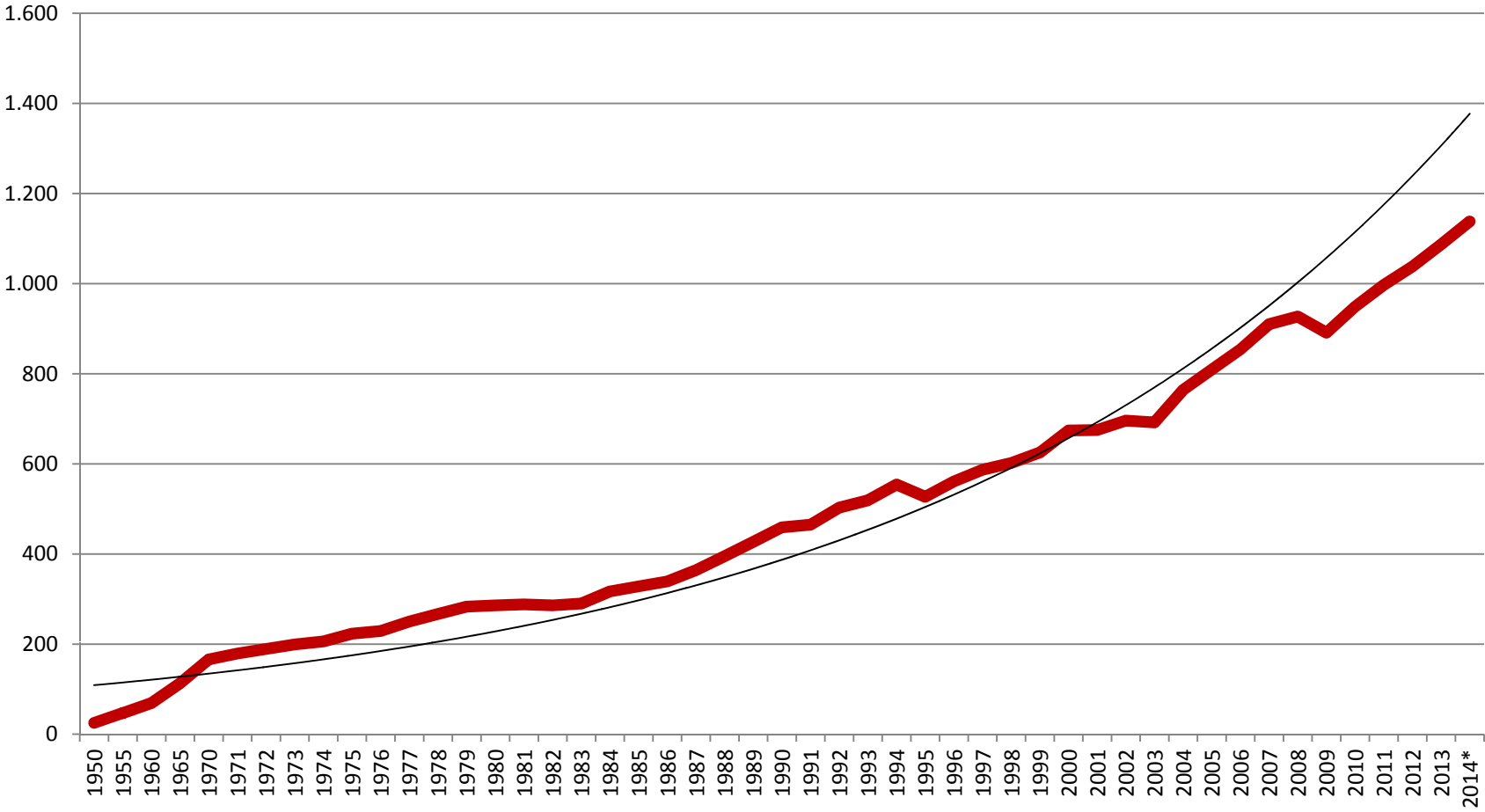


The Vulnerability Challenge and Business Continuity Plans of the Tourism Sector

Mitigating Supply Chain Risks Due to Natural Disasters
ERIA Research Project Jakarta , March 13th, 2015

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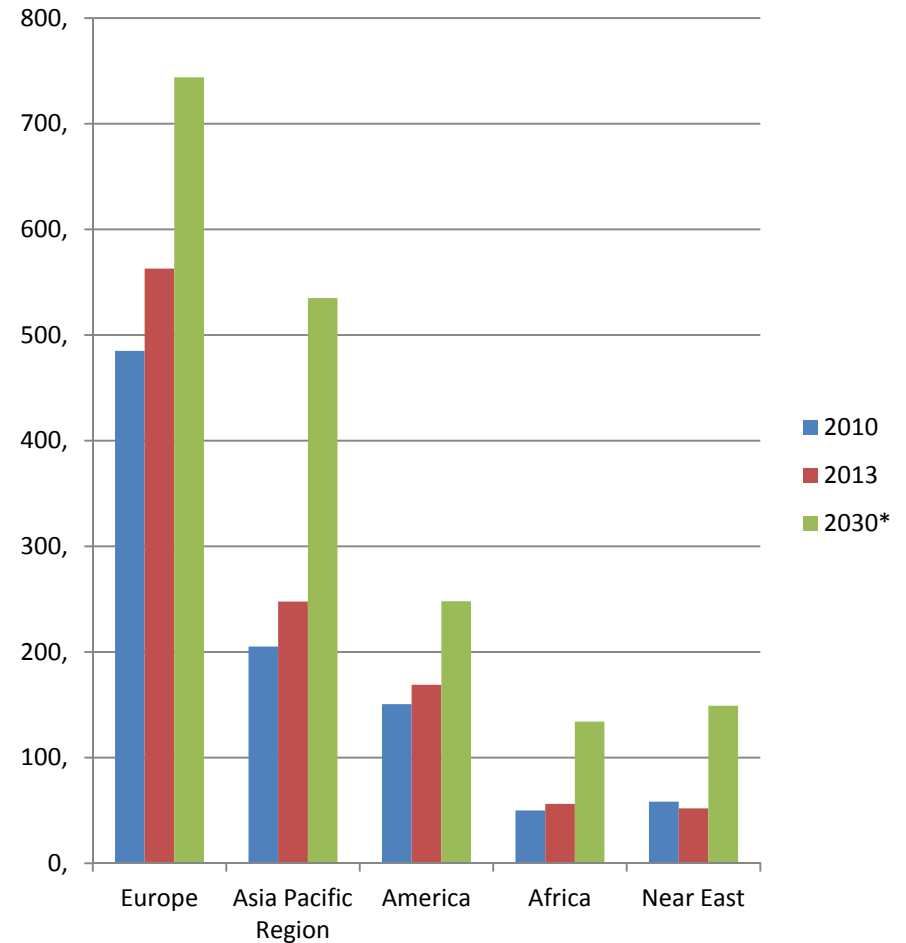
International Tourist Arrivals Worldwide in Million Arrivals 1950 to 2014



