

# New mobility strategies for the development of tourism in Sicily

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## Abstract

Tourism and Transport is a well established and inseparable pair. An areas can increase the tourism in potentially own economy. This requires suitable accommodation and adequate transportation system. A positive synergy effects are induced to increase of the site. Transport is an important growth area for tourism and as a result. A better functioning of transport facilitates access to sites, decreases the cost of transport and increases tourist flows.

In Sicily there are a wealth of artistic, archaeological and natural sites, generating a tourist flows during the year. Despite this, the network of connections and services is precarious. Residents and visitors are inaccessible to certain geographical areas. Often airport nodes are isolated for tourist as residents and connections to main destinations are by road transport, because rail is not competitive. Congestion of the main arteries increase negative externalities related to road transport and for tourists increases the negative perception of the journey. In this paper we propose guidelines for sustainable tourism, by analyzing the supply of mobility. The case study examines the reality of the stretch of waterfront in Western Sicily (Palermo to Trapani), introducing a faster shipping service to facilitate accessibility to tourist sites along the coast, with a network of connections that includes airports nodes.

*Keywords: Sustainable tourism, high speed craft, waterfront areas*

## 1 Introduction

Tourism is a sector that produces strong environmental impacts, with ecological and socio-economic consequences. This requires a global analysis, which allows

to study the dynamics of development, evaluating the benefits and impacts on various sectors which it comes into contact.

In this context, land use with its tourist facilities and infrastructures and transport system became the basis for a tourism competitive.

A place becomes a tourist destination when the market acquires awareness, which develop into tourism demand thanks to the ability to communicate the facilities offered.

The conditions for the local tourism development are essentially related to three categories of factors:

- natural and artificial resources;
- the organizational skills of the active population;
- the level of service offered in terms of accessibility to places.

The presence of a low-cost network to a destination, guides the choice of the tourists who, often, prefer one place rather than another due to economic factor and/or specific features present in places of destination.

The transport globalization involves a new idea of tourism. This turns to *incoming*, must be capable to offer travel deals to ensure "the emotion of an experience" [1].

Sicily is a region potentially competitive in terms of cultural, history and also natural and gastronomic factors. However, It suffers for lack of infrastructure, especially road transport network. This results in a deficit compared to other tourist destinations, also in experiential tourism.

Frequently, it happens that the time spent for waiting and moving is long and unnerving. In fact, individuals difficulty in meet their demands and their needs, both for the difficulty to have free time from daily life, both for the car industry's pervasive accommodation. This last tend to envelop even the consumer in the spiral time and space of the holiday.

The maritime transport, especially shipping speed, is configured as an alternative to terrestrial transport system (road and rail) existing, already suffering from congestion.

In this way they can be met the needs of mobility for both people to move daily within the coastal area, both for occasional users.

In particular, starting from the new frontiers of modern tourism, It has been analyzed the current offer of transportation from the point of view of the existing technology of maritime means fast, bringing out their criticality and performance metrics.

It is analyzed the waterfront areas of Sicily, in particular the west side, and the possible benefits that may arise for the territory and for users.

## **2 Touristic globalization and experiential tourism. The new frontiers of modern tourist**

Tourism is an important resource to develop the economy of a region. It is related to the need to travel and It can be considered as a moment of respite in the chaos of modern life.

Taking into account the issue of tourism, implicitly it speaks about travel or displacement from/to the touristic destinations and, ultimately, about transports. But transport and tourism are two aspects related between them. Planning and implementation of transport system must consider impacts caused by the mobility of people and goods related with tourism.

Likewise, tourism policies can not overlook the aspects of travel from/to destinations and within each of the destinations themselves.

The organization and quality of transport services are integral part of the tourism industry and increments, sometimes very significant, of tourists in an area are largely determined by the improvement of accessibility to the territory.

Although the accessibility to tourist areas depends by nature of the site, state of infrastructure and efficiency of transport systems, a new air transport low cost network flights allows the access to areas once considered outside the usual touristic circuits.

