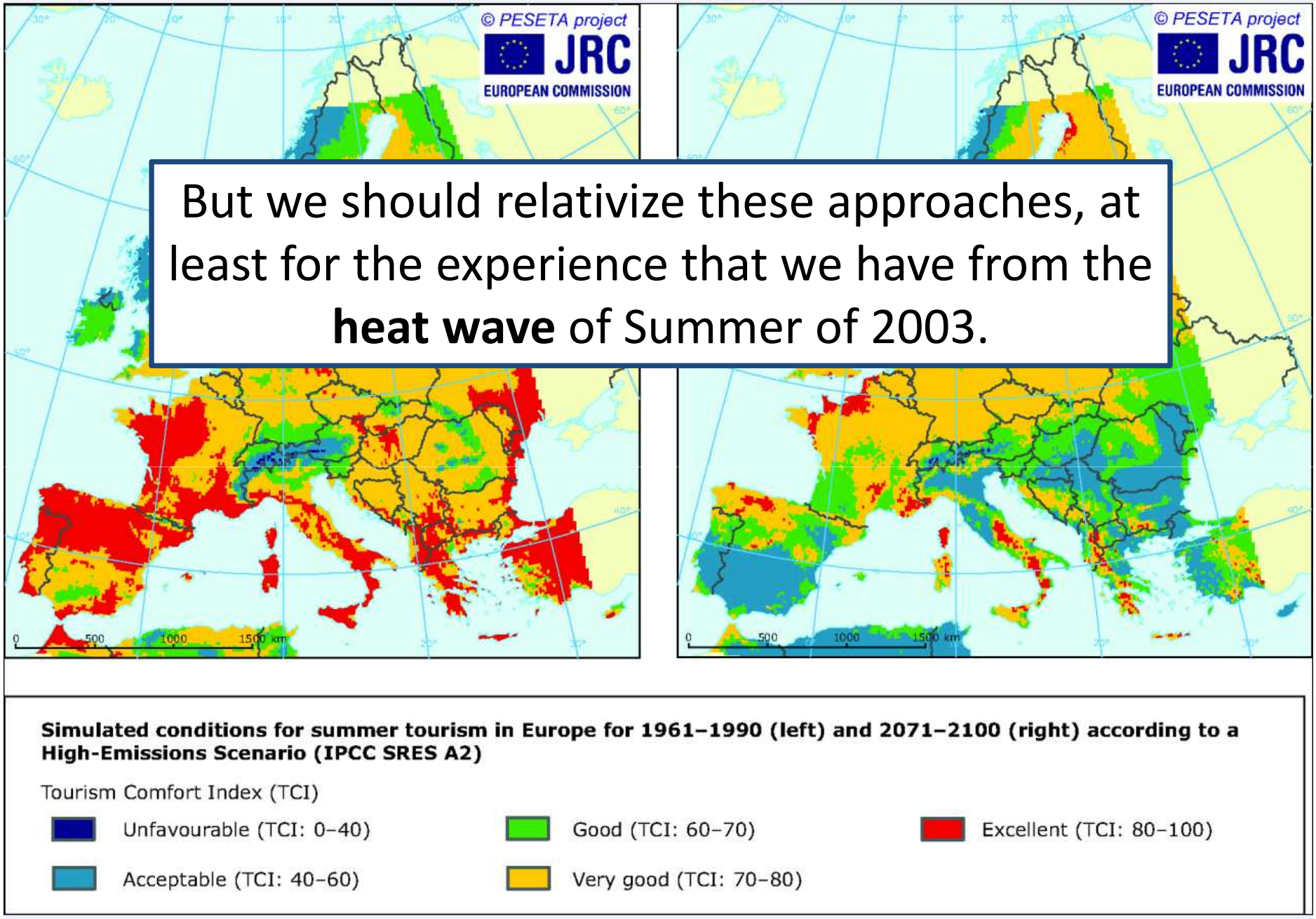
Climate change in the Mediterranean sea and coastal areas

Evidences

+ minimum temperatures

↓

- Night comfort in summer ✗



But we should relativize these approaches, at least for the experience that we have from the **heat wave** of Summer of 2003.