UNWTO World Tourism Barometer , January 2015

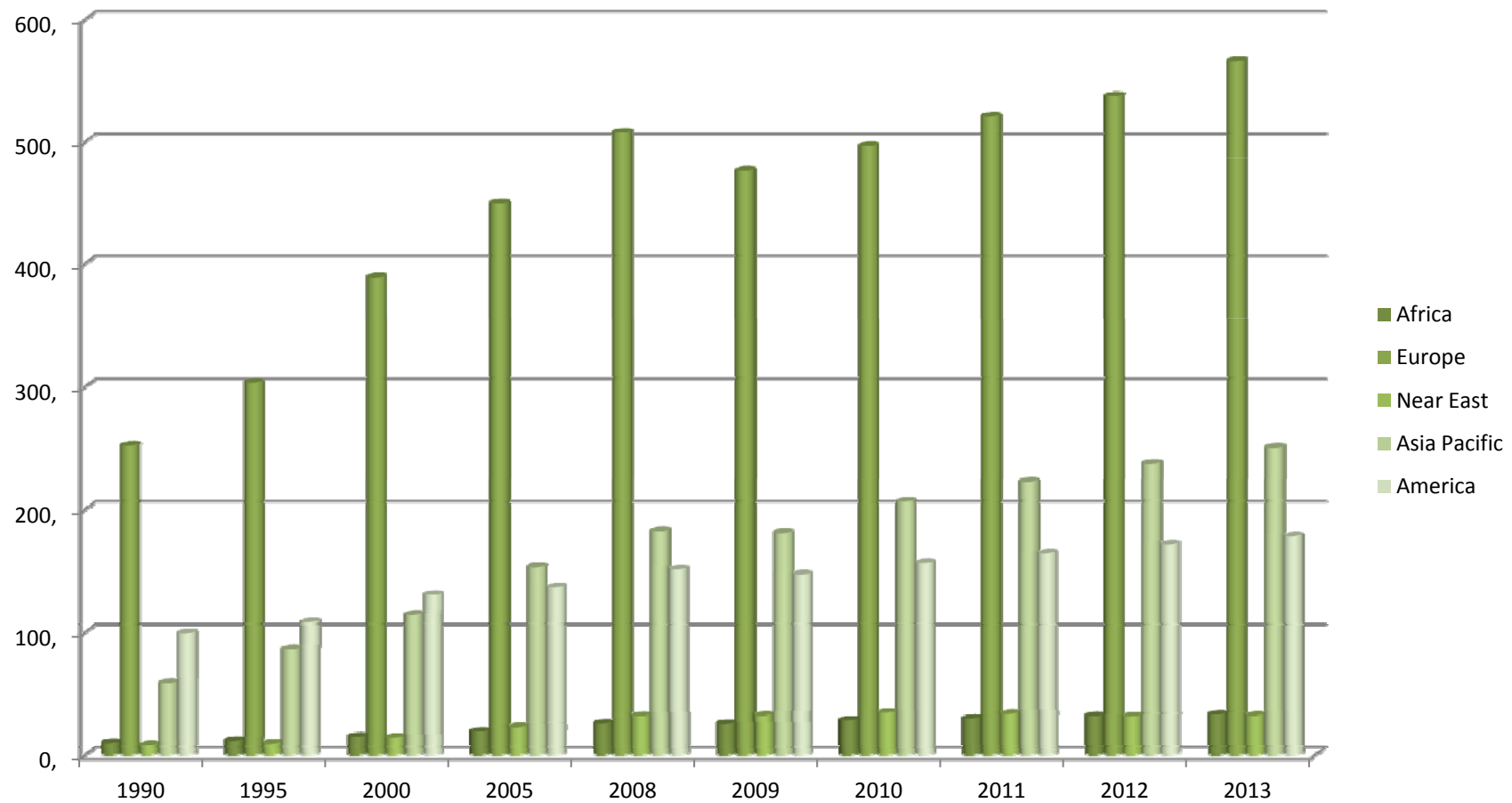
Trends in International Tourist Arrivals in Millions According to World Regions

