

Sustainable Airport Solutions

The Economic Impacts of Regional Airports:

GSA Case Study







DESELCONSULTING
AVIATIONMANAGEMENT



**MOSTERT-PLOOG
& PARTNERS**

provincie **Drenthe**



Study: Function and Role of Regional Airports

Green Sustainable Airports (GSA)

April 2, 2013, Status: Final



Prof. Dr. Ulrich Desel
Desel Consulting
Germanenweg 23
65527 Niedernhausen
Germany



**MOSTERT-PLOOG
& PARTNERS**

Ralf Schikorr
M2P Consulting GmbH
Arndtstraße 47
60325 Frankfurt am Main
Germany

Executive Summary

The study was conducted to assess the function and role of regional airports in the North Sea region as well as to analyse trends and challenges related to this. The following objectives were defined:

- Assessment of the GSA airports' impact on regional economy,
- Understanding of the strategic position of regional airports,
- Development of a policy outlook, as a guideline for further advice on policy.

The study results show that the GSA airports have a significant contribution to the economic welfare of the North Sea region. Considered airports generate total gross value added of more than two billion Euros, and a total of 33,000 direct and indirect jobs related to the operation of the GSA airports.

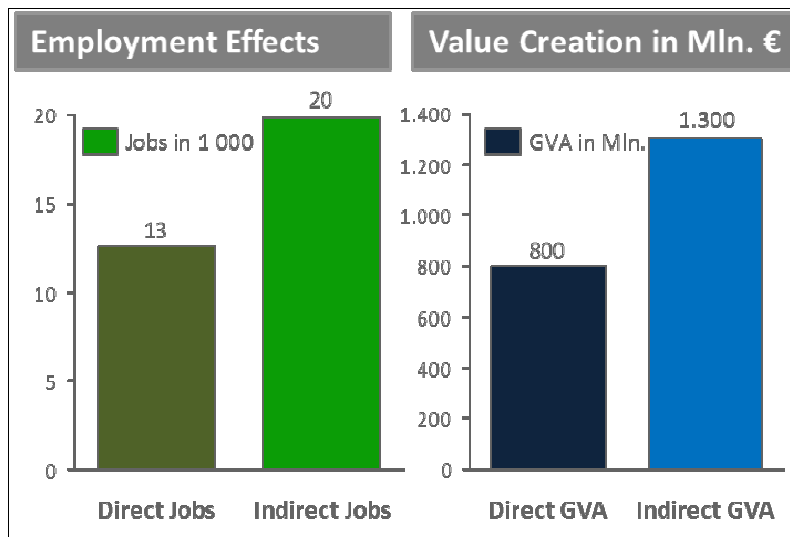


Figure 1: Regional economic impact of GSA Airports

By assessing the strategic position of regional airports the following strengths, weaknesses, opportunities and threats were identified:

- Strengths: comparably low operational cost both for airport users and high customer convenience,
- Weaknesses: high dependence on a number of airlines, high unit cost for airport operators, dependence on public funding, little potential to generate non-aviation revenues,
- Opportunities: development of infrastructure and business, traffic flow-over from congested hub airports, better airport marketing,
- Risks and threats: increasing cost pressure and tightening regulations at European level.

Acknowledging the overall future risks and challenges for regional airports, the study recommends the following measures to be taken by decision-makers:

- Implement unique selling point as a marketing strategy in order to explore traffic potentials
- Improve public communication and corporate social responsibility in order to gain public acceptance

- Strengthen lobbying so that EU regulations were implemented at regional airports
- Develop strategies for the target-oriented cost-control and the increase of non-aviation revenues and public funding

Having recognized the function and role of regional airports, the following policy recommendations can be formulated and submitted to European legislative institutions and decision-makers:

- Link between funding and regional determined economic impact of regional airports
- Take into account characteristics of regional airports while making decision at EU level (e.g. EASA rule-set, aviation guidelines)
- Apply economic impact assessment at Regional Airports in the EU to achieve transparency of economic benefits (e.g. holistic model for impact assessment)
- Provide funding for regional airports in Europe, to support implementation of European regulations.

