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# How may sustainability be advanced through Strategic Environmental Assessment (SEA) in Small Islands? Exploring a conceptual framework

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## Highlights

Explored three key arguments for sustainability in small islands linked with SEA.

Showed the importance of the development of small islands exchange networks.

Encouraged community empowerment and practitioners' ownership in small islands SEA.

Highlighted the need for a systematic engagement and training for the integration of islanders' knowledge.

## Abstract

Small islands provide an opportunity to influence the debate on Strategic Environmental Assessment (SEA) towards sustainability, due to their specific natural and human features. The research goal was to understand how sustainability might be advanced through SEA in small islands, supported by the development of a conceptual framework and recommendations for its implementation. The framework developed provides for the identification of clusters of concepts linking SEA with sustainability in small islands, identified as being key actors, island cooperation and information exchange networks, and small islands SEA-specific issues. These clusters of concepts are interlinked through the actors in a continuous loop of learning and improvement process. The implementation of the framework is recommended based on different key factors, which derived from the conceptual framework: awareness for decision-makers; empowerment and ownership of practitioners and intermediate decision-makers; small islands cooperation and exchange networks; SEA specific issues for small islands; and, small islands specific stakeholders' engagement (local knowledge). The application of the framework developed was conceptualized for the Azores and Orkney archipelagos due to their well-established SEA systems, with similar legal background – the European Union SEA Directive (Directive 2001/42/EC). In the Azores, the SEA system may promote an easier transition towards new models of thinking, but more challenges are expected for Orkney practitioners and decision supporters which may need to use creative solutions to overcome them. Overall, this research concludes that a mind-set changing capacity is needed, enhancing future practice and influencing different stakeholders for the need of specific small islands approaches. The proposed framework should be adopted as a dynamic tool and adjusted iteratively with practice.

## Keywords:

Strategic Environmental Assessment (SEA); sustainability; small islands; community empowerment; local knowledge.

## 1. Introduction

Small islands<sup>1</sup> are often dismissed in environmental and sustainability assessment research, despite the distinctive nature of their environmental, economic and social development (Douglas, 2006; Polido et al., 2014). Fernandes and Pinho (2015) make the case for planning research, where they argue “islandness” as the main feature for particular case of small islands. The concept of “islandness” has been explored in the literature, in the field of islands studies research, but there is still a strong debate about its relevance and meaning (Fernandes and Pinho, 2015). “Islandness” can be loosely described as the unique biophysical, geographical, political, social, economic or cultural of islands influencing the outcomes in islands’ events (Baldacchino, 2004). Additionally, it can also be translated in the intuitive knowledge and sense of place of islands communities (Conkling, 2007; Vannini and Taggart, 2013) – an “experiential identity” (Spilanis et al., 2013, p. 1999).

Small islands have characteristics of bounded systems, and unique features of biological and cultural diversity (Kelman et al., 2015; Kerr, 2005), in addition to a narrow and dependent economic base, limited resources, sensitive and fragile ecosystems, and small populations with possible skills-pool constraints (Kerr, 2005; McIntyre, 2004; Ramjeawon and Beedassy, 2004). Small islands are prone to natural catastrophes, and because of their small size, they are less resilient to single-event disasters (Briguglio, 1995; Hein, 2010; Pelling and Uitto, 2001). These issues lead to an urgency for the integration of sustainability in decision-making processes in these territories (Campling and Rosalie, 2006; Crossley and Sprague, 2014; Douglas, 2003), as also recognized by the international community while focusing on Small Islands Developing States (SIDS) (see United Nations, 2014, 2005, 1994).

However, sustainability in small islands is often viewed as paradoxical because of their high dependency on international trade and markets which may result in unsustainable patterns of global consumption contrasting with possible sustainable practices within the small island organizational and cultural settings (Kerr, 2005). This paradox leads to the need for specific approaches towards sustainability in these territories. Currently, sustainability in small islands is treated sector by sector, emphasizing topics such as climate change, energy, disaster risk reduction, and biodiversity (United Nations, 2014, 2005, 1994). Additionally, United Nations (2014, 2005, 1994) points out the importance of partnerships at the national, regional and international levels, technology transfer, data and statistics, and capacity-building to implement these specific sustainability topics. Sustainability in these territories need to take into account concepts of governance entailing community empowerment, decision-making paradigm change, and resilience enhancement (Polido et al., 2014),

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<sup>1</sup> Generally, Small Island is defined as a territory surrounded by a large body of water with a land area of less than 13,000 km<sup>2</sup> and 1,000,000 inhabitants or less (Dolman, 1985; Hess, 1990).

thus disputing the sectoral approach for sustainability in these territories, going beyond the UN's (2014, 2005, 1994) view for sustainability for these territories. These three key arguments for sustainability for small islands intertwine with what is envisaged by Strategic Environmental Assessment (SEA) (see Sloomweg and Jones, 2011; Tetlow and Hanusch, 2012; White and Noble, 2013). Strategic Environmental Assessment (SEA) is a systematic environmental policy tool used to assess the environmental, economic and social consequences of a policy, plan or programme, to ensure that any effects/impacts are appropriately addressed at an early stage of the decision-making process (Sadler and Verheem, 1996; Therivel, 2004). SEA was firstly introduced through the United States National Environmental Policy Act (NEPA) in 1969, and currently there are more than 60 countries implementing it (Tetlow and Hanusch, 2012). In the European Union, with the introduction of the Directive 2001/42/EC, all member states had to transpose it to their national regulations.

Studies have shown that SEA may positively contribute to the advancement of sustainability in small islands (e.g. Payet, 2011; Ramos et al., 2009), including by identifying environmental challenges at coastal zone management processes (Govender and Trumbic, 2011). SEA promotes sustainability by enabling institutional openness and transparency, and by enhancing different stakeholders' coordination and capacity, thereby influencing the decision-making process (Noble and Nwanekezie, 2016). Due to this evidence, Polido et al. (2016a, 2016b, 2014) have been developing specific work regarding the role of SEA towards sustainability in small islands. Small islands SEA experts, surveyed by Polido et al. (2016a), believe that SEA already improves sustainability in those territories by promoting transparency and public awareness, but sustainability may be further enhanced through cooperation and information exchange. Networks with key stakeholders and the use of local knowledge are also encouraged by SEA practitioners and experts and are seen as a way to enhance sustainability in small islands (Alshuwaikhat, 2005; Polido et al., 2016a). However, it was found by Polido et al. (2016b), in the case of the Azores (Portugal) and Orkney (Scotland) archipelagos, that the existing SEA guidelines (main components and features addressed) and the team that develops the assessment (their specific knowledge and capacity), influence practice and shape the SEA outcomes independently of the type of decision-making being assessed. This indicates a dearth of specific capacity and approaches for small islands SEA, reflected by uniformity in SEA reports, including the topics assessed, the techniques for the assessment and methodological approaches which seem to be related with the knowledge of the practitioner (McLauchlan and João, 2012; Polido et al., 2016b).