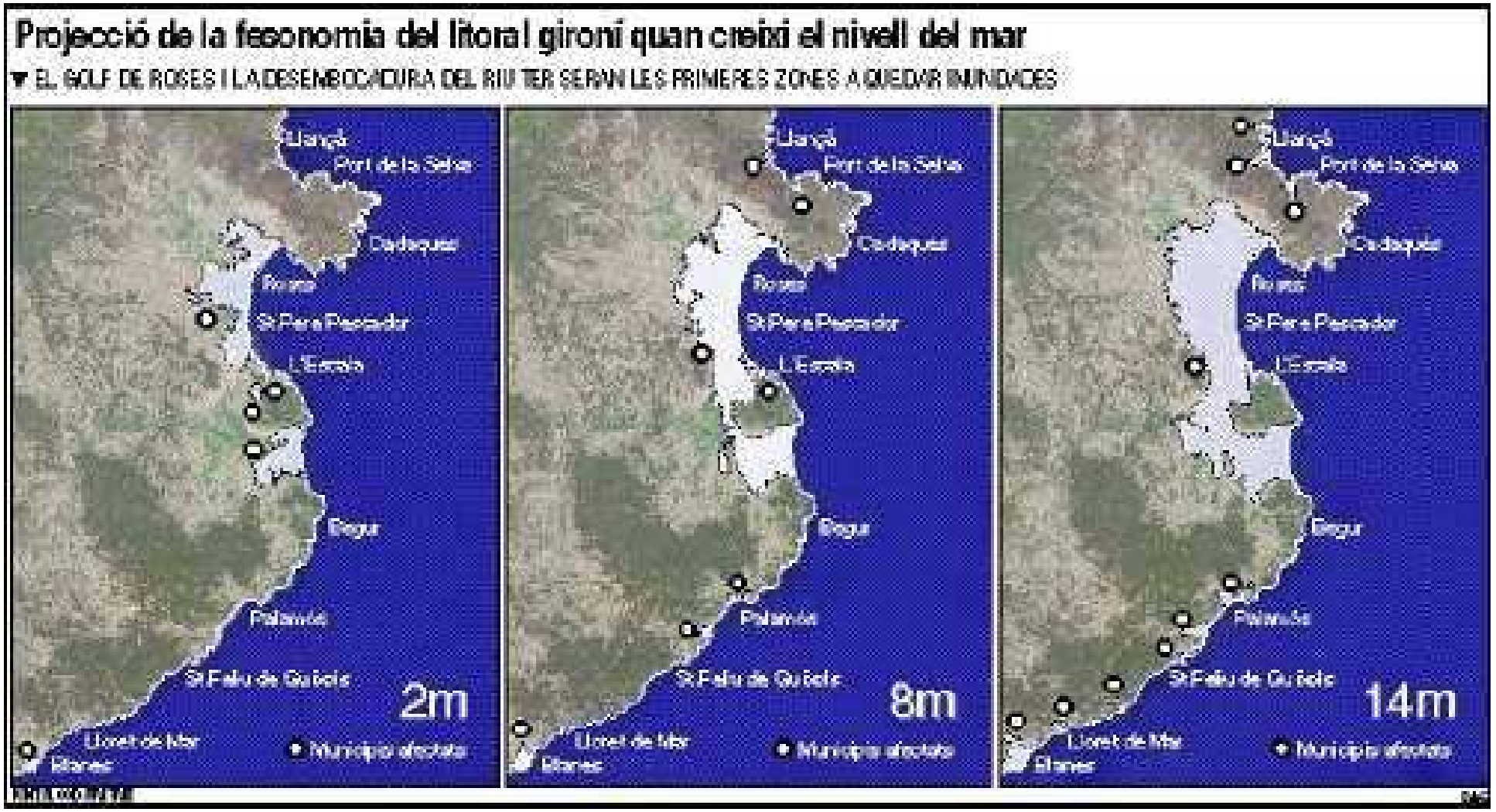
Source: European Environment Agency (2008).

