

Taller 1

How hazard, vulnerability and risk of climate change can be assessed in urban beaches?

[The Socioeconomic Dimension]

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[The Socioeconomic Dimension]

1. Motivation

2. Traditional Approaches to the Economic Valuation of Beaches

3. A New Methodology for the Case Study

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1. Motivation

Climatic Change (2014) 124:119–132

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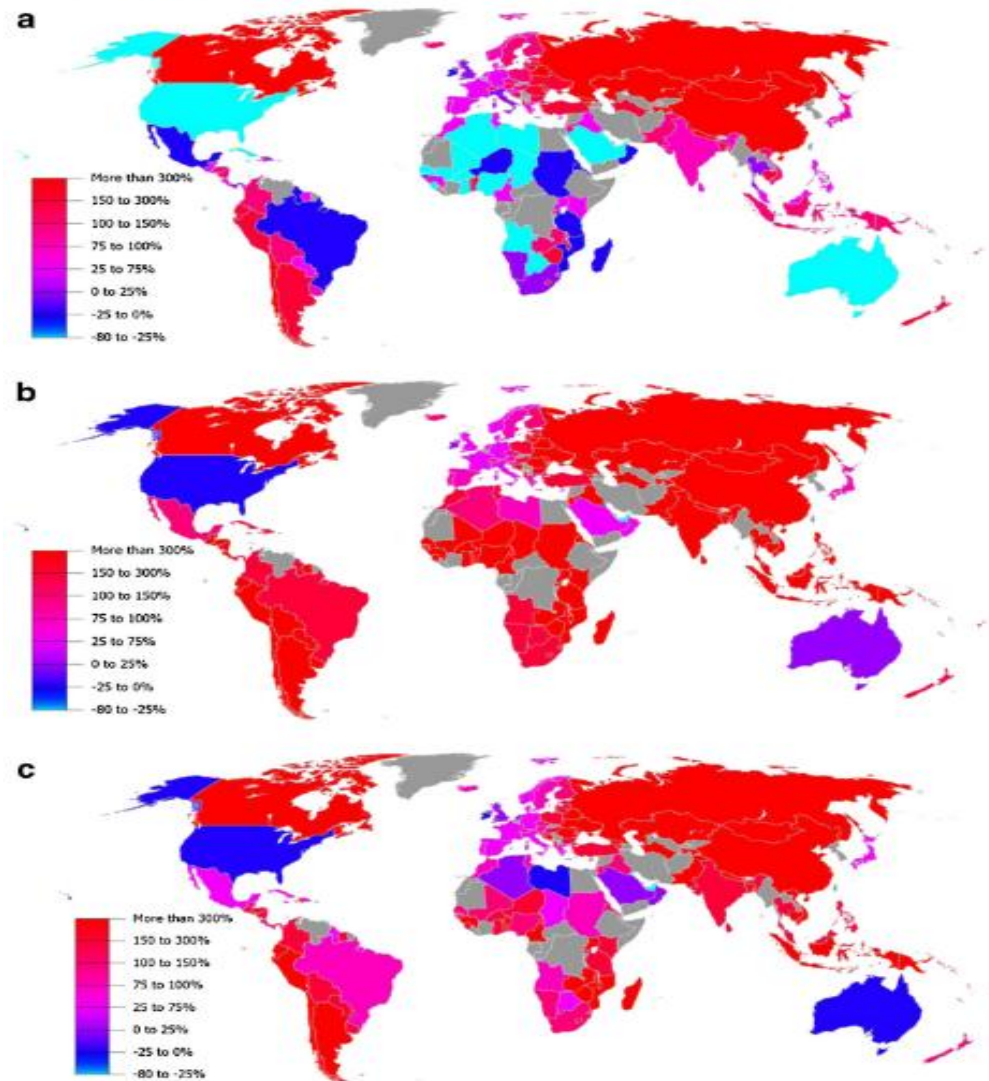
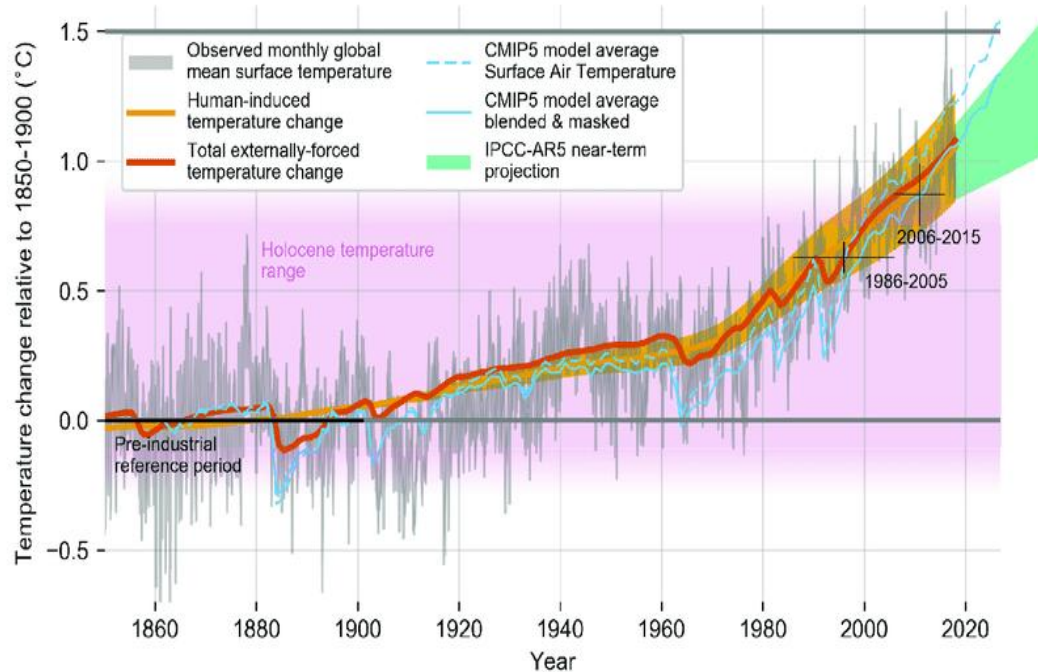


