In brief

Is it possible to promote efficient, sustainable and accessible mobility in alluring island regions? These popular tourist destinations have an annual surge in summer visitor numbers, but low population densities at other times of the year. In addition, transport planning has, until recently, prioritised private vehicles.

This is a daunting challenge faced by many small islands in the Mediterranean and elsewhere in Europe. Appropriate urban planning and design of the transport system is needed to address the situation. The CIVINET CY-EL network, which is dedicated to promoting sustainable mobility in Greece and Cyprus, has successfully developed the concept of a Sustainable Island Mobility Plan (SIMP).
A SIMP builds on the methodology for a Sustainable Urban Mobility Plan (SUMP), but adjusts it to the specific problems and challenges of small and medium-sized islands. The key aim of a SIMP is to provide flexible and sustainable mobility solutions.

**Context**

Greece comprises more than 120 inhabited islands. These are highly diverse in character, as reflected by the variety of their respective populations, size and topography, levels of urbanisation and economic development (including tourism).

Despite the differences, the islands also have many similarities. They are relatively small in area and most consist of a single municipality (i.e. there is only one administrative layer). Many face the same challenge of a development model based on (mass) tourism combined with a scarcity of resources. This poses a threat to fragile ecosystems and social cohesion. If not managed appropriately, mobility becomes part of the threat.

Throughout the summer months in particular, tourists flock to these islands. They put a strain on existing infrastructure, not only by their numbers, but also because the tourist flow is often centred on a few locations – a limited number of villages, a coastal strip, some tourist hotspots, and the port and/or airport providing access to the islands.

On many islands, existing infrastructure is not designed to support such a large transport flow. Although mobility is dominated by cars, road capacity is limited – particularly in many of the small towns and villages. The density and quality of the transport network frequently varies across an island and often parts of an island have low accessibility. There are no rail networks and the availability of (public) transport services is limited.

Upgrading transport infrastructure and services to cope with peak demand requires significant investment. However, public funds may be limited and demand for transport services in the off-season is usually too low to merit frequent and affordable public transport services. It is important for the overall development of islands and for sustainable tourism to find ways to facilitate sustainable mobility, and maintain accessibility for tourists and residents.

The concept of a SIMP provides an interesting example of how small and medium-sized islands across the EU can plan for sustainable mobility.

**In action**

The SIMP methodology was developed to address the specific challenges faced by small and medium-sized islands in planning for sustainable mobility. The Greek islands of Sifnos, Kea and Naxos (making up part of the ‘Cyclades’) are the first islands where a SIMP has been adopted as a mobility planning model.

Traditionally, when identifying mobility patterns, the main focus of mobility planning has been on residents, with less attention paid to tourism. Furthermore, planning is often based on average mobility patterns over a year and tends to focus on key cities or urban areas.

In contrast, the SIMP methodology applied to Sifnos and Kea (and Naxos to a lesser extent as its focus is on the functional area of Naxos city) takes into account the whole island as the functional urban area. It pays particular attention to the collection and analysis of mobility patterns; and needs of tourists and residents, and the variations of their travel patterns throughout the year. Furthermore, whereas sustainable urban mobility planning would typically focus on achieving a car-free city, a key objective of an island’s SIMP is car-free tourism. Therefore, understanding the
differences between the needs and behaviour of residents and tourists is an important element of the SIMP development.

To gain such an understanding, mobility data is collected throughout the year. Both groups are actively solicited for ideas and feedback to help in the analysis of problems and needs, and to identify feasible solutions. Social media and crowdsourcing techniques are used to obtain information directly from tourists.

As resources (e.g. public funds and land) are limited, it is important this is taken into account during infrastructure planning. For example, much can be done to create and improve end-to-end transport routes to and from major destinations and points of interest. This includes providing safe and attractive routes for walking and cycling, while ensuring there are sufficient parking facilities with easy connections to key destinations and applying intelligent transport systems (ITS) to provide route information and optimise flow.

Furthermore, the SIMP concept is particularly useful when developing flexible, on-demand mobility solutions, such as sharing schemes (e.g. car and bike sharing) that enable (public) transport mobility hubs to include park and ride, park and walk, and park and bike facilities. Temporary measures, such as introducing pedestrianisation and traffic calming measures in certain areas during the tourist season, also receive special attention in a SIMP. In addition, a SIMP looks at measures to provide incentives to replace conventionally fuelled vehicle fleets with electric vehicles (EVs). Among the targeted fleet owners are car rental companies and logistics service providers. Since the scope and capacity of the electricity grid is limited on many of the islands, there is a keen interest in developing smart charging solutions for EVs, which use clean energy produced decentrally and possibly even off-grid. There is also interest in applying vehicle-to-grid (V2G) technology – a process that enables EVs to exchange energy with the electricity grid to provide ancillary services, such as supplying power during peak periods. Furthermore, the SIMPs for Sifnos, Kea and Naxos include plans for implementing a hydrogen ferry service connecting the islands comprising the Cyclades.