Even though it is necessary to use what the different stakeholders already know, and avoid drastic changes all at once (Noble and Nwanekezie, 2016), there must be some advancements in SEA practice and knowledge, and in the institutional frameworks and paradigms. The exploration of tailored

approaches, sets of guidelines, showing specificities and enhancement of SEA knowledge and capacity, are key for the development of sustainability-led approaches (Polido et al., 2016b). Thus, despite the importance of SEA for the advancement of sustainability in small islands, there remains a paucity of research about context-specific approaches in these territories (Polido et al., 2016b). There is evidence that specific approaches for small islands must take into account stakeholders' engagement and capacity building (including decision-makers), and establish collaborative approaches within small islands regions (Polido et al., 2016a, 2016b).

Building on the research developed by Polido et al. (2016a, 2016b, 2014), the present research aims to understand how sustainability may be advanced in small islands through SEA, supported by the development of a conceptual framework and recommendations for its implementation. Small islands, specifically those small islands within the European Union, have well established SEA systems, with the same legal framework (the EU SEA Directive<sup>2</sup>). In previous research the Azores and Orkney archipelagos were used as case studies (Polido et al., 2016b). The Azores are a Portuguese autonomous region and European outermost region, isolated in the North Atlantic with specific SEA legislation, while the Orkney are a Scottish council area located 32 km north from the Scottish mainland, using the same legislation as the mainland. In the present research these case studies are also being used to discuss the challenges and opportunities faced by these territories if implementing the SEA context-specific conceptual framework proposed for small islands.

The paper started by justifying the aim of the research, and it then details the research design. Section 3 presents the rationale for the conceptual framework for small island SEA towards sustainability. The discussion built on recommendations for the implementation of the conceptual framework, and the main opportunities and challenges of the proposed framework for the Azores and Orkney islands is explored in Section 4. The final section concludes by suggesting possible ways to advance the research and practice of SEA for sustainability in small islands.

## **2. Research design**

This paper proposes a conceptual framework to support and improve an SEA towards sustainability in small islands. The main aim of the framework is to help decision-makers, practitioners and intermediate decision-makers introduce key sustainability features in the SEA system of small islands. The conceptual framework was developed iteratively building on the results of Polido et al. (Polido et

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<sup>2</sup> "SEA Directive" refers to the Directive 2001/42/EC of the European Parliament and the Council of 27 of June 2001 on the assessment of the effects of certain plans and programmes on the environment.

al., 2016a, 2016b, 2014)<sup>3</sup>, and continuous literature reviews. This section outlines the research design used to conduct the study.

To develop the conceptual framework, building on the works by Polido et al. (Polido et al., 2016a, 2016b, 2014) and continuous literature reviews, a concept map was sketched out to facilitate the integration of the different information and the analysis of the data. Concept mapping is a technique that supports the visualization of abstract conceptual knowledge, and related information (Lanzing, 1998; Tergan, 2005). Concept maps can be used in different contexts (see Kinchin and Streatfield, 2010; Kolkman et al., 2007; Nilsson et al., 2009) to enhance knowledge and understanding by helping aggregate and link different sources of information, to provide a systematic and conceptual framework, as used by Ceulemans et al. (2015) and Lozano and Lozano (2014).

Concept maps represent concepts and linkages between the concepts forming propositions; however, depending on the type of information, they may be presented differently. Traditional concept maps show clear concepts, hierarchical relationships, and linking words, whereas free-form concept maps demonstrate relationships between concepts without an hierarchical pattern (Kinchin and Streatfield, 2010; Wheeldon and Faubert, 2009). A concept map can be sketched in different ways; it can be drawn collaboratively with different stakeholders having an input into it, or it can be an individual exercise for information and knowledge systematization (Maxwell, 2005; Novak and Gowin, 1984). In this research the concept map which gave form to the conceptual framework was developed through the approach given by Novak and Gowin (1984) and Novak and Cañas (2008), with additional inputs by Maxwell (2005) and Miles and Huberman (1994). The development of the concept map is detailed below:

#### **Step 1:** Defining the focus question

According to Novak and Cañas (2008) concept maps are dependent on the context. By establishing a focus question and clarifying the problem being studied, it is possible to limit the context. In this research the focus question was “How may sustainability be advanced through SEA in small islands?”, which is linked with the research aim. The following steps were built on this focus question.

#### **Step 2:** Identifying the key concepts

After establishing the context it is necessary to identify a set of key concepts to draw the concept map (Novak and Cañas, 2008; Novak and Gowin, 1984). These key concepts are the main ideas grouped through an iterative process of analysis of previous phases of a research and/or literature reviews

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<sup>3</sup> A brief summary of the research background is available in the Appendix 1.

(Maxwell, 2005). These key concepts need to be listed and informally ranked from the most inclusive to the most specific for the problem identified (Novak and Cañas, 2008). For this research the key concepts identified emerged from an analysis of the work by Polido et al. (2016a, 2016b, 2014). Table 1 lists these key concepts.

Table 1 – Identification of the key concepts identified from previous research

Key concepts	Reference
Decision-making, Governance and community empowerment, Resilience	(Polido et al., 2014)
Assessment topics, Baseline information, Cooperation networks, Decision-makers, Follow-up, Guidelines, Intermediate decision-makers, Local stakeholders, Methods, Monitoring system, Practitioners,	(Polido et al., 2016a, 2016b)

### Step 3: Drawing a preliminary concept map

It is important to draw a preliminary map to understand the connections between the different concepts. In this step concepts with no clear connection or linkages to other concepts identified in Step 2 may be dropped (Maxwell, 2005; Miles and Huberman, 1994; Novak and Cañas, 2008). The preliminary map can be sketched in different formats; it may be free form, or hierarchical. In this research a mixed approach was opted for, where the concepts were placed hierarchically first, and then they were grouped without linking words, thus creating clusters of concepts (groups of similar concepts) – actors, small islands cooperation and information exchange, and SEA specific issues for small islands (see Figure 1 for details).