This has represented, during the last decades, the assert of international mass tourism.

The air transport liberalization has favored the creation of low-cost airlines, bringing more competition in the sector, through prices considerably lower.

This has generated an increase of annual tourist movements and distances, modifying not only the traditional touristic offers but also the transport demand, generating the "globalization of tourism."

We ask ourselves why tourists travel from region of origin to a destination totally different for natural, environmental and cultural aspect and why they prefer particular destinations instead of others. Traveling is reason often of relax, wellbeing and enjoyment.

The choice of destination becomes important when the visitor selects competitive elements between many alternatives characterized by:

- the ability to respond to different needs and motivations;
- the comparative cost;
- quality of services.

In the last years, some tourists select the destination to visit in relation to the cost of transport, preferring the destinations more accessible to low-cost., rather than traditional destinations [2].

The tourist gives priority to the holidays that can offer, in relation to places, people and locations that he visited, not only the use of services but also new experiences or emotions. Travels, that combine many types of experiences during the space-time of a vacation, are of great success. The result is the leave of the old type of holiday, defined of "surface". So It is necessary a change in the management of tourist offers, that must adapt to the new type of demand and it must be seen not only as a destination but also as a product, that gives to tourist a value added defined as "experiential" [3].

Perception of places uses basically the visual senses and crossing fast replaces the total perceptual experience [4], so it is also important to consider this aspect, providing at the tourist a experiential travel.

The experiences, in fact, produce sensations, emotions, values cognitive, behavioral and relational [1] and it is essential that policy-makers but also tour

operators, etc., analyze these factors, in order to guide the effects and thus make competitive the territory in which they manage.

In this context, tourism and marketing are inseparable (fig.1). The capacity to propose integrated marketing of the territory is a strategic aspect. The purpose is to win the individualism of local areas that disorients potential tourist, losing competitiveness in the global market.

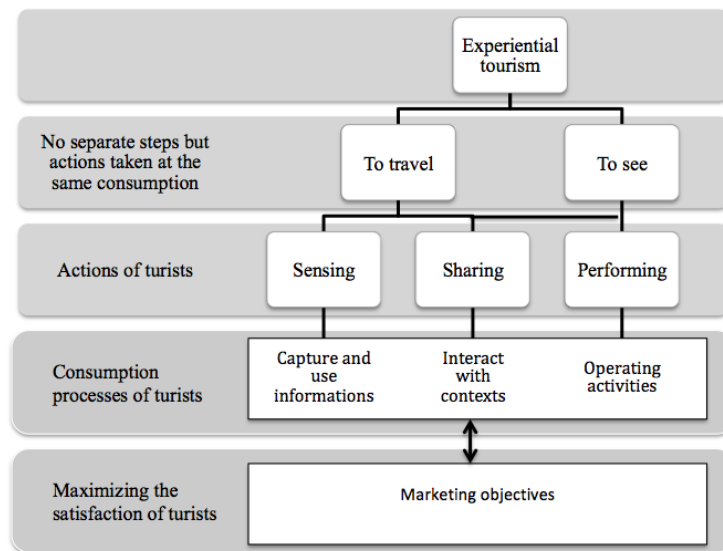


Figure 1: Experiential tourism and marketing objectives.

For these reasons it is important for the develop of Sicilian tourism to focus on these aspects, beginning from the transport experiences that can give to people. The emotion of a travel, in fact, should not be seen as just a moment to reach the "Sicily" but also for the mobility within the Island.

In this way the relation between historic resources, nature, etc. and trip becomes an indissoluble element for the tourist, where the "movement" is an opportunity to elicit an "emotion".

### 3 High Speed Craft

During recent years there has been a development of technologies of high-speed marine vehicles. This vessels are used on very short-distance and/or on medium-range routes, especially for passengers and car transport. In this charter we propose first the actual technologies and after the recent advances.

