
Strategic Environmental Assessment (SEA) and its potential influence on airport development planning

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Abstract

The role of airports as drivers of strategic development is well established. In a world of mobility and high tech development, airports act as superhighway gateways for information, concentrated clusters of growth, and drivers of tourism growth. Indeed, airport development plans proposed as solutions for increasing demand are source of various tensions. In this thesis, such planned interventions are seen as elements of strategic action.

This thesis brings into the field of airport development studies the notion of Strategic Environmental Assessment (SEA). Concisely, SEA in this thesis relates to the institutional and organisational capacity of the airport development plans to reduce the level of uncertainties by implementing holistic sustainability measures. The postulation is that SEA triggers specific localized values and information, as well as visionary opportunities for development towards sustainability and sustainable development. For that reason, SEA in this thesis is seen as a means to achieve better governance practices that support thinking in long-term perspectives instead of short-term solutions. In this research, objectives for assessing the quality of SEA for airport related developments are twofold – the ability to partake strategic alternatives and the potential of SEA for further development in airport cities. It is argued that enhanced understandings of alternatives as elements of holistic approaches including improved environmental, social, financial and sustainability notions is a step further for establishing better SEA practices in relation with airport development plans.

Included in the research is also a critical review of the theoretical concepts of SEA and a content analysis of the contemporary legislation related to airport capacity paradigms and the Directive 2004/42/EC, known as the European SEA Directive. The empirical analysis uses four case studies from Newquay Cornwall, Dublin International, Lisbon International, and Berlin-Brandenburg airports in order to help achieve the goals of this thesis.

The findings of the research show that SEA is forceful tool in decision-making that advances the promotion of sustainable development by early consideration of environmental impacts. However, the body of SEA should be enriched by strategic integration of socio-economic issues related to community reaction and opposition, related in one way or another to the rich notion of sustainable development. Furthermore, in terms of integration of social context, more community-based approaches might have positive effect on mitigating so-called airport resilience.

Keywords: *SEA, strategic alternatives, airport capacity, airport city, airport development Newquay Cornwall Airport, Dublin International Airport, and New Lisbon International Airport, Berlin-Brandenburg Airport*

Acknowledgments

Combining the sphere of influence of airport development plans with the field of SEA at first sight seems rather abstract and vigorous task but behind the scenes, it has logical sequence. If airports are recognized as strategic elements of the public utilities, which are the bones of modern societies, then airport planning ought to be an element of what planners call strategic field of action. However, there is a large gap between proposals for intended development and real implementation of objectives, which requires strategic navigation that SEA might introduce in long-term decision-making. SEA, as a part of the bigger family of impact assessment, is highly recognised planning and decision-making tool by practitioners and policy makers. The UNECE SEA Protocol and European SEA Directive are part of the institutional and legislative frameworks that build for better governance practices.

Therefore, my personal interest, starting with airport expansion and development interventions, found a well-structured and logically sound grain embodied in the principles of SEA. This thesis attempts to advance the technocratic thinking of answering the demand of airport supply by expanding the current capacity with new runways or terminal buildings. In addition, it has the role, which decision makers might appreciate in SEA, of achieving holistic optimal goals of sustainability and sustainable development.

However, a long time ago, when I decided that I would like to work on airport capacity and development problems, I never thought that I would end up with such a complicated and fuzzy subject. The road from the proposal to the final concept of this thesis was not easy and smooth, as it is desired to be.

One of the reasons I stuck with this topic was my personal passion with airports and the specific meaning of airports within our lives – transitional points where our journeys begin and end, despite all the major forces plausible to occur, from volcano eruptions to cabin crew strikes. Every time I find myself in airports, I am amazed by the formal and tacit organization of various activities and institutions operating simultaneously under the eyes of the passengers. Airports are places where different stories, destinies, smiles, and eyes can meet.

This thesis would not have been possible without the support of several people. Firstly, I would like to present my thanks to my supervisor Dr. Femke Niekerk. Without her supervision, comments, and feedbacks, this thesis would not have been completed successfully. In addition, I would like to present my gratitude for her patience, for the times when I failed to meet personal deadlines for completion of different sections of the thesis. Secondly, I am grateful to all the friends who supported me during my thesis troubles, especially Glory Nasarani and the midnight summer sessions spent on park benches, as well as to the other ‘members’ of the ‘EIP focus group’ – Alex, Britta, Leena. The honours members of the ‘Winscho family’ – Olga, Natasha and Carolina and many others, without

whom my sojourn in Groningen would not have been the same. Finally, I would like to thank my family and friends in Bulgaria for the long-distance support they showed during my endeavours with my study and long lasting thesis.

Although this thesis does not answer global problems, it represents a small and important victory in the improvement of airport development practices. In the end, small victories are the only ones that count.

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I. Introduction

1. Introduction

In the contemporary world, social and economic dynamics are widely adjacent to a mobility and transportation demand. The more distant place one desire to go, preferable the less travel time is the aim or vice versa. From the first run of the pioneering steam power introduced boats and trains in the 18th century to the operations of the first huge jumbo jets during the last century in the sky, we are highly dependent on services and benefits gained by this sphere of activity. The classical interpretation of the term “transport” or “transportation” is understood as movement of people and capital from one place to another, consistent by several modes – road, rail, water, air, cable, pipeline and so on. Aviation and particularly civil aviation endures remarkably fast development in the last decades and can be considered as logical supply of the mobility demand of the contemporary economic dynamics of the economically active society. However, this development bears twofold meaning. On the one hand, it is an engine for high profit and surplus niche by airlines, airports, governments, etc., on the other hand, excessive development calls for extra aircraft units both on the ground and on the air, creating precondition for congestions and bottleneck situations.

Nowadays airports are and hypothetically will be inseparable part of the image of high-developed urban regions and agglomerations, measuring their economic pulse and place at national and international scale. During the last decades many airline carriers found niches in new markets practically not considered before as sufficient, the fast development and expansion of so-called low cost carriers illustrates this. During their development phase, most of the single big European airports emerged in integrated and competing airport systems. This growth registered before the late 2000s financial crisis marked that airport development plans might contain crucial institutional and societal issues related to potential impacts and effects on the environment. Presently, even the financial austerities in place amongst many European governments, airport developments remain as strategically important unit at national and international scale.

The institutional perspective on airport capacity planning is drawn by the White Paper on European transport policy (ACI Europe, 2004) where is stated equivocally “priority is thus to limit the construction of new airports” and “Europe will not be able to cope without new airport infrastructure” (ibid). These contradictory requirements have been confirmed especially after the big enlargement of the EU with 12 new member states from Central and Eastern Europe. Ad hoc Community observatory on airport capacity is in place since 2008 following the findings of the “action plan for airport capacity, efficiency and safety in Europe [COM(2006)819]” (CEC, 2006). The Aim of the observatory is to set agenda for a consequent policy framework to deal with issues related to airport capacity, efficiency, and safety.

Airports do not exist in isolation. They are source of various ecological, social and health problems and negative effects, from the protection of the natural zones around airports to the direct noise disruption caused by airplanes (and other) indirect traffic bottleneck situations created around them. This usually brings notions of NIMBYism of the opposing residents, thus common phenomena in airport related planning absorbs various and long-lasting decision making problems due to vague public debates, no locality support, corporative needs and so on. The rich pattern of environmental externalities accompanying redevelopment and expansion plans requires informed and democratic decision making which to offer long-term sustainability and spatial justice at the same time. Strategic Environmental Assessment (SEA) can offer participative, focused, and integrated and governance criteria that might be incorporated in planning process of development plans. Those are also the SEA performance criteria developed and promoted by IAIA (2002). Participative processes are those concerned with the stakeholders' participation, their interest and concerns in the proposed plans, programs or policies. Focused criteria refer to the narrowness of the SEA process in which sufficient and trustworthy aims are set. Notion of integration is understood as the interaction between the relevant assessment of environmental, social and economic impacts, in other words promoting sustainable spatial development. Another major flashing point of SEA is inclusion of alternatives, bellow referred as 'strategic alternatives' that are introduced in the earliest phase of plan or programme preparation and practically inconceivable to consider or exist on the project phase of planned interventions. The concept of the need of strategic alternatives is one of the focal points on which SEA is going to be applied as valuable tool in airport expansion or development plans, within the framework of this thesis.

2. Research objective and research question

From the above it is visible that airport expansion and development plans addresses a wide range of environmental and social issues and requires highly professional, specialized, and open discussions. The big four of the airport expansion related problems are related with noise disturbance, air quality, impact on biodiversity, land-take, and land-use changes and other various effects on the environment (see Chapter 2). Airport expansion is difficult and complex phenomenon including not only the impact on the environment, but also the interaction between the industry and governments. Practices show that airport expansion plans are political contentious and often in confrontation with the industry or notions of environmental sustainability. The assumption of SEA has the potential to influence decision-making process, enhance the positive, and reduce the negative impacts; introduce flexibility by taking into consideration all strategic options at earliest appropriate planning level. Evaluation of SEA process is as well believed to be suitable for complex decision-making situations and rich contextual situations (Retief, 2006). Lessons gained by previous experience can help and improve strategically sound decision-making.

Within respect to the experience of the current development state of airport expansion plans in European context, the main research questions are related to the potential role of SEA in the strategic alternatives about airport expansion plans. So far, the main research question is aiming to answer: To what extent airport development plans can be improved by the use of SEA, taking account previous experience on SEA for PPPs?

To answer the main research question several minor research objectives will be investigated in the structure of the thesis:

What hypothetical advances SEA offers within current or proposed airport development plans?

This question elaborates at the difference on the theoretical gain of SEA, as recognized by various practitioners and policy makers. To answer this question in critical theoretical review will be applied, in order to introduce the reader with the recent SEA principles.

What hypothetical advances of SEA are defining it as a valuable policy and decision-making tool for airport development planning?

The question gives direction for the building the conceptual framework embedded in the thesis. Based on the findings from extracted the previous question, some of the particular strengths of SEA are examined.

What is the value added by SEA for major infrastructure and land use plans within EU context?

The importance of coherent knowledge on benefits of SEA is also significant part of the research. It underlines possible pros and cons due to different regulatory and institutional frameworks, although the transposition of the SEA Directive.

What is the potential role of SEA for airport development plans based on meta-evaluation and analysis of the various SEA experiences and the current state of art?

Last, but not least, this question moves towards building the empirical part of the thesis, based on the previous findings of the research. It elaborates on what particular strengths SEA is ought to introduce in contemporary decision and policy design, when it is related to airport development plans.

3. Theoretical framework

The aim of this section is to introduce briefly the position of the current research amongst the scientific and planning field. Strategic Environmental Assessment (SEA) is evolving and dynamic pit in the policy cycle. It dates to the National Environmental Policy Act (NEPA) established in 1969 promoting consideration of the environment in planning, although not distinguishing SEA as its current state of art. Generic explanation of SEA is introducing environmental awareness into policies, plans, and programmes (PPP). First time Wood and Djeddour (1989), use SEA as a term in report to the Commission of the European Communities in the beginning of the 90s. By that time positions of SEA are not strong amongst the member states, and yet to begin gaining support and importance. Only after a decade, later European SEA Directive is published (Directive 2001/41/EC) and since 2004, SEA is mandatory in the member states (Dalal-Clayton & Sadler, 2005). Definition of the SEA by the Directive states:

“Integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment”

(Directive 2001/41/EC, § 1).

Outside the legislative framework, SEA also has been the subject of various scientific research and development (Partidario and Clark, 2000; Therivel, 2004; Clayton&Sadler, 2005; Jones et al, 2005; etc.). Whereas more attention to this will be given in the next two chapters, the effectiveness of SEA can be seen as giving focus on spatial impact of airports in their surroundings and the potential of SEA to include these impacts by enhancing various alterative at early planning stage.

Effectiveness of a SEA given its role as policy and planning-aiding tool is another issue considered in this thesis. Crabbe & Leroy (2008) articulate that this effectiveness can be tied down with terms of policy evaluation as a crucial part of the policy and decision making process. In the bigger family of environmental policy, SEA is rapidly evolving and carrying with itself producing new questions and solutions in strategic situations characterized with high complexity and strategic decisions to make. Evaluation of SEA practice in international perspective is giving priority to elaboration on the two main widely accepted SEA policy documents – European SEA Directive and UNECE SEA Protocol. Instead of keeping away economic and social effects, they propose to bring them together with the environmental considerations of the development plans. Strategic Environmental Assessment, hence, is a process of integration between environmental, social and economic dimensions, effects and consequences of policies, plans and programs and their implementation in decision making

at the highest level of legislation and policy making and the lowest possible and appropriate stage of planning or implementation.

4. Research Methodology

The research objectives examined in the thesis is going to use three research methods. (1) Literature review aimed at evaluation of data from previous academic references used as introduction of the research's theoretical framework; (2) meta-analysis evaluation design to strengthen the consequences of SEA process in empirical baseline and; (3) critical case study design aimed to reveal the potential role of SEA in strategies dealing with airport expansion plans. Selection of these three research methods are synchronized with the objectives of the thesis and within respect of the time span within the research is constrained. The essential aim of the research design is following the objectives set in the previous sections, namely answering the research question

Literature review is crucial to any research paper. It is based on published and accredited before scientific literature, documents, policies etc. It also contributes for building a frame of steady theoretical discussion in the relatively young field of SEA in the past several decades. It is the part where the most relevant statement about the object of the study is represented in chronological, methodological, or ideological framework. The literature review is setting the tone and the scope of the research argument. Similarly, it is setting up the conceptual framework that the thesis will follow to achieve the research objectives.

While evaluation environmental effects and influence through the sight of SEA there is an unconsidered body of knowledge available by existing evaluations of SEA experiences. This approach in policy evaluation called metaevaluation (evaluation of the evaluation) supports the importance of carried out evaluations and help improvement of planning cycle. This type of approach in metaevaluation studies is known as 'meta-analysis' (Crabbe & Leroy, 2008).

Meta-analysis is relying on information gained by comparative case study research to build additional awareness of the issues that might occur in similar decision and policy-making contexts. Meta-analysis will rely mainly on secondary data sources of information. Thus to provide information needed by policy entrepreneurs in building and improving ex ante techniques for new PPP. This is particularly important in view of that experience on influence of SEA on airport expansion plans is scarce and often limited. That is why normative and generic findings already acknowledged might be important in building prospective SEA frameworks for airport development plans

Case study design is a general research method adopted in social sciences and applicable in planning and policy evaluation. According to Yin (2003, p. 13) case study design is "an empirical enquiry that investigates a contemporary phenomenon within its real-life context." Case study research is suitable for the interest of this thesis because it allows focusing on

specific issues and cases, linking theory with practice, within particularly context and as such to explain how given policy worked out or not. It is usually used when the researchers are assumed to be assessor with less or missing control of the events. It is as well appropriate for exploring complex phenomena in uncertain situations with many variables. This design method is used usually when the main research objective tends to analyse and assess certain policy in decision-making: answering on “how” or “why” questions (Yin, 2003). Mentioned advances of case study research will be used to assess and endeavour to such extent adoption of SEA process in policy-making is effective.

The selection of these study cases is by several reasons. As mentioned, SEA is mainly introduced in infrastructure and land use planning, and emerging field as an airport planning in policy perspective is highly needed. Furthermore, most of the expansion plans actual now are originated before the ratification of the European SEA Directive i.e. Berlin-Brandenburg, and respectively there is not performed SEA. Some strategic policy elements are found in the final EIA report. Additional contextual information is the several trials against the airport expansion plans. At the other extreme is the Lisbon airport, where the role of SEA is documented and what advices can be implemented by practitioners. This can illustrate what pitfalls are plausible to happen in decision-making and advice practitioners what can be done by learning by doing and learning by what to do not.

5. Structure of the thesis

The thesis will be consistent of seven chapters and logically divided on two big sections. The first half of the thesis (Chapter 1-4) will represent the on-going views and debate on the topics of strategic decision-making, SEA, airport capacity, and airport expansion plans. This part will rely more on theoretical and enacting evidences. The second half of the thesis is going to represent critical analysis of the SEA evaluation methodologies of different experiences and their potential influence on airport expansion plans.

The current introductory chapter is the prelude to the research objectives and approaches found in the current research paper. Chapters 2-4, are based mainly on literature review. Chapter 5 is meta-analysis based on secondary data and Chapter 6 represents the selected case studies. Finally, chapter 7 is elaborating on collusions and recommendations.

Chapter 2 elaborates on potential environmental constrains created by airport expansion plans and strategies to deal with them. Airports are source of wide range negative impacts and their interpretation in the context of strategic decision-making is important, as far as the former have the potential to be cumber stones of strategic alternatives carried out during the SEA process application.

A theoretical interpretation of strategic decision making, SEA and policy evaluation is the essence of chapter 3. Adequate and comprehensive elaboration on the most relevant theoretical beliefs is in the heart of on-going analysis and application of SEA in practice.

Chapter 4 depicts the legislative vision of the European Union on the topics of SEA and Airport policy. The importance of application of strategic decision making on airport planning might help for mitigation, enhancement, monitoring, and evaluation of airport expansion plans.

Chapter 5 elaborates on the current SEA experiences on specific plans and programmes within EU member states. The information gained by metaevaluation techniques of these might guide decision and policy makers for further improvement and development of the SEA framework applied at present.

In chapter 6 these lessons, used and applied to airport expansion plans will show the potential role of SEA on airport expansion plans. This might improve the effectiveness and contribute to achieve better results and reduce the negative environmental impact before their point of irretrievable. The aim of this chapter is to build a sound analysis on which to answer the main research question.

Chapter 7 is given to conclusion and opportunities for further discussions of the thesis. Figure 1 represents the schematic visualization of the structure of this thesis.

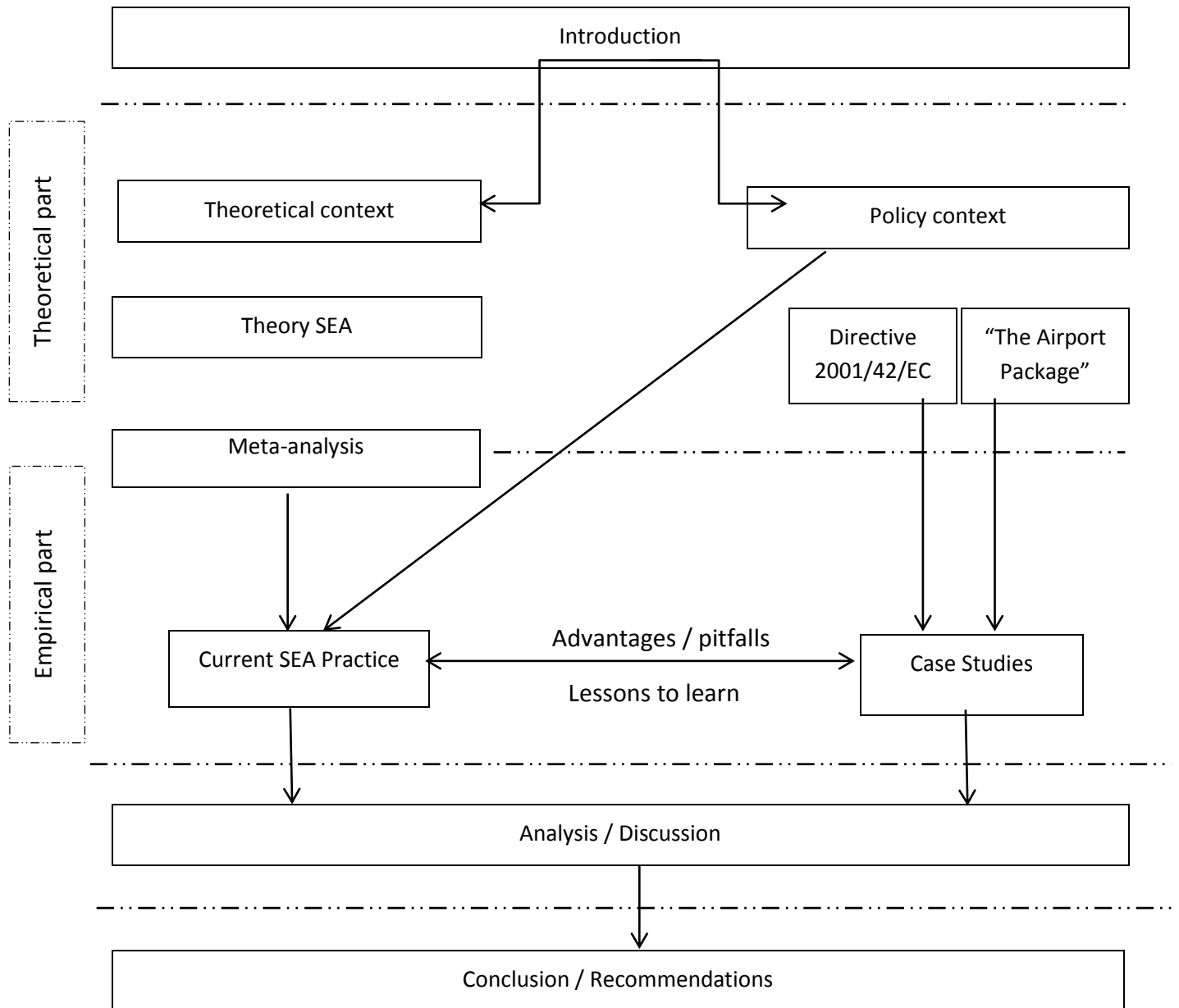


Figure 1 Schematic visualization of the thesis

II. The environmental side of airport development

1. Environmental consciousness of airport development planning

“Airports like cities are never static. They are constantly evolving in form and function!”¹

This opening quote by one of the contemporary advocates behind the ideology of the Aerotropolis (Airport Cities) represents in one breath what exactly are the trends in contemporary airport planning and development. Airports are not anymore single entities in the transportation network where the passengers depart or arrive. They are also integrator of economic activity, public investments, built development and so on. Therefore, when an explicit authority announces intentions for airport capacity improvement one of the big concerns of the public discussion and local city or urban inhabitants are the complex environmental impact or effects of potential expansion or relocation. The goal of this chapter is to illustrate the major environmental tensions generated by airport expansion plans and attempt to prescribe strategies to deal with them. Hereby strategies should be read as strategic alternatives, mitigate and enhance planned and desired interventions on demand and supply of airport capacity. Beforehand is important to introduce the reader with some clarification about the issues and prospective going along with airport expansion plans in general.

Before all, it is important to elaborate on definition of ‘environmental’ in the content of this thesis. The meaning of environment within the current research refers to the apprehension that environment is not only the all living and not-living commodities but also the built environment resulted by continuous interaction with human activities. In other words, holds systematic grasping of physical, social, cultural, economic surrounding. Following this train of thoughts, the expression of environmental awareness presented within this chapter will be explicitly reflecting on the potential social, psychological and community awareness of these environmental issues.

Airport capacity aside, is also symbioses between several functions, which operate together. For simplicity airport capacity in this thesis will be understood as in the scheme of Sanchez et al. (2011), illustrated in Figure 2. At EU levels and as well at national level, there are wide range of recommendation and advisory reports on the need of more capacity at major airport hubs and their impact on the air quality and climate change, woven in the body of the aviation. For example, EC adopted the Action Plan on airport capacity, and initiated different studies on the aircraft noise exposure, effects of the aviation on the air quality, climate change impact on the aviation and even study on use of biofuels on airport operation. Nevertheless, public perceptions fed by environmental limitations have been always constraining factor for the growth of the airports – vociferous oppositions to expansion plans in form of protest and court cases give a simple illustration of that. The

¹ John D. Kasarda, *The Evolution of Airport Cities and the Aerotropolis*, Chapter 1 in *Airport Cities: The*

reason for such opposition originates mainly at the location of the specific airport, where mostly the direct negative impact and effects are experienced.. Usually, either the aerodrome is located in the immediate vicinity of the satellite settlement or it is neighbouring with protection zones or green belts of metropolitan areas.