### Step 4: Identifying cross-links and iterations

After the preliminary map is sketched it is necessary to find further links between the concepts, with additional literature reviews and/or further discussion (Maxwell, 2005; Novak and Cañas, 2008). To develop this step, comprehensive literature reviews were done using the key concepts (Table 1) as keywords in combination with “environmental assessment” and “sustainability assessment”<sup>4</sup>, broadening the search to overall SEA practice in order to find papers covering a combination of the topics. The database used for the research was Scopus® from Elsevier. The authors used this database to restrict the review to academic literature. The search targeted publications from Environmental Assessment (EA) discipline (for details see Fischer et al. (2015)). However, as stressed by Fischer et al. (2015), the majority of publications fall out of the field of the ex-ante environmental management

<sup>4</sup> The exact search query was ( TITLE-ABS-KEY ( "Key concepts" ) AND TITLE-ABS-KEY ( "Sustainability assessment" ) OR TITLE-ABS-KEY ( "environmental assessment" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "re" ) OR LIMIT-TO ( DOCTYPE , "ip" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) ) , limiting the search to articles, reviews and articles in press, appearing in journals, and written in English. The search was conducted first in April 2016 and updated in December 2016.

decision support instrument. The search results retrieved 7144 publications. The key concepts with a large amount of results (more than 100 results) were further screened automatically, limiting the results to EA discipline journals (Fischer et al., 2015; Fischer and Onyango, 2012). This action resulted in a database of 695 publications, and a manual screening by reading the titles and abstracts was developed to further reduce the database to publications within the scope of the research. The publications focusing on the key concepts through an SEA theory perspective were analysed. Additional literature was identified referenced in the retrieved publications during the analysis. A total of 72 publications were surveyed. The authors acknowledge the limitations related with the sampling method, however, this literature was aimed at helping link the different key concepts, and therefore, not all the literature had similar significance for the research<sup>5</sup>. The analysis of these literature was followed by discussions between the authors to further understand causal relationships between the concepts.

From the conceptual framework derives a set of key factors recommended for its implementation, found through the links and clusters of concepts. The Azores and Orkney archipelagos were used to explore the conceptual framework implementation challenges and opportunities due to the well-established SEA system and their specific characteristics. The Azores is a Portuguese autonomous region with its own political-administrative statutes and government bodies. It is constituted by nine inhabited islands with a total land area of 2,322 km<sup>2</sup> and 246,746 inhabitants (DGT, 2014; SREA, 2012), distributed along 600 km with an Exclusive Economic Zone (EEZ) of approximately 984,300 km<sup>2</sup> and a coastline of 690 km (Borges et al., 2009). Azores have high biologic and geologic diversity, reflected by 123 protected areas (terrestrial and marine) (DRA et al., 2014). Orkney is a Scottish council area, located 32 km north from the Scottish mainland, made up of more than 70 islands and islets (Orkney Islands Council, 2012) but only 20 islands have full-time residents (National Records of Scotland, 2013a). Overall, Orkney as an area of 990 km<sup>2</sup> and 21,349 inhabitants (National Records of Scotland, 2013b). The biologic and geologic diversity is reflected in the 73 international and national protected areas (Orkney Islands Council, 2012). Both archipelagos are part of the European Union and have a well-established SEA system. Azores is a European Outermost Region<sup>6</sup> with specific SEA legislation and Orkney is a Scottish council area, with the smallest area and the highest population density within the Islands Council areas of Scotland (Polido et al., 2016b).

### **3. Conceptual framework for small islands SEA towards sustainability**

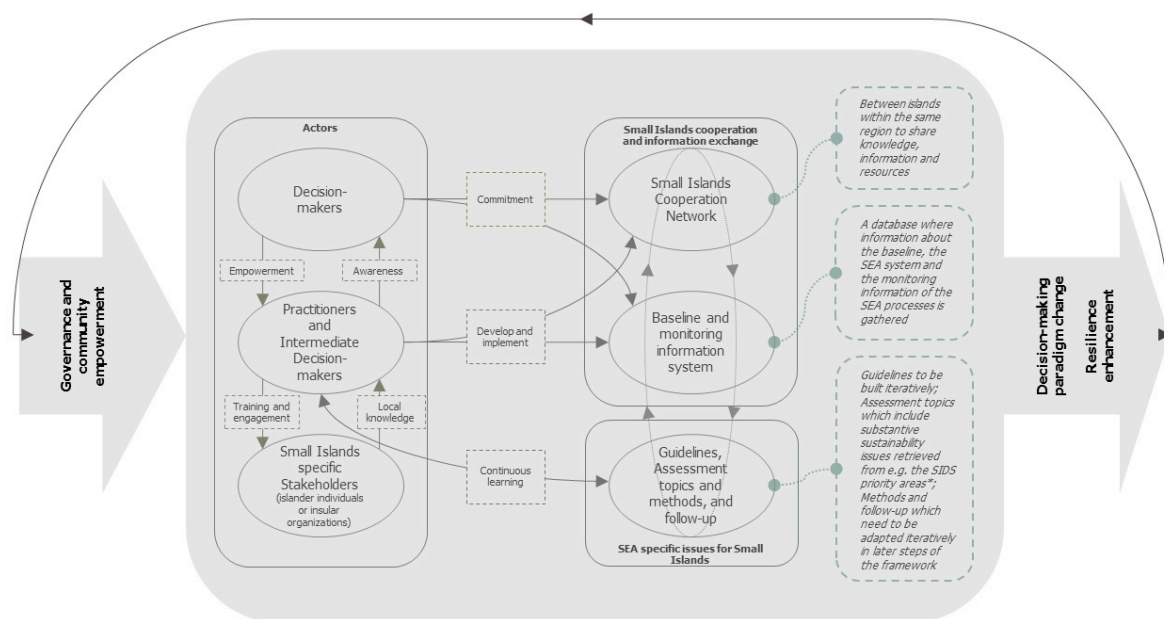
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<sup>5</sup> In the Appendix 2 it is presented the full list of publications retrieved through the final screening.