Table 2.2. Major weaknesses of current models in predicting travel flows under climate change forecasts.

- Validity and structure of statistical databases, including international and domestic statistics
- Assumption of temperature assumed as the most important weather parameter
- Importance of other weather parameters (rain, storms, humidity, hours of sunshine, air pollution) largely unknown
- Role of weather extremes unknown
- Role of information in decision-making unclear
- Role of non-climatic parameters in influencing travel flows unclear (e.g. perception of security and political instability, risk perceptions, destination perception)
- Existence of fuzzy-variables problematic (terrorism, war, epidemics, natural disasters)
- Assumed linearity of change in behaviour unrealistic
- Future costs of transport and availability of tourism infrastructure uncertain
- Future levels of personal disposable income (economic budget) and availability of leisure time (time budget) that are allocated to travel uncertain

From: Gössling and Hall, 2006b, c, d; Hall, 2008a.

Effects of sea level rise in the Costa Brava



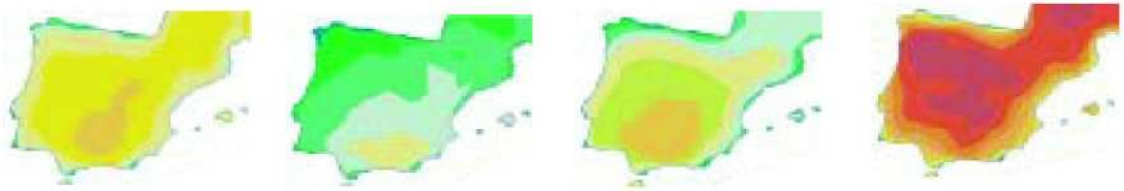
Cambio climático y subida del nivel del mar

CAMBIO DE LAS TEMPERATURAS MÁXIMAS DIARIAS

En grados centígrados

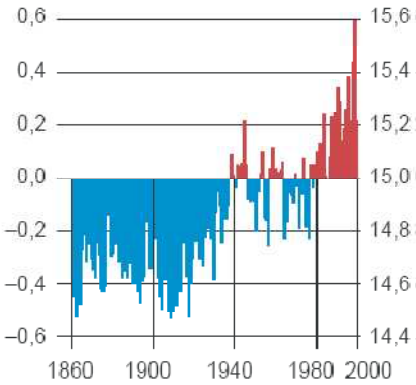
Previsión para el periodo 2070-2100, respecto al clima actual (1960-1990)

+2° +3° +4° +5° +6° +7° +8°



TEMPERATURA MEDIA DE LA SUPERFICIE

En grados centígrados



PÉRDIDA DE PLAYA POR EL CAMBIO CLIMÁTICO

Estimaciones para el año 2050

Subida del nivel del mar
Retroceso de playa
Oleaje
Viento

Costa cantábrica y Canarias

↑	+35 cm
	−15 m
	Aumento
	Aumento (del oeste)

Golfo de Cádiz

↑	+10 cm
	−10 m
	Disminución
	Disminución (de poniente)