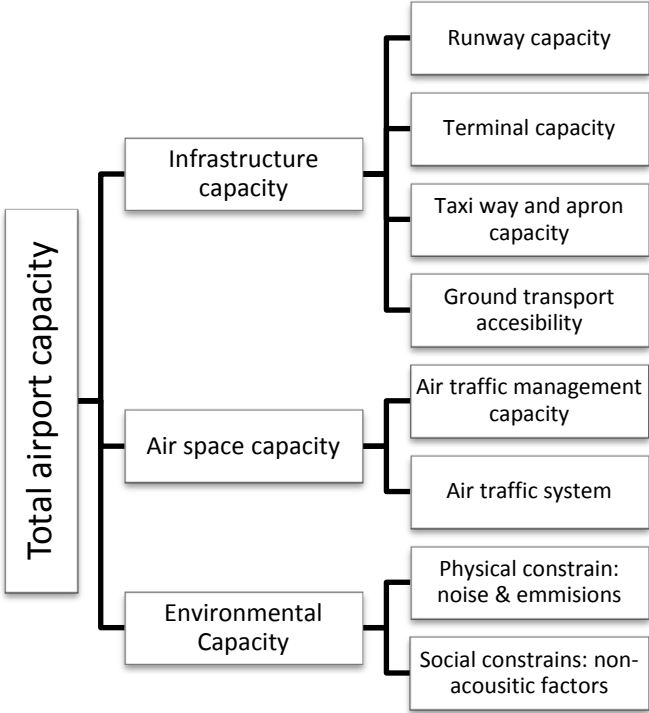


Figure 2 Components of airport capacity (Source: Suau-Sanchez et al, 2011)

Without a doubt expanding the capacity of an airport is considerably difficult and complex issue, as Forsyth (2007) bring out environmental factors can vague hindrance for implementation of airport expansion plans, consuming time and extra costs. Furthermore, Upham (2003, p. 146) develops the concept of environmental capacity on airport capacity as *“the capacity of the receiving environment, both human and non-human, to tolerate the impacts of airport activity”*. What can be concluded for all above and also not included in the formulation of the airport capacity is the external stimuli for external spatial developments and public utilities, such as accommodation and freight services, that have all kind of different impact on the environment.

2. Socio-environmental impacts of airport development plans

To define which the negative are environmental impacts caused by airport expansion plans is as far as a comprehensive and as well an abstract task. Important to acknowledge is that airport expansion plans are not just simple improvement of the aerodromes, their terminals and runways. It also includes construction and maintenance of airport access infrastructure, amendment of the public services and other relevant adjoining basis infrastructure as hotels, office buildings, cargo utilities, etc. In general potential impacts caused by airport expansion

plans can be divided on direct (caused by construction of the airport as well diligent facilities and infrastructures) and indirect (caused by contingent operation of the facilities). Direct impact could be the – noise nuisance and disturbance caused on a building site, air pollution, biodiversity loss, land take, visual changes. Indirect negative impacts are somewhat the same in nature: air pollution, noise disturbance caused by aircrafts, more traffic generated on the exit points of the new infrastructures, biodiversity loss and bird collision, water pollution and as well other hazardous risk as turbulence and vibration.

The classification is not universal and can vary depending on specific contextual circumstances on expansion plans. The Aviation Environment Federation – a non-profit organization concerned with environmental impacts on the airport operation and aviation published a planning guide gaining wide currency to the planning process and the most relevant environmental impacts caused by them (AEF, 2008). The subsequent section will combine some of the most common and important environmental impacts listed below and will try to propose hypothetical mechanisms or strategies to deal with them.

Noise nuisance and disturbance

Undoubtedly, one of the most important impact on the environment by the airport expansion works because it is easy to notice and ascertain. Source of noise usually are generated by on-going constructions on the building site by various machinery also, noise produced by heavy trucks and equipment servicing the constructions. Indirect noise disturbance is well known, and widely discussed in theory and practice, related to increase of aircraft noise created due to the new capacity charge of the possible new runway or airport.

Notably noise at airports is not only the blast caused while landing or taking of, but also related to supplementary airport operations as taxing at the flying ground, on-going traffic, and public transport to and from the terminals. Excessive noise might affect both human and wildlife environment. World Health Organization (1999) recognizes the following harmful health effects on noise: noises induced hearing loss, noise interference with oral communication, sleep disturbance, and disorder, may affect cardiovascular disordered people, may affect mental health, may reduce personal performance, behaviour, or cause any other psychological effects. Effect on wildlife habitat is expressed primary by change of breeding and feeding habit of the birds and reducing their vulnerability to survive.

Usually noise mitigation measures are combining technological, architectural, transport and building technologies, and strategies. Noise perceived by nearby communities can be reduced by implementing technological innovations during the construction, confine within certain limits construction works and traffic flow to the airport during the night and so on. Major innovations for reducing aircraft noise by the governments and airport authorities: there is ban on loud aircraft amongst the European Community member states, sound

efficient airplanes are operational, and runways are made of noise reducing asphalts. In brief, the list of technological innovations is expanding dynamically.

Limiting night flights or charging extra airlines operating with noisy aircrafts could also reduce the perception of airport operation noise. Besides that, compensation measures to nearby communities are something, which should be encouraged – for example soundproof housing or monetary compensations. Upham et al (2003) underlines the need of more effective land-use planning envisioned by airport authorities and governments in order to ‘protect the future airport capacity’. Nevertheless, sound nuisance and disturbance seems to be one of the most crucial stumbling blocks in airport development plans and will be in future also because of its different perception by the locality.

Air Quality

The negative impact on the environment of the airport expansion plans and latter operation are also visible by their charge on the air quality. During the construction phase, main source of pollutants originates nearby the virtual airport facilities in building, i.e. dust is the most common pollutant found in the air. Other major pollutants are the CO₂ emissions liberated by the maintenance activities. Pollution on operational phase usually includes NO, SO and CO emissions from burning of aviation fuel; aircraft and airport maintenance activities as de-icing, engine testing; harmful emissions by cars and public transportation, etc. Air pollution is harmful for the human health and wildlife flora and fauna; therefore, it has been on the political agenda since long time.

European Union has been adopted Air Quality Framework and communication on the effects of airport operations on the air quality, at other hand TEN-t networks and White Papers’ on Transport introduces new intermodal transportation networks for reducing the harmful impact on the nature and also achieving time and cost efficiency. Yet it is difficult to propose punctual measures to reduce the air pollution produced by airports. Usage of biofuel as aviation fuel should be stimulated to reduce the share on the greenhouse emissions. Along with promoting intermodality, step forward is to promote and encourage public transportation services, rather than usage of private vehicles. Monitoring and mitigation plans should be carried out and provide information to be used in building scenarios or envisioning future development.

Climate Change

One of the impacts highly articulated and debated by scientist, politicians, and citizens corresponds to the consequences of climate change to contemporary social and environmental movements. Climate change has been and still is on the highest strategic governance level on international and regional scale the Kyoto Protocol (1998), the treaty of EU under the protocol to reduce the greenhouse effects and targets set by various

governments are clear demonstration of this. However, aviation and airport activities are also source of significant greenhouse emissions. A communication from the CEC (2005) estimates the emissions from trans-European flights to reach 150% more than measured in 1990.

So far, AEF (2008) suggests three major sources of greenhouse emissions. Flight operations are the largest polluter emitting CO_x, NO_x, sulphate and other soot particles. The next major source is the ground traffic generated by incoming and out coming connections of the airport. Last, but not least source of harmful emissions is diligent airport infrastructures, by means of energy costs of their electricity and heating needs.

Whilst, these sources depict emissions on operational phase, tracking greenhouse emissions in construction phase is also likely, by the energy and sources needed to transport the materials and construct the infrastructure itself. Another perspective on climate change is indirect linkage with the urban heat island phenomenon. Airports and adjoining infrastructure units represents high concentration of steel, glass and asphalt which are increasing the reflection coefficient of the airport surface area. Heat waves observed in last decade hides risk of excessive warming and heat from the ground, which usually is trapped in the atmosphere and leads to warming the temperature.

There is raising policy awareness on the potential impact of the climate change addressed to aviation and airport operations on different governance levels initiated amongst EU. Some examples of this are the integration of aviation emission with climate change regime and International Civil Aviation Organization policies for greenhouse emission trading (CEC, 2005). The implementation of the Single European Sky initiative and more research into 'cleaner' air transport are the key triggers to deal with externalities caused by climate change at first sight. Yet, enhanced involvement of the industry in decision-making stages might also be helpful in achieving goals of sustainable development. Especially Upham et al. (2003) indicate that climate change cannot be ignored because of its major impact on the economy and the state. Thus, planned standard functional operations within an authority or organization will experience turbulence in long-term perspective related to transitions in decision and policymaking cycle.

Biodiversity

The impact of the biodiversity is constant as far on the construction site and as much as on operational phase. The importance of green areas around airports gains enormous importance in highly urbanized countries, as the Netherlands for example, when airports are located just next to protected areas or green belts. Runway, terminal, and belonging infrastructure as well as the airport access and satellite development facilities can cause in some cases irreversible damage on the environment.

From an ecological perspective, the implementation of airport expansion plans can result in habitat degradation in means of habitat destruction and fragmentation of a number of species; or road kills on terrestrial species and collision risk on birds. Nevertheless, now almost all airports have warning systems for approaching flock of birds and broadcast a sound similar to raptors to spread out the birds from a distance more than 10 km from the airport. Yet, as mentioned above, sometimes this can distract them and actually made vulnerable to the real predators. Confusion and influence on migration patterns of migratory birds is also significant impact caused by light pollution nearby airports (AEF, 2008).

Airport expansion plans can be in contradiction with the Habitats and Bird Directive of the EU with the establishing of the NATURA 2000 preservation zones, that is why emerging need of recognizing the benefits of integration of airport plans with broader land use, and urban development plans to achieve optimal negative impact on the environment and enhance sustainable development.

From purely ecological point of view, the best practice for nature and habitats conservation in already implemented plan is relocation or restoration of threatened habitats, compensation by nature creation or simple hedge building to keep the endangered species away from the diligent facilities and infrastructure. Bird dispels and monitoring systems should mechanically alter to such extent that it would not put endangered species to hazardous niches.

Land take and land use changes

Land take and land use effects on the environment are associated with the biodiversity, air quality and noise impact. Physical expanding of an airport capacity requires new land on which existent or additional facilities will be upgraded or built. Land take changes usually apply to the changes on the land required for the implementation of the project. Thus, not only the location of the facilities, but also the land required whilst their construction is in progress. Additional complexity comes from the proximity of nearby settlements, which usually are the most affected stakeholders in airport expansion plans. For example, the London Heathrow plan for third runway and new terminal included relocation and actual loss of entire villages and communities, e.g. Simpson village in which was going to be the new runway area (DfT, 2003). On latter stage, the government authorities subjected on severe environmental and social pressure suspended expansion plans.

Major impact related to expansion plans are land use changes, new urban like facilities changes the pattern of the whole environment surround airports. Once usually rural, agricultural, or unspoiled form urbanization processes lands are transforming in suburban or at least heavily used land clusters. As new emerged area for development, airport peripheries attract more investments thus lead to change of the whole environment from rural to urban like.

Land take and land use changes are practically effects that are impossible to avoid, thus appropriate mitigation and compensation measures and participation of affected stakeholders are necessity in preparation of airport expansion plans. Land consolidation and banking measures can abate negative impact on land fragmentation or in some cases appropriate repayment or other ad-hoc compensatory tools.

Third party risks

Overall operation on airport and aviation services also raise awareness of so called third party or external risks, which not directly related to planning or decision making implementation or power relations. These are usually risk related to the safety regulations of airports, risk of airplane crashes, risk of terrorist attack, road accidents and so on.

At current time, there is no clear strategy how to deal with external risk, partly because of their unpredictable nature and partly because of gaining now awareness of this kind of issues. However, some countries are working on mitigation measures to control and mitigate effects of externalities by risk modelling systems to limit potential catastrophic impact. Such initiatives even include purchasing and demolition of properties in high-risk zones by relevant authorities (Upham et al, 2003).

The potential role of integrated land use planning, improved infrastructure, aircraft approach routes and participatory designs in terms of strategic thinking have been considered earlier in this chapter. In result, important factor is it not only to strengthen the validity of long lasting decisions which are going to be made but also through in depth consideration of the capacity to raise social and local awareness over different risks and related development nearby risk zones.

Other impacts

Above listed impacts is just part of the spectrum of the potential impacts which airport expansion plans might cause, both direct and indirect. Possible effect on climate change, water pollution, urbanization processes, traffic accidents, impact on heritage or cultural assets, various community impacts and other impacts resulted from environmental variables on case-by-case analysis. What is important to acknowledge and learn from current practice is that environmental effects do not have a secluded place in airport plan implementation. They are exclusively relying on active public consideration and awareness of environmental protection. In this pattern, environmental impacts can serve wider range of effects; not only describing the effects on the natural environment but also the built and cultural environments, tracking the impact on socio-cultural assets for example.

3. Strategic Alternatives

Sections above illustrate the range of environmental externalities that are pliable of airport expansion plans. Hypothetically, reducing the negative impact on the environment is perhaps possible if strategic alternatives prepared and feasible on appropriate early planning level and scale are ready to assess by decision makers. The strategic alternatives, which this chapter introduces, are not the only development state that might occur, they are simple and straightforward reflection on the risks mentioned in the previous section and their marginal reflection on realistic status quo. The correlation between most likely impact and alternatives is double bound in a way that current impacts and effects followed up after planning implementation offer the possibility to learn from previous experience by so called “learning by doing” and also “learning by what to do not”. Herewith this subsection will elaborate on several strategies to deal with expansion of existing airports. The proposed alternatives are derived from the compendium of the 1st International Colloquium on Airports and Spatial Development took place July 2009 in Karlsruhe (Knippenberger & Wall, 2009), annotations presented in Guller & Guller (2003) and personal observations of the author, gained by previous employment experience.

Table 1 Strategic alternatives related to airport development planning defined in the frame of the thesis

Strategic alternatives related to airport development plans
<i>“Business as usual”</i>
<i>Growth and “destroy”</i>
<i>Growths shrink (idle airports)</i>
<i>Intermodal replacement</i>
<i>Concentration of airports</i>
<i>Auxiliary airports</i>
<i>Sustainable Airports</i>

One of the principle arguments of SEA, as will be elaborated in the next chapter, is the opportunity to consider alternatives that are practically unfeasible on project level decision making. Concisely, for the time that there is a design on a new airport runway it is too late to consider the opportunity to increase capacity on secondary airport, or promote different modes of transport or even enhance better communications.

Proposed alternatives reflect on main uncertainties, awareness, and anxiety influenced by the driving forces of the society, economy, politics, and technology. It is assumed in strategic decision-making planners, entrepreneurs should entail, mix, and match different elements from the above in order to create compatible alternatives that are used as potential strategic action in the current state of art. Hence, these alternative developments proposed are result both of current development of the aviation and airport sphere (see Guller & Guller, 2003) and the role of alternatives in impact assessment studies. In particular, the theoretical foundation about the proposed alternatives is following the classification after Arts (2004) who distinguishes several types of alternatives in the field of impact assessment:

- Zero alternatives
- AMFE: alternative most favourable to the environment
- Preference alternative: initially proposed by proponent
- Modality alternatives
- Location alternatives
- Construction alternatives
- Other alternatives

Concisely, the decision space for the alternatives in airport expansion plans is usually triangulating between the most preferable alternatives, that in most of the cases is economically driven, the MFE-alternative that is targeting sustainability goals and the possibility of doing nothing (Figure 3). Thereby, strategic alternatives might be seen as trying to find the balance between the desired goals of capacity development and its impacts on the environment.

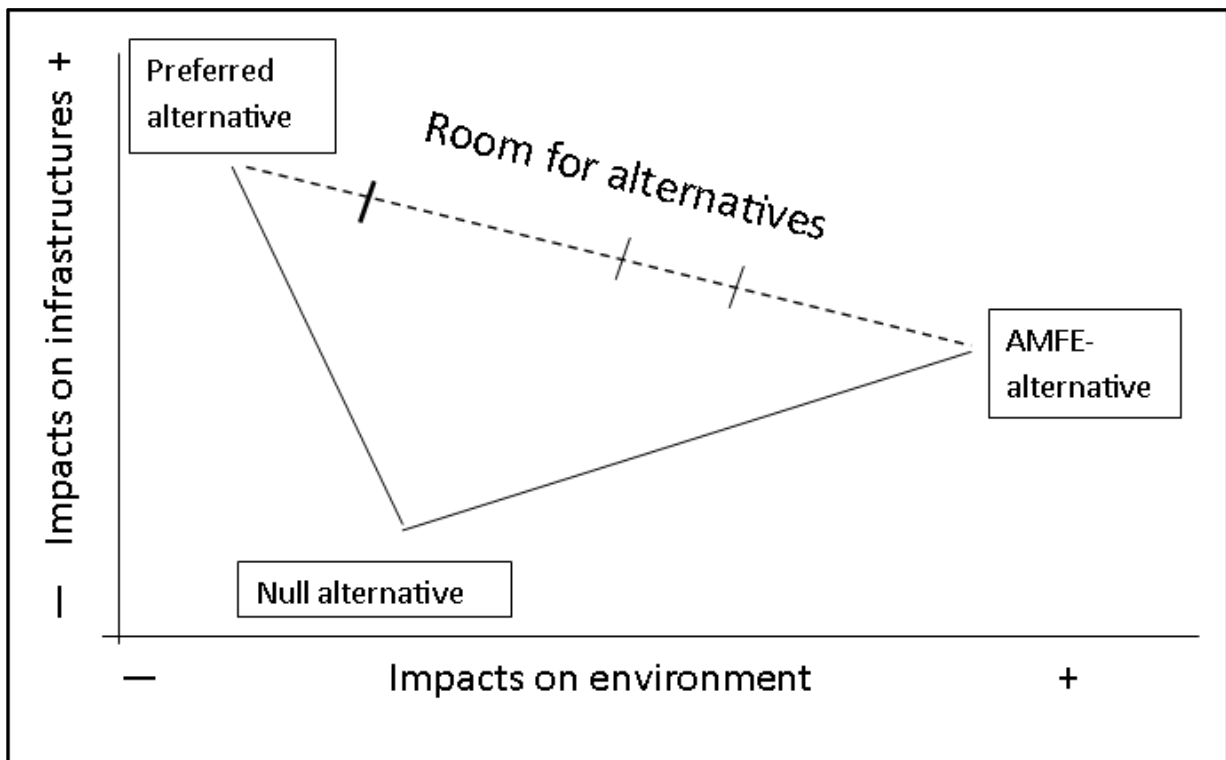


Figure 3 Decision-making space and room for alternatives (after Arts, 2004)

Business as usual

One of the basic strategies in planning practice and design is actually doing nothing, leaving the policy, plan, or standard functional operations to evolve as they are. In other words, this is a baseline development based on current state of art and autonomous development. Thus, taking no action and allow business go as usual. “Do nothing” options is one of the basics concerning assessing alternatives in impact assessment studies. In this case, the

airport growth is left on his own and no further external pressure on development is induced.

It might be argued that practically due to various effects on airport operations, this option is not applicable. For instance, the need to reduce greenhouse gas emissions and technological innovation in aircraft industry are key pleas for that. Thus, airport expansion is not existing in an individual bubble of development it has high degree of interdependence with other technological and technical development areas.

Capacity growth and/or shrink

At first glance, these contradictory alternatives compounds in the understandings of addressing the mismatch between airport capacity and demand. Straightaway and rational decision, viewed in terms of rational planning of supply and demand, in cases of mismatch is to expand the current capacity either by new runway, new terminal or though relocation of the airport (new airport on alternative location). In most of the cases, this corresponds to formal or informal opposition and increase spatial variation on the surroundings. The potential role of SEA here is related to the occurrence of capacity-demand dilemma: is the development really needed or various fiscal, regulatory, and substantive measures can anticipate it. The point here is to what extent the desired development is balancing the impacts on the environment and the infrastructure demand as illustrated in Figure 3. The basic assumption is those investors usually are craving for alternative, which is fiscally preferred but sometimes environmentally unprofitably. The role of SEA in this case can be to counterpoise the balance between both for most spatially sustainable decision.

The other side of the coin is related to complex socio-cultural, political, and fiscal measures. Usually decision makers have to deal with uncertainties. Taking in account the role of uncertainty factor is a key fundament in identifying and assessing alternatives. Following the statement of Wilkinson (1995, p. 1) that “given the impossibility of knowing precisely how the future will play out, a good decision or strategy to adopt is one that plays out well across several possible futures”, the aviation sector also needs projection in prospect and envision as well as positive and negative trends.

Most of the European airports demanded for capacity expansion due to fast dynamics in the aviation sector in the early 2000s, yet the financial crunch still echoing dropped down the economic indices and uncertainty about future development can handicap airport expansion plans. Simply this goes for no further growth and keeps developments idle.

Intermodal Replacement

The discussion about uncertainties and substantive measures to identify strategic alternatives in airport expansion plans have to overlook the issue of intermodal replacement of journeys and specially short-haul journeys. Furthermore, environmental extremities such

as volcano eruptions, severe storms and so on put on the agenda the topic of force major vulnerability on the aviation transport and looking for plausible alternatives. For example, 2010 eruptions of Eyjafjallajökull, an Icelandic volcano created an ash cloud led to more than one-week air travel disruption, not only in the European single sky but also had an impact on the transcontinental flights. This led to transfer of massive passenger flows to alternative transport nodes – trains, bus, rent-a-car, etc. or the tragic view of people stuck in airports for weeks.

Intermodal replacement might alter short haul trips like between Paris and London, where the average scheduled daily flights are more than 30 (without the budget airline carriers). The Eurostar connection between Brussels-Paris-London is an already implemented alternative, but its accountability is subject of contradictions. Replacement option sound and option for journeys planned within a single state or transboundary regions, where the likelihood for participation and negotiation is higher than in transboundary decision making.

Concentration of growth

The notion of concentration here takes form as strategic action on the highest policy level, primary on EU and former at national level. Designing expansion plans of airports or airport systems should follow specific objectives or recommendations set in framework. At current state, there is no existing institutional setting coordinating capacity regulations. Before declaring a master program of an airport expansion plan, first approach should address the sense of emergence and the type of the capacity crunch. Differently, before making concrete decision there is recognition to decide wherever the implementation should be.

The major hub airports (London, Paris, Frankfurt, Madrid, and Amsterdam) are satellites of development demand and yet at the same time secondary or satellite airports are suffering from demand shortage. There should be advocacy on strategic policy level dealing with more accurately intelligence where and what type of airport expansion promoted, dignified or discredited took place. This also can help dealing with the existing tensions between European North-South and West-East relationships. At other hand similar policy should held at national governance scale in order to neutralize social and spatial disparities. Here the emphasis is not to “allow” or “not” capacity expansions but to promote tailor made airport-smart growth concept.

Auxiliary/Secondary Airports

Important place in the present aviation scheme not only in Europe but also all over the world is gaining ground of auxiliary airports in order to reduce the impacts of big airport hubs. Instead of rousing and high costly expansion of existing airport capacity, in some cases, redirecting expand focus on satellite airports might be times more cost effective. Examples of such hub-satellite interactions are visible in the cases of Brussels International and

Charleroi Airport, Barcelona El Prat and Girona-Costa Brava and Reus Airport, Milan Malepensa, Linate and Orio al Serio Airport, the metropolitan multi-airport system of London and Paris, partly Schiphol (Amsterdam) and Eindhoven, etc.

Satellite airports offers relaxed taxing and charging policy and at the same time stimulate the growth of regional and local economy. Whilst, redirecting traffic to secondary airports decreases capacity demand on major hubs, it can lead to social or political opposition in the satellite airport boundaries due to serious impacts related to new operations. Therefore, assessing an alternative to expand capacity on secondary airports is not an end itself but a mean to stand for and achieve improved airport operations and complex spatial planning implementation.

Interesting observation on secondary airport is their ability to attract investments and passenger flows. Currently secondary airports are preferable destination of low budget carriers that avoid the high taxing of major airport hubs. This in all senses is indicator of strategic thinking but in economical aspect rather in strategic action meant in this thesis. So far, here is to say that “replacing” airport by secondary one most of the time is seen as financially driven strategic alternative within bigger frame of strategic thinking.

Sustainable airports

In a period of growing attention to global warming, environmental and ecological crisis the discourse about sustainability and “green” development gains importance. As mentioned before the link between environment and aviation is very sensitive and concealed. Therefore, the commitment of the aviation on climate change requires thinking about not only technical measures of airport expansion but more substantive and abstract level thinking. The International Air Transport Association (IATA) envisions first steps in sustainable aviation strategies by four trigger points strategy with focus on improvement and investment: in new technology, improving operations, infrastructures, and economic measures. Whilst the research held focuses on issues as policy integration, efficient fuel saving, biofuels or supports from governments (IATA, 2011) there is also need to think strategically not only in policy but also at programme and plan level where more localized management approaches show feasibility. Sustainability targets and solutions needs as using renewable sources in airport building maintenance or integrating departure-arrival schedules with the public transport might not compensate capacity demand but it has the potential to mitigate and enhance partly third party related effects.