<sup>6</sup> The European outermost regions are addressed in the Treaty on the Functioning of the European Union (TFEU), articles 349 and 355.



The proposed conceptual framework, resulting from the concept map, is organized in different clusters of key concepts (actors, small islands cooperation and information exchange, and SEA specific issues for small islands), and their linking words. The main driver for the conceptual framework is “governance and community empowerment” and the main outcomes are an enhanced resilience of small islands territories and the change in the decision-making paradigm (Figure 1) – the three key arguments for sustainability in small islands found by Polido et al. (2014). In the following sub-sections are presented the rationale and characterization for the different components, concepts and linkages of the proposed approach.



\*SIDS – Small Islands Developing States, this refers to the priority areas given by the Barbados Programme of Action, the Mauritius Strategy and the S.A.M.O.A. Pathway.

Figure 1 – Conceptual framework to support Strategic Environmental Assessment (SEA) in small islands towards sustainability.

### 3.1 Key arguments for sustainability in small islands

The conceptual framework represents the three key arguments towards sustainability in small islands found by Polido et al. (2014) – governance and community empowerment, decision-making paradigm change, and resilience enhancement. Governance and community empowerment influence the different components – translated through the clusters of concepts presented (Actors, Small islands cooperation and information exchange, and SEA specific issues for Small Islands), and their cross-links. Resilience enhancement and decision-making paradigm change are end-point goals which will be achieved through the development of the conceptual framework components. The key arguments for sustainability in small islands are linked through an overarching feedback loop that results from

empowerment and the development of the different components of the framework, resulting in decision-making paradigm changes and resilience enhancement. It then feeds back into more empowerment. They aim at transforming the political, institutional and cultural context influencing small islands decision-making outcomes.

“Governance and community empowerment” can be directly linked with the cluster of concepts “Actors”. Governance within SEA can be defined as the way to increase stakeholder engagement and to promote accountable and transparent decisions (OECD, 2006). Community empowerment through knowledge and understanding, linked with the enhancement of participation, leads to social transformation, innovative learning experiences and learning processes (Bina, 2007), particularly in small islands where the communities have a strong sense of place (Tran, 2006; Vannini and Taggart, 2013). Effective involvement of insular communities and the use of local knowledge will help develop territories and communities towards sustainability (Hugé et al., 2013; Polido et al., 2016a, 2016b; Rotmans et al., 2001)<sup>7</sup>.

“Decision-making paradigm change” and “Resilience enhancement” are promoted through the proposed framework and its clusters. While developing governance and community empowerment, stakeholders (such as decision-makers, practitioners and intermediate decision-makers) also help develop SEA knowledge and learning as stated by McLauchlan and João (2012) and White and Noble (2013). Transparent decisions (Tetlow and Hanusch, 2012), and public administration openness and awareness (White and Noble, 2013), may also lead to a change in the decision-making paradigm in different contexts, including small islands (Yasarata et al., 2010). Hence, decision-making paradigm change, meaning the change in established system for developing decision-making processes, will occur through the development and enhancement of SEA knowledge by the different institutions and actors involved in the process, where SEA is a continuous learning process with cross-insular cooperation networks, and baseline and monitoring information systems having a fundamental role, providing awareness about different methodologies and approaches to decision-making. Engaging all the different stakeholders and promoting governance and community empowerment will enable transparency in the small islands SEA process, with openness from public administration, as well as accountability to all stakeholders, are key to the desired change of the paradigm.

Effective governance and community empowerment increases resilience (Hay, 2013), the ability of a system to return to its original state after suffering different pressures (Walker and Salt, 2006). Resilience is linked with SEA through the encouragement of developing new systems, enabling

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<sup>7</sup> The work by Pitman et al. (2017) suggests that people with high ecological literacy may lead to engaged and “informed citizenry with capacity for making effective environmental decisions.” (Pitman et al., 2017, p.1).

response diversity and adaptive capacity (Slootweg and Jones, 2011). The conceptual framework itself may provide a resilience enhancement in territories and small islands communities. Communities engaged and empowered take ownership of the SEA process. This promotes social cohesion and capacity to overcome vulnerabilities, enabling the ability to deal complexity and uncertainty (Hay, 2013). The outer arrow that encompasses the framework represents its iterative facet, showing the need for a continuous evaluation of the sustainability drivers as well as the framework itself.

### 3.2 Actors

The term “Actors”, as used in this conceptual framework, defines all stakeholders that can be involved in the SEA process. The cluster “Actors” unfolds in the three key concepts derived from Polido et al. (Polido et al., 2016a, 2016b): i) *decision-makers* - high-level policy-makers, top-level managers in public agencies, and any actor that has responsibility for deciding the outcomes of the SEA process, and/or the strategic action; ii) *practitioners and intermediate decision-makers* - actors involved directly in the completion and implementation of the SEA process. Practitioners refers to in-house practitioners or private consultants contracted to develop the SEA, including planners; intermediate decision-makers, to public officers involved in the planning and SEA processes, which review and influence their outcomes; and, iii) *small islands specific stakeholders* - islander individuals or insular organizations that may influence the planning and SEA process but are not part of the other two concepts. They can be researchers, experts, civil organizations, private companies, or the general public.

The characteristics of the different stakeholders, including the existing power relations, influence the way SEA contributes to decision-making (Runhaar, 2009). Power relations may have significant impacts on the small islands community (Hampton and Jeyacheya, 2015). A decision-maker influences the outcomes of the SEA process and/or the strategic action and their environmental and sustainability values and openness to power-sharing affects these outcomes (Runhaar, 2009; Tetlow and Hanusch, 2012). Academic literature points to the need for decision-makers to develop capacity on SEA and sustainability issues (Bina, 2008; Tetlow and Hanusch, 2012; White and Noble, 2013). Additionally, collaboration between decision-makers, practitioners and intermediate decision-makers is fundamental for the development of an SEA approach (White and Noble, 2013).