Mediterráneo

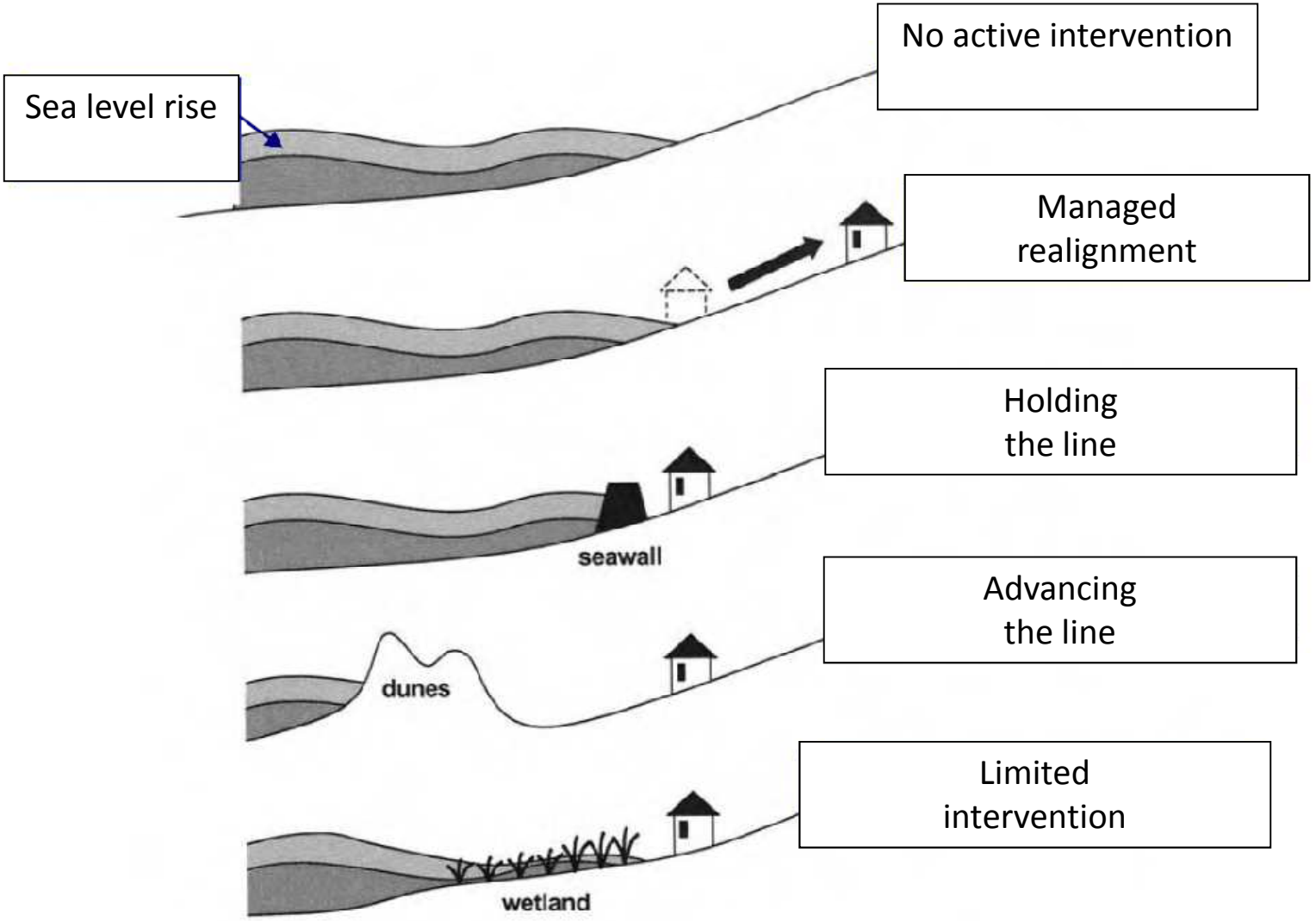
↑	+20 cm
	−10 m (hasta Alicante) −8 m (en el norte)
	Sin variación (cambio en la dirección de las olas)

Fuente: Ministerio de Medio Ambiente.

“There is high confidence that the most **immediate and more significant** consequences of climate change are likely to be changes in the nature of extreme events (e.g. flooding, tropical cyclones, storm surges, heat waves) and climatic variability (e.g. droughts, and prevailing winds accelerating coastal erosion). Coastal areas are particularly vulnerable to extreme wind events”.

UNWTO-UNEP-WMO (2008).