4. Conclusion

The purpose of this chapter was to introduce the current research paper with the most common pitfalls and constrains that might affect airport development plans. Common judgment on the up-to date plans is that airport planners and decision makers were not

maximizing the role of the environment conservation in long-term airport plans. Thus, the notion of “environmental capacity” should come into greater importance on the airport policy agenda (Upham, 2003). Exposed environmental problems also might set up the formation basis of strategic alternatives, which should policy entrepreneurs, and adequate authorities include in expansion plans.

Identifying strategic alternatives are the very first step of early mitigation and enhancement of potential negative impact on the environment. Some of the alternatives developed above illustrate mutually exclusive development others have combining elements. The role of SEA in airport decision making might assist recognition of the exclusive and alike components; embark comparative analysis; appoint preferred alternative or set of alternatives; and guide assessment on alternative’s strategic action, impact prediction, and evaluation.

The alternatives proposed in this chapter not tend to occur at every level of strategic policy action and at the same time represent neatly an abstract idealistic model in airport planning. Alternatives are one of the principal elements of decision making recognized in theory and practice. Moreover, alternatives are one of the main inputs of SEA in decision and plan making. So far, the consideration on alternatives on different strategy levels is graphically illustrated on Fig. 2. The impact of alternatives is more significant and legible on high-level strategic actions on which SEA is integral part instead of project level EIA, whereas the scope for change is untenable. Furthermore, this and more theoretical outlines as well as methodological inputs of SEA as a principal tool in good decision-making represent the content of the following chapter.

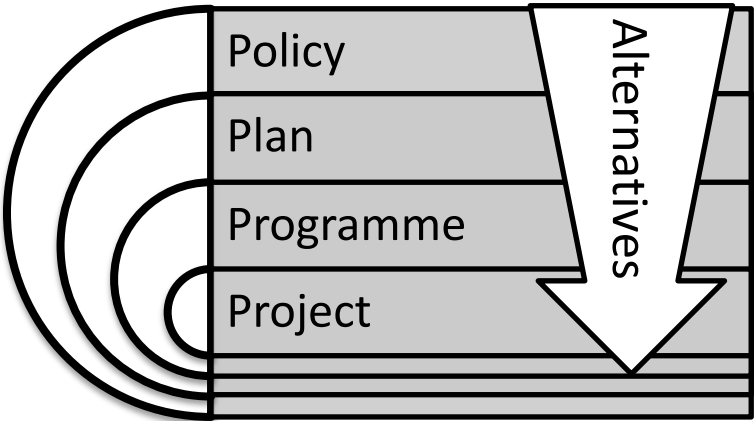


Figure 4 Room for alternatives in decision making (adapted from Arts, 2004; Dalal-Clayton and Sadler, 2005; Partidario 2000)

This simple figure shows implicitly the room of alternatives in the decision making cycle and their scope in different stage. SEA, which is dealing with the upper three levels of decision-making, has the greater room for adopting the most favourable strategic alternatives regarding the mitigation and enhancement of potential impacts. The next chapter will elaborate in depth on the role of SEA over alternatives undertaken in decision-making process by underlying its theoretical advances.

III. Theoretical context

1. Introduction

Whilst the previous chapter discussed various social-environmental impacts and effects related to airport development plans, as well, associated to them external spatial development and also hypothetical strategic alternatives that might be considered in such development plans, the objective of the current chapter is to build a theoretical framework that highlight the SEA as viable and sound decision making tool.

The foundation used in this chapter is purely explanatory, as such as, to provide as more as possible theoretical context to the reader. Admittedly, theoretical review is based on coeval experience with SEA or SEA type approaches in practice and documented by various scholars. The theoretical discussion gives the background of the occurring policy and practice discourses. It also seeds the thought for methodological and evaluation modus operandi while approaching SEA. The elucidations of this chapter will be the heart of the following sections of this thesis. The overall aim of this chapter is referring to the question of the *hypothetical advances SEA offers within current or proposed airport development plans*.

The description of the theoretical roots is going to be approached with certain level of abstractness, starting with the explanation of the nature of strategic action and developing theoretical framework based on current accessible literature and studies on the subject and finish with opportunities of using meta-analysis as tool for evaluation of SEA.

2. Strategic Environmental Assessment

Strategic action

Before entering the abstract theoretical frameworks of SEA one more term is need further elaboration – the so-called ‘strategic action’ (Table 1). Strategic actions emerges driven bay wide range of reasons and difficult to understand. Etymologically the term strategic stand for “forming part of long-term plans to achieve a specific purpose.”² This specific purpose might be rooted in the political agenda, the socio-economic situation, or any other socio-cultural phenomena. Strategic actions in environmental policy usually emerge after building complex coalitions between decision makers and public figures. Strategic actions could be different development plans, integrated and sectoral policies undertaken by national and international institutions having specific objectives and supporting it. In planning practice the term strategic action directly refers to the notion of policies, plans and porgrammes (PPP) introduced by Wood and Djeddour (1991, in Therivel, 2004). Policies are typically referred to institutions or rules of action that guide decision makers to achieve certain goals.

² Definition by: *Paperback Oxford English dictionary*. Oxford: Oxford University Press, 2006

In the literature policy, actually refer to existing protocols or acts instead of the actual course of actions in decision-making. Plans are focused in implementing the policy objectives and priorities, coordinated with the availability of resources and timing. Programs can be defined as structured and organized concept with specific activities and investments or in other words the implementation of planning. (Joao, 2005; Therivel, 2004)

Table 2 Different notions of strategic actions

Definitions and Examples of strategic actions		
Strategic action	Definition	Examples
Policy	Broad inspiration and guidance for action	European Transport Policy, Global Warming and Climate Change Policy
Plan	Set of proposed correlated actions with specific timeframe	Land use plans, CO2 emissions reduction plan
Programme	Set of projects in a particular area; implementation of planning	Specific sectoral with large scale capacity storage – SAPARD, PHARE, rural development programs

In addition to the above-mentioned “strategic actions”, the term “project” also should be defined. In planning practice, projects refer to the implementation of any detailed proposal or development design going for implementation. These definitions in practice do not have proven strict boundaries and limitations. By clarifying, the difference between the fields of strategic actions now can be elaborated why SEA process is needed in the practice and why it should be distinguished from the EIA process (Joao, 2004).

While EIA is mainly describing the impact of proposed or already existing project, SEA is assessing the alternatives, which might be available in earlier stages of implementation. For example if new highway is in implementation phase, there is no room for building alternative strategies – such as increasing capacity of existing roads or encourage rail connections. In other words at the project level is too late envision strategic alternatives. More of the advantages and hypothetical benefits of SEA will be examined in the following section.

Towards theoretical framework of SEA

The previous paragraph introduced the concept of strategic actions and strategic decision making crucially important in contemporary planning practice and design. It is also necessary within the purpose of the thesis is necessary to introduce the reader with basic concepts of environmental policy and co-responsible tools and measures. Overall, environmental assessment (EA) is not a new phenomenon in decision making as well consistent in theoretical perspective. Since the introduction of the NEPA (US National Environmental Policy Act) in 1969, the role of the environment in development plans and project is gaining considerable importance. Large number countries, in developed and developing world, developed and adopted Environmental Impact Assessment (EIA) practice in their legislative and policy networks. EIA can be considered as unique project documents assessing and

evaluating the potential impact of proposed project on the surrounding environment, sometimes including also the social and economic impacts. Recently, effectiveness of EIA have been subject of critical review because of the fact that sometimes it is held quite late in decision-making and planning sequence. Due to that fact it is usually difficult to mitigate impacts, which have not been considered as important at earlier stage. Recognition of the impacts on the earliest possible level and their mitigation, so called back casting approaches are the easiest way to understand the principles of SEA – if we want to achieve better decision making what actions and which impacts should be predicted and mitigated.

SEA as a decision making tool originates from the EIA paradigm in terms of envisioning higher environmental attention and achieving sustainability but at the same time it evolved as a tool thinking out of the box of the EIA limitations (Dalal-Clayton and Sadler, 2005). From this perspective SEA is relatively new policy and decision making tool emerging during the last two decades. Whilst EIA is designed and applied to describe the potential impact on the environment for specific proposed development projects, the application of SEA is believed to enhance the role of the environment in plans, programs and policies (PPP) design. Many theorists and policy entrepreneurs emphasizes that the potential power of SEA in decision making is in the integration of the environmental considerations at the earliest possible and appropriate stage of planning and at the same time at the highest level of legislative and policy networks. The final goal of SEA is to move forward to sustainable development. The classical definition of the SEA can be summarized as systematic decision making process to regard and designate complex environmental, social and economic effects and influence of proposed plans, policies or programs at the earliest possible stage of planning and implementation on their systematic application at highest levels of decision making and law-making institutions (Dalal-Clayton & Sadler, 2005; Partidario & Clark, 2000; Therivel, 2004).

Understandings of the concept of SEA are based closely on EIA principles and design, although that there is an undistorted difference between the both. As mentioned before the research and practice of SEA is relatively new field of action and characterized with high dynamics and not clarified theoretical boundaries. Within the academic research, there is no single and universal definition of what SEA is due to the different practice adopted in each country because of specific spatial, economic and political contextual interactions. Recent works elaborated on theoretical assets of SEA in European as well international experience are carried out by Dalal-Clayton & Sadler (2005), Fischer (2007), and Therivel (2004). Some of the most important and distinguished definitions of SEA are available in Box 1. This list of the most recognized definitions shows also how the international practice and understandings of SEA is evolving.

The main goal of all definitions is gravitating around enhancement the role of the environment in applications of PPP design. Some of the contemporary research and advocacy of SEA and its rationalizations as a decision-making framework supported with tailor made core elements are made by Partidario (2000, 2007) and Vicente & Partidario

(2006). Furthermore Partidario & Clark (2000) and Partidario (2007) argues that SEA might be used to envisage the unintended and intended impact of potential action by setting up a capable decision making context able to find what would the problems be and what is the most harmless way to assess them. This could be done by integration of different decision making tools and setting up an agenda for long term solutions. Application of SEA is step forward to achieving sustainable development, meaning the result of SEA is not to indicate what is sustainable but to stipulate action to be taken ending in establishment of specific framework, which contributes to decision making.

"The environmental assessments appropriate to policies, plans and programmes of a more strategic nature than those applicable to individual projects and are likely to differ from in several important respects... We have adopted the term 'strategic environmental assessment' (SEA) to describe this type of assessment"

Wood & Djeddour (1989, in Partidario 2007)

"A systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations."

Sadler & Verheem (1996, in Dalal-Clayton and Sadler)

"The aim of SEA is to help protect the environment and promote sustainability... by helping to integrate environmental and sustainability issues in decision making"

Therivel (2004, p. 7)

"SEA is a systematic, on-going process for evaluating, at the earliest appropriate stage of publicly accountable decision making, the environmental quality, and consequences, of alternative visions and development intentions incorporated in policy, planning, or program initiatives, ensuring full integration of relevant biophysical, economic, social, and political considerations."

Partidario & Clark (2000, p. 4)

"SEA is currently understood to be a process for identifying and addressing the environmental dimensions, effects, and consequences of PPP and other high-level initiatives"

Dalal-Clayton & Sadler (2005, p. 10)

"SEA aims to ensure that due consideration is given to environmental and possibly other sustainability aspects in policy, plan and programme making above the project level"

Fischer (2007, p. 6)

"SEA is the process of evaluating the environmental impacts of proposed policies, plans, or programmes, in order to inform decision making"

Joao (2005)

Box 1 Various definitions of SEA

It should be evident that the aim and principles of SEA do not seek dominance over notions of EIA. SEA is often presented as transfer of environmental and social notions into strategic decision-making levels taking in account the range and extent of specific policy (Partidario, 2007; Partidario&Clark, 2000). Another important capacity of SEA is the notion of flexibility that is to adapt wide range and specific fields of actions posed by unique values. Tiering between different levels of strategic governance is another crucial element of SEA (Vicente & Partidario, 2006) yet not very much approved in practice but only in theoretical aspect

(Therivel, 2004). According to Dalal-Clayton & Sadler (2005) SEA with systematic application on the highest decision making level, bring into prominence the positive and damping the negative impacts in coordination with sustainable development principles, this review in some extent overlaps with the opinion of Therivel (2004) that the ultimate aim of SEA is just to protect the environment and promote sustainability. At other hand Fischer (2007) states that SEA is integrator in achieving structured decision making framework by supporting systematic approaches and evidence based decision making.

Therefore, the definition of SEA in this thesis relates to the institutional and organisational capacity of the airport development plans to reduce the level of uncertainties by implementing holistic sustainability means. The assumption is that SEA triggers specific localized values and information, as well as visionary opportunities for development towards sustainability and sustainable development. For that reason, SEA in this thesis is seen as a mean to achieve a better governance practices that supports thinking in long-term perspectives instead of heading towards short-term solutions.

The controversy within the theoretical debate of the essence of SEA is influenced by the analysis of various SEA processes with different context richness and application in societies with different development status. It should be clear more than ever that notion of sustainability has different meaning is industrialized, developing and transitional countries. Therefore in international practice and literature are distinguished two man classifications of SEA systems. The first categorization is proposed by Dalal-Clayton & Sadler (2005) distinguish between tree types of SEA procedures:

- formal SEA is the legislative and policy frameworks developed by international organizations and/or respective governmental institutions;
- near-equivalent SEA is based on environmental appraisal of various policies and laws;
- Para-SEA is an approach analogous to SEA but operating without any legal counterparts but have some of their characteristics and goals.

This classification brings to foreground the issue of the SEA pronouncement in different legislative frameworks. Officially, the term "SEA" adopted in 90's has been preceded by and after in various SEA-type approaches, not necessarily called SEA.

Another major classification is based on characteristics of the SEA approaches itself. Two main methodological approaches are distinguished: EIA-based and non-EIA (strategic) based SEA. The difference between both approaches is embedded in the goal setting agenda of each. EIA-based approach has already set objectives in its core and is looking for potential impacts of proposed plans, policy or programme. The strategic or non-EIA approach of SEA is looking for the problems waiting to be determined and then setting clear and desired objectives. Virtually the EIA-based approach has certain precedence over the strategic

approach, which is said to be not explored in theoretical perspective (Fischer, 2007; Partidario, 2007).

Overall several components in the development status of the planning system are needed to implement and adopt effective SEA framework. Globalized and active society participating in decision-making processes is necessary, in a vision that planning is done for the people by the people. This opens room for wider stakeholder involvement by applying systematic and streamlined approaches resulting in recognition of strategic alternatives and their existence. These major components are aimed primary at integration of environmental and sustainability notions, assessment and validation of strategic options for identifying the best options, setting agendas for minimizing the negative and optimizing positive impacts promoting stakeholder participation and communication. What is observed and believed hypothetically is that SEA incorporates wide range criteria in decision-making policy cycle. Such as: early consideration of strategic alternatives, early public and stakeholder involvement, integration of different decision making levels, better coordination between institutions and politicians, enhancing institutional transparency, better information distribution, building trust, reducing costly mistakes to achieve better PPP incorporated with sustainable development principles (Dalal-Clayton&Sadler, 2005; Fischer, 2007; Partidario 2007; Partidario&Clark. 2000).

What is intended to achieve by application of SEA approaches is its balance-seeking role in decision-making. As Fischer (2007, p. 15) asserts, "SEA acts as an instrument for sustainable development by addressing interdependencies and improved balance of different assessment aspects in decision making." This leads the SEA discussion to the point that it is more suitable to a decision-helping tool, rather than a decision making one, due to its frame of reference. Furthermore, decision makers mainly use it as a tool seeking for various means to achieve a certain end – sustainability, by two fundamental principles: evaluating the strategic alternatives and improving decision-making.

The action of determining the frontiers of the SEA presumably leads to several technical (timing, resource availability, uncertainty) and institutional (political will, integration processes, strategic visions) limitations.

One of the main limitations is the issue of timing and resource consuming. Unluckily strategic actions might have different aspects and require as well different time spanning and resources (Therivel, 2004). When applying SEA in decision-making practitioners should investigate on what are the most likely strategic impacts would be and how much time is available to assess and evaluate them and result in timely and adequate SEA outcome (Partidario, 2000). Arguably, SEA is a process in adolescence, characterized by experimentation flair and at the same time with lack of mature experience. This ends up with the statement that effective baseline analysis is still not available (Therivel, 2004). So far there is a vagrant uncertainties related to what exactly sustainability means, and will it

change its meaning in the future; what exactly are the objectives of the strategic action; furthermore what targets and indicators should be used assessing them; and how to set up clear guidance.

Procedural or institutional limitations are result of intended or unintended misinterpretation of SEA by decision makers and institutions. The main obstacle that is difficult to deal with is the political will or lack of it. Current experience shows little interest by many government bodies and institutions towards SEA because of the fear of losing control by opening a door for early public involvement and coalition of different private interest (Dalal-Clayton&Sadler, 2005). Secondly, during the last decades the phenomena of integration is on-going in decision-making. Integration of social, economic, and environmental impacts or simply integration of sustainability in planning is a good example. Another notion of integration is between different sectoral levels of governance and government. The success of SEA is more evident when it is clear with which key figures and at what level it should be incorporated in decision-making. Capacity to think in strategic terms and operate at strategic level is yet another limiting factor, mainly due to lack of practitioners with allied experience.

In this line, there is not perfect SEA system or approach that is not subject to limitations. SEA aims to cope with wide range of uncertainty and emerging factors and by that means to improve and change the strategic action. More details on the set by IAIA performance criteria for SEA are available in Appendix 1.

The SEA process

Given the outcomes, performance criteria and methodological advances revealed in the previous section procedural steps of SEA process could be conceptualized. As mentioned before the primary goal of a SEA as a decision-aiding instrument is contribution in decision making by supporting sustainability. Therefore, SEA is not to be counted as a simple analysis, but as a decision-making process evolving in policy cycle. This subchapter will address the SEA process as it is; its role and intentions. For the purpose of the thesis only the EIA-based SEA approach will be elaborated, because of its embedded importance and value in governance. SEA is the fixed purpose of earlier and broad environmental inputs in strategic decision-making. Essential functions of each SEA system, whether it is EIA- or strategic policy based non-EIA based processes, are coherently given by Partidario (2007):

- Integrated environmental and sustainability objectives in strategic actions
- Determination of strategic alternatives and their liability
- Post exposure evaluation of strategic actions and aftereffects

Before comprehending or encompassing certain parts of the process. It is important to acknowledge that there is no universally utilized SEA process adopted by practitioners or scientist. The European Directive 2001/42/EC is providing some legal basis for reaching SEA

framework, but typically, SEA process methodology and techniques are adjusted to each member’s state planning system and tradition.

Illustration of the main steps of the SEA process and their emergence in strategic decision-making process as viewed in Dalal-Clayton & Sadler (2005), Fischer (2007), Partidario & Clark (2000), Therivel (2004) is shown in Figure 3. The three main stages are believed to be subsequent but some of the elements are subject to contingency that is why consultation and participation applied in the baseline analysis can be recapitulated at the implementation stage.

Baseline analysis determines the objectives and the context of strategic action. It is designed in terms of what the expected decision is expected to be and the time continuum in which decision should be carried out. Beside that the policy and institutional framework is also important in terms of assigning meaning of strategic actions. The baseline constitutes the potential outcome of SEA process.

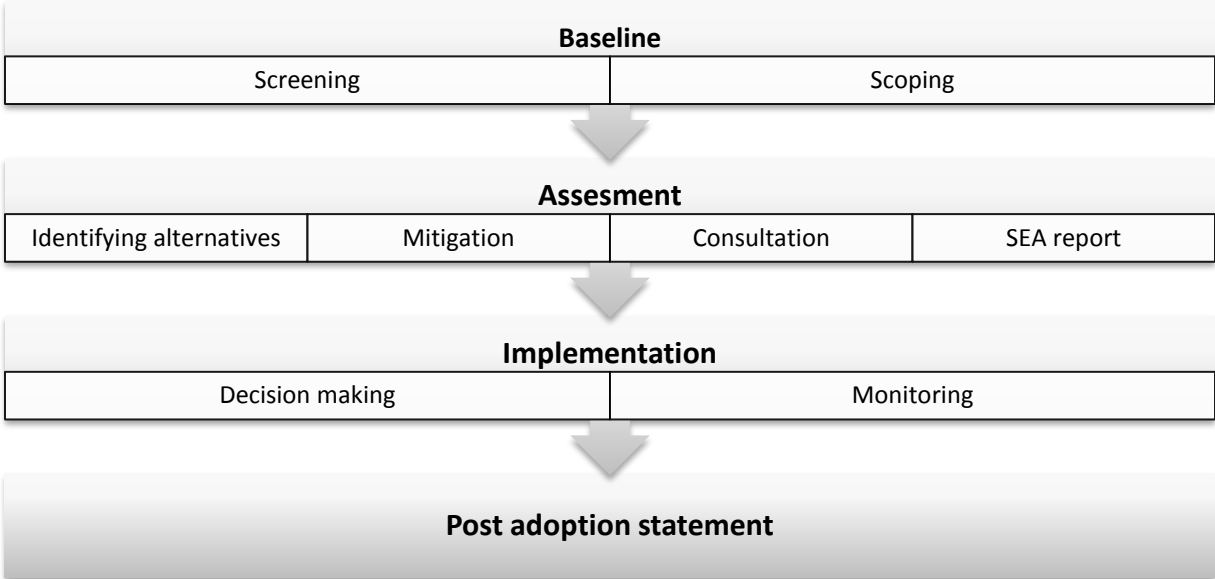


Figure 5 The SEA process (designed by the author, based on Dalal-Clayton & Sadler, 2005; Fischer, 2007; Partidario & Clark, 2000; Therivel, 2004)

The very first step of *screening* is conducted to determine if SEA is binding part of the related strategic decision-making level and usually is done on case-by-case core. The main objectives here are to assess what are the peculiarities of on-going decision intended to be achieved and the potential impact, by using relevant knowledge available about the specific geographical location. In other means to decide whether SEA is required.

Determining targets, indicators and the range of issued covered by SEA is commonly called *scoping*. The main goal of scoping step is to frame the data which to be included in SEA. Scoping is also the initial source of defining what the sustainability objectives are. At this step the baseline of the environmental assesment, identification of key issues and

negotiation between relevant stakeholders about possible alternatives are undertaken. Next steps of the SEA process are constructed upon information wrapped up in both screening and scoping sub-stages.

Assessment is driven by the analyses of the main trends and key SEA inputs. At this step, also the main strategic alternatives are identified. The analysis should be adequate and transparent in order to provide proficient prediction and appraisal of potential impacts of alternatives and as well how these alternatives will support strategic decision-making. Here the use of scenarios with multiple options is advisable in comparison between different alternatives. The assessment is also impending to avoid, minimize, mitigate or compensate the critical impacts of these alternatives. One of the main goals achieved by assessment is focused on selection of mitigation measures and implementing them in practice supported by institutional integration of environmental, economic and social objectives in decision making linking up with sustainable development. All mentioned above support the contention that without question assessment is the core of the SEA process.

Implementation stage is to be understood as the result of the SEA process, namely the *SEA report*, if it is present in the institutional and decision-making context; but also the following consultation, review and consultation. The sea report is a legal basis for further public consultation and participation. Besides describing the techniques and methods undertaken during the SEA process it also offers recommendations and preferred alternatives and benchmarks for dealing with their impacts.

Consultation here is acknowledged in terms of public exposure of the SEA report guaranteeing that SEA process is conducted sufficiently. SEA Review or quality assurance is measuring the competency of the SEA process and report as a whole. Review is normally performed by independent agency or institution through a system of checks and balances.

SEA follow-up is a novel and increasingly gaining support but yet not widely circulated by practitioners and mainly related to project level SEAs (Morrison-Saunders and Arts, 2004). So far, this discourse is mainly based on envisioning and performance evaluation, taking in account that SEA process cycle is relatively short and dynamic. Well-performed SEA process should be informative, participative and communicative. Follow up stage also may result in post adoption statement, which is to serve wider information about the environmental report, its implementation, and tiering with other policy instruments.