Fig. 3 Percentage variation in tourist arrivals caused by change in temperatures and GDPpc. Percentage change in tourist arrivals for 2080, compared to arrivals in 2007, considering scenarios A2 (a), B1 (b), and B2 (c)

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1. Motivation

Previous experience in how to evaluate the effects of climate change on tourism:

1. Physical conditions ¿?¿?
2. Climatic indices (Cardenas et al., 2026 and 2025; Deyà et al, 2026)
3. Quantitative evaluation of the impact on demand (Rosselló et al., 2011; Bujosa and Rosselló, 2013; Rosselló and Santana-Gallego, 2014; Priego et al., 2015; Rosselló and Waqas , 2016; Pintassilgo et al, 2016; Rosselló et al., 2020)

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1. Motivation

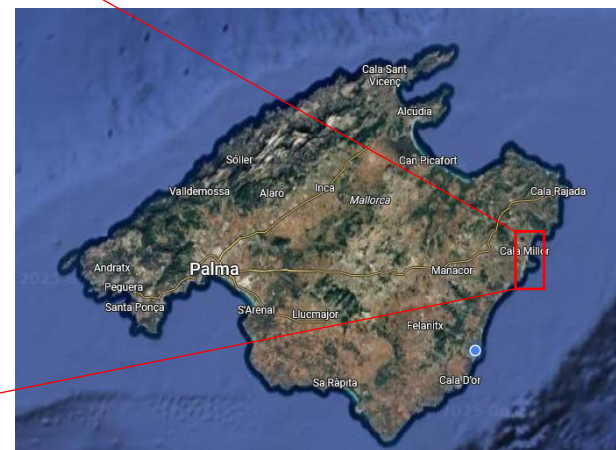
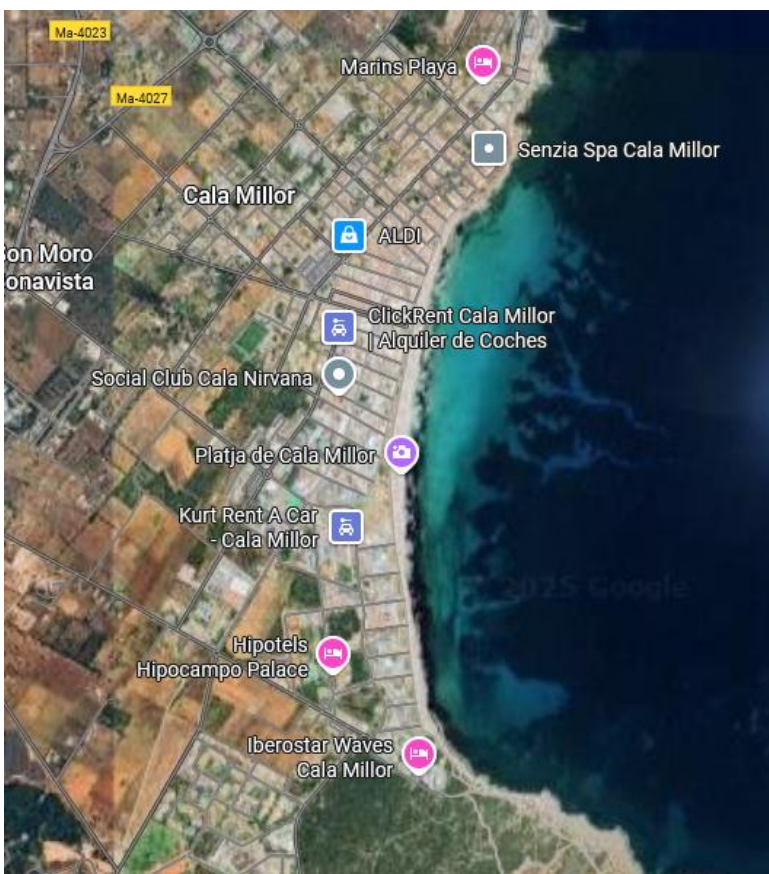