High Speed Craft (H.S.C.) is a ship that reaches a speed over 20 knots, regulated by HSC Code, proposed by International Maritime Organization [5].

Table 1 describes technical details of HSC, used in public transports [6].

Table 1: Technical details of High-speed marine craft

HSC	Lenght (m)		Draught (m)		Speed (knots)		Endurance (nm)		Passengers	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Hovercraft	10,15	51,00	0,27	2,60	23	50	120	750	16	334
Hydrofoils	18,55	43,50	0,30	4,88	30	50	130	320	40	400
High-Speed Catamaran and Multi-Hull Vessels	16,76	49,30	0,72	3,65	20	50	125	600	70	652
High-Speed Mono Hull Craft	22,78	48,50	0,80	2,83	22	38	200	300	64	450

**Hovercraft** is a vessel provided of an air cushion, that allows him to move on different surfaces. The faster models have a speed of 50 knots, with 90 passengers. The endurance is about 200 nm for a speed of 24 knots, transporting 257 passengers.

**Hydrofoils** are HSC that for hydrodynamic effect rise up on the sea surface. The speed Hydrofoils is about 45 knots, draught 4.40 mt with 250 passengers transported. The problems regard the endurance and the adaptation of existing ports, expecially due to lower wings of hydrofoil [7].

**Catamaran and Multi-Hull Vessels**, differently of Hydrofoil, allow transport of vehicles too. They consist of two or more hulls interconnected by a horizontal structure and they are Trimarans when there are 3 hulls. The range of speed is 20-50 knots. Maximum passengers are 652 and the endurance is 600 nm.

**Mono Hull Crafts** are HSC that consume more fuel and during exercise several problems are related on the wave motion generated near the coast due to high speed.

Recent studies and researches on HSC, that appear in international literature and in conferences, are about:

- materials [8];
- design of high speed hulls (in general ship hydrodynamics) [9] [10] [11];
- hybrid systems for low environmental impacts;
- safety and operating characteristics of the various typologies of these high-speed marine vessels [12].

The following image (Fig. 4) shows some examples of HSC applications that operate scheduled services in the world [13].

Cyclades Islands, Canary Islands, are some reality where you can move through a medium speed maritime for the airport.

Maritime and air transport services connect the Cyclades archipelago from the rest of the Greece and Europe. During the summer, the solutions increasing to respond to the peaceful "invasion" of tourists.

The connections begin from the airport to the port, which connects with the islands. This happens also for the islands of the Canaries and the Balearics. The Canary Islands have a good connection with the continent and the islands of the

archipelago. All the islands have an airport, except for El Hierro and La Gomera, which have internal connections (only between the islands).



Figure 2: Distribution of HSC used for public transport in the world.

To get to Tenerife, Gran Canaria and Lanzarote there is a connection from the port of Cadiz with the company Acciona Transmediterránea.

The Balearic Islands have connections with the airports of Mallorca, Menorca and Ibiza. For example the island Formentera is only connected by hidrofoil to Ibiza.

In this paper we present some innovative HSC. Trimaran and pentamaran hull, for passenger and vehicles transportation, seem to be appreciated by international studies and proposals for non-conventional high-speed marine vehicles [14].

The research on Hybrid systems is oriented for low environmental impacts, through craft with photovoltaic panels.

For example “Planet Solar” [15] is a catamaran length 30 mt, with a surface of 537 meter squares, covered by photovoltaic panels. The speed is 8 knots with a maximum speed of 14 (tab. 2). The sun energy retained in batteries, so it is possible to navigate also during the night (autonomy 3 days).

Table 2: Technical details of “Planet Solar”

Technical details	Value	Units of measure
Length	31	m
Width	15	m
Height	6.10	m
Length with flaps	35	m
Width with flaps	23	m
Crew	4	personnes
Passengers	40	personnes

Another researches are about the use of sail or more mobile sails, covered with photovoltaic panels [16].  
 Unresolved aspects for high-speed ships or, at least aspects requiring deeper investigation, still are working in progress.