One of the main advocacies of establishing a SEA framework, Partidario (2000) is referring to SEA process as a part of the bigger policy and decision-making cycle conceptualized by Crabbe & Leroy (2008). There is on-going debate on the meaning of the term 'policy', policy processes, and evaluation. While in practitioners view it can be seen as the primary source of action, there is different views on policy processes and evaluation in theoretical perspective. The most common interpretation of the policy cycle is as a coherently subsequent stages

representing decision-making. Another interpretation is the view of policy as a control loop, political interaction or institutional phenomenon. At other hand policy, evaluation is usually measured by the capacity of goal effectiveness – goal-oriented or goal-seeking- whether this classification may be criticized (ibid). Whether an SEA is goal seeking or goal-oriented is difficult to decide, because of the different approaches undertaken in SEA process.

3. Rationale of policy evaluation

As a result, SEA as process of evaluation of environmental and balanced sustainability issues on strategic action level is inevitable part of the policy and decision making cycle on top levels of governance. Consequently, SEA as a part of the team of the environmental and impact assessment is subject of evaluation, efficiency, and legitimacy. Policy evaluation according to authors as Crabbe & Lleroy (2008) or Olivhera and Pinho (2010) is building the linkages between the practices and theory. Thus, policy evaluation is seen as analysis of specific policy cycle based on specific criteria on which recommendations can be added. So far, evaluation methodologies stand for being as an informal sequence of decision-making process. Crabbe & Leroy (2008) explore policy evaluation criteria in details, and one of the pliable instruments they introduce in academic view is the so “called JEP triangle,” combining three different approaches of evaluation methodology: the juridical, the economic business and the political social approach (fig 6).

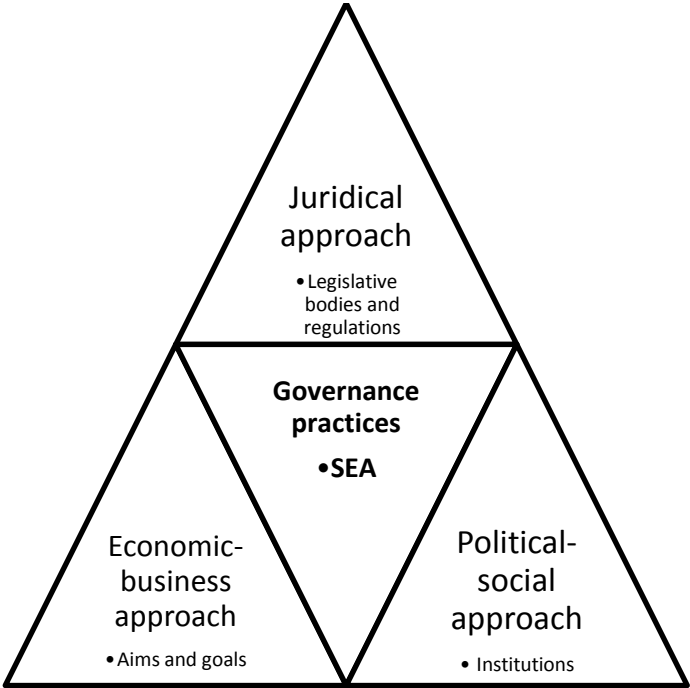


Figure 6 Operationalization of the JEP Triangle (after Crabbe & Leroy, 2008)

The “JEP Triangle” represent ideally balanced managerial and governance capabilities that need certain operationalization, in other words needs variable definition. More important the triangle provides the three sets of policy evaluation criteria – juridical approach, economic business and political social approach. SEA as a good advocacy tool for better

governance matches without a glitch as an core of the triangle surrounded: via the juridical rationale by the various legislative boundaries; the economic business rationale – focusing on the aims and goals of certain plan or development programme; and last but not least – the political rationale offering integration of various institutional functions of the society – representation, transparency, participation, knowledge distribution and so on,. Thus, examples of good SEA could be found in integration of these three approaches rather than seeking implementation by following only one of thee. Hypothetically, this conceptualization of SEA as a mediator in this approach might vary in different contextual values offering and opportunity for learning by doing and learning by what to do not.

4. Conclusion

Conceptually the role of SEA and evaluation methods in policy and decision making aim to add more rationality and deep understandings of strategic and critical thinking in planning practice and particularly in airport development plans. The question here is about the power balance of the actors or agencies who decide about the amount of the necessary or desired development needed for optimal functioning and servicing the balance between infrastructure and socially driven environment factors.

Flyvbjerg (2003, 2004) brings out the discussion of rationality, power, and phronetic planning research in planning practice, questioning the way how power, values and knowledge interplay shapes the *“weakness of modernity and modern politics, administration and planning”* (Flyvbjerg, 2003: 325).

An observant eye above the on-going research and practice on the SEA performance and transposition in practice will illuminate its place on the complex rationality-power relationship. Ideally, academics and some practitioners represent SEA as a universal solution of the possible problems, which should occur if it is not applied. The power of these to influence decision-making is also questionable. What should be clear is that instead of digging into theoretical debates on SEA itself more prominence should fade on what specific tools SEA should cover in specific policymaking situations in wider pattern of planning initiatives. In practice, the goals, or the result of adopted strategic alternatives are usually logical continuation of the ground by which stakeholders are interacting.

There is no ultimate universal goal, as such, as there is not universal and perfect planning process. The results of SEA in planning are open to free interpretations and analysis. At the current status quo of SEA, the burden is on the issues such as its impact on decision-making and used methodologies. There is considerably room for discussions concerning the improvement of SEA and taking it not only as a granted or paper that will decorate some decision maker’s shelf. Strategic policymaking and thinking should be the background on which policy makers develop their actions and not the opposite. (See chapter V)

Screening performed at the very early stage of SEA needs coordination and reality check with the follow up mechanisms disclosed after completion of the process. This is to check whether SEA is influential tool in decision-making; does it change something and how; and what if it does not lead to any change in planning, what else should planners or policy entrepreneur do?

Nevertheless, airport development plans will remain on the strategic policy making agenda under the influence of different power circumstances. Some pitfalls in airport and in general policymaking can be result of such power relations. Therefore, this is to say that whilst doing SEA, one might be aware of the power rationality-knowledge balance and try to retain as much autonomous and independent professional perspectives as possible.

5. Setting the agenda of SEA evaluation

The inclusive objective of this thesis is to define the basic prerequisites for firm SEA effectiveness evaluation of proposed airport expansion plans. To do that, model of conceptual framework with three main functions is proposed (fig. 6). The strategies envisioned as alternatives of airport expansion plans draw back linkages to Chapter 2, where the most significant environmental impact related alternatives were proposed. The most relevant verdicts of theoretical and policy circumstances are the foundation of the so called 'functions and added value of SEA'. Their reflection on the evaluation selected strategic alternatives or choices in practice are the concluding part of the theoretical model.

The overall aim of this thesis is to carry out a research on the empirical value and feasible application of SEA as advocacy tool in decision making, particularly in airport planning in Europe. Therefore, the assessment of the practical value of SEA, retrieved by its theoretical and institutional settings, is necessary. Moreover, to accomplish the transition from abstract theory and regulatory instruments towards down-to-earth application, a conceptual framework for the former assessment is designed.

The theoretical layout of the research is extracted from the assumption that alternatives as important elements of SEA are a crucial factor in assessment of the strategic actions suitable to deal with capacity shortage of relevant airport areas. The empirical part of the design analyses if these strategies or alternative scenarios are taken into account and to what extent the functions and benefits of SEA influence plan- and decision-making. By any means, the proposed design process is veil in high level of abstractness and idealistic findings. Since, the added value of SEA in decision making is logically function of existing evaluations, one might argue for the need of more detailed research into this topic. Such analysis is going to be the meta-evaluation method of up-to-date European SEA experience and in depth analysis of four case studies based mainly on secondary data. The importance of meta-analysis in this case relates to its methodological advance within the conceptual framework to reveal the primary inputs for the selected case studies.

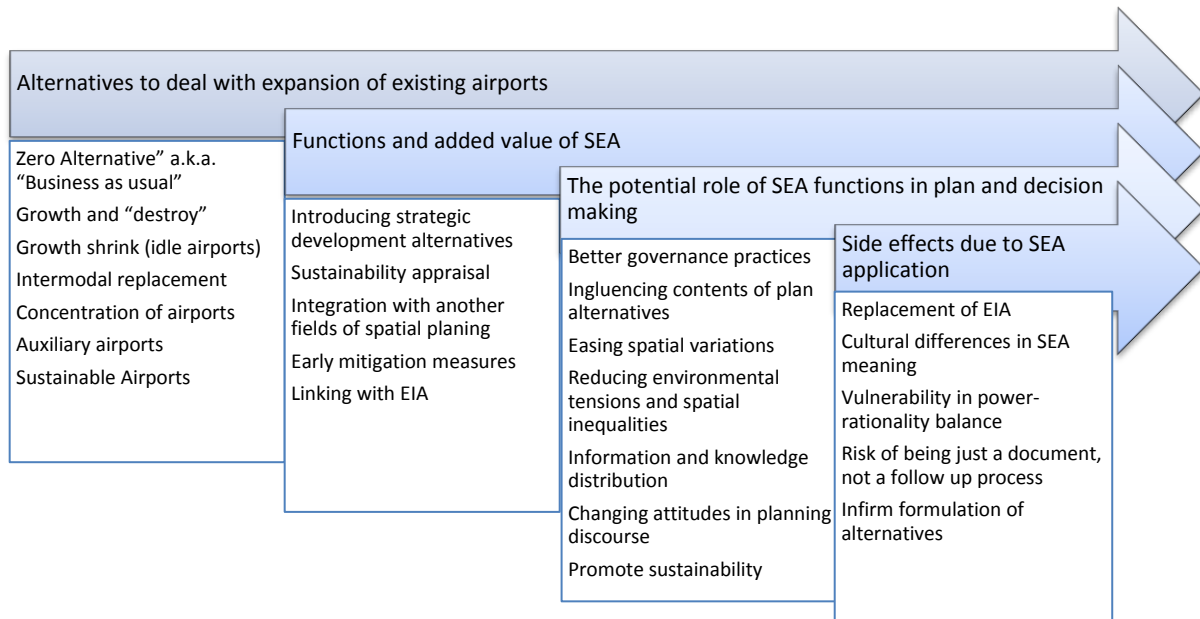


Figure 7 Conceptual model of empirical research in the thesis

IV. Policy Context

1. Introduction

The objective of current chapter is to introduce the reader with the most relevant policy perspectives on EU level dealing with the motion of implementation of SEA and airport capacity expansion plans. European Commission, the executive body of the European Union responsible for legislation and implementing decision have been proposed and transposed several major directives and related directly to the topic and some indirect directives and action plans. Due to the complexity of the issue of airport and air transportation development, they might be seen as under the provision of several directorates, yet mainly *Transport* and *Environment*. In the current section, two of the proposed legislative acts will be discussed and analysed. First the Directive 2001/42/EC or so called the SEA Directive its application, transposition and effectiveness is assessed. Then analysis of the proposed recently action plan for airport capacity COM (2006) 819 final) is held in the second part of the chapter.

The short review of the policy context of the SEA Directive and the legislations related to the airport planning and capacity policy are aimed to obtain additional information about the place of such strategic action in the contemporary practice and design. Thus, this chapter aims to reduce with an idea less the abstractness of SEA that was proposed in the theoretical chapter of the thesis. It also aims focusing down at the level of the European Community by critically approaching the policy acts related to airport capacity and development within the European Union. Therefore, the aim of this chapter is to set up the foundation of the linkage between the theoretical and empirical basis that is going to be explored later in the text.

2. European SEA Directive

Content and review of the SEA Directive

Strategic Environmental Assessment (SEA) at international stage dates back to the National Environmental Policy Act (NEPA) of 1969 which is the first document setting up the role of the environment in policy field and the Environmental Impact Assessment (EIA) was introduced. Although, by that time, SEA is not mentioned as a specific evaluation tool of plans, policies and programs (PPP) the first step of environmental assessment can be found in Environmental Impact Statement (EIS) which according to NEPA calls for informed decision making and for specific actions which are "significantly affecting the quality of the human environment" (Sec. 102 [C], NEPA, 1969).

The outlines of different notions during the emergence of current SEA practice are inseparably related to the development trends of EIA. However, the strategic decision-making has been approached with a minor importance. SEA is relatively new policy field in

decision-making but its evolutionary development recognizes three main phases – formative, formalization, expansion (Dalal-Clayton and Sadler, 2005). Different development stages are merging into another and the time period used is fictitious. The aim of this scale is to visualize the change of SEA paradigm over the years.

Table 3 The Evolution of SEA (adopted by Dalal-Clayton & Sadler, 2005)

Indicator / Phase	Period	Institutional context
Formative	1970 – 1989	First legislations and policy documents concerning sea are published
Formalization	1990 – 2001	First implementation and adoption of sea in practice by developed countries and donor organizations
Expansion	Onwards 2001	Setting up room for wider implementation of sea and potential for policy transfer

At present SEA procedures and jurisdictions are place in almost all members of United Nations Economic Commission for Europe (UNECE) region including all EU member states, although the level of adoption between them is different. Cornerstone in European legislation and guidance SEA context is “Directive 2001/42/EC on the assessment of the effects of certain plans and programs on the environment”.

An ad hoc discussion about postulating SEA Directive at European level are on-going since 1975, but yet in early 1990’s proposal for the current SEA is presented. Followed by public discussion and participation the European SEA Directive is in current state of art since 2001, with the primary intention to be transposed in the member states (MS) until 2004 (Therivel, 2004).

The aim of the SEA Directive is assessment of effects and impacts on particular programs or plans which project EIA’s cannot foresee. The title of the act gives the first insight into the design and interest of the act. It is proposed to (1) assert assessment, applied to (2) plans and programs based on (3) environmental effects. The aim of the SEA directive is defined in Art. 1:

“to provide high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programs with a view to promoting sustainable development, by ensuring that an environmental assessment is carried out of certain plans and programs which are likely to have significant effects on the environment”

Wide range of objectives set in this article is explicitly followed in the subsequent articles. The scope and requirements set by are listed under Art 3, Art 4 and Art 13.3. The key recommendations prevised by the act are namely the environmental report (Art 5) and consultation with the public authorities and institutions (Art 6). The weight of the Directive in decision-making is given by Art 8 stating:

“The environmental report prepared pursuant to Article 5, the opinions expressed pursuant to Article 6... shall be taken into account during the preparation of the plan or programme and before its adoption or submission to the legislative procedure”

Mentioning, the role of SEA, even not officially affirmed in this way, goes far beyond the borders of the consultative and explanatory settings of such an approach. Another regulated by the directive notion is that of building of institutional setting for monitoring.

SEA outcomes and limitations

Nevertheless, the SEA Directive, some MS by that time had already established SEA approaches in national level, for example the *e-test* in the Netherlands or the *environmental appraisal* in the United Kingdom (Fischer, 2007; Therivel, 2004). What is important here to emphasize is that the Directive is not putting in action new set of actions or processes to be adopted, but rather giving each MS to interpret the process into its planning system and decision-making regulations. Many plans prepared by private companies will not require SEA because the companies are not authorities or any other plans that does not set framework for development consent of projects.

In this state the Directive 2001/42/EC is representing explicitly idealistic utopian decision making a policy building process, but also opening room for some critical remarks. Therefore, here the policy evaluation methodology developed by Crabbe & Leroy (2008) can be applied, whereas SEA is subject to ex ante evaluations. Some of the outcomes are listed below. Whilst there is a widespread state of having positive beliefs, such as:

- Covers wide range of objectives by linking environmental assessment with sustainable development
- Articulates with the whole SEA process from scoping until monitoring and evaluation
- Provides directions about SEA implementation and tiering with another policy acts.

There are also can be noticed some pitfalls in the Directory that apply to:

- Range of action, the Directive, does not apply at policy level, where usually the main decisions are being made;
- Insufficient elaboration on the recognition of ‘significant environmental effects’;
- Difficulties with defining who exactly the authorities are;
- Not using the term ‘Strategic Environmental Assessment’ in the body of the art (Fischer, 2007; Therivel, 2004)

Some other constrains recognized are related to the missing content of the scoping process and time framework of the SEA process, referring to the data collection in the formulation

of the baseline information in particular and the whole policy cycle in general; limited requirements for the performance of the analysis in every step.

Institutional follow up

Consecutive guidance research and announcement on the application and effectiveness of the SEA Directive (2009) give more insights to previous critical review. Whilst the former is with more explanatory character and answering `questions relate with the implementation statute of the Directive, latter is carrying out some annotations and advices for afterward SEA approaches. The report notifies that full transposition by the all MS is achieved by 2009, instead of 2004 due to procedural and institutional constrains. The inclusive advice of the Report is that scoping procedure, information gathering, setting the environmental and sustainability criteria, identification of the alternatives, period and monitoring methods should be accomplished on ad-hoc basis. Thereafter, the implementation of the Directive in the planning process has been resulted in “improved organization and structure of the whole planning procedure” (p. 9) and the impact of the content of the programmes and plans is measured in transition for the objectives of founding criteria, rather than their major goals (EC, 2009). Many of the opportunities of development recognized by the Report should be used as opportunities for improvement the content and the methodology of future SEA processes in practice. This also might be applied when SEA approaches are implemented and applied to airport expansion plans.

Room for improvement

Contemporary application and effectiveness of the SEA Directive illustrates the importance of its necessity in modern planning and policy-making and at the same time opening doors for its further improvement. SEA is certainly in the family of ex ante evaluations, because it aims to reduce and alter the negative impacts of PPP and enhance positives and elaborates notions of sustainability in strategic decision-making. Since many of the issues with SEA are not answered. There is need for improved ex-ante evaluation implemented in the SEA Directive in order to upgrade the efficiency and goal attainment of particular plans or programmes.

Screening and scoping requirements can be more precise in recognizing the important strategic impacts. What will be the approaches to investigate them and more important are these impacts going to provide necessary input for describing the goals and aims of the desired action. Selection and recommendation of alternatives, as well as their assessment can follow the expected effects and suitable goal attainment tools of the intervention. Mitigation measures can apply to test how the latter are suitable and sustainable for long-term application of the preferred alternative. Moreover, each preferred alternative should be subject to cross-examination in within uncertainty and scenario development axis (see van der Heijden, 2005). Finally yet importantly, examination and reality check of the goals

set, goals needed and the goals achieved after decision making is necessary. Accomplishment of which might be with simple juxtaposition of the objectives associated with the development requirements corresponding with the actual results of the SEA application.

2. European policy acts related to airport development

The European Commission as an executive body of the European Union has been adopted several directives, communications and reports the operation and effectiveness of air transport and aviation in general and particularly on airports. The main goals of the EU airport policy are gravitating around the following three goals (Committee of European Commission, 2007):

- Bring into existence of a Single Aviation Market / Single European Sky
- Put into practice common rules and standards
- Obtain an au-fait and sustainable sector of the economy

The Airport Package

In existence are several legislative acts at EU level in concern of market access, noise, safety, air passenger rights, insurance, allocation of airport slots, security, creation of Single European Sky, competition, air traffic management etc. It is important to acknowledge that major part of this legislative acts are aimed on improving activities and commitments 'inside' the airports and with less extent looking forward to address issues on the landside aspect of the airports. Instead of acting on different sector policies with respect to sustainable development, there is an urgent need of policy integration to enhance the Community Framework for Airports. The action plan for airports in Europe or the so called "**Airport package**" is initiated and adopted in 2007 and is providing a comprehensive framework to deal with capacity, environmental, efficiency, and safety demands on the Community airports. The Package is aiming to establish common set of rules, which would apply to all European airports. The idea of the "airport package" set up a new observatory to study airport capacity in Europe for a period of five years between 2008 and 2013.

The **Airport Package** adopted on January 2007 is carrying three main lawful actions:

1. Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on airport charges;
2. Communication from the Commission - an action plan for airport capacity, efficiency and safety in Europe [COM(2006)819];
3. Report from the Commission on the application of Council Directive 96/67/EC of 15 October 1996 [COM(2006)821] on access to the ground handling market at Community airports

Source: *European Commission*

Documents available on: http://ec.europa.eu/transport/air/airports/airports_en.htm

Box 2 The "Airport Package" vision of the European Union

In the on-going discussion within respect to the main objectives in this thesis only the *Action plan for airport capacity, efficiency and safety [COM (2006) 819]* will be analysed. In its essence, the Action plan addresses the expected effects of capacity shortage due to prospective development of the aviation sector. The “capacity crunch” is expressing the gap between demand and capacity expectation of both in- and outside airport activates and infrastructure. This mismatch between capacity and demand is creating congestion situations with multiple impacts and negatives.

“The capacity crunch at airports poses a threat to the safety, efficiency, and competitiveness of all actors involved in the air transport supply chain.”

Art. 1, COM (2006) 819

The action plan is combining wide range of strategic visions in setting achievable and measurable goals - from the capacity commitment trough environmental constrains to market and economy dimensions. Thus promoting sustainability in airport planning is accomplished by five major initiatives as recognized in Art. 2:

- Optimization of current airport capacity
- Compliant air safety procedures at airports
- Encourage intermodal transportation
- Improve the planning process for new airport infrastructure
- Introduce new cost-effective technologies

To improve the existing airport capacity the action plan is using three different approaches. The most crucial for them is addressing the capacity assessment and planning technologies for airports based on various existing definitions and conclusive apparatus used in current practice (Art. 3.1). Contrariwise, capacity demand should be addressed also by implementing new technologies in the operation processes itself, but this is rather technical than planning objective.

Another tool for addressing the implementation gap on airport plans is promotion of intermodality, using more than one mode of transport for realizing a journey. In the body of the action plan, particular place administers the integration of air and rail transport. (Art. 5.1, Art. 5.2). The rail links can contribute to the improvement of adjoining infrastructure, discharge traffic congestions and bottleneck situations around airports, provide better and faster linkage with the city or region, reduce negative impact on the environment and last but not least to comply with the passenger demand and market values.

Plans and programmes for new airport infrastructure requires accurate approach based on adequate and balanced planning and environmental approach. Major impact recognized by

the Action plan correlated to airports is the noise nuisance, it is also presented as the only environmental capacity constrain of airports (Art. 6.1)

Second approach on improving airport infrastructure acquires altering of the planning framework of the former. The document makes step forward in comprehension of the planning process combining land use planning with so-called capacity planning of the airports in coordination at regional and as well on Community level between the member states.

“The Commission, together with experts from Member States and stakeholders, will seek to simplify procedures as well as develop a recommendation on best practice guidelines to promote improved co-ordination of airport plans and wider land-use plans.”

Art. 6.2, COM (2006) 819

In other words, the Action Plan is relying on participation of all parties for dealing with capacity shortage on one side with better use of already existing capability to act by introducing new technologies, promoting intermodal transportation and increase accessibility and at other hand by improving airport capacity-planning framework. To set up agenda for these perspectives the Commission, following the principles of the Action Plan initiated *Community observatory on airport capacity* for the period 2009-2013 in seeking the goals of the following objectives (EC, 2009):

- Airport capacity assessment methodology
- Integrated air-rail ticketing
- Infrastructures planning processes
- Intermodality at airports
- Accessibility to airports

Relationship with other EU transport legislation and policy treaties

The Action Plan indeed is not the only policy and institutional written communication related to the issue of airport development and planning. Expanding airport capacity also finds reflection in the white papers of the EC and is in some extent addressed in TEN-t projects. It might be argued that measures and tools proposed in the above examined Action Plan are set in the *“White paper – European transport policy for 2010: time to decide”* (EC, 2001). This is the first policy act approaching issues such as shortage of existent airport infrastructure, enrolling environmental issues in restricting operations at airports, and promoting co-modality with rail transport as significant technique to deal with the “capacity crunch”. There is also some controversy in the injunction of the document, whilst stating, “Europe will not be able to cope without new airport infrastructure” (p. 37) it also argues that “priority is thus to limit the construction of new airports” (p. 38). The dual message set by the White Paper can be used as a reference point about the need of broad discussion about airport

capacity topic by that time. Nevertheless, relevant data on implementation of the notions presented above and transposition of the Action Plan can be found in the most recently White Paper: “Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system”.

With criticism, it implies that most of the proposed initiatives are introduced but still there is room for improvement of the air/rail linkage and by that means to connect major European airport hubs with the rail network by year of 2050. The new idea introduced here is co-modality with the inland waterway systems where applicable. Thus, a sustainable and ambitious intermodality-led network meeting the requirements of a broad spectrum of users presents the future of transportation in Europe. This is why airports are important part of the trans-European transport networks (TEN-T). Some of the objectives encompassed by the TEN-T projects for the airports are expanding the capacity, decrease negative environmental effects, better accessibility and improving intermodal transfers (EC, 2010).