- Estimated 5% of global GDP earned in tourism



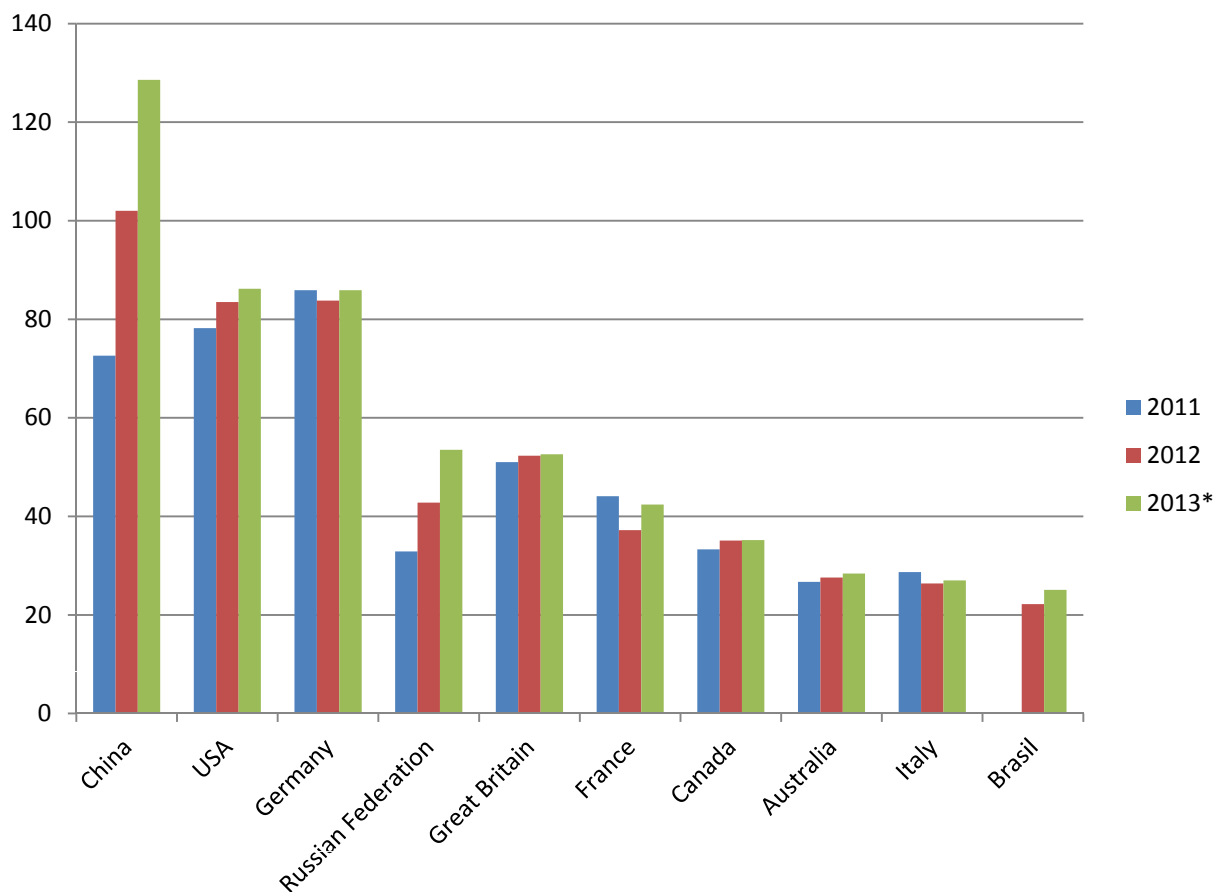
Source: UNWTO, March 2014

International Arrivals in Outbound Tourism in Million Originating from Region



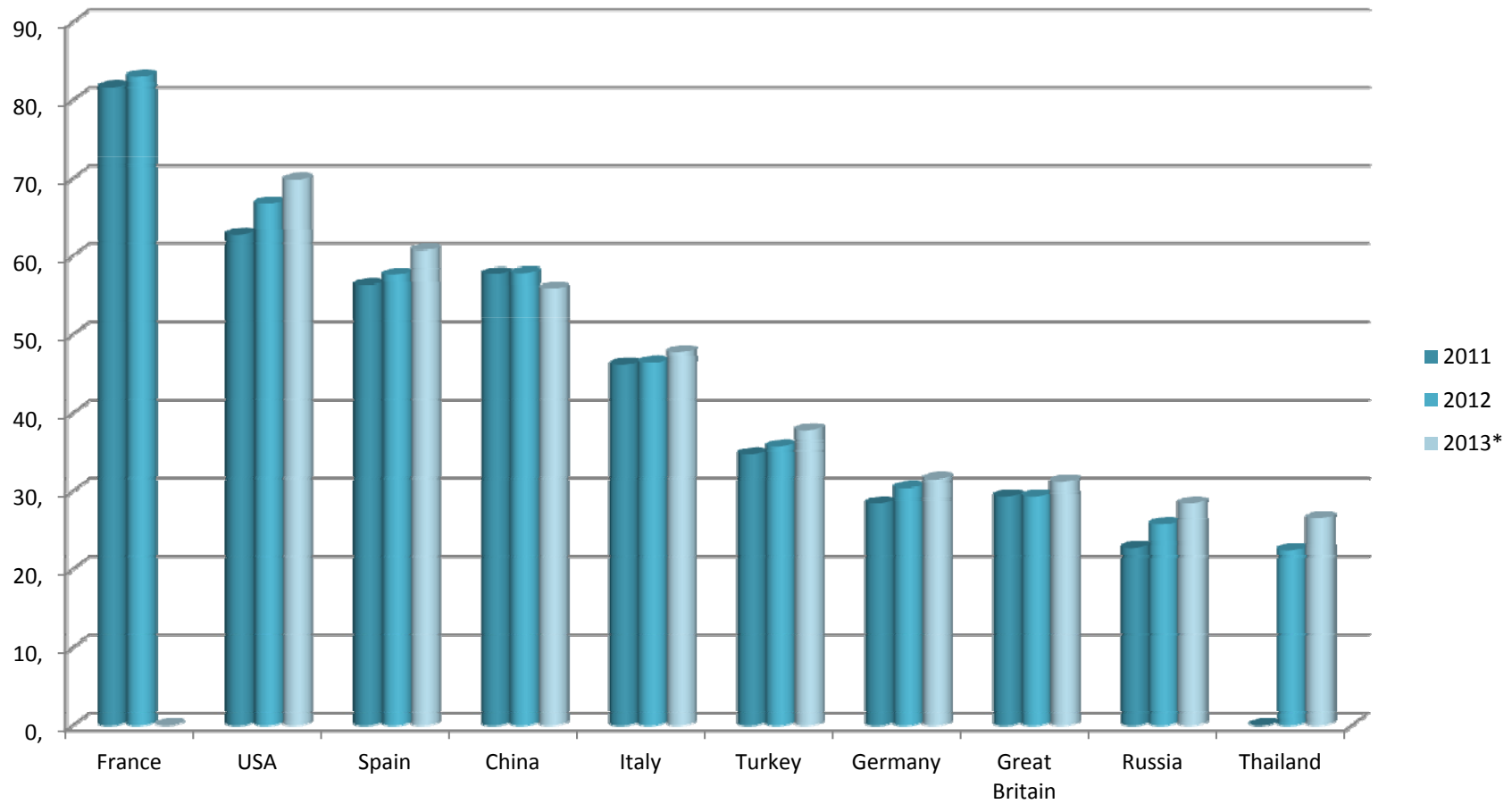
Tourism Expenditures of Major Countries in Billion US\$