Having embraced the SIMP concept, Sifnos, Kea and Naxos are leading the way by working to develop and implement their own mobility plans on this basis.
Results

The SIMP concept is relatively new and has only been applied by the three islands for the past 2 years. None of these SIMPs has gone through the full cycle from preparation to implementation and evaluation. However, the adoption of the SIMP concept has brought new or reinforced credibility to the importance of analysing and addressing tourism-related mobility and the accompanying seasonal variations. Mobility data from tourists and residents shows the previously unaccounted differences in needs and behaviour. Analysing tourist and resident routes from origin to destination provides useful input to help identify missing links in these routes, and measures that can make mobility more sustainable. Social media applications are useful for collecting mobility data and feedback from different groups of transport users.

While Sifnos, Kea and Naxos are among the first to adopt the SIMP concept, SIMPs are proving to be appealing for other islands. Some 32 Greek islands have now received funding to develop a SIMP or a SUMP, taking on board the need to deal with tourism-related mobility and high seasonal fluctuations in mobility demand.

Challenges, opportunities and transferability

SIMP experience relevant for other islands wishing to take action include:

- Analysing the mobility patterns of tourists and residents provides useful insight on their impact on the environment and urban living conditions. The bigger the impact of tourism, the bigger the need to focus on the promotion of car-free tourism rather than a car-free city.
- Social media and crowdsourcing tools can be helpful for collecting data on mobility patterns, and tips and ideas from tourists and residents. There is still a lot to be learned about the use of these tools. Various EU-funded projects, including MOTIVATE, DESTINATIONS and OROWD,
have been developing and testing such applications.

- A SIMP has an important role in defining sustainable mobility solutions that will facilitate sustainable journeys from origin to destination. This includes integrating shared mobility services with micro-mobility solutions. Such solutions are valuable for tourists and residents to help ensure a basic level of accessibility throughout an island all year round, especially during the off-peak season. Experience from other Mediterranean cities – as described in the EU-funded projects DESTINATIONS, DESTI-SMART, LOCATIONS and MOBILITAS – provides good examples of sustainable mobility solutions, which have been further developed and tested in the context of the three islands.

- To raise awareness and promote sustainable mobility options, it is important to have easy access to information and well-targeted communication. Developing smart applications – that supply easy access to mobility information, seamless journey planning and the Mobility as a Service (MaaS) on offer – is seen as an important element in persuading tourists to use sustainable mobility options. Marketing attractions and places of interest based on easy access can also help to attract tourists.

- Islands need smart charging solutions for EVs, unlocking the flexibility to use more solar and wind power by adapting the charging cycle of EVs to the conditions of the power system and the needs of vehicle users.

- Apart from the technological hurdles that face smart charging solutions, such as V2G, there are several regulatory, industrial and consumer barriers to be resolved before widespread implementation can be realised.

- Islands are an ideal testbed for these solutions. Small islands are particularly well suited to the implementation of electric mobility. As distances are small, the relevance of range limitations of EVs is limited. In addition, electromobility offers flexibility and electricity storage services that are particularly important for island electricity grids, which are not interconnected to the main grid, as cars, including EVs, typically spend about 95% of their lifetime parked. These idle periods, combined with their battery storage capacity, could make EVs an attractive, flexible solution for the power system. Each EV could effectively become a micro-grid-connected bidirectional storage unit with the potential to provide a broad range of services to the system. EV charging patterns could be controlled to flatten peak demand and support real-time balancing of the grid by adjusting their charging levels. Through V2G, EVs can give electricity back to the grid, also providing ancillary services to the electricity grid operators. Furthermore, the use of renewable energy sources in isolated, small electric grids is often limited due to a lack of demand during off-peak hours and storage capacity. EV charging during off-peak hours could increase efficiency and act as an incentive for further investment in renewable energy.

In Depth

More information:

Contact persons

Alexia Spyridonidou: as@civinet.gr

Kosmas Anagnostopoulos: ka@civinet.gr

Photo Credits: © petovarga and Aerial-motion - no permission to re-use image(s) without separate licence from Shutterstock.