3. Conclusion

There are always contradictory tensions between legislative norms and empirical practices. Reviewed above piece of art are not exceptions of this rule. Firstly, the SEA framework and guidance with its partly unintelligible features creates more questions instead of helping resolving existing issues in the principles of strategic planning. Interestingly enough European Commission encourages adoption and transposition of different decision-making tools and methodologies, the elaborated SEA Directive and EIA Directive are example of that, whilst there is no clear vision on the entire planning culture and system amongst the member states. Different planning approaches and methodologies in each country define the effectiveness of SEA. Continuing this pattern of thought, SEA guidance is not new phenomena for countries as the Netherlands or the UK, where the notions of early stakeholder participation and consultation are well known. Therefore, one should assume that performance criteria in these countries and in those ones, which simply adopt the framework, are quite different.

Consequently, planners can use different policy transfer methods to improve decision making networks whereas is necessary by copying, adaptation or synchronization of different policy ideas and concepts in order to improve contextual constrains (Dolowitz & Marsh, 2000). Synchronizing instead of retreating between different planning cultures and designs might be the first step towards well-balanced sustainable development and society. If there is one thing that is sure about the dynamics of the airports and aviation, this is the uncertainty. The uncertainty whether the aviation trends will ascend or descend (Wilkinson, 1995). Thus, taking action on the decision adopted requires carefully attention to scenario building in order to gain sufficient support about the preferred alternatives.

One can say that the ratification and transposition of different directives initiated by the European Commission is barely coordinated with the real needs of decision-making and planning implementation. During the on-going analysis of the both legislative acts it was difficult to find the tangential points of both and find a place of SEA in airport policies and vice versa – to acknowledge the hospitality of the SEA Directive with reality driven Airport Package. Looking at it in that way the role of SEA in practice is having an effect only as a separate policy document, usually initiated by the investor by clearly juridical measures. Taking stock at the JEP triangle offered by Leroy and Crabbe (2008), both acts are on the top of the governance pyramid offering legal security and trustworthiness, believed to follow both the socio-political and financial-demand paradigms. Therefore, the role of the both legislative frameworks are not to be view as mutual exclusive, rather their common ground lay in the practical experience of successful SEA techniques, what the alternatives and impact prediction stages are and tie up them to potentially recognized airport development strategies or scenarios.

V. Analyses of the existing evaluations of SEA experiences

1. Introduction

This chapter is the first step to approach the empirical analysis of this thesis. The main aim here is to investigate the feasible value and application of SEA as advocacy element in decision making, with particular focus on airport planning. Therefore, this chapter provides meta-analysis of several selected successful SEA processes in different European context. The purpose of this kind of evaluation method is to support the conceptual model of the empirical research (see Chapter 3) by highlighting the possible use of SEA in high-level decision-making and partly to set awareness of different meaning of SEA and potential room for improvement.

The preliminary backup for the meta-analysis/evaluation uses deliberately the knowledge gained in the previous two chapters about the theoretical advances, administrative and institutional bearing of the SEA as a whole. The main question embodied in this chapter is to find *what is the value added in decision and policy making by SEA for infrastructure and land use projects within the European Union*. For that reason, first some general remarks of contemporary SEA experience are presented, followed by examples of three European countries. The second half of the meta-analysis focuses on the adoption of the SEA Directive and finishes with envisioning of the accomplished meta-evaluation method.

The purpose of this chapter is to reduce the amount of abstractness of the SEA practices and present attempt of operationalization in intended developments occurring at the same period. Information gained by such evaluation method might be added to the analysis of the thesis as part of the scope and limitation of what practitioners, entrepreneurs, and scholars to be aware.

2. Evaluation of contemporary SEA experience

Current subchapter examines broadly the overall effectiveness of SEA in land use and transport planning through meta-analysis of various types of evaluation studies and literature. Important to acknowledge whilst approaching such evaluation is the different contexts and different evaluation criteria that encounter researchers. Such diversity might be useful but at the same time, it hides risks of not understanding the whole picture when approaching only the phenomena of SEA. A substantive provision of meta-analysis, in case studies both pre- and post-SEA Directive, might adjust the overall importance and effectiveness of SEA in high-level decision- and plan-making. Howsoever, a meta-analysis of contemporary SEA experience might be also related to the conceptual model of this thesis by the exploring some of the hypothetical advances of pitfalls engaged from theory perspective.

SEA and SEA type assessment methodologies are present in some European countries since the 80s – the UK, the Netherlands, Germany, Sweden, Denmark, etc. (Dalal-Clayton & Sadler, 2005; Fischer, 2007; Gazolla, 2008). These countries have comparatively participatory and open planning culture and relevantly they are the biggest ‘exporters’ of SEA knowledge amongst other European countries. Therefore, most of the case studies discussed in scientific journals and proceedings are from the above countries.

SEA application in practice depends on greater extent to the contextual, institutional, and political arrangements in which the proposed strategic actions are going to happen (Fischer, 2005; Runhaar & Driessen, 2007). Furthermore, Runhaar & Driessen proposed that SEA efficiency brings two major impact targets: direct and indirect. Direct impacts are changes in the material reality as consequences in decision- and plan making affected by SEA. Indirect impacts refer to changes in participant’s perceptions about the content of the environmental assessment. However, reported impacts on SEA in the selected by the authors case studies show that actually, the final recommendations of SEA show partly impact in decision-making, and significant impact falls over the field of transport planning. Anyhow, the effectiveness of SEA depends to big extent on how much the current socio-economical goals are opposing or not the strategic visions of investment in new development (ibid).

Performance factor in SEA approach depends also in opinion leader’s perception of SEA process itself. Practitioners in the field of SEA have been long time influenced by project EIA approaches, mostly because lack of experience but primary because of uncertainty about the essence of the former. Therefore, Fischer (2006) and Partidario (2009) call for mutual existence of both structured processes, instead of borrowing concepts for a development plan. Hence, focusing on contributions of SEA in decision-making instead of focusing on the impact and setting not so high expectations of SEA is necessary (Runhaar & Driessen, 2007; Therivel, 2004).

The following paragraphs will provide short analyses of the SEA evaluation of several case studies in four European countries (Germany, Italy, Netherlands, and United Kingdom) and short summary of difficulties in assessing effectiveness in different planning systems. Since the objectives of this chapter tend to be critical, description of the study cases and application of the SEA process will be rigorously concise.

Evaluating SEA effectiveness in Braunschweig Planning Region, Germany

SEA-type approaches in Germany are in place since 1970s and mostly applied in spatial (at the level of the Landers) and transport planning (Fischer et al, 2009; Jones et al, 2005). Braunschweig planning region (lying in state of Lower Saxony) includes the territory of the independent cities of Braunschweig, Salzgitter and Wolfsburg and the county Gifhorn, Goslar, Helmstedt, and Wolfenbüttel Peine. It coordinates all cross-border projects, plans, and activities that affect the entire region, responsible for all regional and transportation

planning and its implementation. The regional planning body adopted regional land use plan and SEA in the period 2004-2008 (Gemeinsam für die Region, 2011).

Fischer et al (2009) point several trigger points of the effectiveness of SEA in Braunschweig region: the pertinent level of the conducted SEA at strategic action level, the size of the area for which SEA was applied, involvement of planners in SEA process, time and cost-efficiency of SEA, notion of stakeholder involvement. On the findings of this baseline, conclusion is that more resourceful and pliable SEA is needed to mainstream its potential in decision-making. Another visible finding in the case is the duplicate function of SEA outcomes borrowed from EIA methodology, due to employment of opinion policy makers specializing in the latter and the unsatisfactory information distribution about SEA.

Evaluating SEA effectiveness in the Netherlands

Requirements of SEA in the regulative and indicative Dutch planning system exists since the amendment of the EIA Decree in 1987 (Dalal-Clayton & Sadler, 2005), justified with the formal Directive based SEA requirements in 2006 (Fischer, 2007) and applied on plans with bigger importance and significant impact on the environment. Hereby two different case studies will be reviewed due to the significant output of the SEA process.

SEA in the Regional Body of Amsterdam

The case of the Regional Transport Plan is an example of pre-directive based, voluntary SEA, held in 1997 and 2003. As Fischer (2003) summarizes the main developments envisioned, was the implementation of the Provincial Transport Plan (PVVP) legally adhered in 1997 and potentially adopted in 2003. However, this did not happened and second study was started on the potential of revised Regional Transport Plan (RVVP). The SEA held the form of strategic comparison of the findings gained in 1997 with the results in contemporary practice. Interesting findings from the comparison is the change of the perception of the decision makers and stakeholders involved in the process and change in the policy perspective of the revised plan. A crucial change in the content of SEA is replacement of the assessments of strategic alternatives and multilevel participation in RVVP by list of project addressing the demand capacity of transportation and single loop participation and consultation in PVVP.

Whilst observation shows no change in the objectives and goals of the Regional Transport Plan there is significant shift in decision and plan making actions. These is explained by political changes and follow up changes in policy perspective leading to formalized top-down planning approaches.

The value of political willingness and support in decision making in general and as input in SEA practice is not novel. However, this shows the SEA effectiveness adjustment in

contemporary political agenda. Respectively, if there is no recognition of urgency the efficiency tends to be anything more than insignificant.

SEA for development areas in Rotterdam and Leiden

As part of the Randstad Metropolitan area, cities of Leiden and Rotterdam developed and proposed housing and business development plans in order to answer needs of emerging demand. Both development plans are in opposition due to impact on protected areas. Therefore, this was the main prerequisite to initiate formal SEA, which later was considered as comprehensive SEA, including social and economic values.

The SEA was accomplished in explicitly formalized EIA manner and alternatives were identified by using multi-criteria analysis. Moreover, active involvement of relevant public, private and general public led to improved information distribution, clarity of decision-making and stakeholder participation. However, preferred alternative in the case of Rotterdam gained support but in Leiden was not favoured in eyes of opinion leaders, because it did not fulfil the requirements of economic growth.

Overall, the both study cases in the Netherlands show the importance of assessing SEA effectiveness related to decision-making and politics on day-by-day basis (Fischer, 2007) and raise awareness of changing discourses in strategic decision-making and foreshortenings they might arise.

Evaluating SEA effectiveness in the United Kingdom

In the traditional land use management and discretionary planning system of the United Kingdom (Sanyal, 2005) SEA is introduced during the 1990s and since then is integral part of the wider commendation of sustainability appraisal, based on the unitary development plan (Fischer, 2007; Therivel, 2004). The above statements might lead to the assumption that SEA efficiency is assessed in terms of flexible, balanced, and evermore case-by-case approach and analysis.

SEA for Oldham Unitary Development Plan

The unitary development plan of Oldham, an former industrial lying in the Greater Manchester area, adopted in 2006 is setting objectives for various development of planning applications over the built environment, infrastructure, housing, employment, etc. in the boundaries of the borough in short term perspective. The SEA design was applied on the Oldham Replacement UDP (Oldham Council, 2006).

The SEA process formation was continuous (2001-2006) and done in explicit stakeholder involvement from different professional and public institutions leading to proactive involvement of strategic notions of sustainable development. Whilst, achieving high level of

participation there is no evidence that it led to effective proposal and assessment of environmentally strategic alternatives. The UDP amended to use and improve the current policies, instead of finding alternatives. One of the biggest drawbacks in assessing Oldham UDP is the extent of the limited level on 'public privacy' on the related documents, participation, and consultation with general public (Fischer, 2007). Further, research on the resource availability of the case shows that the lack of documentation is not referring to the on-going decision making but to the related source needed to build the environmental and sustainability baseline. Anyhow, the overall objectives of the UDP points that alike the mismatches in public involvement, the perceptions of decision makers at individual and institutional level show significant mismatches.

Evaluation the effectiveness of SEA Directive adoption

Above study-cases illustrate the outcomes SEA process brought to planning and decision making systems in plan or program level, at current the significance of policy level and namely the implementation of the Directive 42/2001/EC and its potential output in contemporary practice. To this, end Fischer and Gazzola (2006) and Gazzola (2008) examine the effectiveness criteria of SEA through the prism of different planning approaches in the member states and more explicitly comparison of implementation of the Directive in the United Kingdom and the Italy.

Both countries are examples of different planning cultures, UK as Anglo-Saxon and Northern planning culture and Italy as example of southern planning paradigm with focus on urbanism and strong tradition on architecture and design (European Commission, 2001).

Content analysis of the Directive's implementation is highlighting the contextual elements (economic, political, and social) in evaluating the efficiency of SEA. So far, most of the relevant issues of the UK planning system and SEA-type assessment had discussed above. At the contrary, in Italy the concerns of environment in decision and plan making is not recognized and knowledge about sustainable development or environmental considerations of plans is limited. Additionally the EIA system is bounded with insufficient institutional apparatus and usually held when major impact is already under perceive (Fischer and Gazzola, 2006).

As conclusion, SEA effectiveness in the UK relies on widely flexible and discretionary planning approaches, with open and informative decision-making system. Whilst, applied to the case of Italy SEA effectiveness might be achieved only if legally binding components coerced by third party regulative bodies are set (Gazolla, 2008).

Commitment in evaluating the overall effectiveness of the SEA and impact in decision making additionally should emphasize on tailor made approaches to connect with another substantive elements of the planning system or the more, tailored approach of SEA

Directive's approach in application in nationwide spatial planning system (Gazolla, 2008). Promotion and advertisement of environmental and sustainability awareness together with knowledge distribution of potential impact of SEA in public involvement and transparency are principle tools in enhancing the SEA efficiency on decision-making.

3. Conclusion

The overall effectiveness of SEA assessed through various contextual reality checks and abstract theoretical models shows changes decision making by:

- Perception of the involved stakeholders about the environment
- Enriching information added in environmental baseline
- Effective considerations of the assessment of strategic alternatives in decision making
- Reducing spatial inequalities (e.g. by avoiding developments on green areas)

Some criticism conjointly addresses the harmonization of SEA goals in a current economic, politic, or social trends, issues related to participation and involvement, data availability. Following the technical routes of project EIA is one of the major drawbacks encountered in SEA practice. Both environmental assessments are structured and programmatic ex-ante approaches, but instead of compensating and overlapping with the former, SEA practitioner should array level of criticism against and affirm as independent and interdependent tool.

Finally yet importantly, major input mentioned in the beginning of the chapter in evaluating the effectiveness of SEA is accomplished by scientific researches in countries with well-established and high efficient planning systems and cultures. Consequently, these countries are some of the biggest advocates, knowledge leaders and exporters all over the world. However, this does not mean that once working these methodologies or criteria will be valid in other contextual and institutional settings. For example, the strong regulatory Dutch SEA-like assessment may not be applicable for the chaotic planning system in Greece, Hungary, or yet another MS with rugged practice in environmental policies, EIA and SEA systems or sustainability appraisal

4. Outputs of the envisioned evaluation

One might ask about the relevance of meta-analysis of the effectiveness if the SEA performance in the design of the undergoing research. In seeking for answer to the main research question asked in the beginning of this thesis it is important to find and know the most common and relevant advantages and/or pitfalls that SEA encounter in practice. The conclusions noted down in this chapter shows some overlaps of the SEA application effects that open room for enhancement and policy upgrade not only in the selected cases but also in common SEA perspective. Learning from previous experience gives opportunity for better

transposition and make premises to policy entrepreneurs which actions should be avoided and which not to achieve the most balanced implementation.

The current chapter aimed exploration of the current SEA practices occur within the last decades. It illustrated some significant result, which might be snatched also in contemporary SEA practice for airport expansion plans, which the next chapter explores in details. In addition, some critical notions are on surface but their effect is a matter of subjectivity and good examples for forthcoming practitioners.

VI. The potential role of SEA on airport expansion plan

1. Introduction

The previous chapter has discussed the role of SEA within selected programmes or other strategic actions. This has been done by using meta-analysis evaluation procedures and their implementation on the planning process. In addition to that, the current chapter is adding strength into the empirical part of the thesis within the analysis of four different airport development and expansion plans in different European countries. The objectives of these case studies are to illustrate the specific function of SEA in each case related context within the line of the main research inputs.

The aim of this chapter is to build an analysis reflects on decision-making processes related to involving different strategic alternatives, changing perceptions towards the sustainability and environment, and level of integration of airport expansion plans in spatial planning. The outcome of this chapter is seeking to assess the potential role of SEA in focusing on taking in account these strategic alternatives are included in decision making and in what way the idea of airport cities is included in SEA.

The analysis will critically reflect on the conceptual framework developed in Chapter 4. The assumption is that earlier proposed alternatives are not the only ones, which might occur yet, might be examples of interdisciplinary approach. Besides that, the policy perspective also will be included as inseparable part of SEA implementation.

The selection of case studies is seeking to cover wide range of variables, as size of the airport, strategic importance in national and international transportation network, political, environmental or/and social pressure, level of congestion, etc. In this follow of mind, impacts that are plausible to occur due to expansion of the Berlin-Brandenburg Airport will be with different focus in the relocation of the New Lisbon International Airport. Entirely different discourse will occur in the southwest English countryside where the expansion plans of Newquay Cornwall airport are in implementation and not in the least Dublin airport will suffer from the same impacts.

Therefore, elaboration on the case study selection is to show that airport expansion plans not always lead to same negatives (or positives). The cases will represent different contextual and institutional settings within national but also EU context. In doing so, this chapter will provide information to which level SEA is taken in accounts as a tool in airport growth and expansion plans.

2. Striving for regional priority: Newquay Cornwall Airport

General Information

Newquay Cornwall Airport is the main civil airport of Cornwall, a unitary authority and county of England. The airport is mainly with regional importance, opened in 1934 was serving as military base during the Second World War and later on also important military unit during the years of the Cold War.



Figure 8 Location of Newquay Cornwall Airport (Source: Google Maps, 2011)

Since mid-1990s, discussions about its retransformation to civil airport are in place. In late-2000s the airports is already recognized at the local and national aviation market and running out of capacity. Airport Masterplan envisioned in 2008 is setting the future long-term vision of the airport (Box 4).

Box 3 Newquay Cornwall Airport Masterplan Key points

The long-term vision for Newquay Cornwall Airport is:

- the creation of a safe, secure and efficient, commercially successful regional airport;
- a focal point for a major strategic employment area, based around aviation related and associated activities which acts as a key driver of the whole Cornish economy and;
- an airport designed to the best sustainable development principles, offering a model for other regional airports

Source: Newquay Cornwall Airport Masterplan, 2008

Public discussion on the masterplan lasted until the early 2009. Recently the airport has pivotal role in the regional economy, considering the fact that Cornwall is getting more popular as touristic destination within UK context (Newquay Cornwall Airport, 2011).

According to the UK Office for National Statistics (2011), the South West region where the county of Cornwall lies is one of the poorest and indicators as gross income are below the UK averages. The regional economy is explicitly agricultural and tourism oriented thus pointing the existence of the Newquay Cornwall Airport is crucial factor for further economic improvement. Explicitly in terms of making the region more attractive and accessible.

Impacts of SEA

The Cornwall City Council, the responsible authority of the airport, initiated voluntary strategic environmental assessment in order certify the potential social-economic, cultural and environmental impact that might occur after adoption of the Masterplan. Several alternatives have been assessed related to extraneous variables such as biodiversity, climate change, material and cultural assets, economic growth, public health and so on. The alternatives included in the SEA report are as follows: Airport Closure, Do nothing, North Side Development, South Side Un-integrated development, South Side Integrated Complex and High Growth (NCAM, 2008).

Assessment matrix has been used in the study and in envisioned environmental report to evaluate the aspects of different strategic alternatives involved. Analysis of the matrix shows that the impact assessment on the alternatives examined by the SEA objectives have overall neutral effect. However, it showed very positive effect on all alternatives when implies to the sustainable and economic growth and very negative impact of if closure occurs. The assessment matrix and potential impacts on envisioned alternatives are clearly visualized in Appendix 2.

SEA as an integral part of the masterplan envisioned three step consultations: at the scoping stage and after publishing the environmental report it got responses from major stakeholders and organizations, yet after the release of the draft it was subject to public discussions and consultation. However, after the closure of the follow up consultation the Cornwall Airport Authority published the final report of the airport vision, in which SEA was

in favour of two of the proposed alternatives: North Side Development and South Side Integrated (Table 3). These recommendations also matched with the expectation of the authority about the optimal benefit of the airport operation to the Cornish and national economy. Anyway, opposition parties criticized the final masterplan because it was failing in position of meeting environmental and sustainability standpoints, using and relying on too many idealistic forecasting methods (SNAIRE³, 2009).

Table 4 Newquay Cornwall Masterplan Alternatives (Source: Draft NCA Masterplan, ENTEC 2008)

Airport Closure	The airport would be closed. The existing terminal could be converted to business use and there might be scope to develop other uses on the site.
Do Nothing	No further development would take place beyond that which already has approval. The airport could accommodate 0.70 million passengers per annum (mppa) on 25 - 30 routes. There would be potential for aviation related uses on other parts of the airfield and proposed wider developments could take place to the South Side of the airfield but would need to be taken forward independently and segregated from the existing terminal facilities at NCA
North Side Development	Additional infrastructure would be added to the current terminal site to enable passenger growth up to 0.84mppa by 2015/16. There would be potential for aviation related uses on other parts of the airfield and proposed wider developments could take place to the South Side of the airfield but would need to be taken forward independently and segregated from the existing terminal facilities at NCA
South Side Un-integrated Complex	A new low cost terminal building would be developed on the South Side of the airfield with a capacity of 1.15mppa up to 2020 and could be extended to accommodate 1.42mppa by 2030. Development of other facilities such as an aviation academy, education based Discovery Centre and hotel and conference development would result in a long, linear un-integrated development. There would be potential for aviation related uses on other parts of the airfield. Wider developments such as a business park could take place on the South Side of the airfield and would benefit from infrastructure developed for the new terminal.
South Side Integrated Complex	A new terminal of high quality and sustainable design would be developed on the South Side of the airfield with a capacity of 1.15mppa up to 2020 and could be extended to accommodate 1.42mppa by 2030. Development of airport facilities would be provided on the South Side of the airfield adjacent to an Educational Development Zone and Ancillary Business Development Zone. There would be potential for aviation related uses on other parts of the airfield. Wider developments such as a business park could take place on the South Side of the airfield and would benefit from infrastructure developed for the new terminal.
High Growth	Similar to the South Side Integrated Complex outlined above but with the capacity for modular extension to the terminal to accommodate potential passenger demand of 1.79mppa by 2030/31.

SEA related decision-making aftermaths

The selected study case is good example of “synchronization” between SEA objectives and current politic and related economic dimensions. As mentioned above, the responsible authority Newquay Cornwall Airport is the Cornwall County Council initiated the SEA in terms of clear intensions of assessing the potential impact on airport expansion plans. In this view, it is not surprising that so well the consultee accepted the favoured alternatives. The SEA methodology and assessment was explicit on integration of the environmental

³ Stop Newquay Airport Expansion group

considerations and report into the masterplan and on being informative, i.e. the three level consultation, participation, and document availability through the website of the airport authority.

Anyway, even though the preferred alternatives and the master plan shows high level of correlation between the airport growth issues and land use planning policies some criticism towards the identified alternatives in general is necessary. Four of six alternatives reflect on the so-called 'growth and destroy' alternative proposed in Chapter 2. Acknowledging the dramatic sense of the mentioned above should not lead the reader in confusion, the use of exactly this combination is referring to the notion of expanding contemporary airport capacity in terms of building new physical infrastructure as runways, piers, terminal buildings, etc.

However, this shows as a whole the predetermined development-led input of the SEA within the overall development plan. Whilst it is believed that objectives of sustainability are present in the assessed alternatives the full range of social issues remain incomplete. As Baines (2007) refer, there is no clear statement of the SEA on the indirect cost of the population in terms of social or economic indexes. The last ones are not 'a must' in doing SEA, but can provide important information about community and social involvement in decision-making.

Furthermore, none of the alternatives is dealing with the parsing of the contemporary airport destinations. More than a half of the scheduled non-seasonal flight are short-haul UK flight which might potentially substituted by alternative high-speed train travel. Regrettably, this consideration is not present as an option neither in the closure nor in the 'do nothing' alternative. Hereby, the overall expectation of changing attitudes influenced by SEA is limited only on development related directly with the airport unity and reflection on indirect and external variables, as intermodal replacement is more than limited.