#### 4. Case of study

This study proposes a new transport mode between the airports of Palermo and Trapani, integrating the actual mobility offers and taking advantage that airports are located near the coast.

The airports of Punta Raisi (Palermo) and Birgi (Trapani) in western Sicily able to promote economic developments, tourisms and socials for these areas.

The statistical tourist flow (GESAP) report that, in 2010, the airport of Punta Raisi, between departures and arrivals, recorded 4,342,227 passengers [17]; while from the airport of Birgi, in 2009, arrived passengers 1,069,528, and continue to grow [18].

This zone is about 60 nm and covers part of the metropolitan area of Palermo and province of Trapani (fig. 2).

It is densely urbanized and there are many itineraries of historical, gastronomic and natural interestes.

The actual transports, accentuated by the inefficiency of rail system, are not able to supply the mobility demand generated by activities of this territory, causing daily congestion on the roads.

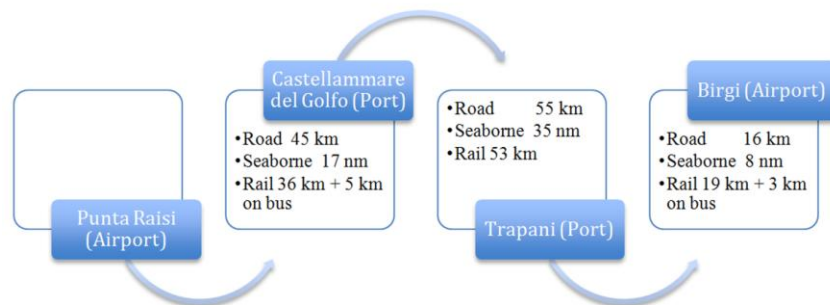


Figure 3: Distances in the area of study for several modes of transport.

So the airport is an independent and isolated transport hub.

Figure 3 shows the results of a survey (year 2010) carried out in Palermo Airport on a sample of 1,294 passengers, with regard to means of transport used to reach the airport [19].

The results show that private transports are prevailing over public transport.

It is necessary to enforce the public transports, making them efficient, economics and integrated. In this way tourism can be experiential, involving people already during the move.

The solution should be the introduction of fast sea shipping, creating a touristic product suitable for existing demand that is become demanding.

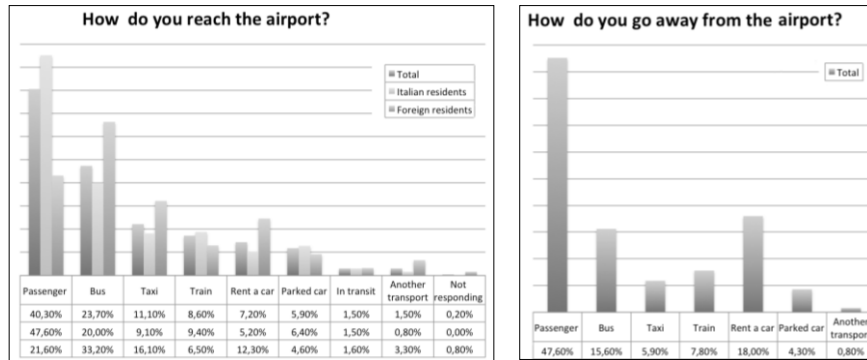


Figure 4: Analysis of modal split used to reach (in/out) Punta Raisi.

Target is use-suited ship for speed, capacity, autonomy, etc., operating an optimal commercial speed that should reduce number of berthing.

We propose the use of HSC already in operation in Sicily, because the prototypes at low environmental impact are not competitive for commercial applications. In this way this service can be considered a widening of the existing maritime transport system.

Hydrofoil is the suitable HSC for this application. In fact the adaptation of existing ports at this ships require limited resources.