Revision History

Date	Version	Summary of changes	Made by
02.04.2013	1.00	Final	Ralf Schikorr

Table of Contents

Figures.....	7
Abbreviations.....	8
Airport Codes.....	9
1 Introduction	10
2 GSA – The INTERREG Project on Green Sustainable Airports	12
3 Regional Airports.....	14
3.1 Definitions and Categorization	14
3.2 The Function and Role of Regional Airports	15
4 The Social and Economic Impact of Airports	16
4.1 Introduction	16
4.2 Regional Economic Effects - Definition	17
4.3 Model Approach for Regional Economic Impact Assessment	18
4.3.1 Approach	18
4.3.2 Economic and Social Structure of the Airport Region	18
4.3.3 Direct Employment and Income Effects.....	19
4.3.4 Indirect Employment and Income Effects	19
4.3.5 Induced Employment and Income Effects.....	20
4.3.6 Assessment of Catalytic Effects	20
4.3.7 Determination of Fiscal Effects.....	21
4.4 Regional Economic Impact Assessment of Airports – Scientific Model.....	22
5 Economic and Social Impact of the GSA Airports.....	23
5.1 Objectives and Approach.....	23
5.2 Initial Analysis of the GSA Airports	23
5.3 Data Compilation and Assessment	25
5.4 Benchmarking airports in terms of their effect on regional economy	26
5.5 Economic Impact of Regional Airports - Regression Analyses.....	28
5.6 Regional Economic Impact of the GSA Airports.....	29
5.7 Evaluation of Results.....	30
6 Trends and Challenges for Regional Airports	32
6.1 SWOT Analysis	32
6.1.1 Strengths.....	32
6.1.2 Weaknesses	34
6.1.3 Opportunities	35
6.1.4 Threats.....	35

6.2	European Airport Policy Outlook	36
6.2.1	EU Airport Package	36
6.2.2	Review of EU Aviation Guidelines	37
6.2.3	EU Safety Regulation	38
7	Critical Success Factors for Regional Airports.....	39
8	Summary.....	40
9	Conclusions and Recommendations	41
	List of References	43
	Appendices	45
1	GSA airport profiles	46
1.1	Billund Airport - a Profile	46
1.2	Bremen Airport - a Profile.....	46
1.3	Sandefjord Airport Torp – a Profile.....	47
1.4	Groningen Airport Eelde – a Profile	47
1.5	London Southend Airport – a Profile	48
1.6	Kortrijk Airport - a Profile.....	48
1.7	Manston Airport & Lydd Airport – a Profile.....	49
2	Regression analysis - results.....	50

Figures

Figure 1: Regional economic impact of GSA Airports	2
Figure 2: Regional airports in the North Sea Region – key challenges.....	10
Figure 3: Regional airports in the GSA project	12
Figure 4: Schematic context of national account system [5]	16
Figure 5: Key stakeholder of the air transport sector [6]	18
Figure 6: Determination of the income and employment effects [5]	21
Figure 7: Regional economic impact assessment of airports – a model approach [5, 6]	22
Figure 8: Overview on GSA airports	24
Figure 9: GSA airports – Traffic statistics.....	24
Figure 10: Characteristics of GSA airports.....	25
Figure 11: Regional economic impact of GSA airports – total value.....	30
Figure 12: Regional airports – SWOT analysis.....	33
Figure 13: Conclusions and recommendations of the study.....	41
Figure 14: Number of employees in relation to the passenger volume	50
Figure 15: Value creation in relation to the passenger volume	50
Figure 16: Total value creation per passenger in relation to the passenger volume.....	51
Figure 17: Value creation in relation to the number of employees.....	51