Another input in the analysis of the current case study is related to the SEA-EIA tiering. According to the SEA post-adoption statement and under the SEA regulations in the UK when there is acknowledged insignificant change in the Masterplan after the consultation procedure, legally a further environmental assessment is not necessarily required. Moreover, a personal internet research came across the information that the regional airport of Plymouth, located in the neighbouring county of Devon is planned to close in December 2011 and also that Air Southwest, one of the chief carriers having all years flight to Newquay is planning to axe its flights due to financial loses. (BBC, 2011). This raises the issue of uncertainty and high expectations given to SEA without careful estimating of plausible scenarios very likely to occur.

The case of Newquay Cornwall Airport gives important inputs on the role of SEA in dealing with strategic alternatives, which probably might not, had been considered. To some extent,

this might be explained with the ‘doing of SEA’ in the specific context. The key stages of SEA process are completely finalized with the SEA post adoption statement (2009). Important to acknowledge is that key inputs shown by application of SEA here are result of the integration between the SEA environmental report, which partly predates the masterplan and consequently its input the draft masterplan.

3. The leap into the future of the Celtic Tiger: Dublin International Airport

General Information

Dublin International Airport is Ireland’s busiest and biggest airport and amongst the top 15 European airports in terms of passenger carried (Eurostat, 2011). The airport is operating on its current location since 1940 and at the same time experienced two major expansions during the 50’s and 80’s of the last century (FCC, 2006). Key factors of the most recent history of the airport are the bilateral US border preclearance agreement between both governments; accession of the country in the EU and the fast growth of the ‘Celtic Tiger’ economy.

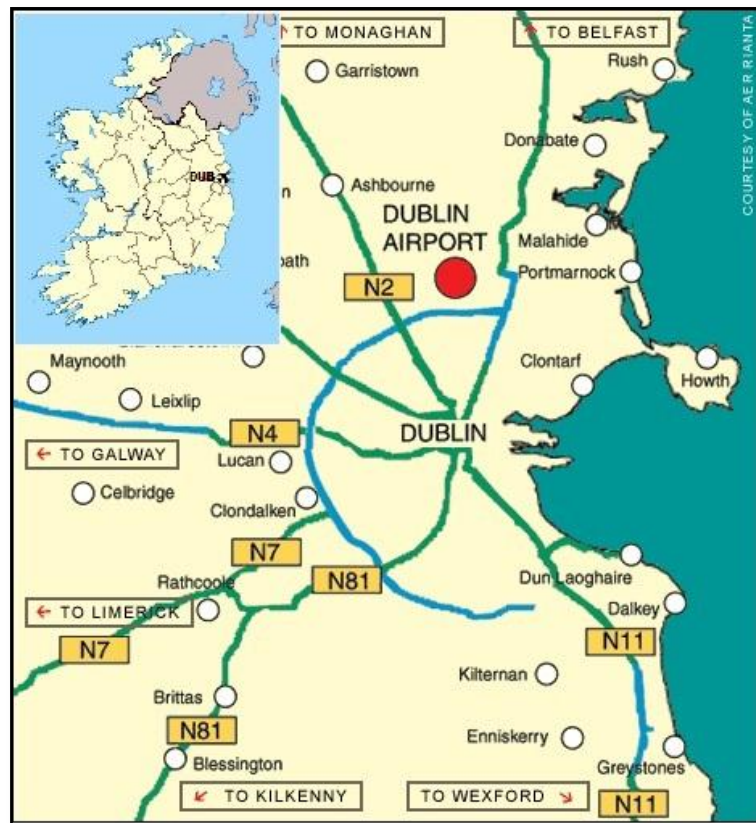


Figure 9 Location of Dublin International Airport (Source: DAA, 2011)

The notion ‘Celtic Tiger’ is to depict the economic overgrowth of the Irish economy between the mid-1990s and early 2000s, having example form the growth of the Southeast Asian countries in late 1980s and early 1990s, commonly called in economic geography the ‘Asian Tigers’. Expanding growth and demand were the most relevant factors for the planned expansion to deal with the airport growth, despite of the aftermath of the financial crisis begun in late-2000s.

Discussion about airport exposure of the airport is present from the late-90s but Dublin Airport Authority gave the final shade of development and transformation program in 2006 with the publication of a Draft Dublin Airport Masterplan envisioning the agenda of strategic improvement of the facility until 2012. The initiative covered expansion of the current

terminal and facilities, construction of new terminal, new airport apron and building an internal airport infrastructure network (FCC, 2006a).

Impacts of SEA

Following the regulations under Directive 2001/42/EC the authority was obliged to carry out an assessment of the potential effects on the airport on the environment before the plan implementation. The methodology of SEA followed the standard recommendations of the European Committee given in the Directive, envisioning screening, scoping, consideration of alternatives, baseline study, environmental assessment of the master plan, mitigation, and monitoring (FCC, 2006b)

The consideration of the alternatives in order to propose or promote the most feasible option for development took place after a strategic comparison of key studies hold out by independent planning bodies. Virtually Masterplan alternatives are divided on flows: do-nothing notion, strategic development action, and broader Masterplan options. However, alternative variations, excluding the “zero action” fit in three mainstreams: strategic vision of airport development, Masterplan development options in terms of terminal, and overall expansion options (Table 4).

Table 5 Alternatives envisioned in the SEA report of Dublin Airport Local Area Plan (Source: Fingal County Council, 2006)

Do Nothing	If no action is launched the projected growth of the airport would be severely curtailed due to airside and landside infrastructural deficits. The attractiveness of the country as a whole as a business and leisure location would be negatively impacted upon due to the decreasing levels of service and congestion associated with airport infrastructural deficits
Strategic Development Options	
Increased Use of Other Airports	Other airport locations, such as Cork and Shannon, are not in areas that would best suit the needs of the majority of passengers that currently use Dublin Airport. They would therefore either not serve demand or require increased surface access provisions
Improved Use of the Existing Infrastructure at Dublin Airport.	It has been shown that the current facilities cannot cater for 20 MPPA without significant additions or alterations and that substantial new airside, terminal and landside capacity must be in place by 2020 in order to meet demand at an acceptable level of service
Alternative locations for the second runway at Dublin airport	The extension of the current runway was considered as the only option sufficiently compatible with the local development plan to be a feasible alternative. However, there were a number of significant disadvantages associated with this option, which included limitations on capacity, removal of existing facilities and not a specified policy of the County Development Plan. It was also found that the extension of this runway would have an impact on areas not previously identified for airport use and that noise levels would not be significantly different in the best operational scenario.
Provision of a single runway elsewhere in the Greater Dublin Area	This would either take the form of a new single runway airport or change the use of an existing airfield to civil use. Impacts on land use would be increased and noise impacts may be less but only at the expense of increased travel distance and road use.
Replacement of Dublin Airport on a new site	Due to the timescale of the Government’s proposed infrastructure programme, this option was not considered feasible. In addition, the high costs involved in this

	option means it would only be justifiable if the environmental benefits were very significant.
Expansion Options	
West Expansion	Construction of a new large 30 MPPA terminal and piers to the western side of the airport lands, with landside access from the west with connections to the regional and highway systems
East/West expansion	Development of a second terminal and piers to the west of the existing facilities, as well as the redevelopment and extension of the existing terminal. This would result in a two-terminal, two-landside airport
Northward expansion	Construction of a new terminal and pier complex on the north side in the area of the existing hangers, as well as the alteration and expansion of the existing terminal. The result is a two terminal airport but with considerable shared landside infrastructure.
Eastward expansion	Expansion and extension of the existing terminal building to the south and east of the existing site to form large single terminal building with a single set of landside and airside facilities with a capacity of 30 million passengers per annum

The role of SEA in this study case gained some retrospective affection due to its ability of apprehension of wide range alternatives. Studies included in the SEA report represent broad range of strategic options such as increased use of other airports, replacement of the airport, and the preferred improved use of the existing infrastructure, etc. The assessment of the alternatives in the SEA report is somehow hierarchical. Firstly, high abstraction level alternatives related to strategic development are proposed. The second level of alternatives is reviewing expansion in touch within the option for improvement of current infrastructure capacity and the third layer is project approach to terminal design options. So far, there was a present out of box thinking about impact related alternatives and not only their projection on existing developments.

SEA related decision-making aftermaths

Strength of the SEA in the case of Dublin is its relationship and transposition with other major and relevant development plans. As already mentioned, SEA claimed to reflect on the environment but also to assess to what extent, the draft plan is tiered with existing policy regulations.

The proposed Masterplan is legally bound in the Fingal County Development Plan 2005-2011, consistent of national and regional transportation, land use, and spatial strategies as well as in the Irish sustainable development strategy. Transposition of the Masterplan through the SEA in the rich institutional planning pattern of the country might be argued stand behind the promotion of Dublin Airport City vision believed to be on the decision-making agenda after 2012, announced by DAA (2008).

Strategic shareholder interest from business and government are usually the key drivers towards aerotropolis agenda. However, current financial trends and political agenda is likely to affect this plans and leave the business to continue as usual.

Important to acknowledge is that the level of public consultation and participation on the decision-making agenda on the draft masterplan was on a small scale. Neither the draft masterplan nor the SEA report provided any information on how and when the public interested on the plan options can express opinion or object. Information on the initial public consultation on the draft and second public consultation on the yet final masterplan is found to be limited and unclear. Furthermore, even the involved relevant stakeholders, for example, airline carriers found some aspects of the masterplan design and implementation unbalanced. Brief example of that is objection from Ryan Air to new terminal and pier design from economically driven perspective (O'Leary, 2006). Yet, alternatives are referring to implementation related rather than strategic thinking terms of sustainability for example. Another point where the SEA does not match the proceedings discussed at previous chapter on relation to the report is the assessment of the masterplan.

The final report assesses the airport expansion alternatives in terms of well-defined and balanced SEA objectives focusing on environmental, social, cultural, and spatial baseline but assessment of the proposed strategic alternatives is uncertain. While this might be understood as high-level approach of assessing the effectiveness and the impact of the overall development, narrowing perspectives on the different alternatives, suggest more open and informative decision making. To clarify, the first approach of the SEA in this case is dealing explicitly on high level of abstractness, exploring overall and idealistic alternatives. The second approach is narrowing on development and expansion options on lower level of decision-making. Anyway, this shift in assessing or narrowing down alternatives, believed to be strategic, in the SEA report seems to be unclear and opening door for further discussion. So far, at ex-post evaluation stage on the role of SEA in interpreting the alternatives does not seem to be significant.

Another discussion in this case is the input of SEA in airport planning and its role as important apparatus that can support the aerotropolis approach in the future. This of course is not aim of SEA, but its effect on airport planning in the statutory of land-use planning is yet to begin. One should not forget the fact that, development and visions of airport city are to big extent related to political, financial, and social willingness and cooperation.

At this stage, these related spatial developments have not been included in SEA reports or the masterplan explicitly. However, there is a visible link between the assessment of the final masterplan and surrounding surface access and infrastructure link, but the sources found are informative, rather showing substantive linkages with the purpose of strategic thinking. For example, it should be better if at the assessing the alternative stage of SEA should be included more information about the impact of the supporting the airport relevant infrastructure, rather than focusing only on the airport side expansion of the airport. This aspect of SEA in its own turn might potentially be helpful assumption on which the idea of aerotropolis can be embedded in the immense body of spatial planning.

Recently, taking the advantage of contemporary social media DAA is actively promoting the emerged area around the airport as attractive and prosperous developments are for business, retail, high tech, etc. The location of the airport and Dublin as major financial district within the country and in the EU context is believed to enhance the business opportunity investments. The potential forthcoming the airport city will be mixed notion of growth, connectivity, sustainable development and lifestyle (DAA, 2011). However, due to the current financial instability of the country the vision of the development Dublin Airport City are indistinct.

4. The strategic role of comparison: New Lisbon Airport

General Information

Lisbon Portela airport is functioning since 1942 and at current time the major airport in Portugal and major European hub for transatlantic flights. Ideas about airport expansion have been discussed since 1970s but consequent political and political crisis temporarily slow down the expansion dialogue. The trigger for change, i.e. the need of adding more capacity to the airport was driven by the fast levels of urban growth, by that time the airport was already surrounded by the city of Lisbon. Ideas for expansion emerge in the early 80s and 90s, by accession of the country in EU and applying mandatory EIS for projects (IDAD, 2007).

During 2005 after more than three decades of negotiating and consultation, the decision was to relocate the airport to village of Ota, between Lisbon and Porto. Decision for this location were both environmental – seeking for less negative impacts; and strategic – potential airport at this area might stimulate so called “airport corridor” type development between Porto and Lisbon. However, the public and industry criticized decision taken by the government and publicly announced. Independent research was appointed and came up with proposal for new location Campo de Tiro de Alcochete (CTA) followed by strategic comparative assessment between two preferred locations (Figure 10, Appendix 3). The result showed that CTA has predominant advantage in comparison to OTA and the government announced CTA as the final location for the new airport, planned to operate by 2017 (Partidario, 2011).



Figure 10 Visualisation of Lisbon and the proposed two alternatives for new airport location (Source: Google Maps, 2011)

Impacts of SEA

The comparative assessment was performed by state connected National Laboratory for Civil Engineering (2008), but was not SEA in its pure form. There were already two preferred alternative locations for new airport. Whether in the former study was result of more than 40 years planning decision labyrinth loop and performed for the need of the developer, the latter shows significant positive impacts on decision-making agenda. The strategic assessment of alternatives (see Appendix 2) held in form of comparison and had the following objectives:

- Safety, efficiency, and capacity of air traffic operations
- Natural resource sustainability and hazards
- Nature conservation and biodiversity
- Ground transportation system and accessibility
- Spatial Planning and Regional Development
- Social - economic development and competitiveness
- Financial Analysis

Anyway, even without complying with the performance criteria of SEA the second study included strategic comparison of alternative locations based on their environmental feasibility and accessibility the study proposed OTA as the most favourable alternative in terms of balanced social an environmental scenario approach (IDAD, 2008)

The above seven strategic decision factors were the major pillars of the strategic assessment and favoured location of CTA based on positive mark on four of seven critical decision factors (Appendix 4), this meaning changing the mind-set of decision-making. Thus, highlight the importance of the notion of strategic in SEA.

The SEA decision-making aftermath

Performed as non-structured SEA, in this case has led to enormous change in decision-making agenda. Structuredness here is related to the procedural body within in theory and in policy perspective, which SEA should be bounded as being ex ante evaluation and tool used in decision making. In this case, assessment has been done by strategic comparison of the both studies initiated instead of classical EIA-type SEA approach.

Whether the overall assessment of the use of SEA in Lisbon is positive, some concerns are also not to ignore. The so-called strategic comparative, focused mainly on assessment of risk and opportunities of the two locations, but did not question the need of new airport in due the current economic and political context. Furthermore, the current location of the airport carries the ideas of sustainability appraisal and some kind of building trust between stakeholders and general public, in terms of the developer accepting opinion which was primary different by its own. At the same time, at this moment, there is no visible and transparent link to another field of spatial planning or practice. The airport authority ANA (Aerportos de Portugal) announced recently that there is on-going preparation of masterplan who will set up the vision of the airport region in long term, until 2050 and initiated EIS (Environmental Impact Study) to identify the best opportunities for development on the airport site within the knowledge of sustainability (ANA, 2008). Hypothetically, this will legally bind the SEA type approach with the going to emerge EIA in the reference master plan.

This case is very specific in terms that it did change the decision-making in terms of changing the preferred location of new airport development. The process of SEA application and detailed analysis of the both studies initiated by IDAD and LNEC are elaborated in details by Partidario (2011). Importantly for the purpose of the thesis is the radical change in the decision making process due to SEA application. Hypothetically, the new location is a strategic alternative integrating economic and environmental considerations, which is believed to be the most important outcome of SEA – sustainable development.

At this moment, it is too early to predict what will be the outcomes of application of SEA alike approaches will be. Yet one is visible in this case that SEA can change the outcome of decision making process if it is applied on time, by independent planning authority, and acted strategically, in terms of thinking out of the project impact related EIA bound. So far, the application of SEA should be encouraged not only within the new location of the airport but also within the consideration of the potential Lisbon Airport City as an early assessment and mitigation tool for relevant spatial development.

5. Opportunities for Berlin-Brandenburg International

General Information

Unlikely as many European metropolitan regions i.e. London, Paris, Madrid, Lisbon, Vienna, Amsterdam, the capital city of one of the biggest economical engines in Europe – federal state of Berlin is not hosting country's biggest airport. This privilege is given to the Frankfurt am Main Airport, due to unique social, economic, and political reasons. The social and political changes before and after the WWII shapes to some extent the current state and surface of Berlin, not only in airport planning perspective, but also in urban and land use development (Knippenberger, 2010).

Three polar airport services provided by Tempelhof, Tegel and Schönefeld airports after the fall of the Wall become insufficient and environmentally prohibitive due to urban growth and raising environmental awareness. Policy makers were obliged to come up with long-lasting and sustainable solution. That is why in the first post-cold war years Berlin City Council started procedure for alternative allocation of sole airport which to satisfy capital region's demands. In 1996 consensus reached, between the co-respondent decision makers in Berlin and Brandenburg and the federal bodies, concludes to reroute existing air traffic and expand Schönefeld airport into new Berlin-Brandenburg International Airport.

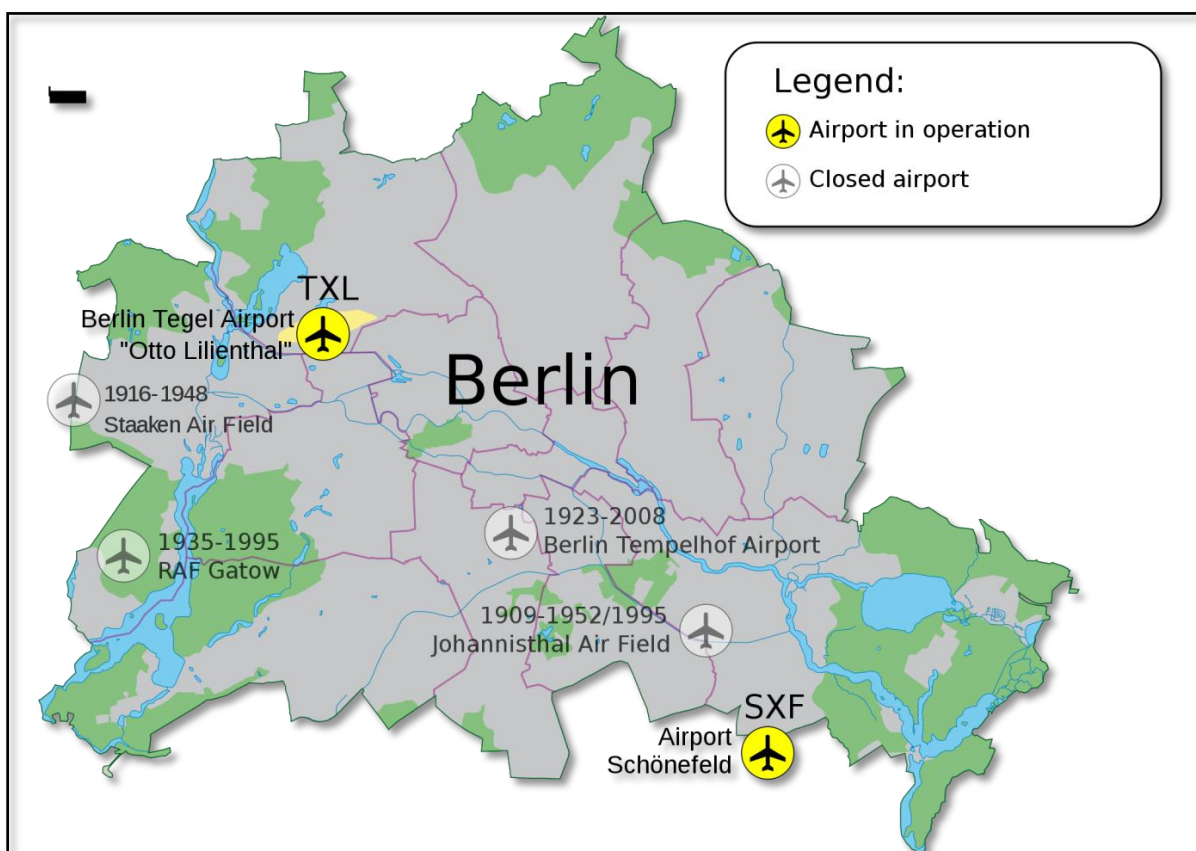


Figure 11 Berlin Airport Scheme (Source: Berliner Flughäfen, 2011)

In contrary of the discussed above study cases, at this time there is no SEA or SEA type approaches to apply or implemented. From its beginning, the discussion of Berlin airport issue was a political fiasco. Instead of discussion about the need of expansion of Berlins' airports, the discourse of the future airport of Berlin, after the German unification was in on call of need new international airport which to serve the need of the region and the country. Although, practically Berlin is considered as secondary, yet important point on the national and international aviation transport map (Alberts et al, 2010).

Despite the controversy on the need of new airport or not in 1996 there was a consensus reached where to allocate the new airport. It will be between both federal states of Berlin and Brandenburg, and use some of the facilities and utilities of the existing Schönefeld.

Impact of SEA

By that time, SEA was rather exotic planning approach that use is unclear and not yet promoted. Instead, after having a decision for new location a draft approval process had been given to the public for comments. This preliminary draft was formalized as final EIA in 2004, focusing on the environmental impact on the airport (Koppen, 2010). However, the EIA report criticized by SYNÖK⁴, because it was too much time- and cost consuming and the overall criteria by the assessment is done are unclear (SYNÖK, 2004). Anyway, between the announcement of the final draft and the actual implementation started in 2006 several lawsuits arouse against the potential growth project. However, after timely and costly planning process, with some interruption in between, the major developer gain a suit at the federal court to build and constructions begun in 2006. After several force-majeure conditions, now, the airport is scheduled to open in June 2012 (personal communication).

Concisely, the question is why this case study under the hood of SEA evaluation matrix while there is even not a sight of strategic assessment implied. The summarized description above showed what kind of implementation and pitfalls might occur without setting a preliminary agenda of strategic planning, in terms of the man outcome of SEA. In the case of BBI, the decision was politically predetermined – to improve the efficiency of the air transport demand in the region through new airport. Moreover, it led to major public and social opposition by long-lasting court trials, which ended in some 'limitations' of the use of the airport. Not much to surprise is the environmental and legal objection current BBI got in the past and to what extent of limitation it results now. For example due to environmental and health impact by night there will be flight ban, this inconceivably will affect the flight schedules and respectively the operation of the whole megaproject airport, which probably will not use its whole capacity anyway.

^{4 4} an independent planning authority with focus on environmental planning and resource management

One might argue that the expansion plan predates the SEA Directive and respectively it was not applicable by that time. The point here is not to be advocacy on the SEA Directive but the SEA ideology. The previous chapter showed that SEA-type assessment predates the actual European legislative act (see also Fischer et al, 2009). This raises the question of methodological reliability of SEA and SEA-type of approaches in diurnal decision-making. For example, detailed analysis of relevant publications and document shows that there were alternatives articulate on the political debate on-going (Behnen, 2004; Alberts et al, 2004; Beria et al, 2010). Yet their presence have been recognized somehow timidly and without applying comprehensive knowledge on them. The lack of data availability on the quality assurance and preference of those or finally selected location of Schönefeld is also to scrutinize. Potential political predetermined of decision making stagnates the room for SEA or SEA type approaches, specifically in terms of alternatives on which is the focus of the thesis.