Climate change adaptation in coastal areas

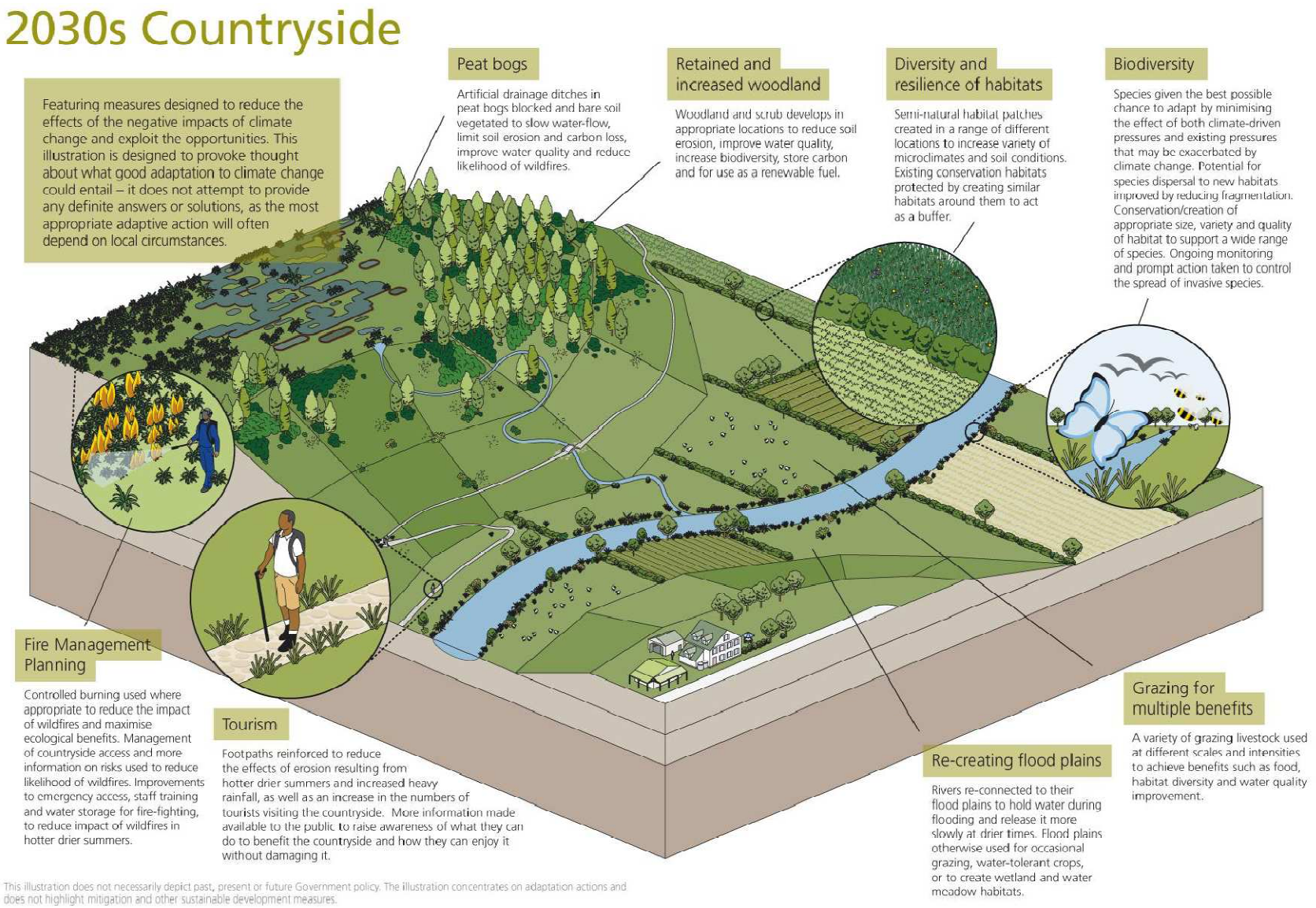


Source: DEFRA (2001).