- In average over US\$ 1000 per tourist trip
- Appr. US\$ 180 per tourist day/night

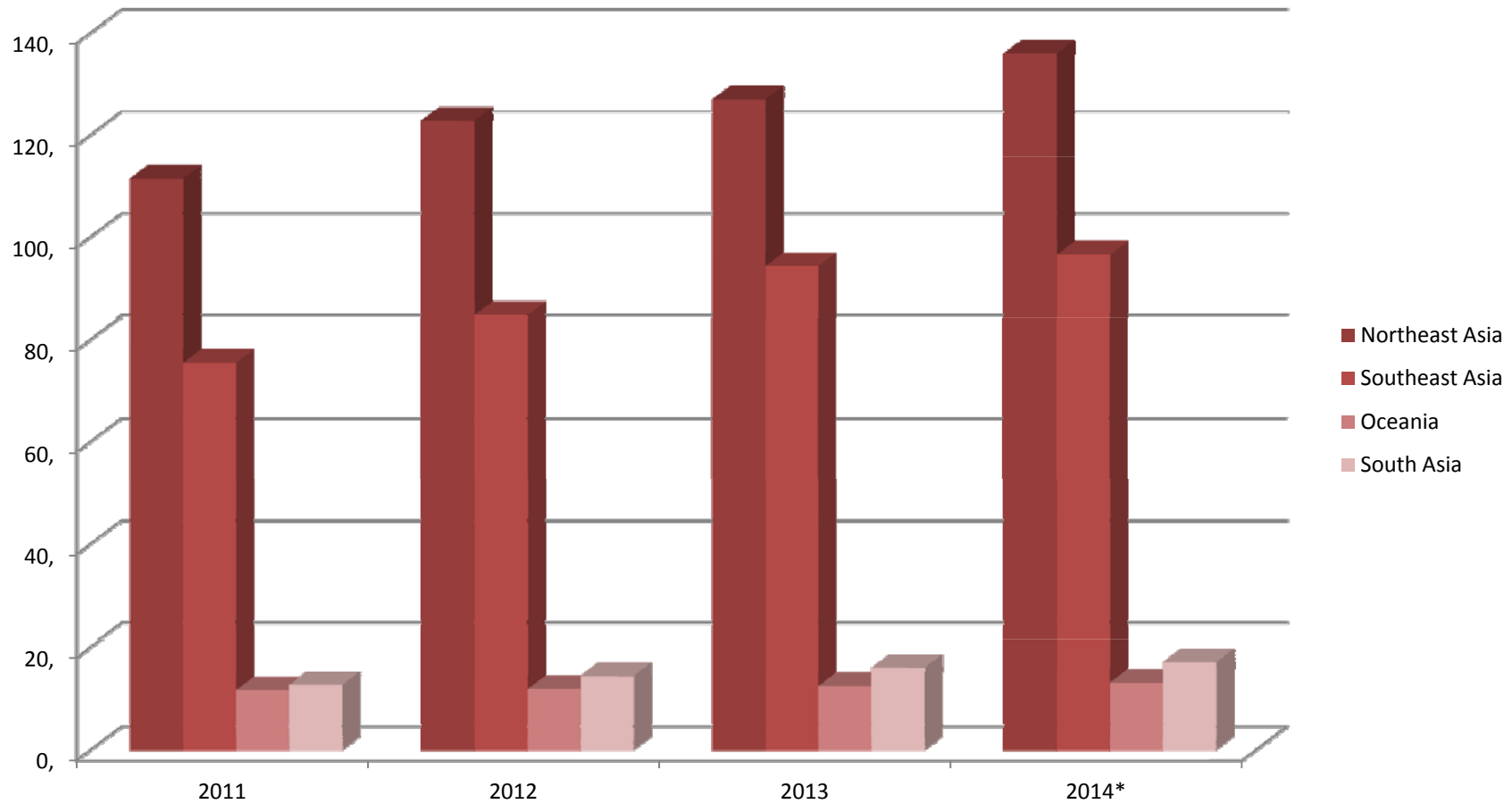


Source: UNWTO, May 2014

Most Important Countries with International Tourism Arrivals in Million

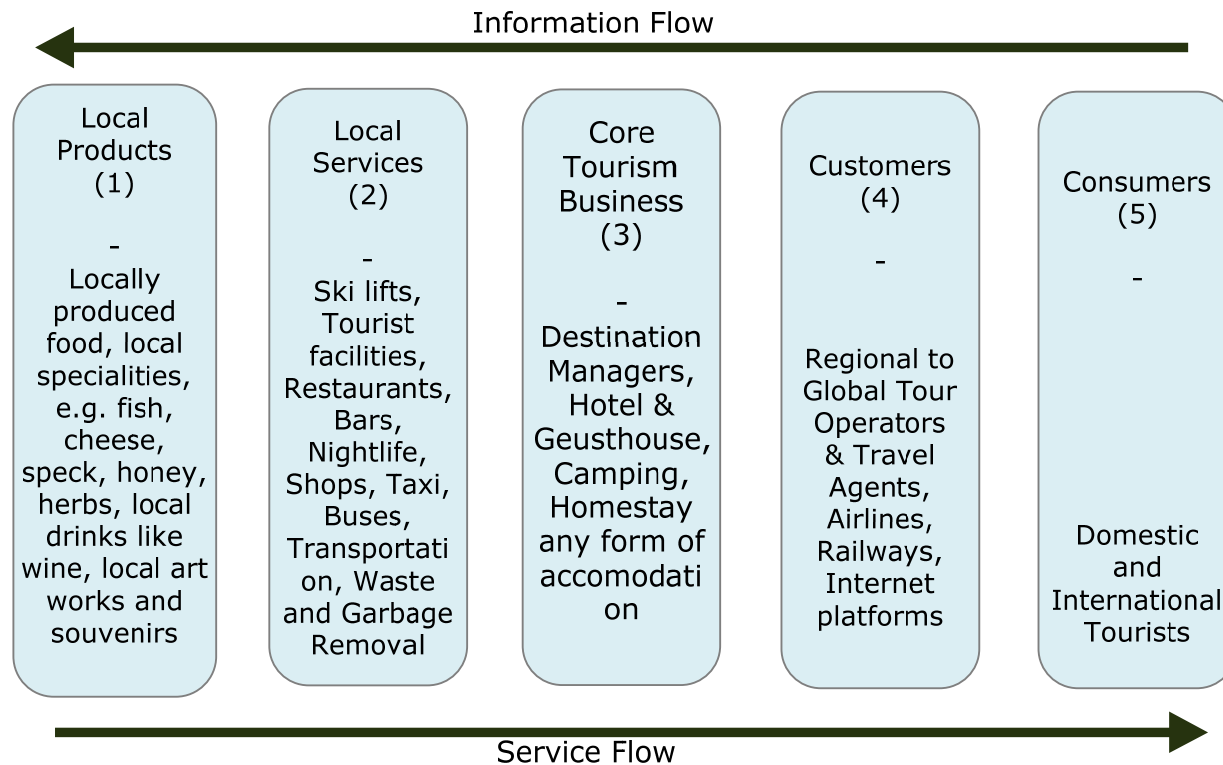


International Tourist Arrivals of Asian Regions



Source: UNWTO, January 2015

The Tourism Supply Chain