Tables

Table 1: Definition overview of economic effects of regional airports [6]	17
Table 2: Direct effects of Bremen airport [5]	19
Table 3: Fiscal effects of Airports	21
Table 4: Availability of regional economic impact studies for GSA airports	26
Table 5: Airports benchmarking – overview	26
Table 6: Regional airports – benchmarking results.....	27
Table 7: Small regional airports – benchmarking results	28
Table 8: Regional economic impact of GSA airports	29
Table 9: Applied approach – evaluation.....	30

Abbreviations

A/C	Aircraft
ACI	Airport Council International
AEA	Association of European Airlines
AMS	Aerospace Material Specification
ARP	Aerospace Recommended Practice
ATC	Air Traffic Control
ATM	Air Traffic Movements
BSAG.	Bremer Straßenbahn AG
e.g.	example given
EASA	European Aviation Safety Agency
FTE	Full Time Equivalent Units
GSA	Green Sustainable Airports
GVA	Gross Value Added
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ISO	International Organization for Standardization
KLM	Royal Dutch Airlines
KPI	Key performance indicator
LCC	Low-cost Carrier
Mln	Million
MRO	Maintenance, Repair and Overhaul
n/a	not available
NPA	Notice of Proposed Amendment
PSO	Public Service Obligation
RWY	Runway
SWOT	Strengths, Weakness, Opportunity, Threats
TWY	Taxiway
VBV	Verkehrsverbund Bremen/ Niedersachsen GmbH

WLU

Work Load Units

ZVBN

Zweckverband Verkehrsverbund Bremen/Niedersachsen

Airport Codes

BLL

Billund Airport

BRE

Bremen City Airport

GRQ

Groningen Airport Eelde

KJK

Airport Kortrijk-Wevelgem

LYX

Lydd Airport

MSE

Manston Airport

SEN

London Southend Airport

TRF

Sandefjord Airport Torp

1 Introduction

Regional Airports play a significant role in shaping the economic, social and political landscape of local communities they serve. Today, airport stakeholders are facing increasing economic pressure while public expectations are steadily growing. In general, profit margins have dropped over the last few years while costs have increased significantly (e.g. energy costs doubled in the last decade). Customers' expectations towards the level of service and service requirements have grown, as overall processes have become more complex and vulnerable to external shocks. Rising concerns on climate change increase public awareness of overall airport operations, but also clear communication and corporate responsibility are becoming more important.



Figure 2: Regional airports in the North Sea Region – key challenges

By acknowledging today's key challenges for regional airports it is important to recall their fundamental economic and social benefits:

- Regional airports serve as regional gateway to world-wide markets
- Their role is complementary to hub airports and airport system of metropolitan regions by providing additional slots and capacity,
- Regional airports have a potential for attracting inbound tourism thanks to their outstanding infrastructure,
- Regional airports create direct and indirect employment and income effects from airport operations,
- Business location factor to attract direct inward investments and set up regional development clusters,
- Substantial infrastructure allows holding regional competitiveness.

Regional economic studies examine the impact of regional airports on the economy of a given area. The economic impact is usually measured in terms of changes in the economic growth (output or value added) and associated with changes in jobs (employment) and income (wages). Following the above listed benefits, airport stakeholders setup regional economic impact studies to:

- provide the economic case for projects on airport expansion,
- carry out strategic investments,
- inform about regional economic benefits of airports and traffic growth,
- provide rationale for public funding,
- gain regulatory approvals and planning approvals,
- retain regional acceptance and awareness of regional airports,
- facilitate better airport and destination marketing.

Green Sustainable Airports (GSA) is the EU-funded INTERREG project which brings together airport operators and regional authorities from the North Sea Region (NSR) to collaborate on solutions for sustainable airport operations and marketing. The project aims to develop strategies and solution for a more eco-efficient and green aviation industry, as well as to make regional airports frontrunners in sustainable development.

As one key deliverable of the project, the study aims to assess the function and role of the regional airports and to analyse related trends and challenges in order to help airports develop their future strategy and, in a later term, to develop policy recommendations.