Moreover, mobility demand concerns to people that must go to the airports, therefore it is not priority the transport of vehicles.

In this study were identified a variety of berthings that can be receive the transport speed and that are easily accessible through public transport. Have been identified 4 stopping points [20]:

- Punta Raisi (Project);
- Castellammare del Golfo;
- Trapani;
- Birgi (In expansion).

**Palermo airport** is located in the Punta Raisi, 35 km from the center of Palermo, along the A29, after the exit of Cinisi. There are several services of transport that connecting the airport with Palermo, covering the time periods of arrival and departure of flights, but there isn't a berthing of sea.

This node represents the local airport in the metropolitan area of Palermo and western Sicily, also for national and international connections of shorts-range. Actually there isn't a berthing of sea.

Figure 5 shows an idea of location originated from the proximity from the airport [21]. The hypothesis provides a service of 300 mt.



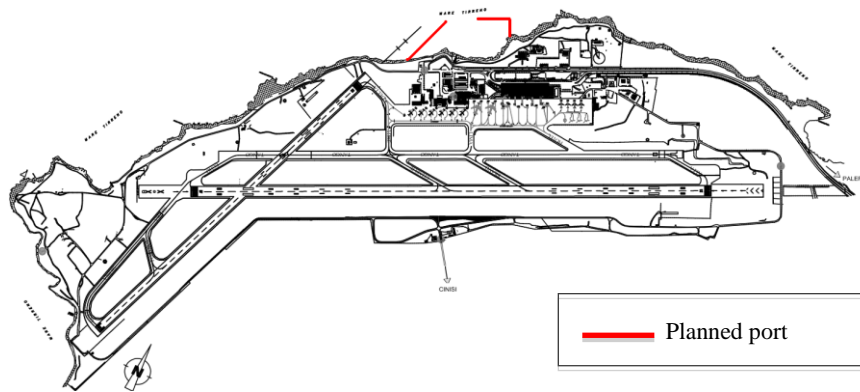


Figure 5: Port location of Punta Raisi.

**Castellammare del Golfo (Port)** is located half way between the port of Trapani and Palermo. On the east, the Castle Quay is internally equipped with quays and mooring rings.

Actually it is used for pleasure boats, so it could be a starting point as a tourist destination and as a connect to the interior West.

This decision brought to the consideration to examine the feasibility of an expansion and a connection with the airport infrastructure in western Sicily, to improve the mobility of one of the most depressed areas of the south.

The **port of Trapani** has a close connection with the city and its historic center, for historical, cultural and geographical reasons. Drills, said "port city", was created and developed around its own port, since ancient times.

Many companies operating within the harbour able to provide various port facilities and it is an ideal place to receive maritime assets of different types and sizes. Also it offer services to destination excellent level and easy to use.

The berthing of Trapani has quays for total length of 1.650 meter and numerous infrastructure are near, as the train station and airport of Trapani-Birgi. Those arriving at the port of Trapani is located near the centre of the city.

The **airport of Trapani** – Birgi “Vincenzo Florio” is a military berthing open to traffic and passenger flows are very increasing in last years, through low cost airlines. Accessibility is guaranteed by road transport because the nearest train station is Mozia-Birgi (3 km from the airport). There is a berthing near this airport that needs expansion.

## 5. Conclusions

The purpose of this paper was to propose an alternative mode of transport to connect Punta Raisi and Birgi airports, proposing a fast maritime connection from an airport to another of the western Sicily.

The assumption of this study was to propose the enhancement of existing berths, transforming them into strategic interchange nodes and tourism.

The modern HSC, especially hydrofoils, are able to offer a regular and comfort services to tourists.

These nodes are mainly sites that including customs, functions, streams: a synthesis of space and community.

The project, in addition to enforcing of the port functions (increasing), describes the development, to the transport system, itineraries of monumental historical and touristic that they have a big attractiveness.

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