Practitioners and intermediate decision-makers play a central role in the SEA implementation through their discretionary powers (Kørnø et al., 2015). Stoeglehner et al. (2009) argues that SEA effectiveness depends on the ownership by practitioners and intermediate decision-makers. This ownership is related to the practitioners and intermediate decision-makers’ perception of their

specific influence to change paradigms and their capacity respecting sustainability issues, SEA techniques and process outcomes (Stoeglehner et al., 2009). Limited resources may curtail this ownership, resulting in SEA processes done customarily impeding the development of new perspectives in the assessment and innovation (McLauchlan and João, 2012; Stoeglehner et al., 2009). This may even be amplified in small islands due to their inherent lack of different resources (Hein, 2010; McIntyre, 2004). However, practitioners and decision supporters have the capacity to reflect on and review the SEA system, abandoning these routines, being open to innovation (Hilding-Rydevik and Bjarnadóttir, 2007; Kørnørv et al., 2015). There is a clear message from academic literature towards the enhancement of the SEA learning process. Practitioners and intermediate decision-makers are important in the SEA learning process because of their capacity to link different stakeholders, types of knowledge and networks, ultimately achieving an effective information exchange and knowledge transfer amongst these systems (Sheate and Partidário, 2010). Due to the possible lack of sufficient human resources with the appropriate skills (Hein, 2010; Pelling and Uitto, 2001), knowledge and capacity exchange is paramount for small islands.

The conceptual framework shows that decision-makers need to empower practitioners and intermediate decision-makers on SEA and sustainability issues. This empowerment should take the form of provisioning the necessary resources for the ownership of the process by the practitioners and intermediate decision-makers. These resources can be multiple, such as: *human resources* to avoid an overload of SEA processes for each practitioner and intermediate decision-maker, *financial resources* to implement different methods of assessment, to engage the small islands' specific stakeholders (local stakeholders), or to put in place an effective follow-up framework, and *time*, real timeframes for the conclusion of the process, including the different consultation processes and assessment procedures. Also, practitioners and intermediate decision-makers need to make the decision-makers aware of the importance of the SEA processes for the integration of sustainability issues in the policy and planning system. However, the decision-makers need to be receptive to the awareness training.

The involvement of local stakeholders in these information exchanges and knowledge transfer will enable SEA towards more deliberative models, as envisaged by Jiliberto (2011). In small islands, due to their specificity, local stakeholders (e.g. experts, civil organizations, general public), due to their 'islandness' (Conkling, 2007), are key to these environmental and sustainability related processes (Fernandes et al., 2015; Purnama, 2003). "Small islands specific stakeholders" are critical for the framework because they will provide the local knowledge needed for the SEA process to be

conducted effectively. Practitioners and intermediate decision-makers need to engage and train them on the SEA process, and on sustainability issues.

This cluster of concepts is linked through specific connectors with the clusters “SEA specific issues” and “Cooperation and information exchange”. The rationale of the flows between these clusters is also presented in the following sub-section. The main actors in the interface between clusters are the decision-makers, and the practitioners and intermediate decision-makers.

### *3.3 Small islands cooperation and information exchange and SEA specific issues for Small Islands*

The improvement of existing guidelines for SEA (instead of an additional regulatory burden), and the use of topics and methods used regularly by the practitioners and understood by the intermediate decision-makers, are an asset, as shown by Polido et al. (Polido et al., 2016b). However, in order to effectively advance with SEA, this knowledge needs to be enhanced, which may happen through a continuous learning process. The proposed framework introduces the link between practitioners and intermediate decision-makers, and the assessment issues through a continuous learning process. This continuous learning process is based on the lessons learned from previous SEA cases, local knowledge, cooperation networks, and the centralized baseline and monitoring system, as suggested by Polido et al. (2016a, 2016b). In effect, the concepts in “Small Islands SEA specific issues” and “Cooperation and information exchange” clusters are linked through a continuous loop.

Small islands cooperation networks are envisaged as partnerships between different small islands or small island archipelagos within the same region, to facilitate a forum where participants may learn from others about the different SEA thinking and practices happening in similar territories, as is also proposed by Alshuwaikhat (2005) for developing countries. These cooperation networks are based in a shared effort between different small islands to exchange knowledge, information and resources. These island networks may also have a central role in the development and implementation of a baseline and monitoring information system. The baseline and monitoring information system will work as an aggregator of information related to baseline data within the region, including the identification and characterization of ecosystem services and the monitoring practices and results.

The small islands cooperation networks and the baseline and monitoring information system must start as a commitment from decision-makers within islands, where partnerships need to be developed. These cooperation networks and information systems are passed from the decision-makers to the practitioners and intermediate decision-makers to develop and implemented them. The relationship between decision-makers and practitioners, and intermediate decision-makers is recovered (iteratively), as shown in cluster “Actors” – the decision-makers need to empower the

practitioners and intermediate decision-makers. The local knowledge will be introduced into the process via the practitioners and intermediate decision-makers.

#### **4. Recommendations for the implementation of the conceptual framework**

The implementation of the proposed conceptual framework may be envisaged through a set of key factors linked with the clusters presented in Figure 1, which can be summarized as follows: awareness for decision-makers (cluster actors), empowerment and ownership of practitioners and intermediate decision-makers (cluster actors), small islands cooperation and exchange networks, SEA specific issues for small islands, and small islands specific stakeholders' engagement (cluster actors). Table 2 outlines these key factors, including their rationale, recommendations, actors involved, and the possible results and outcomes for each key factor.

The first two key factors presented ("Actors: Awareness for decision-makers" and "Actors: Empowerment and ownership of practitioners and intermediate decision-makers") are the ground-breaking factors that, once implemented successfully, will enhance the remaining three key factors. However, it is possible to address the fourth and fifth key factors ("SEA specific issues for small islands" and "Actors: Small islands specific stakeholders' engagement") independently of these two ground-breaking factors, if there is already appropriate provision of resources and a mandate in place. "Awareness for decision-makers" and "Actors: Empowerment and ownership of practitioners and intermediate decision-makers" form the link between decision-makers, practitioners and intermediate decision-makers; to raise awareness of the former about the importance of SEA for decision-making and to improve overall sustainability, and to empower the latter, by providing the necessary resources to advance the SEA process towards sustainability.