The following aspects shall be covered:

- Definitions of regional airports
- Assessment of function and role of regional airports,
- Overview and methodological insight into economic impact assessment,
- Assessment of GSA airports impact on regional economies,
- Strategic analysis and SWOT matrix,
- European airport policy outlook,
- Critical success factors and conclusions.

2 GSA – The INTERREG Project on Green Sustainable Airports

Green Sustainable Airports (GSA) is an international partnership project, dedicated to various stakeholders of the European aviation industry to work on solutions for sustainable airport operations. The project aims to develop strategies and solutions for a more eco-efficient and green aviation industry, as well as to make regional airports frontrunners in sustainable development.

The major goal of the project is to improve regional airport accessibility, public communication and acceptance. Furthermore, fostering better regulatory framework conditions and safeguarding the role of regional airports, such as accessibility, is a key intention of the study, too.

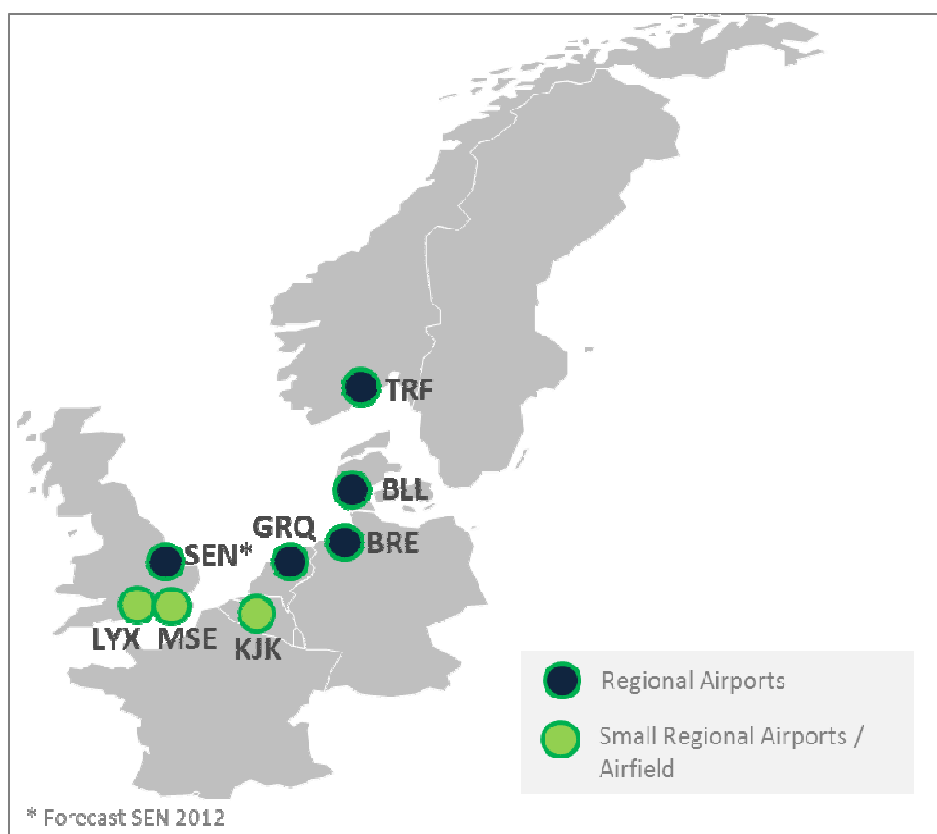


Figure 3: Regional airports in the GSA project

The following airports are considered as GSA project airports:

- Bremen Airport (Germany)
- Groningen Airport Eelde (The Netherlands)
- Sandefjord Lufthavn AS (Norway)
- Kortrijk-Wevelgem International Airport (Belgium)
- London Southend Airport Co. Ltd (United Kingdom)
- Billund Airport (Denmark)
- Lydd and Manston Airports (United Kingdom)

The following public institutions belong to the project:

- Province of Drenthe (Netherlands)
- Kent County Council (United Kingdom)
- Institute for Sustainability (United Kingdom)
- National Physical Laboratory (United Kingdom)
- Vestfold Fylkeskommune (Norway)
- Freie Hansestadt Bremen - Senator für Wirtschaft und Häfen (Germany)
- Freie Hansestadt Bremen - Der Senator für Umwelt, Bau, Verkehr und Europa (Germany)
- Zweckverband Verkehrsverbund Bremen/Niedersachsen (ZVBN) (Germany)
- Verkehrsverbund Bremen/ Niedersachsen GmbH (VBN) (Germany)
- Bremer Straßenbahn AG (BSAG) (Germany).