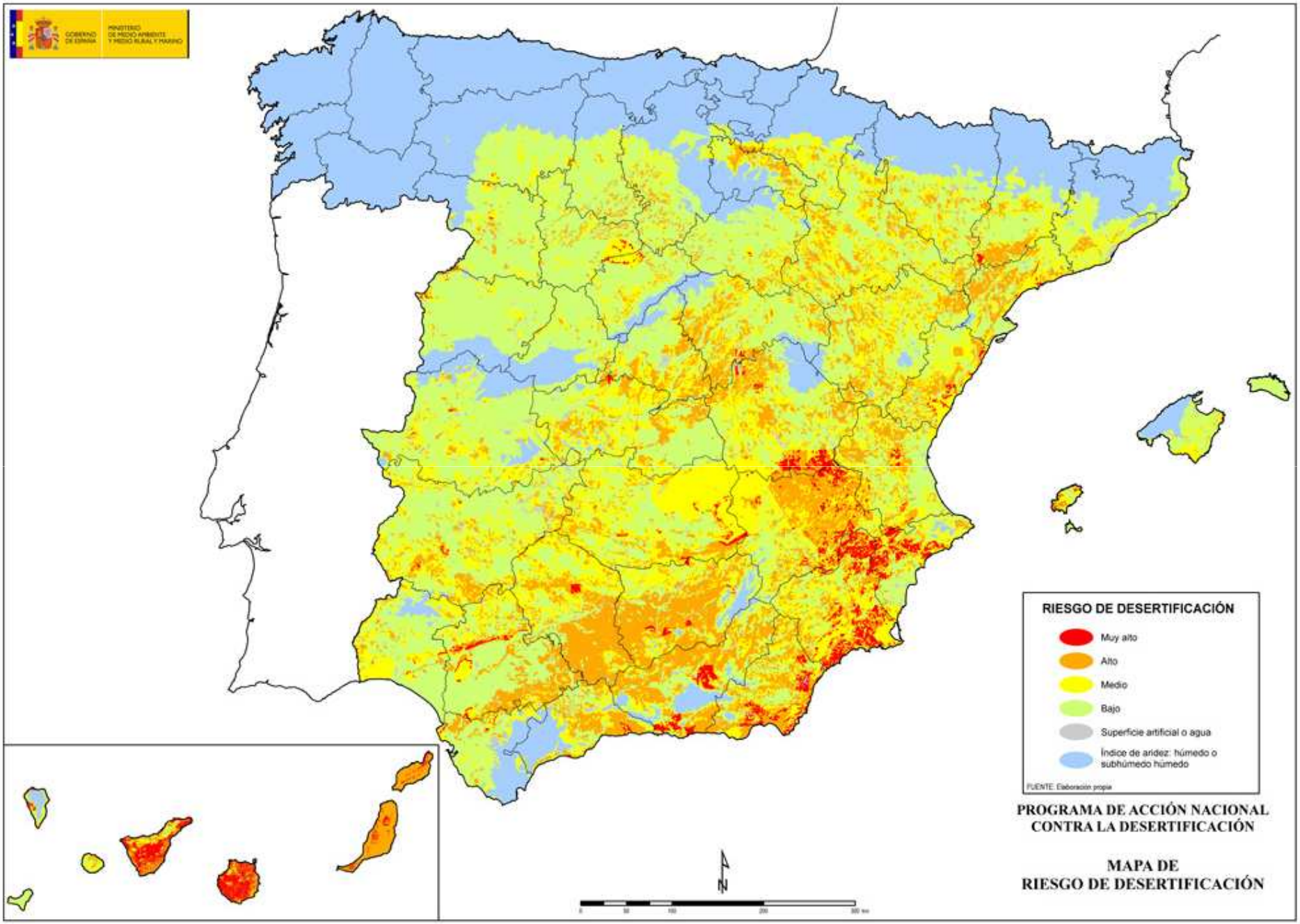

Aiguamolls de l'Empordà Natural Park
Golf de Roses
Peralada
Garriguella
Vilajuiga
Marzà
Pau
Palau-saverdera
Vilabertran
Vilanova de la Muga
Castelló d'Empúries
Vila-sacra
el Far d'Empordà
Fortià
Riumors
Siurana
Vilamalcolum
Sant Pere Pescador
Torroella de Fluvià
l'Armentera
Sant Mori
Ventalló
Viladamat
Sant Martí d'Empúries
l'Escala
Empuriabrava
Roses
la Selva de Mar
el Port de la Selva
Cadaqués
el Peni
Cap Gros
Punta dels Farallons
Illa de Portaló
Cap Norfeu
Punta Falconera
Punta del Bol Roig
Punta de Trencabraços
PARC NATURAL DEL CAP DE CREUS