The "Actors: Awareness for decision-makers" factor is divided into two recommendations: preparation of information; and awareness training. The first recommendation within this key factor (prepare information about SEA, what has been done, its results, importance for sustainability and for the decision-making process) might be challenging for the Azorean practitioners and decision supporters due to the decentralized information system as explained, as explained by Polido et al. (2016b), while the second recommendation (awareness training for decision-makers), due to the administrative autonomy of the Azores, it is expected to be easily implemented, because of the proximity between institutions (Polido et al., 2016b). In contrast, in Scotland it is in place a centralized SEA system<sup>8</sup> which may result in easy access to information, but may accentuate the

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<sup>8</sup> See the case of Orkney Islands in Scotland: the government has created the SEA Gateway Team (at national level) where the information is gathered and integrated to advise and co-ordinate the process to ensure SEA quality (Jackson and Illsley, 2007; Polido et al., 2016b).

challenges in raising awareness to decision-makers, which may be less open to it. Overall, this key factor mainly depends on the decision-makers' willingness to accept the awareness training given by the practitioners and intermediate decision-makers within the small islands.

For the second key factor ("Actors: Empowerment and ownership of practitioners and intermediate decision-makers"), it is envisaged that practitioners and intermediate decision-makers from both Azores and Orkney advance with the recommendations, without it being an additional burden to their routine responsibilities. Assessing the needs for the advancement of SEA in these territories may be well understood by these actors, with the establishment of priority actions and reporting to decision-makers, as suggested by Kørnø et al. (2015) in their study about the influence of street-level bureaucracy on the implementation of SEA in Denmark. It is also necessary to put in place a mechanism for the continuous evaluation and improvement of these recommendations, specifically in the establishment of priorities, in the later stages of the framework implementation. Additionally, small islands specific stakeholders may be involved here, when the framework has matured, to help with the establishment of the priority actions.

The "Small islands cooperation and exchange networks" factor depends greatly on decision-makers to make the appropriate provisions and commitments with other insular regions. Here, sufficient resources need to be allocated to develop the islands networks, and the baseline information and monitoring systems for archipelagos or individual islands. It is recommended that the baseline information and monitoring system be developed with the help of the different partners. Their cooperation and information exchange through island networks are a way of introducing a type of benchmarking in the SEA system, ensuring a continuous learning process for the different SEA stakeholders, but mainly for practitioners and intermediate decision-makers. Using islands networks from the same bio-geographical region may be an added asset for the baseline information and monitoring system: Madeira and Canarias for Azores, and other islands belonging to the Atlantic region for Orkney (see European Environment Agency, 2016).

The key factor "SEA specific issues for small islands" is grounded by an in-depth study of the existing situation and the development of guidelines and lessons learned from practice. A similar feature was suggested by Douglas (2003) for Health Impact Assessment (HIA) in small islands. For Azores and Orkney there is already some work done in this regard (Polido et al., 2016b), and additional exploration of the findings of the in-depth study should be achieved with focus groups, interviews, or workshops with different stakeholders involved in the SEA processes analysed. The guidelines, and lessons learned, developed from the analysis should give highlights on the methods, the topics, the type of follow-up and its outcomes, the stakeholder engagement developed for each SEA conducted

(sector-specificity), giving clues about what should be enhanced, what should be avoided, and recommendations for future practice. Even though it is important to keep what practitioners learned in a first stage of the framework implementation, as suggested by Noble and Nwanekezie (2016), gradually, and with the information resulting from the different key factor outcomes, innovative guidelines addressing different issues, namely methods, assessment techniques and follow-up need to be further developed. It is expected more challenges to implement this phase for the Orcadian practitioners due to their centralized system and uniformed process (McLauchlan and João, 2012; Polido et al., 2016b) and openness from the Azorean practitioners and intermediate decision-makers to try methods, assessment topics and do specific guidelines because the system is more flexible at this time (Polido et al., 2016b). Furthermore, in later implementation stages of the framework, the involvement of small islands specific stakeholders to help with the baseline information and monitoring system (e.g. civil organizations, general public), should be considered for enhancing civil/citizen participation in these processes.

As for the “Actors: Small islands specific stakeholders’ engagement” key factor, aims at establishing a solid base of stakeholders to introduce local knowledge in the SEA processes. It is not intended to limit public participation to these stakeholders, but to have a pool of stakeholders pre-engaged and informed about SEA and sustainability issues. The systematic introduction of local knowledge in the SEA process is envisaged in the framework through the establishment of a solid and informed base of stakeholders, which may be effectively engaged in the SEA process as suggested by Jiliberto (2011). In the Azores it is expected to be easier to put this phase in place and to have a pool of engaged stakeholders because the existing public participation is broader (more people and organizations participate in SEA process). In Orkney, there is few public participation (Polido et al., 2016b) and the effort to engage local knowledge may be a challenge for practitioners and decision supporters. The Orcadian practitioners and intermediate decision-makers will need to enhance unusual (for these types of processes) forms of engagement, thinking creatively as suggested by different authors addressing ways to foster sustainability (e.g. Lozano, 2014). A possibility is to use the school and higher education populations to create a solid base of engaged island stakeholders, similar to what is suggested by Douglas (2003) in the case of HIA in small islands.



Table 2 – Recommendations for the implementation of the conceptual framework for small island SEA application