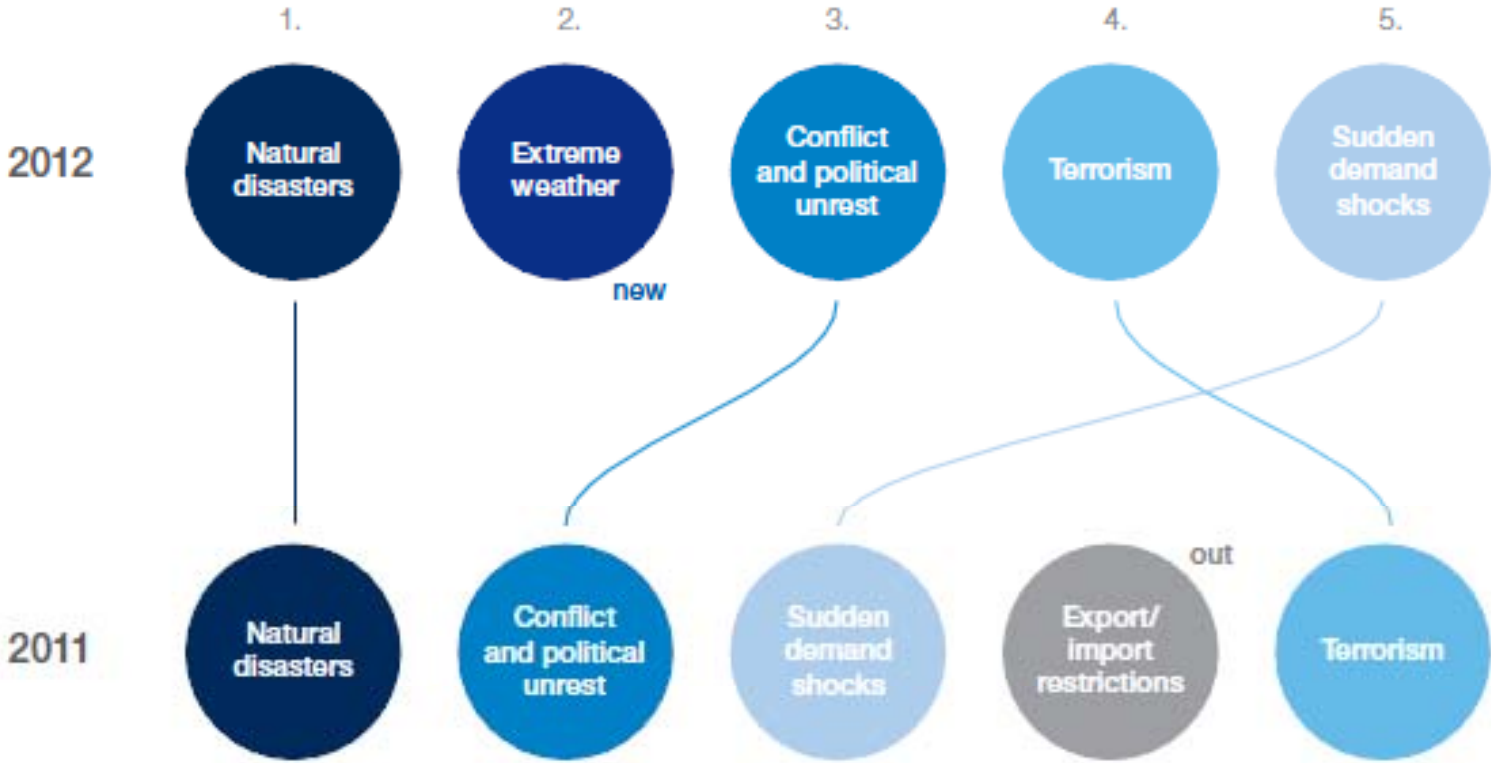


Aims

- Old: Improvement of information and service flow between:
 - all involved partners, related to
 - supply chain structure,
 - business processes
 - management components
- New: Include Disaster and Climate Resilience in Tourism Supply Chain
 - Through increasing resilience of tourist destinations
 - Regional programs
 - Risk financing mechanism