Aiguamolls de l’Empordà Natural Park

Adaptation of alternative tourism to climate change



Source: Adapting to Climate Change Future Worlds images; www.defra.gov.uk/adaptation


GOBIERNO DE ESPAÑA
MINISTERIO DE MEDIO AMBIENTE Y MEDIO RURAL Y MARINO
RIESGO DE DESERTIFICACIÓN
Muy alto
Alto
Medio
Bajo
Superficie artificial o agua
Índice de aridez: húmedo o subhúmedo húmedo
FUENTE: Elaboración propia
PROGRAMA DE ACCIÓN NACIONAL CONTRA LA DESERTIFICACIÓN
MAPA DE RIESGO DE DESERTIFICACIÓN

Climate change in the Mediterranean sea and coastal areas

The evidence of the vulnerability of the current tourism model brings to recognize the need to:

- Restructure the sector / destinations towards more diversified forms of tourism
- Stimulate more sustainable forms of tourism
- Introduce social changes that facilitate the adaptation (holiday distribution, more sustainable behaviour, etc.)

General needs

- Spatial planning
- Financial measures (ecotaxes)
- Water planning
- Sanitation planning
- Risk education and communication

Indicators for measuring the impact and adaptation of coastal tourist areas and products

- Energy consumption
- Water consumption
- Financial investments in beach and coastal infrastructures regeneration
- Financial investments in equipments
- Lenght of tourist stays and seasonal distribution

Source: Esteban et al. (2005).

Table 6: A Selection of Indicators for Sustainable Tourism Destinations in the Caribbean Relating to Climate Change

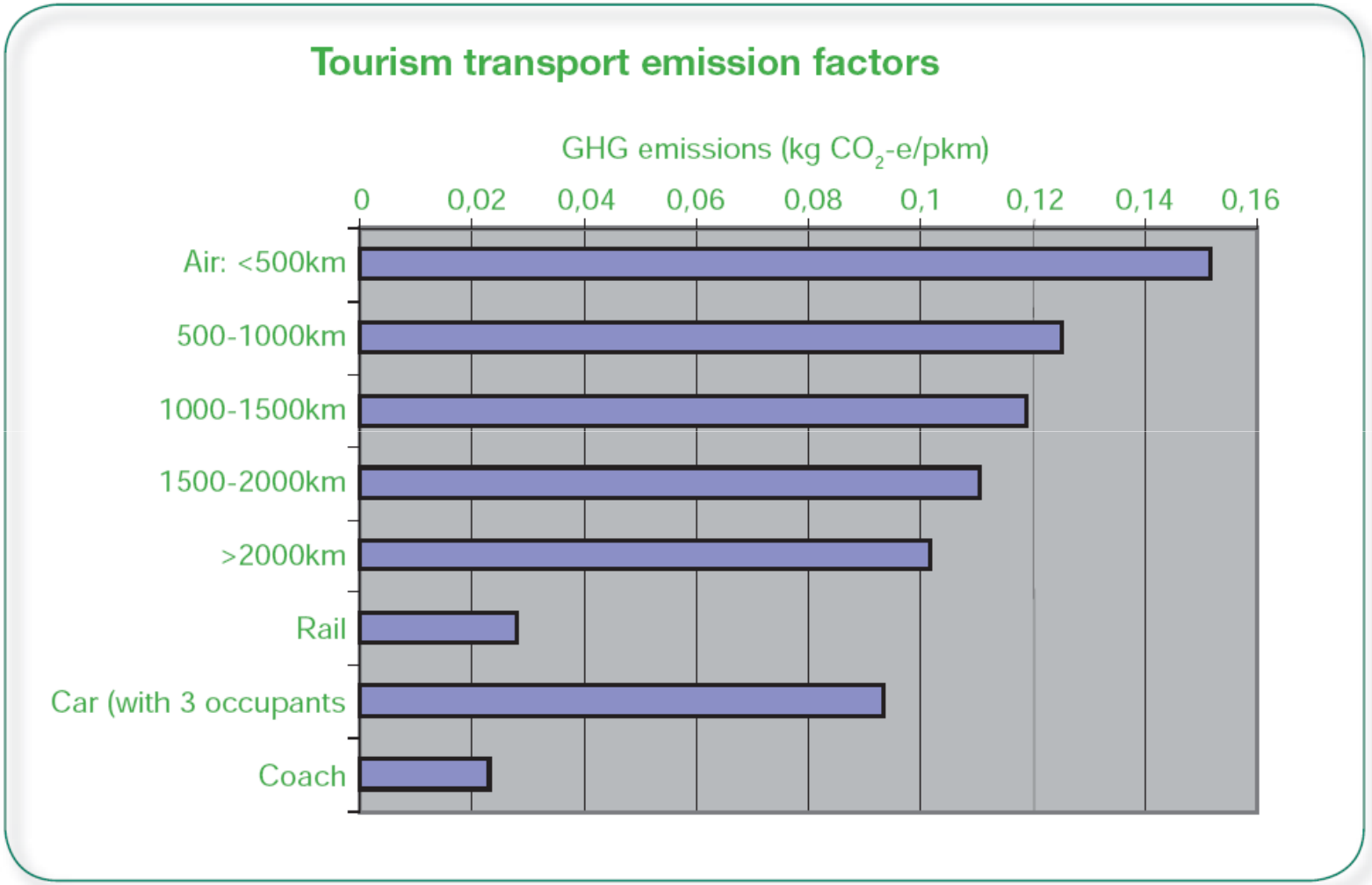
•	National standards exist for the construction of new buildings to be set-back from the shoreline
•	A climate change risk assessment for tourism industry has been completed
•	An assessment of destination's adaptive capacity to climate change has been completed
•	A system to measure and monitor carbon emissions in destination is being used
•	Percentage of energy consumed in the destination from renewable sources
•	Percentage of beaches where erosion is monitored at least annually
•	Percentage of coastline with visible signs of erosion
•	Effective erosion protection measures in place in vulnerable areas (i.e. that do not have direct or indirect negative effects elsewhere)