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2. Traditional Approaches to the Economic Valuation of Beaches

A. Revealed Preference Approaches

B. Stated Preference Methods

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2. Traditional Approaches to the Economic Valuation of Beaches

A. Revealed Preference Approaches

Property Value (Hedonic Pricing Method)

- Measures the influence of beach proximity and quality on real estate prices
- Assumes beach amenities are capitalized into property values

Travel Cost Method

- Visitors' willingness to pay based on the time and money they spend traveling to access the beach

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2. Traditional Approaches to the Economic Valuation of Beaches

B. Stated Preference Methods

Contingent Valuation Method (CVM)

- Uses surveys to elicit willingness to pay for: Beach preservation, Erosion control, Pollution reduction,...

Choice Experiments

- Respondents choose between alternative beach management scenarios

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2. Traditional Approaches to the Economic Valuation of Beaches

Main problems with these traditional methodologies (demand oriented):

- Capture only recreational uses associated with specific markets
- Do not account for the broader economic activity generated in the surrounding area by the beach
- Stated preference methods face persistent criticism due to the gap between stated intentions and actual behavior

→ It has low acceptance among the general public.

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2. Traditional Approaches to the Economic Valuation of Beaches

A. Revealed Preference Approaches

B. Stated Preference Methods

Demand-Oriented
Perspective

C. Production Function Approach

Supply-Oriented
Perspective

Used in: Pollination Services and Agriculture; Water Quality and Irrigated Agriculture; Watershed Protection for Drinking Water,...but never un the tourist sector.