Key factors	Rationale	Actions	Actors involved	Possible results and outcomes
<i>Actors: Awareness for decision-makers</i>	<p>Practitioners and intermediate decision-makers need to create awareness in decision-makers about the importance of SEA for the enhancement of sustainability and the decision-making process.</p> <p>For Azores, it will be at the regional level – Regional Government and Regional Institutions. For Orkney it is necessary to go further in the institutional hierarchical level with the need to involve the Scottish Government and consultation authorities (Scottish Environmental Protection Agency (SEPA), Scottish Natural Heritage (SNH) and Historic Environment Scotland (HES)), as well as the local council and institutions.</p> <p>The awareness may be achieved through workshops, meetings or other means deem appropriate where practitioners and intermediate decision-makers show what is already done and what could be achieved with suitable resources, emphasizing the need for island specific SEA approaches.</p>	<ul style="list-style-type: none"> <li>- Prepare information about SEA, what has been done, its results, importance for sustainability and for the decision-making process;</li> <li>- Awareness training for decision-makers.</li> </ul>	<ul style="list-style-type: none"> <li>- Decision-makers (e.g. Azores Regional Government, Regional Secretariat for Agriculture and Environment for Azores or Scottish Government, SEPA, SNH, HES, Orkney Islands Council for Orkney);</li> <li>- Practitioners and intermediate decision-makers (e.g. network of in-house practitioners, planners, intermediate decision-makers and consultants for Azores or in-house practitioners, planners and intermediate decision-makers for Orkney).</li> </ul>	<ul style="list-style-type: none"> <li>- Systematization of lessons learned from previous experience;</li> <li>- Commitment from the decision-makers;</li> <li>- Mandate to practitioners and intermediate decision-makers for further analysis (see following key factor).</li> </ul>
<i>Actors: Empowerment and ownership of practitioners and intermediate decision-makers</i>	<p>After the awareness training is expected that decision-makers give a mandate to practitioners and intermediate decision-makers to assess further information and needs in order to advance SEA. This will create empowerment and ownership on SEA by practitioners and intermediate decision-makers.</p> <p>At the same time, priority actions need to be established to advance SEA towards sustainability. Decision-makers must be kept informed of the outcomes of the different tasks, give feedback and further mandate to practitioners and intermediate decision-makers so they may effectively develop and</p>	<ul style="list-style-type: none"> <li>- Assessment of the situation (including capacity-building for human resources and need for financial and time resources);</li> <li>- Establishment priority actions;</li> <li>- Report back to decision-makers about the outcomes of the previous tasks;</li> <li>- Feedback from decision-makers to practitioners and intermediate decision-makers.</li> </ul>	<ul style="list-style-type: none"> <li>- Decision-makers (e.g. Azores Regional Government, Regional Secretariat for Agriculture and Environment for Azores or Scottish Government, SEPA, SNH, HES, Orkney Islands Council for Orkney);</li> <li>- Practitioners and intermediate decision-makers (e.g. in-house practitioners, planners and intermediate decision-makers from the Regional Secretariat for Agriculture and Environment</li> </ul>	<ul style="list-style-type: none"> <li>- Strategy for the other key factors and implementation of priority areas;</li> <li>- Assignment of resources needed as identified in the assessment of the situation;</li> <li>- Definition of responsibilities of the practitioners and intermediate decision-makers.</li> </ul>

Key factors	Rationale	Actions	Actors involved	Possible results and outcomes
	implement the priority actions established.		Azores or Orkney Islands Council for Orkney).  Due to the iterative facet of the framework it is expected that small islands specific stakeholders may be involved in later stages when the framework has matured, to help with the establishment of the priority actions (e.g. civil organizations, general public).	
<i>Small islands cooperation and exchange networks</i>	Decision-makers, practitioners and intermediate decision-makers need to work together to identify and establish the most suitable partnerships for the development of small islands cooperation networks and baseline information and monitoring systems. The decision-makers develop a commitment between different partner regions and define a plan of action (what is going to be exchange – e.g. knowledge, technology), with the inputs from practitioners and intermediate decision-makers.  For Azores these networks may be accomplished with Madeira and Canary islands, and for Orkney with other islands belonging to the Atlantic region.	<ul style="list-style-type: none"> <li>- Identify small islands suitable for partnerships;</li> <li>- Establish an action plan where it is envisaged the full cooperation among the regions;</li> <li>- Develop a baseline information and monitoring system within the network region.</li> </ul>	<ul style="list-style-type: none"> <li>- Decision-makers (e.g. Regional Secretariat for Agriculture and Environment for Azores or Orkney Islands Council for Orkney);</li> <li>- Practitioners and intermediate decision-makers e.g. in-house practitioners, planners and intermediate decision-makers from the Regional Secretariat for Agriculture and Environment Azores or Orkney Islands Council for Orkney).</li> </ul> <p>In later stages of the framework, once it has matured, it is expected that small islands specific stakeholders may be involved here to help with the baseline information and monitoring system (e.g. civil organizations, general public).</p>	<ul style="list-style-type: none"> <li>- Small islands cooperation networks;</li> <li>- Baseline information and monitoring system.</li> </ul>
<i>SEA specific</i>	Preparation of an in depth study to understand how	- In-depth study analysing the SEA	- All stakeholders involved in past	- Detailed knowledge about

Key factors	Rationale	Actions	Actors involved	Possible results and outcomes
<i>issues for small islands</i>	<p>the different SEA assessment stages have been conducted for different type of plans and programmes.</p> <p>A thorough study must be conducted to link best practices and type of decision-making addressed with methodological approaches, methods, follow-up strategies, and stakeholders' engagement practices. Following this analysis, it is possible to develop practical guidelines for future practice to help the different actors be involved in the SEA processes. Additionally, the development of lessons learned by the different actors involved in each SEA process is encouraged for future analysis.</p>	<p>practices, including focus groups, interviews or workshops with the different actors involved in each SEA process;</p> <ul style="list-style-type: none"> <li>- Development of practical guidelines for future practice based on what was learned from the previous task;</li> <li>- Development of a systematized lessons learned database (past and future practice) for continuous learning.</li> </ul>	SEA processes, including decision-makers, practitioners, planners, consultants, intermediate decision-makers, civil organizations, private companies, general public, etc.	<p>SEA practice;</p> <ul style="list-style-type: none"> <li>- Guidelines for future practice;</li> <li>- Implementation of lessons learned database.</li> </ul>
<i>Actors: Small islands specific stakeholders' engagement (local knowledge)</i>	<p>Creating a solid base of insular local knowledge is paramount for the development of SEA, but it is necessary to engage this knowledge before the SEA processes starts. In Azores is possible to contact stakeholders that were involved in past SEA processes as well as Environmental non-governmental organizations. For Orkney, schools and higher education institutions may be used as a starting point for the engagement.</p> <p>It is recommended to train willing civil society stakeholders on the SEA processes and sustainability issues, so when it is necessary the stakeholders inputs on a specific SEA processes, they are already aware about the overall aim of the process. This may also help the participation process focus on the most important matters for the development of the SEA and decision-making, improving the outcomes.</p>	<ul style="list-style-type: none"> <li>- Identify interested civil society organizations and general public;</li> <li>- Train the identified stakeholders on the SEA process and sustainability issues generally prior to a specific SEA process;</li> <li>- Engage these stakeholders in specific SEA processes.</li> </ul>	<ul style="list-style-type: none"> <li>- Practitioners and intermediate decision-makers (e.g. in-house practitioners, planners and intermediate decision-makers from the Regional Secretariat for Agriculture and Environment Azores or Orkney Islands Council for Orkney);</li> <li>- Small islands specific stakeholders (e.g. islands experts and researchers – University of Azores for Azores and International Centre for Island Technology for Orkney; islands civil organizations; islanders, including school population).</li> </ul>	<ul style="list-style-type: none"> <li>- Engaged and informed stakeholders;</li> <li>- Effective inclusion of island knowledge in SEA process.</li> </ul>