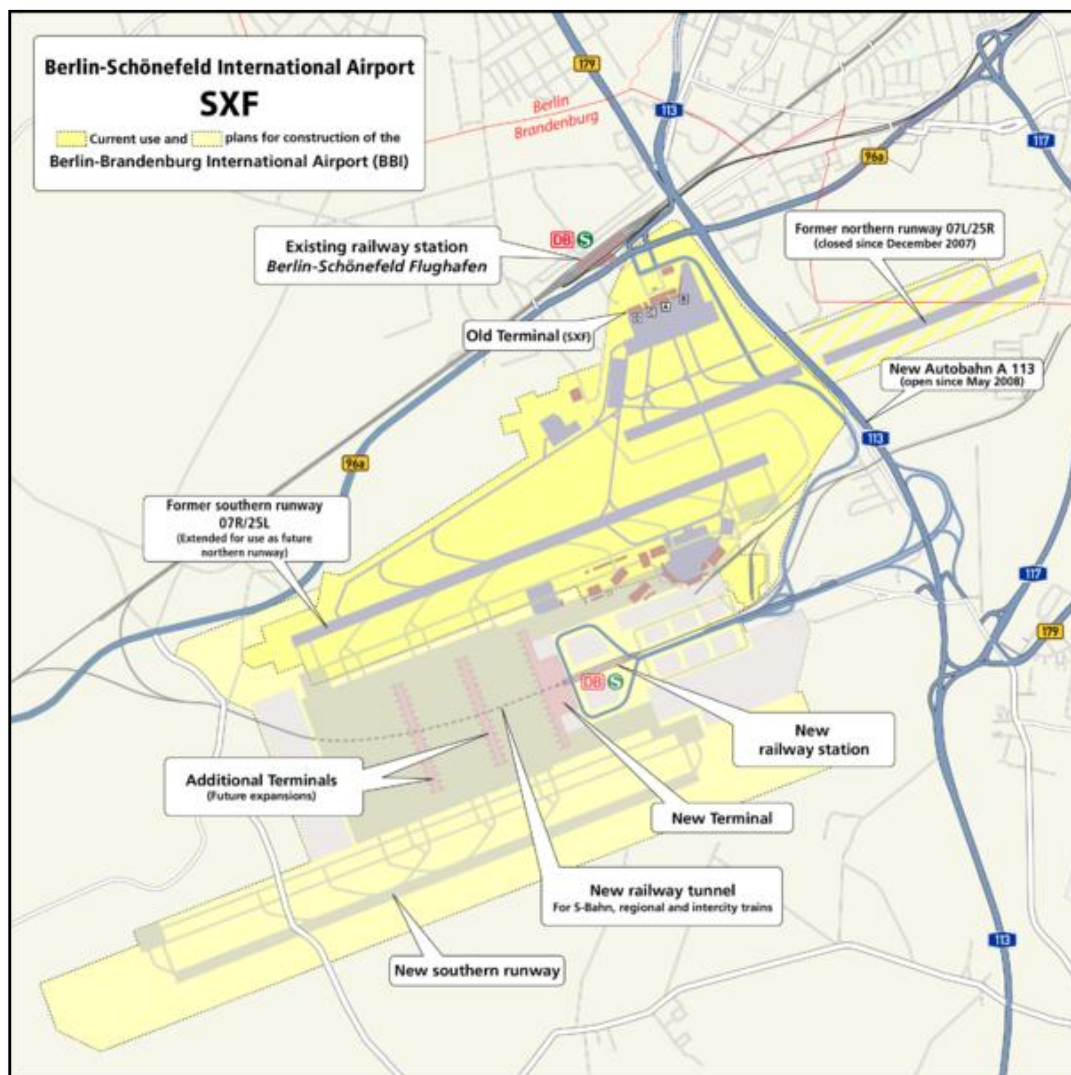


Figure 12 New Berlin-Brandenburg Airport (Berliner Flughäfen, 2011)

Anyway, cases discussed before prove the importance of at least strategic thinking when related to airport growth issues and related land use and land transformation. The aftermaths of this case study particularly are to big extent important not only in airport planning but also in planning discourse at all. Strong objection concerned with environmental protection that mentioned above in one way or another belied in the court. Nevertheless, the creation of Joint Spatial Planning Department Berlin-Brandenburg – a consensus planning institutional body between both federal states of Berlin and Brandenburg is indicative of the problems that are accumulated.

Box 4 Consensus-orientated planning and dialogue process

Parties involved: the federal states of Berlin and Brandenburg, 12 municipalities of Brandenburg, 3 Berlin boroughs, 3 administrative districts of Dahme-Spreewald, Oder-Spree, Teltow-Fläming, partially the Regional Planning Associations of Lausitz - Spreewald, Havelland – Fläming und Oderland -Spree und die FBS (Flughafengesellschaft) take part in the dialogue process.

The Joint Spatial Planning Department Berlin-Brandenburg presented the dialogue process until 2008.

The dialogue process pursues the following targets:

- Initiation of a permanent collaboration of the airport with its surrounding municipalities.
- Preparation of a state-crossing common development strategy Overall Concept / Common Structural Concept (GSK FU BBI)
- Support of the intermunicipal consensus-finding process for the development of the region

Source: Sperling, 2011 (personal communication)

In line with the main, two research objectives of the analysis: role of SEA in alternatives and spatial development link, there is not so much to say. The lack of SEA application leads to almost off-position of recognizing alternatives. The EIA report finalized for the expansion of the existing runways and new buildings deals with direct impacts and effect, when there is almost no room for big scale intervention. Interestingly, the airport authority advertises and encourages spatial developments around the airport. The development of Berlin Airport City is somehow in the discussion of the airport expansion, but linkages of the expansion plans of the airport with spatial development are conducted mainly from strategic notions evolved from economical but not strategic planning viewed in SEA perspective. In fact, obstacle in assessing strategically the planning process in different airport expansion and development plans is to find the most appropriate approach in defining the term “strategic.”

6. Findings and concluding remarks

From the four case studies above, it is visible that practically SEA might fit on the shape of different range of plans. No matter if, it is a development strategy for a middle-sized regional airport or major metropolitan hub. However, the cases provided valuable information about

whether and how SEA is undertaken [if it] is and what the potential consequences would be. Examined case studies shows that no matter the different methodologies and context dependent variable are in present the problems gravitate around the political and financial rational of decision-making process. In other words, strategic alternatives and related spatial developments are in most of the cases viewed as strategic actions derived from economic and political state of affairs.

The four development plans envisioned seem to have different approach towards the two major inputs that were set in the beginning of this chapter. Whilst assessment the role of alternatives brought by SEA appears to be present almost in all studies, certainly its input in promoting ideas of aerotropolis through land use planning is for now feasible only in case of Dublin and Berlin-Brandenburg. It might be the case Lisbon region also to adopt the idea of airport cities but at this phase, it is too early for any predictions. Moreover, in the case of Newquay Cornwall enlightens that Airport Cities are the future of big airports, usually with hub functions, not airports with regional or seasonal importance.

The real expectation of the strength of SEA to carry alternatives is also subject to criticism. Reviewed cases illustrate that the promoter of the infrastructure usually initiates the SEA process. Therefore, it is not surprising that usually the most preferable alternative is the most desired one, from the developer. General paradigm in planning practice is related to the nature of the decision that is going to be assessed. So far, the respective agency or body is appointed and charged with the responsibility to satisfy the expectations of the consultee. Hence, in this case not only the validity of the proposed alternatives is to scrutinize but also the overall quality of the SEA and planning process.

Some neutrality and independent planning check within in the institutional framework in performing the assessment is desirable. This can be done by independent EIA committee as in the Netherlands or by other institutional means, yet the independence of such committee is to some extent linked with the financial state of art and the aimed goals by the decision makers. Nevertheless, the main goal of such independent check or follow up is to confirm the qualitative goals of the assessment report and avoid objectification of the planning process. This might be the way to find balanced airport development. The case of Dublin showed some objection due to economic infeasible building plans and designs, but there was not environmental feasibility in the proposals at all. The issues raised were completely implementation but not decision making related. At the contrary is the case study of Berlin where the political rational decide the new location to be and it led to huge society opposition, concerned with not only environmental but also social issues.

On the other hand, alternatives within the current research context are instruments of high expectation changes in decision making in the institutional and policy framework of the planning process. This idealistic view of planning of the alternatives is derived by the belief that the responsible authority embarks SEA approach on relatively early stage and leaves

opportunity for enough public response and consultation. In reality, there is not clear view at what time of decision making the SEA should be launched and when the (relevant/related) stakeholders of a particular plan, like airport development, can get involved in the decision making process.

Aside the importance of alternatives in airport planning promoted by SEA application, the second train of thought within the analysis is related to spatial linkages with other fields of planning gravitating around airport development. If we simply recognize this kind of development as forming an airport city within narrow specialization of the former, so far we can summarize that this kind of images are joined product of balanced vision, promotion, and marketing of the greater region. The same is valid about the planned intervention on airport sites. Representative authorities are now promoting their visions of development thought multimedia advertisement at the internet and social networks, probably relying on more potential supporters. However, another finding is the statement that the notions of development of airport cities rely on the integration status between the specific SEA principles and effectiveness criteria given in the master plans; and the optimal rational interest for sustainable development.

While it is difficult to prove that SEA integrates different fields of spatial planning it might be argued that the application of SEA gives some incentives of sustainability appraisal of the airport cities development plans. From the examples used in this thesis, only two airports have vision of their Airport Cities, whereas some part of Dublin International Airport is already developing its adjacent development areas, and Berlin-Brandenburg is still in construction phase. Both cases show juridical and planning synchronization for achieving desired outcomes. Developing an image of airport city is compound task targeting endure between environment constrain, financial desires and social acceptance, the three components of sustainability.

Some criticism may arise from the contradictory combination of “sustainable airport city” in which this thesis is trying to reveal also the role of SEA in its planning. Aerotropolis by its origin is now in the phase from utopian and futuristic vision of the airport development to become integral point with urban, spatial, and economic interpretations. Such concept in contemporary world is infeasible without the light of environmental considerations. Respectively one can say that one day in the future airport cities will be synonym of sustainable airport related development.

For this substantial differences table of comparison between the selected study cases is available in Appendix 5, whereas the main differences between the overall of role of SEA and specific decision-making context is described. It is visible however, that the decision-making context and approaches to it might influence the overall performance and potential role of SEA in implementing spatial planning policies and plans. Preliminary excerpt from this table ought to be that the lower the power of the central government the higher is the role of SEA

in decision-making. However, this observation does not confirm the role of the strategic alternatives as key triggers for changing paradigms in context specific decision-making. On the contrary, taking historical perspective, the table shows that these strategic alternatives are increasing their importance as crucial elements of SEA or SEA type approaches. This is visible if the case study of Berlin-Brandenburg is compared to the New Lisbon airport and further to the Cornwall Newquay airport. The first study has no signs of any kind of alternatives, whilst the latter discusses preferable alternative locations and alternatives explicitly related to development options.

Anyway, the main question to answer here is for what alternative helps in specific study cases? Do they help at all? Moreover, if not what is the problem with SEA anyway? Answering this question might be hard up for an answer. Primary because the quite limited range of alternatives recognized in the case studies but mainly because the political rational hidden behind the SEA consultee. Yet bringing in consideration alternatives in decision-making is one of the key principles of SEA but articulating with them is to such extent is in the hands of the responsible authority. Secondly, even though SEA does have an impact on airport expansion plans it is difficult to trace its traces on related airport city visions. Partly because the two developments are not synchronized from the beginning, but also because of the power relations involved in both strategic planning and implementation of spatial policies

VII. Conclusion

1. Introduction

The aim of this final chapter is to discuss central facets and findings of the analysis supervised in the on-going research. The conclusion will focus on important elements of decision-making and governance with simultaneous application of SEA or SEA type methodologies. It will be drawn on the extent that SEA has potential to improve decision-making. For this reason, the chapter is divided on two parts. The first part will elaborate on conclusions derived by the analysis of the theory, policy and case study results and aims to answer the research question of the thesis. The second part of the chapter will reflect on the methodology, analysis and results achieved and finally yet importantly, the current chapter aims to give some recommendations about the concept of SEA as a planning making instrument.

The overall objective of this thesis was to explore the role of SEA (and SEA type approaches) and its potential to influence decision via twofold assumptions. On one side, the aim was to evaluate to what extent strategic alternatives are considered in decision-making as far it is related to airport expansion plans. On another, the secondary goal was to find whether SEA might have any role in the discussion about further development of airport cities. For the former, first in chapter 2 plausible socially driven environmental impacts and sublime to them strategic alternative were proposed, later theoretical and policy frameworks were used to support the neat role of alternatives related to SEA as planning instrument in practice in Chapter 3 and 4. Chapters 5 and 6 come forward to certain conceptualization and operationalization of the SEA concept by using specific approaches to evaluate coexisting practices in different spatial contexts.

2. Theoretical, policy and case study results

To start with, from the theoretical consideration in the thesis relied heavily on articulated notions summarized by Dalal-Clayton & Sadler (2005), Fischer (2007), Partidario (2000), Therivel (2004), etc. and combining elements of environmental policy evaluation promoted by Arts (2004) and Crabbe & Leroy (2008). Combining these perspectives, the concept of SEA has the potential to provide some insight of the complex spatial changes occurring on multistage levels of governance and government. Whereas, planning focuses on interactions in spatial dimension, both practitioners, and scholar are sometimes underestimate the role of space-time relation. Often, the notion of time is unfairly neglected when the subject is related to evaluation of development or intended interventions. Remarkably, SEA offers some grasp of light in this aspect. Classification of the decision-making space and room for alternatives in planning (fig 2, 4) shows some interrelations in between those. Whereas the role of SEA is proven influential on the high levels of strategic actions, to be understood, policies, plans and actions the space-time continuum at project or implementation level

does not have the capacity to deal with alternatives emerged at those higher levels. Instead it concentrates on direct impact and effects which are abstractly not available in top levels of the strategic decision making cycle. Hence, SEA is believed to be some kind of 'supervisor' of alternatives, to articulate and influence the content of the PPP alternatives in order to achieve environmental and balanced sustainability views. By doing so, the project level EIA has existing guidelines of potential mitigation, enhancement, resilience, and adaptation methods to cope with.

The theoretical statement in the beginning of the thesis was that SEA stands of promotion of sustainable development by early consideration of environmental issues. The analysis of the theoretical and policy perspective together along with some part of the analysis of the case studies underline that sustainability appraisal (which often) considered by SEA is with no clear formulations and needs some explanatory terminology. The analyses results that sustainability led development very often are overlaying with economic appraisal of the plan alternatives. The JEP triangle (fig 5) used to conceptualize the place of SEA as governance principle within the three main assets of policy evaluation criteria in the theory, in practice shows tendency of tilting the scales towards the midst of economic and political approach, fairly supported by the stability of the juridical approach on paper. Since, these three does not exist in isolation it might be summarized that analysis of the existing SEA practices are seen more as legislative benchmarks rather than instruments that deals with potential influences

Analysis shows that current SEA fails to embody the meaning built on theoretical foundations of integrator or balanced environmental and sustainability terms. Ominously, it fails to grasp the exact notion of sustainable development, perhaps by informal power relations or the lack of awareness about the exact nature of the problem. So far, the cases of Cornwall Newquay and Dublin International airport supports that statement that (Appendix 5).

Enfolding both the three main evaluation criteria of policy evaluation (namely the juridical, the economic-business and the political-social approach (see Leroy & Crabbe, 2008) and the sphere of influence of sustainable development (namely society, environment, economy), supported by the both meta-evaluations and the case study analysis of SEA tends to be viable and equitable. Concerning respectively the economic-business approach and political-social approach of the relationship between environments, economic and social development, but yet experiencing problems with combining this three parts of sustainable development through tolerable or endurable measures.

Hence, SEA as a decision-helping tool emerging from the juridical approach of policy evaluation is still not mature enough to bear with the full responsibility of sustainable development. SEA still lags in the middle as being a document and often is even ignored by developer. For instance, from the four-study cases only one have been followed by follow up

evaluation – Newquay Cornwall Airport and at the contrary – in Berlin Brandenburg International case there is lack of SEA application, due to various reasons mentioned above. Moreover, the policy perspectives encountered in the policy context and case study analysis showed that SEA is understood differently in the various cases.

Understandably, born and developed in the industrialized North of policy and decision-making spectrum SEA is not as the same as in the rest of the world. Bounded to the rational and legislative nature of planning systems in each country SEA claims various aims and goals defined by specific context related information and common knowledge sharing. Although, the compared study cases were representative of the policy making North, some differences in the manner SEA initiated and promoted were substantial. As for instance, Newquay Cornwall Airport Authority initiated voluntarily SEA and follow up, in the land use system of the United Kingdom, which is aiming to balance the economic activities and environmental equalities. On the contrary, in Ireland where basically the SEA was legally obliged to be carried out by the authority and in Portugal, whereas the SEA as in from of strategic comparison is actually performed by independent agency under the require of a government authority. The time dimension is not to underestimate as well. Whereas the SEA reports in the case of Newquay Cornwall Airport took long time more than 2 years and were exposed on broad public discussion and yet finally assessed positively, the case of Dublin is marked with elements of imperativeness – the final SEA report has been published only 3 month after the draft assessment.

Analyse driven by the theoretical and conceptual framework of the thesis showed that alternatives emerged with the SEA reports are broadly based on projections and forecasts, which reflect historical predetermination but less rely on futuristic scenarios with increasing level of uncertainty. The triggers for initiating strategic thinking via incorporation of alternatives has been mainly focused on what is actually wanted to achieve by the investor instead of what is the most preferred and sustainable alternative. The notion of Airport Cities is indeed valid for major hub airport instead of secondary ports with regional or seasonal importance, yet there is no direct spatial linkage between the intentions of SEA and actual interest of the developers. At one hand, this might be due to the legal complexity of the strategic notions of SEA but at other, this might reflect on the institutional difficulties decision makers should go through considering multiple options and multi-faceted coalitions. This might require involvement of certain adaptive governance techniques within the already technical rational of central and high level decision-making. Moreover, only Dublin Airport Authority for now and partly Berlin Brandenburg Airport has declared their intentions for developing airport city but their synchronisation with SEA are not yet proved. Therefore, in a nutshell the conclusion will be that future notes of airport cities should rely on synchronisation of the terms “strategic”, “SEA” and the real interest involved in decision making.

3. In search of answers

To conclude all mentioned earlier in this thesis and in this chapter, hereby, answers of the main research question and consequent sub-questions by using central arguments from the whole analysis. For clarification, first the sub-questions will be approached since they provide insight to the main question.

What hypothetical advances SEA offers within current or proposed airport development plans?

Hypothetically, SEA is not the only planning or decision-making tool that might be applied to airport development plans. The practice show that decisions related to airport development, relocation or even closure have impact more than in the local context where they are. Airports are considered strategic infrastructure elements with crucial effects on the society, business and the environments. Based on the theoretical discussion earlier, probably the easiest way to define what SEA offers for decision-making related to airport development is its ability of foreseeing and assessing environmental impacts in strategic decision making levels and using this information in follow-up processes, such as design of project EIA. SEA is believed to be the tiering between strategic PPP and project level EIA, by streamlining and specifying the issues on which the latter should concentrate. Hypothetical advances of SEA within its institutional framework triangulate between the strategic development alternatives, the early mitigation measures, and building environmental limitations within the development should be allowed or prevented. Based on these outcomes the need of SEA is supported by two major arguments: consideration of alternatives practically impossible at the project level and incorporating sustainability assessment. SEA systems also should be aware of the timing and nature of the decisions and with the level of the information available. Practically SEA systems exist in different countries but they are not necessarily and officially named likewise. Due to its technocratic roots in practice are distinguished two main methodological approaches: EIA-based and strategic or non-EIA based. However, value added to decision making by SEA is because project EIA are subject to various limitations and a particularly snapshot of the development phase (Dalal-Clayton&Sadler, 2005; Therivel, 2004).

What particular advances of SEA are defining it as a valuable policy and decision-making tool?

To answer this question several linkages to the first sub-question will be made. The overall aim of this thesis is to carry out a research on the empirical value and feasible application of SEA as advocacy tool in decision making and already is known that SEA brings opportunities of alternatives in the beginning of the decision making process which are no optional in the project design phase. Furthermore, to answer this question a conceptual framework of empirical analysis was developed in Chapter 3, which contained specific potential functions and inputs in decision-making:

- + Introduction of collaborative governance practices – due to inclusion of multiple coalitions and scenario approach alternatives;
- + Influencing contents of plan alternatives – by the threefold assumptions mentioned in the above sub-question SEA report might allow or prevent development in areas which are considered to be effected negatively by planned interventions not only in environmental but also in social aspect.
- + Reducing environmental tensions and spatial inequalities, e.g. easing spatial variations – in meaning of mitigating and enhancing the variations across the natural and human landscapes resulted from potential development alternatives;
- + Information and knowledge distribution – collaborative approaches involved within SEA report allow wide public collaboration and information share which allow strengthening the strategic decisions from the starting points of their implementation
- + Changing attitudes in planning discourse – although, difficult to assess, SEA brings with itself changing attitudes in high-level governance practices. Whilst, several decades ago this type of approaches were following traditional technocratic decision making method following the idea that a problem can be divided and assessed by different entrepreneurs, SEA is initiator of the integration of different experts in order to find better solution which will satisfy multiple actors and agencies.
- + Promote sustainability – Form above said and the analysis conducted earlier in this research is visible that SEA aims to combine the three consistent parts of sustainability defined by Agenda 21 – social, economic, and environmental approaches.

Admittedly, limitations due to misinterpretation of SEA or SEA type of approaches are available but they have not been in the focus of the research. Nevertheless, the central point of these negative feedback mechanisms is centrally following vulnerability in power-knowledge rationality and some variations in the meaning of SEA in different planning courses.

+ **What is the value added by SEA for major infrastructure and land use plans within EU context?**

Taking lessons from previous experience of SEA in almost similar context of decision-making refers to strengthening the value and limitation that practitioners might occur for future. Therefore, this meta-analysis of already performed SEA reports is part of the thesis. The SEA Directive as in charge from 2004 is the highest institutional and regulative decree, which captures and envision SEA practice in the member states. The meta-analysis envisioned intend to represent an ex-post SEA meta-analysis evaluation approach tend to strengthen the competency, institutional and advocacy capability of the effectiveness of SEA in decision-making and program or plan design. By doing so, meta-analysis attends to be a so-called quality control tool in policy cycle and planning practice.

The benefits extracted by such evaluation method of SEA to big extent depend on the concern of the environment in the planning system, the state of art of the planning system, promotion of sustainability in the planning system and the place of SEA in the planning system. On the presumption of these conditions, several aspects are crucial. SEA has important role in resources and information distribution amongst the stakeholders. SEA carry institutional capacity to sustain and carry coalition and collaborative approaches, doing this increases the adaptivity of decision making to new creating socio-ecological circumstances. The dominant planning discourses are influencing the perception of SEA and vice versa. For example, it is noticeable that some of the evaluated SEA are following technocratic approaches of EIA, predetermined by bias of decision makers. Hence, SEA carries out the potential of challenging already existing institutional frameworks and their resilience. However, the overall conclusion of the value added might be synthetized to the level of information, the nature and the timing of the decision.

 **What is the potential role of SEA for airport development plans based on meta-evaluation and analysis of the various SEA experiences and the current state of art?**

Based on the analysis and the findings found in the answers of the previous questions several notes for the efficiency on SEA upon airport development plans might be drawn. SEA as both in coeval practices and airport development plans is based on forecasting methods whereas new conditions of governance require innovative scenario building methodologies based on economical, physical and social actualities. The different scale of the planned interventions involved predetermines different notions and understandings of SEA. In this sense, it is more than visible that SEA reports are in favour of the opinion of the consultee. Following this train of thought, the content of SEA is hardly to be generalized by any kind of planning legislation or regulation, such as all four potential airport developments analysed define sustainability in different perspectives. Additionally, the content of the SEA reports vary due to the mentioned above differences.

However, overall conclusion is that SEA aims to initiate environmental protection and sustainable development within the strategic framework of airport development plans and translate the role of the environment into specific needs of practise. For example, the early discussions about the future of the four case studies involved response of the main carriers operating at the relevant airports to development plans and later on integrated their visions for development in the strategic option for development. These additional feedback mechanisms only strengthen the role of SEA in airport plans. Furthermore, via SEA the initiators of planned developments aim better efficiency on airport capacity as result of creating room for informed decision-making, knowledge distribution and community response on very early stage of development. Whereas the list of potential roles and functions of SEA in airport related decision-making is long enough, this thesis narrows down on two main benefits of SEA: the role of alternatives as crucial for decision-making and the role of SEA as initiator and integrator in prospective development of airport cities. The need

of focused down research was needed in order to answer the questions arose from the theoretical, policy and empirical approach illustrated in the thesis. After all what SEA about is to integrate environmental and sustainability issues into strategic options and these both focuses of research are targeting this question

4. The role of SEA in airport development plans – present and future

The objective of this section is to answer the central research question formulated in the first stages of this research and outline recommendations based on the scope, analysis and limitations of the thesis for both practice and further research opts.

Response to the research question

The question asked in the very beginning of this thesis intended to find: **To what extent airport development plans can be improved by the use of SEA, taking account previous experience on SEA for PPPs?**

The quick answer with no superfluous enthusiasm is that ideally, SEA has the potential to influence decision making in positive way but as well, there is a room for improvement.