To coordinate all stakeholders' interests, the international cooperation of regional and small regional airports, local authorities and public transport suppliers strive for extensive knowledge exchange and resource bundling.

The project is managed by the Province of Drenthe and set up for a three-year period from 2010 to the end of 2013.

3 Regional Airports

3.1 Definitions and Categorization

International organizations and authorities as well as the scientific world provide various definitions of “Regional Airports”. The European Commission defines all airports with less than 5 million passengers per annum as regional airports. Moreover, the Commission differentiates between large regional airports with 1 to 5 million annual passengers and small regional airports, handling less than 1 million passengers [2].

The ACI (Airport Council International) airport association provides a comparable definition, assuming more sophisticated attributes [2]:

- Peripheral and remote (e.g. Frankfurt Hahn Airport)
- Strong catchment area in the proximity of another medium- or big sized airport(s) (e.g. London Southend Airport)
- Serving niche markets as cargo business (e.g. Liege Airport)
- Providing special services such as MRO services (e.g. Shannon Airport)

A similar definition appears in the scientific literature. In 1988, a German traffic scientist J. Sorgenfrei published a comprehensive definition of regional airports:[3]

“As Regional Airports we can identify those airports which are legally approved as regional commercial airports as well as landing strips. These Regional Airports have the function as station for the regional air traffic and they are a relevant locational factor for the regional economy”.

This definition considers traffic volumes and regional economic impact besides differentiation for scheduled flights and general aviation traffic.

The American scientific literature divides airports into hub and non-hub airports, where the latter is recognized as regional airport. According to this definition, medium-sized airports, such as Hamburg Airport, would be ranked as a regional airport.

The following attributes were applied to categorize regional airports:

- Airports serving slightly populated areas with limited catchment area in terms of inhabitants (e.g. Groningen Airport)
- Small to medium sized airports serving non-capital cities (e.g. Bremen or Hanover Airport)
- Secondary or tertiary airports for metropolitan areas (e.g. London Southend Airport)

Here, all airports with > 200k passengers are categorized as “Regional Airport” whereas others with <200k passengers are defined as “Small Regional Airport”.

3.2 The Function and Role of Regional Airports

The analysis of different types of traffic and route networks related to regional airports reveals the following types of connectivity:

- **Point-to-point traffic:** Provision of connectivity to regions as well as between remote areas by airlines (and airports). In some cases these routes are defined as PSO routes (e.g. in France or Norway). Due to the limited demand, these routes are served with a low frequency and only small aircraft, generating high operational costs per seat kilometre.
- **Feeder flights to hubs:** Route connectivity between regions and worldwide destinations via hub feeder flights. Routes are operated by the hub-operating carrier or by a partner airline flying on behalf or by a regional subsidiary. For this type of traffic a significant frequency is provided to serve the hub wave pattern for optimal connectivity and minimum transfer time.
- **Low-cost Traffic:** LCC carriers serve OD-demand without connecting transfer passengers, whereas frequencies might differ significantly between winter and summer schedule due to the reason of seasonality. Moreover, some airports provide a large variety of destinations with limited route frequency at the same time.
- **Charter Traffic:** Flights operated by charter airlines and tour operators, serving seasonal, on demand flight frequency to holiday destinations.
- **Specialization:** Some regional airports provide special functions to niche markets. This could be for example a strong focus on cargo traffic, charter traffic, MRO or business aviation.