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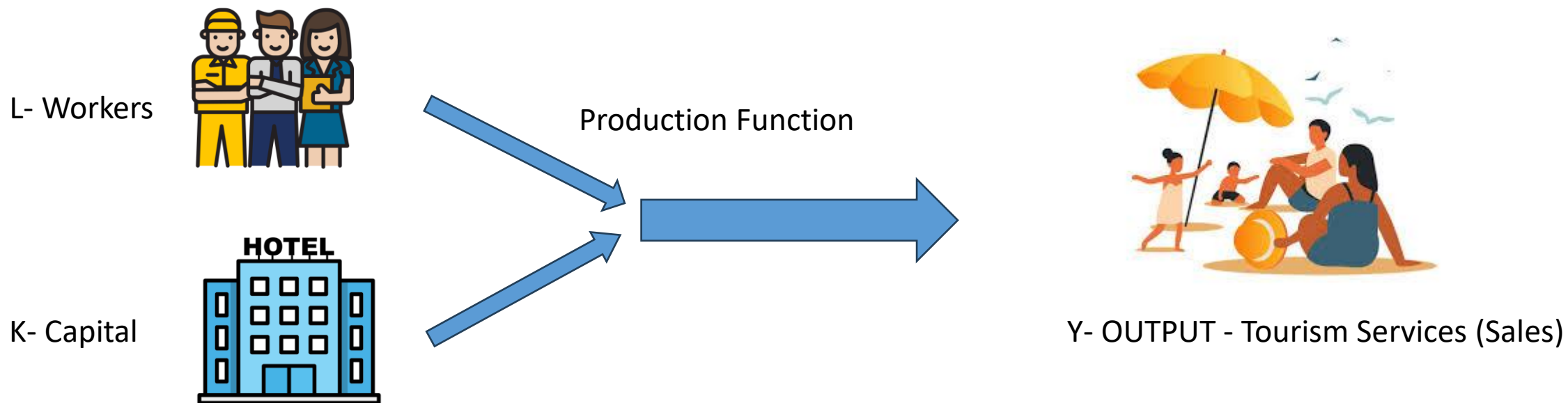
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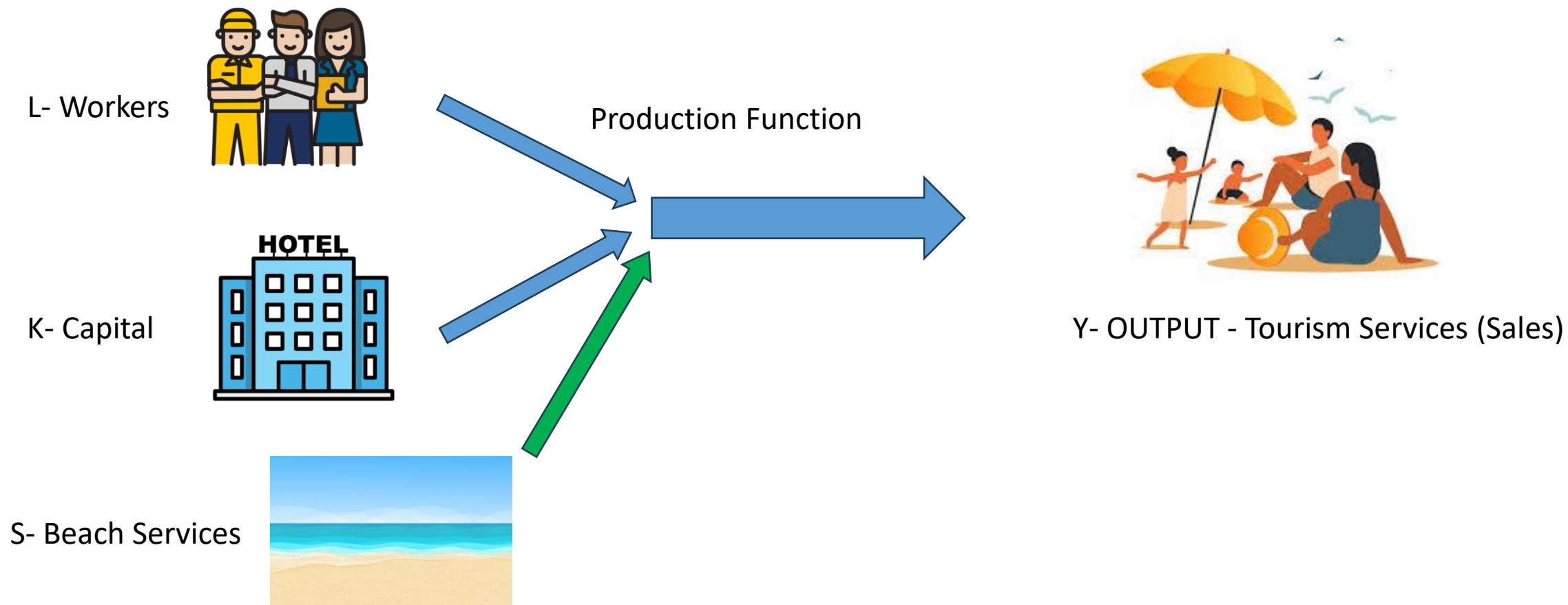
We intend to use the same language as business people.