Top five disruption triggers for tourism industry

Source: Supply Chain Risk Radar survey results. World Economic Forum, 2012.



Natural disasters

- The emphasis on *natural disasters and extreme weather is a consequence of events such as the*
 - *Floods*
 - *Cyclones*
 - *Drought*
 - *Extreme Precipitation*
 - *Snow related risks in case of mountain tourism*
 - *Too much snow, avalanches*
 - *No snow in case of snow based activities*

Disasters have an impact on resource demand in tourism

- Water
 - Tourist water demand is several times higher than local demand
 - Disasters
 - » Further limit water availability, e.g. groundwater take in case of drought
 - » The wise use of water is impossible in case of a flood
- Food
 - Ideally local food is consumed
 - » Local agricultural products are an important factor for tourism
 - » If harvests fall out, the tourism benefit is reduced, food has to be imported
- Material
 - Building tourism and accommodation facilities
 - » Local materials like wood, bamboo contribute to originality of the destination
 - » Major storm can damage forest stands, reduce the quantity of useable material

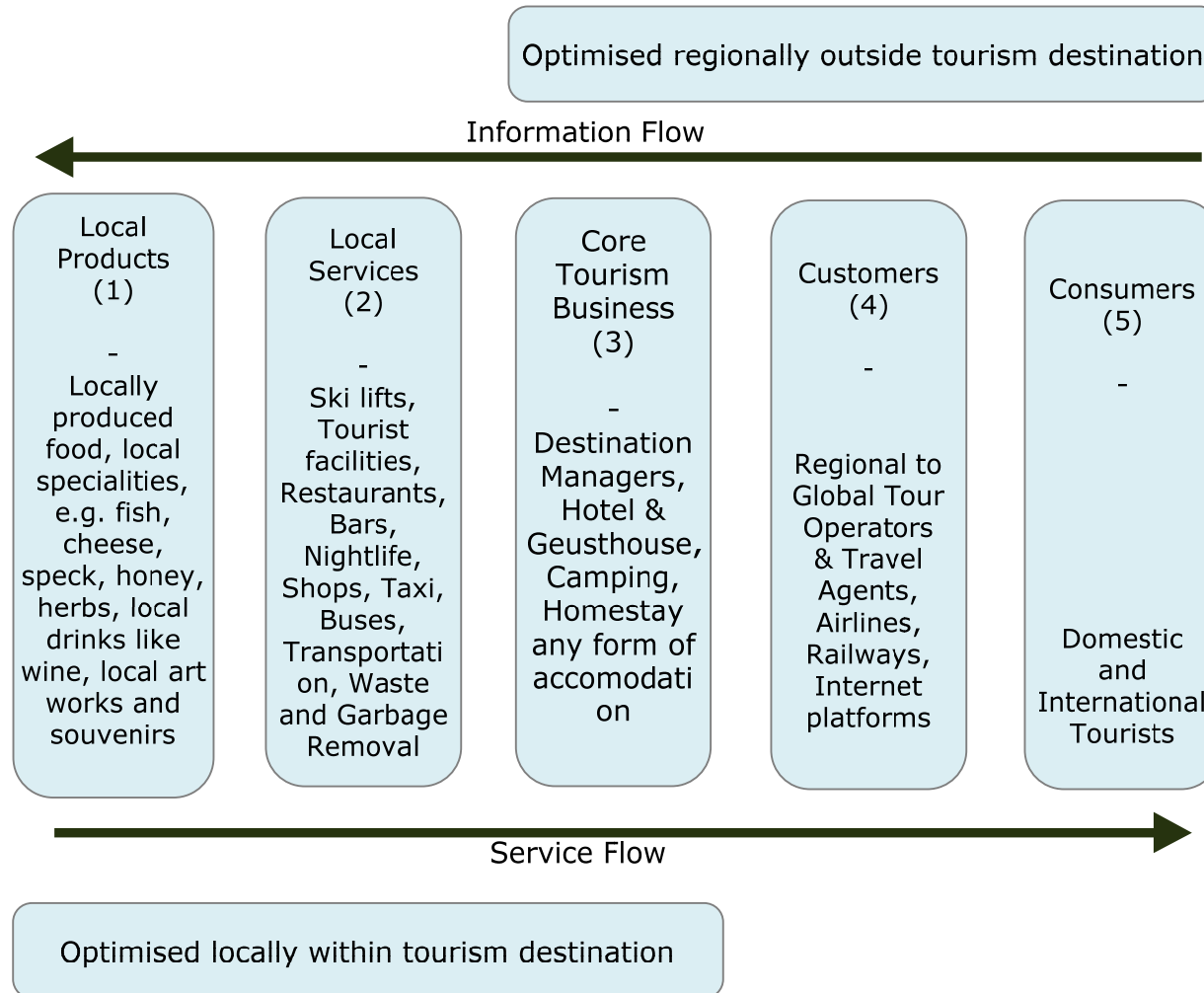
Sustainable Energy Use

- Tourism needs more energy than local demand
 - Ideally this demand is satisfied by renewable resources
 - Very often satisfied by the import of fossil fuels
- Disasters are a major disruption source to renewable energy sources
 - Hydropower
 - Local biomass use
 - Windpower
 - Photovoltaic