Source: Adapted from Simpson and Ladle 2007

The other side of the coin: the issue of mitigation

(tourism sector as a contributor to climate change)

Figure 8: Carbon dioxide emissions for various transport modes



Source: UNWTO-UNEP-WMO 2008

Table 12: Overview of potential mitigation actions

Action/ Actor	Air transport	Car Transport	Train/ coach transport	Destination	Accomm.	Activities
Tourists	Minimise air transport; Choose pro-environmental airline; Offset emissions	Avoid car transport; Use energy-efficient cars (<120g CO2/km)	Use train & coach	Stay longer; Favour closer destinations	Choose environmentally certified hotel	Avoid energy intense activity, for instance such involving transport (helicopter flights, etc.)

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Tour operators	Cooperate with pro-environmental airline; Offer carbon offsetting	Promote the use of small, environmentally friendly cars	Develop packages based on train/coach transport and other carbon-smart products	Offer destinations close by; Provide carbon labelling	Cooperate with certified hotels	Offer activities that do not involve transports, particularly flights

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Destintion Managers and Planners	Restructure marketing (eco-efficiency); Consider domestic tourism; Increase length of stay; Focus on revenue, not growth.	Promote public transport systems; eventually small cars	Cooperate with national railways systems and coach operators to offer attractive transport solutions	Involve all actors to engage in action to become sustainable destination	Promote the use of environmental management systems and eco-certifications.	Develop activities that are low-carbon

Final remarks: Some considerations about climate change and tourism today

- It is an important and worrying problem, but **not an alarming** problem
- It is a **middle** and **long term** problem (need of **planning**)
- There are still a lot of **uncertainties**: we already have trends but not predictions (precautionary principle)
- Climate change can be an **opportunity** for tourism, not only a problem
- Tourism is a **victim** of climate change, but it is also a **contributor** (need of implementing mitigation actions)
- We must be aware about climate change, and study it from an **objective** point of view

Thank you

Gràcies

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