The theoretical statement in the beginning of the thesis was that SEA stands for promotion of sustainable development by early consideration of environmental impacts. It results that thus sustainability led development very often is overlaying with economic appraisal of the preferred alternatives. What should be added in the meaning of SEA is not only early involvement of the environment, but also strategic integration of socio-economic issues related to community reaction and opposition. Further, in terms of integration of social context, more community-based approaches might have positive effect on mitigating so-called airport resilience.

Tacking stock in the conceptual framework proposed for empirical research earlier in the structure of the thesis, some remarks are to be made. Whilst all but one development plans make use of strategic notions and encountering the functions of SEA as influencing the content of plan alternatives, most of the alternatives actually gravitate around achieving financial rather than balanced sustainability. Analysis showed that the real and hypothetical functions and benefit of SEA in decision making and planning formulated in the conceptual framework to some extent intersect. The fact that alternatives as itself are considered in planning process is indicative of that. Admittedly, it is difficult to measure the use of SEA outcomes in decision making by both quantitative and qualitative measures, but the aim of all envisioned practices in this chapter is to achieve practices of better governance by integrating as more as possible stakeholders and interests, building stable coalitions between environment and development. Of course, approaching such important, considerate, and significant development options is always a double edge weapon complexly wrapped in power relations.

Referring to the policy context within airport developments are dealt within the member states of European Union there is a blackout of information. Both legislative acts of SEA Directive and the Airport Package are in progress independent of each other. Whereas there is already, a follow up mechanism on the implementation of the SEA directive, the on-going creation of the Airport Package requires more socio-ecological and sustainability approaches embedded instead of existing decrees focusing on airport capacity mainly by slot allocation or airport charges. Additionally one of the widely accepted assumptions of SEA is that it should allow navigation of downstream EIA in the decision making discourse. The analysis showed that a major misinterpretation is that SEA is perceived party as EIA from decision-making leaders. While SEA is primary addressing the high levels of decision making cycle, as for example is a proposed master plan for integrated development of an airport area, EIA is designated to address and appraise the low level singular projects include within, as runways, terminal buildings, new public utilities, pathway approaches and so on. No one SEA design is able to apply to all the levels of strategic actions and asses continuously the impacts of planned interventions. There is need of SEA tools, which instead of being idealized should meet the needs of particular contexts and institutions. Simple replacement of EIA by SEA is not able to answer the needs of airport capacity growth or development opportunities.

Taking in account the different issues arose from the four case studies, important place in the on-going SEA debate is the meaning of strategic and SEA in different planning systems and their interpretation. At the end there is no 'good planning' or 'bad planning' neither 'good' or 'bad' alternative, the meaning and value of all above is limited to specific context related issues which to some extent seems to be invalid when are put out of it.

Finally yet importantly, there is some truth in that there is not such a place where you can build an airport without environmental and territorial consequences. Very often, the whole idea of airport capacity growth is twofold. Consumers do need directly or indirectly the planned interventions but at the same time wish airports does not to disturb their liveability and environment. In this line of thoughts, airport growth issues always will have their supporters and opposes no matter how perfectly and exemplary undertaken SEA nor the whole plan or project is. The overall incentive of integrating SEA or SEA type approaches in airport planning related should be encouraged in future when opinions about expanding airport capacity rise up

Recommendations for practice

Bot SEA and airport growth are tremendous fields of empirical evidence and practices in contemporary socio-environmental circumstances. Therefore, based on this thesis several recommendations for better practices are given.

- ✚ Policy makers should make use of local knowledge and contextual differences of terminology before conducting SEA. This might be obtained by test fieldworks or preliminary data collection. By doing that, practitioners might reduce the distance between the policy-reality mismatch. In sense, that this general remark, carry potential to ground the language of abstract policy goals to the level of everyday reality context. This was seen in Berlin-Branednburg case, where non-collaborative proresses before years led to long lasting prosecutions and external costs, that potentially might be avoided if pilot meetings with affected communities had been organized.
- ✚ Practitioners should create up-to-date feedback mechanism sin order to build stable collaborative approaches with the affected stakeholders. Feedback mechanisms and are closely related with the learning capacity of both sides of planned interventions – the promoter of the development and the affected stakeholders. The case of Newquay Cornwall airport showed that, although the positive response to the expansion, after a year a major airline operating on the airport, decided to redirect flights to another regional airport. Thus, the successful otherwise undertaken SEA did not take in account behaviour of major stakeholders and overall market positioning.
- ✚ Consider SEA as a parenting body of EIA and create follow up mechanisms in order to perform regular quality checks of SEA objectives on different stages of decision-making. This might be achieved by creating independent organization, which might assess and judge the quality of any kind impact assessment.
- ✚ Involve public leaders as images of local governance to encourage collaborative approaches and information distribution. This might help to improve the learning capacity, trust and legitimacy of particular elements of proposed interventions.
- ✚ Consider existence of Airport Cities as side effect of capacity growth or development of airport zones and not outgrowth of urban areas. The essence of this kind of development is that it serves the immediate and intermediate needs of airports rather than urban activities.

Recommendations for further research

The role of SEA not only within airport development is tracing back to the wider family of impact assessment as a whole. During the last two decades, advocacies of SEA initiated various workshops, conferences and guidelines for better SEA practices. SEA methodologies are explicitly developed for strategic PPPs and their contexts, but these strategic actions soon or later land in project implementation. Therefore, as already mentioned, the SEA approaches found in the case studies showed that when talking about ‘strategic’ options of development the economic discourse is substantial than environmental and sustainability consideration. Instead of just noticing that economic driven discourse is stronger than anything else is, proactive promotion and involvement of the industry in early stages of decision-making might have the power to provide balanced overview on the decision making process. Thus, predominant CBA (cost-benefit analysis) that seems to be prevailing now

could come in for criticism by applying other monetary and non-monetary methods of economic appraisal. For instance, the amalgam of CBA and MCA (multi-criteria analysis), combining industry and demand driven and society friendly procedures and preferences known as MCCBA such as contingent valuation (Sijtsma et al, 2010) could stand for what SEA is meant to – promotion of informed decision-making.

Another assumption within the on-going research was that SEA is a concept meant to act independently and strategically to help decision-making. In essence, airport growth related issues are always are obscurely and not so much dealing with power balance and power issues. What does SEA really does not take in account while action under is influence form outside, such as political predetermined decisions. Thus, the assumption of independent quality check of SEA, by third-party practitioners or decision makers, not involved directly in planning process, introduces new meaning to decision-making process. The potential objectification of decisions making would be avoided or at least balanced with desired sustainable development.

The focus on future research either might focus on enriching the family of SEA tools with more context related localization factors and enriching the meaning of sustainable development by combined multilevel approaches. However, in relation to airport development and capacity, the current academic research is focused on ecological barriers of airport operations and economic measures to ease congestion the need of elaborated future research to improve the position of environmental and sustainability appraisal within the context of SEA is needed. Furthermore, the concept of Airport Cities as a new field of exploration might be enriched by involvement of SEA practices as the technocratic blueprint planning might not be enough.

Finally, there should be specific interest on application of SEA, seen as important or potential tool for airport decision making in different nationwide contexts. This thesis provides only three main context specific inputs on space-time dimension. In world of resilient and adaptive governance practices, there should be more research on particular strengths and weaknesses of SEA examined in different spatial planning practices, instead of generalized findings, which usually are result of research in nations of policy exporters in the North.

5. Reflection

Finding way through the unbounded cosmos of impact assessment is not an easy job and often ends at crossroads of puzzling and fuzzy planning methods and evaluations. Indeed, impact assessment is a lot of information itself: perspective on stakeholders, public participation and involvement, political debates and discussions, legislative procedures and regulations, never-ending media information about environmental friendly and sustainable development and so on.

Nevertheless, when reflecting on this research it became clear that in the beginning some difficulties become evident. One of the major difficulties was in line with accessibility to appropriate and relevant data of each study. Linguistic misinterpretations and unfeasibility of professional translation of the examined policy documents on which the on-going research is based are just a thorn in the eyes of the author. Secondary data collection of based on content analysis is a challenge due to extracting the appropriate information from the relevant policy documents. This task was even more complex for the purpose of this research because the majority of the policies and documents needed translation, which already decreased the quality of the contents.

The research in this thesis relies on a theoretical framework based on academic literature on the subject of impact assessment, policy evaluation, planning theory. The literature encompassed different notions of strategic action and narrowed focus on theoretical background of SEA and its place in the family of impact assessment tools. The research additionally borrowed concepts from the field of environmental policy evaluation for developing meta-evaluation analysis. The current reading also used broad document and policy analysis for providing up-to-date information about the four selected case studies. Finally, the results and analysis of the above mentioned were neatly criticized by the prism of basic planning practice discourses.

The potential role of SEA in airport expansion planning was based on twofold assumptions which analysis and recommendation was represented in the previous chapter. However, once again, the role of evaluation and assessment the development preferences are crucial to achieve better high-level decision-making. However, the proposed alternatives about the future of potential airport expansion plans developed in the conceptual framework are considerably idealistic and not always reflect on real life situation and their fitfulness within the actual planning practice can be under question. Nevertheless, the combination of different case studies provide useful empirical input in comparison of SEA practice in different socio- spatial-politico-legal contextual settings and open room for procedural and legislative improvements.

Towards the closure of this thesis finally yet importantly is to acknowledge the place of the new-coming airport cities and political willingness in the planning discourse. Whereas the former is going to stand in the breach in the future, currently the lack of the latter is one of the major reasons of SEA drawbacks. This thesis argues that SEA might have input in forthcoming airport cities by combining different aspects of spatial planning, as strengthening tool, combining environment, industry, and sustainability, but its scope and availability are fruits of virtually visible power and knowledge relations. Yet, how this hypothesis was right or not will be, available in the uncertainty we call future. For now, certainly SEA is carrying the ability to initiate both institutional and organizational innovation towards improving social wellbeing through mitigation and enhancement methods and situation specific spatial transformation.

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Appendixes

Appendix 1: The SEA Performance Criteria by IAIA

A good-quality Strategic Environmental Assessment (SEA) process informs planners, decision makers and affected public on the sustainability of strategic decisions, facilitates the search for the best alternative and ensures a democratic decision making process. This enhances the credibility of decisions and leads to more cost- and time-effective EA at the project level. For this purpose, a good-quality SEA process is:

Integrated:

- ✓ Ensures an appropriate environmental assessment of all strategic decisions relevant for the achievement of sustainable development.
- ✓ Addresses the interrelationships of biophysical, social and economic aspects.
- ✓ Is tiered to policies in relevant sectors and (transboundary) regions and, where appropriate, to project EIA and decision-making.

Sustainable:

- ✓ Facilitates identification of development options and alternative proposals that are more sustainable (that contributes to the overall sustainable criteria published in Rio Declaration, 1992)

Focused:

- ✓ Provides sufficient, reliable, and usable information for development planning and decision-making.
- ✓ Concentrates on key issues of sustainable development.
- ✓ Is customized to the characteristics of the decision making process.
- ✓ Is cost-and time-effective.

Accountable:

- ✓ Is the responsibility of the leading agencies for the strategic decision to be taken.
- ✓ Is carried out with professionalism, rigor, fairness, impartiality and balance.
- ✓ Is subject to independent checks and verification
- ✓ Documents and justifies how sustainability issues were taken into account in decision-making.

Participative:

- ✓ Informs and involves interested and affected public and government bodies throughout the decision making process.
- ✓ Explicitly addresses their inputs and concerns in documentation and decision-making.
- ✓ Has clear, easily understood information requirements and ensures sufficient access to all relevant information.

Iterative:

- ✓ Ensures availability of the assessment results early enough to influence the decision making process and inspire future planning.
- ✓ Provides sufficient information on the actual impacts of implementing a strategic decision, to judge whether this decision should be amended and to provide a basis for future decisions.

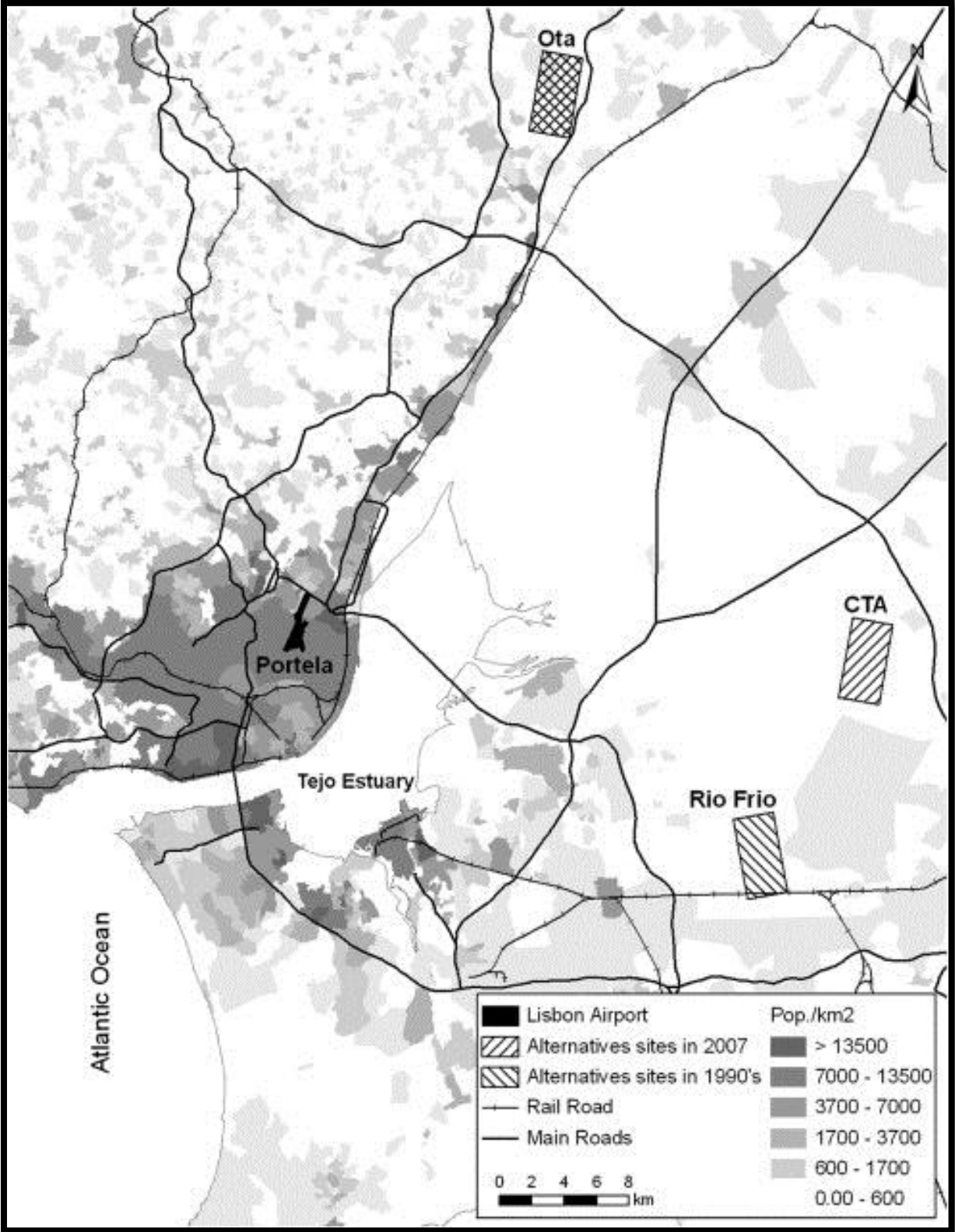
Source: IAIA, 2002. Special publication No. 1

Appendix 2: Potential Impact on NCA Draft Masterplan alternatives and an overview of the relationships between each of the strategic alternatives and the SEA objectives (Source: NCA Draft Masterplan, ENTEC 2008)

Key			
Very strong positive effect	++	Negative effect	-
Positive effect	+	Very strong negative effect	--
Overall neutral effect	0		

Potential Impacts of the draft Masterplan Alternatives						
SEA Objective	Airport Closure	Do Nothing	North Side Development	South Side Un-integrated	South Side Integrated	High Growth
Poverty and social exclusion	-	0	0	+	+	+
Vibrant communities	-	+	+	+	+	+
Natural and historic environment	0	0	0	0	0	0
Environmental quality	+	0	0	0	0	0
Sustainable land use, construction, design and transport	-	0	0	0	+	+
Contributions to climate change	+	-	-	-	-	-
Sustainable resource Management	++	-	-	-	-	-
Sustainable economic growth and employment	--	++	++	++	++	++
Social and environmental performance of the economy	-	+	+	+	+	+

Appendix 3: The relative geographical location of the new airport of Lisbon major alternative location (Source: Partidario, 2011)



Appendix 4: Strategic assessment of the seven critical decision factors in the location of New Lisbon Airport (LNEC, 2008)

Critical Decision Factors	Strategic assessment comparison OTA/CTA
Safety, efficiency, and capacity of the air traffic operations	It was possible in any of the two locations examined, to ensure standards for adequate operational safety. However, from the point of view of efficiency and capacity of air traffic operations, despite previous studies lack the deeper understanding, available evidence indicates the location of New Lisbon Airport in the area of CTA as more favourable.
Natural resource sustainability and hazards	This includes the water and land resources, the latter in geotechnical perspective. It encompasses also the analysis of flood risk, erosion risk, and seismic risk and risk allocation of the noise. With regard to the implementation aspects of the platform, there is the big difference between the locations in the areas of OTA and CTA that relates to the topographical and geotechnical conditions prevailing in the most unfavourable option of OTA in comparison to the CTA (present situation).
Nature conservation and biodiversity	The implementation of major infrastructure projects has disadvantages mainly due to the artificiality of the territory. These drawbacks are also evident in the case of New Lisbon Airport; there are very negative potential impacts both in OTA as well in CTA. Some impacts are inevitable and irreversible, resulting from physical changes caused in the implementation of airport infrastructure, a planned airport city, new roads, and railways. It also provides a multitude of additional indirect impacts in the surrounding areas, induced by the reorganization of activities in the territory and the likely changes in land use. Despite these similarities in the processes involved in implementation of the New Lisbon Airport, both locations have differences in advantages and disadvantages due to their different ecological characteristics. It is considered that, in terms of nature conservation and biodiversity, the location of CTA is more disadvantageous in that area of Ota.
Ground transportation system and accessibility	Both locations satisfy the criterion of sustainability of the transport system, i.e., both allow a good integration in the axis of high-speed rail network and the national rail network as well as in the Metropolitan Area of Lisbon, enhancing any of them in an efficient modal split access. With regard to land access, as it stands, the overall comparison between the location in the location in Ota and of CTA results in favour of Ota, although the difference is not significant in terms of percentages between the values of the indicators used.
Spatial planning and regional development	The location in the area of Ota has major advantages in the appreciation of the urban system of the West and Central Coast, use of the potential of entrepreneurship and human resources in the West and Central Coast, and to a smaller extent the boost tourism development in these regions. The main disadvantage highlights the difficulties of expanding the airport infrastructure and accommodation of an "airport city." The location in the of CTA has major advantages for the recovery of obsolete industrial areas such as Setúbal Peninsula, the absence of restrictions on space for expansion of airport infrastructure and the implementation of a airport city and to a smaller degree, the impulse economic development in the Alentejo. The main

	disadvantage of this location is the danger of destruction of vast heritage forestry, agricultural and green areas.
Social-economic development and competitiveness	The conclusion drawn by considering the risks and opportunities, going towards the existence of a global advantage of the location of NAL in the area of the CTA. The most relevant comparison that led to the choice of this location mainly refer to the optimization of the economic and financial development of the project, the approximation to the more strategic positioning and competitive approach to the airport-city model.
Financial analysis	The methodology developed for the financial evaluation of two alternative locations for the New Lisbon Airport was based on the estimation of indicators of the relative merits of both alternatives, calculated based on incremental future cash flows directly associated with the two primary locations (projects). Financial analysis included cost-benefit analysis (CBA) based on the strategic assessment methodology as it is articulated and is in interdependence of the indicator. The interconnection between the CBA and SEA required a continuous interdisciplinary interaction in order to materialize the indicators for each evaluation criterion

Appendix 5: Comparison table of the case studies

Key Objectives	Cornwall Newquay Airport	Dublin International Airport	New Lisbon Airport	Berlin Brandenburg Airport
Decision making context*	Overall assessment of the planning system– level of control on spatial planning policies is concentrated on local level. The national government provide guidance to local level implementation. Spatial planning and policies require planning permission before implementation.	Overall assessment of the planning system – level of control on spatial planning policies from the central government is medium. The decision making power is on the county council.	Overall assessment of the planning system– centralised and strong controlled spatial planning policies. Implementation of policies is coordinated between different levels of government. The decision making power is on municipal level, which is depended on central government.	Overall assessment of the planning system – medium level of control on spatial planning policies. Local authorities have the last word in implementation. Each federal state has its own regional planning acts following the nationwide Regional Planning Act (Raumordnungsgesetz) and the Federal Building Code (Baugesetzbuch).
Approaches to decision making*	There is gap between central and local level of governance. The aim of the spatial planning is to be discretionary and consensus oriented. In general, higher-level authorities might override lower lever planning decision and implementations. Decisions rely on legal actions evolved from the British Common law.	Transition from the central governance paradigm towards the role of regional governance practices, i.e. preparation of regional planning guidelines. Decisions rely on legal actions evolved from the British Common law.	The goal of spatial planning is to provide balanced location of activities based on different socio-economic and environmental qualities. Although the strong role of central government, citizen participation is promoted in order to achieve sustainable goals.	Local government is concentrated on urban and physical planning, following the restrictions and regulations of higher-level legal frameworks. Decisions follow strict regulations and written constitutions.
SEA Performed	Yes, voluntarily, pre-directive SEA, requested by the investor.	Yes, legislation required after Directive 2001/42/EC. SEA report included in broader Masterplan	Yes, in a form of strategic comparison between two studies	Decision on airport development predates the SEA directive (circa 1996)
Introducing strategic development alternatives	Alternatives explicitly related to development options with no relation to	Alternatives are based on two approaches. Alternatives, mutually inclusive	No strategic alternatives involved. The SEA type assessment is dealing with	No, there is envisioned EIA with options for strategic development.

	intermodal replacement or potential scenarios for decreasing passenger supply	and following logical hierarchy	location alternatives.	
Overall role of SEA in airport development decision making	SEA is predetermined development led, focus on financial sustainability, whilst incomplete impact assessment on social factors	SEA is with balanced objectives focusing on environmental, social, cultural and economic criteria, but unclear about public participation. However, alternatives are implementation related instead of holistic strategic meaning.	SEA is seen as consensus-seeking approach between different stakeholders. The SEA is favouring different locations, instead of dealing with holistic strategic alternatives.	No SEA but the role embodied within the EIA report is to narrow focus on environmental impacts of the airport location. However, does not provide information for the location.
Relation of SEA and Airport Cities	The scale of the airport does not provide sufficient means for airport city development. Rather on interregional development of another airports (i.e. Plymouth)	The SEA is part of the Masterplan of Dublin Airport Local Area Plan, which envisions future visions of Dublin Airport City	Long term development plans envisioning the vision of the airport and they are until 2050 are launched by the airport authority	The scope of the EIA report does not include potential effects of external variables such as airport cities. However, there is clear vision for intended further development.
Linking with EIA	Based on the post-adoption statement after consultation procedure further environmental assessment is not required.	There is hierarchy of impact assessment procedures. Released EIA for second parallel runway at Dublin Airport and for the terminal buildings.	The compared reports on location are peculiar environmental impact studies, however the airport authority is running research on broader masterplan in the following years	Links with other regulatory measures within the regional and local planning context, but not specific strategic actions
Follow up or feedback mechanism	Yes, post adoption statement on the Newquay Cornwall Airport Masterplan SEA, commissioned by the Cornwall Council to examine the implementation of the masterplan	Proposing monitoring strategies for traffic, noise, air quality, heritage, ground water and built environment monitoring, but no further documented actions are launched	No documented actions on follow up procedures, due to early phase of planning implementation	Adaptive governance measures – establishment of consensus orientated planning and dialogue process; Joint spatial planning department Berlin-Brandenburg

*based on The EU Compendium of spatial planning systems and policies (European Commission, 1997) and National spatial planning policies and governance typology (Tosics et al, 2010).