Seasonality in Tourism

- Seasonality of tourism
 - Peaks are common in tourism
 - In many countries distinction between summer tourism and winter tourism (May to October and November to April)
 - Continuous flow of tourist would be more desirable
- Disasters are an additional burden
 - In high peak season the damage is over proportional
 - A few days or one week loss can take the profit of a whole season
 - A regular return of disasters like anticipated in climate change scenarios can ruin destinations if the peak season is affected

Otimizing disaster relief within and outside destination



Theoretical framework of Tourism Supply Chain Management after Zhang et al. 2008 (1) modified

- Objectives
 - Tourism satisfaction
 - Tourism sustainability
 - Monetary value
 - Reduce demand uncertainty
 - Tourist safety
 - Protection from disasters
- Network structure
 - Describe key Tourism Supply Chain members
 - Include climate and climate risk information members
 - Analyze the market structure
 - Disaster protection measures provide comparative advantage in competitive market
 - Figure out the power relationship
 - Identify what business processes are linked to what TSC members
- Management issues
 - Demand management
 - Two party relation
 - Supply management
 - Inventory management
 - Outline vulnerabilities within destination
 - Product development
 - TSC coordination
 - Information technology
 - Include climate and climate risk information

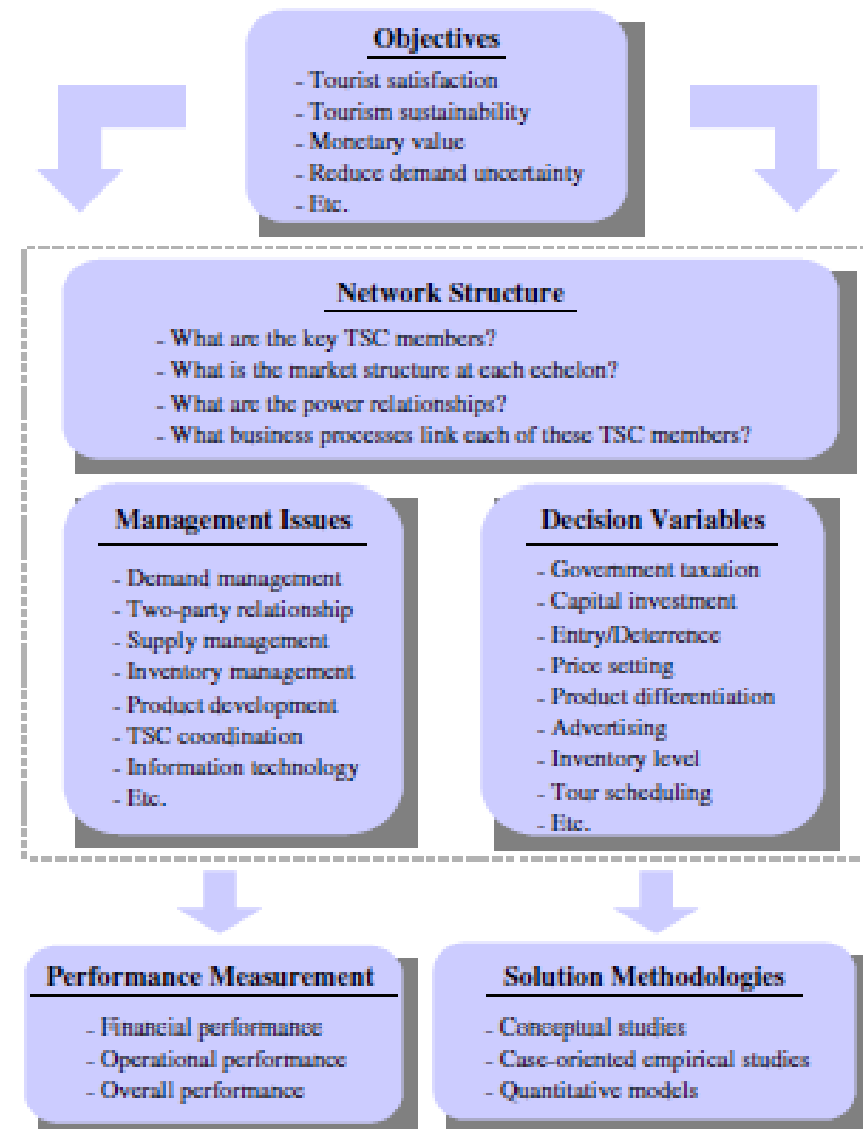


Fig. 2. Theoretical framework for TSCM research.

Theoretical framework of Tourism Supply Chain Management modified based on Zhang et al. 2008 (2)

- **Decision Variables**
 - Government taxation
 - Capital Investment
 - Entry/Deterrence
 - Price setting
 - Product differentiation
 - Advertising
 - Inventory level
 - Touristic program & Tour scheduling
- **Additional Variables**
 - Climate risks
 - Possibility of disaster prevention
 - Emergency action plans in place
- **Performance Measure**
 - Describe key TSC members
 - Analyze the market structure
 - Figure out the power relationship
 - Identify what business processes are linked to what TSC members
- **Solution Methodologies**
 - Demand management
 - Two party relation
 - Supply management
 - Inventory management
 - Product development
 - TSC coordination
 - Information technology