## 5. Conclusions

This research set out to develop a conceptual framework to support and improve an SEA towards sustainability in small islands and give provision for its implementation for stakeholders. The framework shows the three key arguments for sustainability in small islands: governance and community empowerment; decision-making paradigm change; and, resilience enhancement. These key arguments for sustainability in small islands are linked with SEA and may help set the sustainability context for these territories. By addressing governance and community empowerment, accountability and transparency for decisions is enabled, as well as effective participation, leading to social transformations and decision-making paradigm change. Additionally, this change in the decision-making paradigm facilitates and enhances SEA development and knowledge within islands communities. Resilience will be enhanced through the development of islands communities' capacity for embracing complexity and uncertainty.

To implement the framework, the key factors should be taken into account. These key factors tackle training for decision-makers on SEA and sustainability issues, empowerment and ownership by practitioners and intermediate decision-makers, cooperation and exchange of information through small islands networks, different SEA issues (guidelines, methods and follow-up), and islanders' knowledge integration in the SEA processes. These key factors are partially independent from each other, because, if practitioners and intermediate decision-makers already have sufficient resources and mandate they may implement the different recommendations autonomously, except the awareness training of decision-makers, which needs decision-makers willingness for it to be developed.

The framework proposes that awareness is raised for decision-makers about SEA and sustainability issues in small islands in order for them to understand the potential of this tool for the sustainability of these territories. It is also proposed the empowerment and ownership of practitioners and intermediate decision-makers on the SEA process, including the provision of the appropriate resources so they are able to advance SEA towards sustainability innovatively. Islands exchange cooperation and information networks and the provisioning of guidelines established through a continuous learning process, are also envisaged by the framework. Furthermore, the proposed framework includes the integration of islanders' knowledge through the systematic engagement and training of a solid base of willing island stakeholders. Stakeholders are an important feature in these types of territories as well as in SEA processes. Moreover, stakeholders have a central role in the proposed framework, where practitioners and intermediate decision-makers are paramount for the development of the different links between stakeholders and other clusters.

The framework was conceptualized for the Azores and Orkney archipelagos. In Azores, the SEA panorama may promote an easier shift towards new models of thinking. This is because there are several actors, including external practitioners with insular knowledge and intermediate decision-makers, as well as a wide pool of local stakeholders participating in the SEA process. However, it is expected more challenges for Orkney practitioners and intermediate decision-makers due to the lack of sufficient human resources in that territory. The proposed framework may have a mind-set changing capacity, helping these territories transition towards sustainability. There is complexity mainly due to the relations between different stakeholders, which are bounded by power relations.

Drawing on this research, future developments need to validate this framework against a specific implementation case, to better understand its limitations and to adjust it as necessary. Also, for the implementation of the conceptual framework in future developments it could be an asset to have inputs from different tools from management systems, such as change management models and processes. Overall, the findings of this study may have a role in enhancing future practice by influencing institutions, decision-makers, practitioners, and intermediate decision-makers to understand that there is a need for context-specific approaches in these territories. It is important that this framework is continually evaluated, iteratively, to understand what should be changed and what should be maintained. The framework should be adopted as a dynamic tool, and be adjusted in the light of practice outcomes.

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## Appendix 1 – Summary of the research background

	Objectives	Main findings
<b>Integrative literature review</b> <b>(Polido et al., 2014)</b>	Identify, explore and discuss sustainability integration in small islands; Study the role of SEA in the integration of sustainability into decision-making of these territories.	The review showed a lack of a clear definition and the best approach to sustainability in small islands. However, three key arguments concerning sustainability in these territories were found: governance and community empowerment, decision-making paradigm change, and resilience. These key arguments are with SEA and therefore, SEA may help develop approaches promoting these key arguments.
<b>Empirical studies</b> <b>(Polido et al., 2016a, 2016b)</b>	Assess SEA practices and procedures in small islands; Compare SEA practices and procedures in small islands with the mainland; Identify key issues for sustainability integration through SEA practice in small islands.	<p>The empirical results showed that there is a lack of tailored SEA approaches used within Orkney and Azores archipelagos, including guidelines, assessment topics, assessment techniques, follow-up and stakeholders engagement. Further discussion on specific approaches to small islands must be re-focused on the enhancement of SEA capacity-building amongst different stakeholders (including decision-makers), on the development and implementation of collaborative approaches, and on the exchange of knowledge and experiences between small islands networks.</p> <p>Additional it was found that experts encourage the development of regional networks for cooperation among small islands, which may enhance legal and institutional frameworks that promote SEA specific features, while taking into account the constraints associated with these territories, by providing a joint effort to: (i) capacitate staff in sustainability-related issues; (ii) develop a shared baseline information system, including the identification of ecosystems and their services; and (iii) share and exchange resources.</p> <p>Also, the empirical studies showed that by taking a tailored SEA approach in small islands, there is potential for changing the decision-making paradigm, enhancing good governance and community empowerment and shaping resilient communities through the inclusion of an effective assessment and follow-up, ensuring a network of key stakeholders, including local people, and engaging with the authorities in the development of an information system easily available for the baseline, assessment, and follow-up.</p>

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## Appendix 2 – Full list of publications retrieved through the final screening for the comprehensive review developed in Step 4 of the conceptual map

Note: Not all of these publications were used and cited in the manuscript. The literature used in the research is cited in the manuscript and referenced in the list of references. There are repetitions between the list of references and Appendix 2.

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