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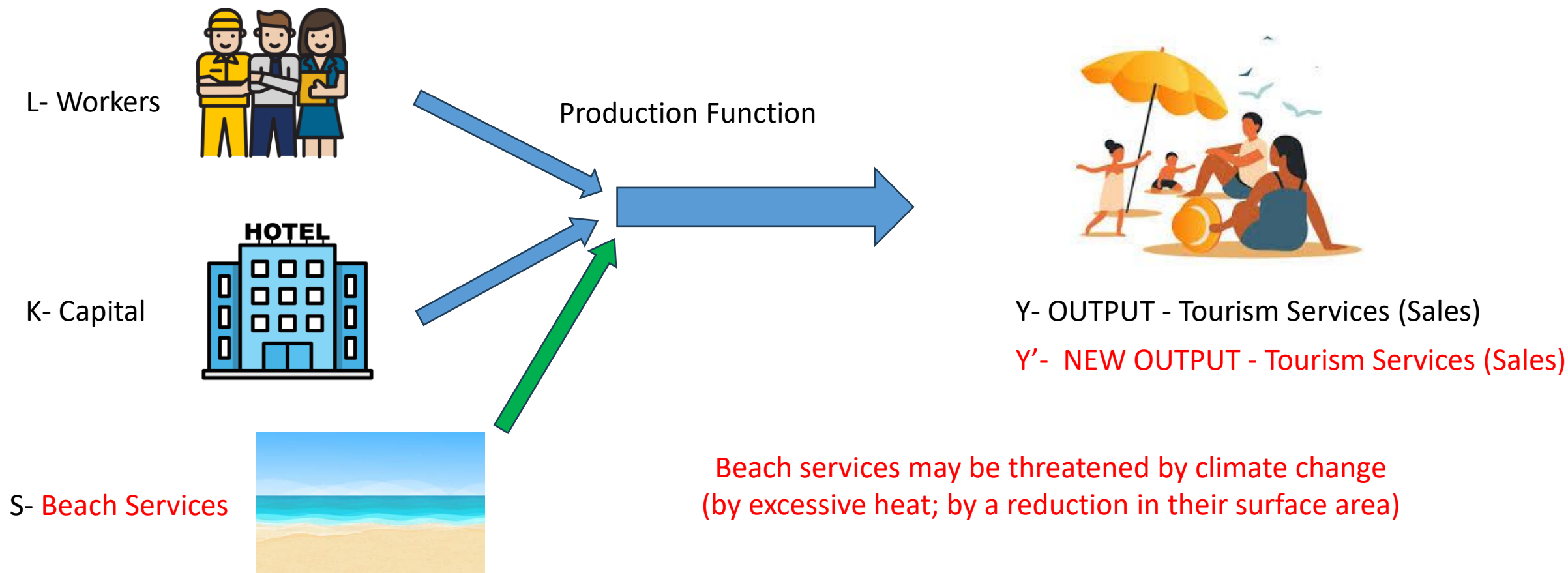
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3. A New Methodology for the Case Study

assuming a Cobb-Douglas functional form ...

$A > 0$ total factor productivity; α, β and γ output elasticities

Y - Economic output in a coastal tourism microregion

K - Capital

L - Labour

S - Services provided by a beach

$$Y = A \cdot K^{\alpha} \cdot L^{\beta} \cdot \left(\iint_D s(x, y) dx dy \right)^{\gamma}$$

$$TEV = PY$$

Total economic value (TEV) is based on the market price of output (P)

$$S = \iint_D s(x, y) dx dy$$

Ecosystem services provided by a beach (S), where, the beach's contribution depends on its surface area (x) and local temperature (y)

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assuming a Cobb-Douglas functional form ...

$A > 0$ total factor productivity; α, β and γ output elasticities

Y - Economic output in a coastal tourism microregion

K - Capital

L - Labour

S - Services provided by a beach

$$Y' = A \cdot K'^{\alpha} \cdot L^{\beta} \cdot \left(\iint_{D'} s(x, y) dx dy \right)^{\gamma}$$

$$TEV' = PY'$$

Climate Change

Can impact on K (Flooded urban plots), Beach surface (x), temperature (y)

$$\Delta TEV = TEV - TEV'$$

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Findings

- The Cala Millor case study shows that this method captures both:
 - ✓ Direct impacts, such as the loss of land used for economic activities, and
 - ✓ Indirect impacts, including beach erosion and rising temperatures.
- The production function approach generates economic valuation estimates that can be directly associated with company sales, profits, and losses, as well as with regional economic output, making the results easier to integrate into standard business and economic accounts.