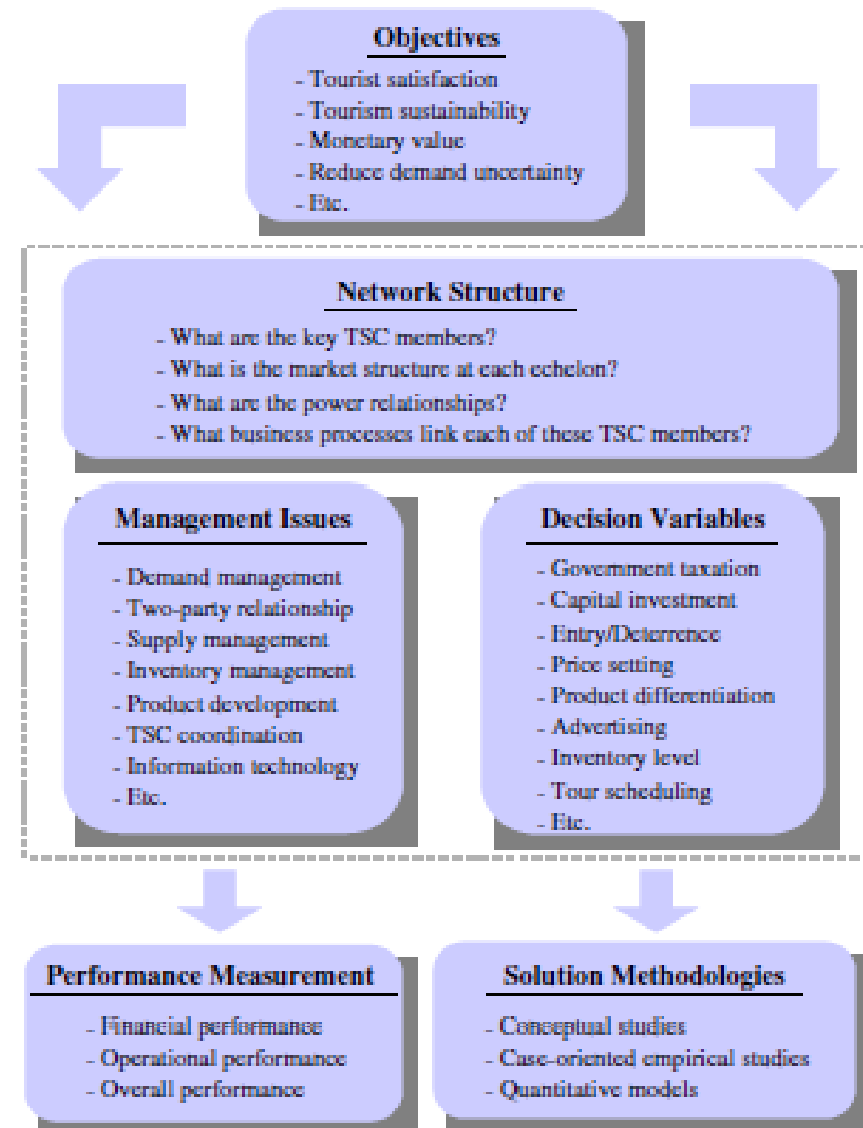


Fig. 2. Theoretical framework for TSCM research.

Example from European Tourism Indicator System: Toolkit for sustainable destination (2013)

EUROPEAN TOURISM INDICATOR SYSTEM TOOLKIT

B.5 Tourism Supply Chain

Indicator B.5.1

Percentage of tourism enterprises actively taking steps to source local, sustainable, and fair trade goods and services

Connecting tourism businesses with local producers and suppliers of tourism-related goods and services helps multiply the economic impact of tourism in the destination. Agriculture and fishing sectors are particularly well positioned to benefit from tourism. These indicators encourage local, fair trade business connections.

Climate change adaptation and vulnerable zones

D.2 Climate Change

Indicator D.2.1.1

Percentage of the destination included in climate change adaptation strategy or planning

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EUROPEAN TOURISM INDICATOR SYSTEM TOOLKIT

Indicator D.2.1.2

Percentage of tourism accommodation and attraction infrastructure located in “vulnerable zones”

Including the whole destination in climate change initiatives is important. This indicator monitors how much is missed in order to encourage inclusion.

The second indicator is designed to raise awareness of climate-related vulnerability.

Water saving measures

D.5 Water Management

Indicator D.5.1.1	Percentage of tourism enterprises with low-flow shower heads and taps and/or dual flush toilets/waterless urinals
Indicator D.5.1.2	Percentage of tourism enterprises using recycled water
Indicator D.5.1.3	Percentage of water use derived from recycled water in the destination

Landscape related measures

D.7 Landscape and Biodiversity Protection

Indicator D.7.1.1	Percentage of local enterprises in the tourism sector actively supporting protection, conservation, and management of local biodiversity and landscapes.
Indicator D.7.1.2	Percentage of destination covered by a biodiversity management and monitoring plan

Tourism enterprises are significant beneficiaries of investment in protected areas, so it is important to track the sector's contribution to conservation.

This is an indicator of the activities of conservation agencies and the existence of risks to key species.

Example 1: Small island developing states (SIDS)

- Very high to exclusive dependence on tourism
 - In general over 25% of GDP earned in tourism
 - With multipliers, almost everything is earned in tourism
- Climate risk resilience
 - mainly coastal destinations
 - Sea level rise
 - Resilience to impacts decreases
 - Vulnerability increases
 - Possible increase in natural disasters
 - Cyclones
 - Floods

Example 2: Mountain Regions (MR)

- Tourism is in general much more important than in flat regions
 - Estimated to be over 10% of GDP in peaceful mountain regions
 - global average is estimated 5% of GDP
 - In Austrian mountain regions more than 20% of GDP
- Climate risk resilience
 - Land slides, torrents, avalanches are well known mountain disasters
 - Likely to increase with climate change
 - Likely to be connected with more damage in case of tourism development
 - In Austria, Europe, there is a long established tradition to cope with mountain risks
 - Risk management plans
 - Avalanche warning systems
 - Incorporated into the TSCM

Recommandation

- To start with one or two Asian case studies related to SCM in the tourism sector
- To analyze all relationships, business cases and management factors in the TSC
- To make inventories related to climate risk and disasters
- Develop a handbook of specific recommandations for firms in coastal and mountain tourist destinations.
- The involved firms develop a business continuity plan for their tourist destination