According to the above defined types of connectivity, regional airports can be categorized by their function and role as:

- **Traditional Spokes Airports:** Primarily feed the hub(s) and provide only limited point-to-point traffic (e.g. Tromsø Airport, Norway).
- **Regional Hubs:** Limited hub function for continental flights as well as point-to-point flights (e.g. Marseille Airport, Lyon Airport).
- **Low-Cost Airports:** LCC as the dominant carrier, often located in remote regions (e.g. Hahn Airport).
- **Seasonal Airports:** High seasonality of demand, especially triggered by touristic inbound traffic (e.g. Salzburg Airport).
- **City Airports:** Serving business travellers and high yield demand in metropolitan areas in addition to larger airport systems (e.g. Stockholm/Bromma, London City Airport).
- **Cargo Airports:** Airports with focus on cargo operations (e.g. Liege Airport).
- **General Aviation Airports:** Airports with focus on General and Business aviation (e.g. Kortrijk Airport).

4 The Social and Economic Impact of Airports

4.1 Introduction

Airports have a significant economic and social impact on regions [4] [5]. The impact can be divided into employment and income effects.

Employment effects

The Employment Effects term is defined as all full time equivalent unit (FTE) which is directly and indirectly linked to the operation of an airport. In relation to this, jobs generated through the airport's induced and catalytic effects are also taken into account. [4] [5].

Income effects

Income effects are measured by the gross value added (GVA). Other definitions, such as the one described by the national account systems, determines production value minus advance payments. The production value summarizes values of all goods and services produced in a defined period of time. Advance payments in the value chain for services and goods obtained from other economic units are considered as input for the production in the reporting period.

Having deducted depreciations and operating surpluses/income of self-employers from the gross value added, we come up with a result which provides salaries for employees. Gross wages are determined if contributions to social insurances paid by employers are subtracted. The mentioned aggregation levels are interconnected as depicted in Figure 4.

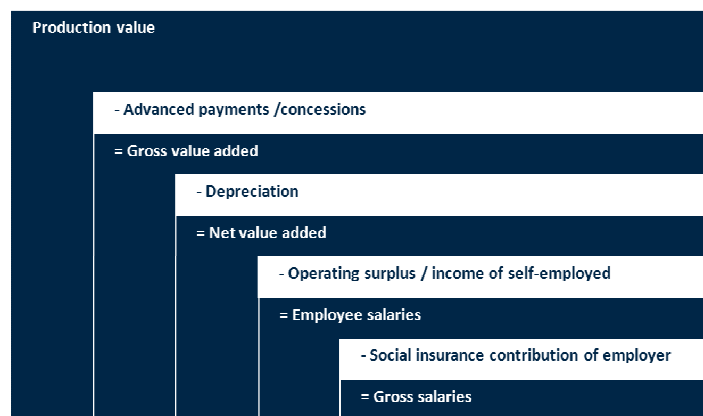


Figure 4: Schematic context of national account system [5]

4.2 Regional Economic Effects - Definition

Following the methodology developed by the Airport Council International (ACI) four categories of employment and income effects are defined [1]:

Direct on-site effects summarize the number of on-site jobs and gross value added (GVA). Effects are largely related to the operation of an airport and generated from the operational area of the airport.

Indirect effects include employment and GVA which are generated through the chain of goods and services suppliers, as input to direct operational activities.

Induced effects include employment and GVA which are generated from the income expenditure derived from direct or indirect activities.

Catalytic effects define the increase of employment and value creation due to the attractiveness of the region. Regional airport connectivity is an important location factor for many businesses to attract investments.

It is a real challenge to provide a proof for the correlation between the airport operation and other businesses. Therefore, many studies exclude catalytic effects or depend only on incoming tourism.

Economic Impact Associated with Airports		
Impact Category	Definition	Examples
Direct On-Site	Employment and GVA are totally or largely related to the operation of an airport and generated within the airport operational area	Airport operator, airlines, handling agents, control authorities, concessions, freight agents, flight caterers, hotels, car parking, aircraft servicing, fuel storage
Direct Off- Site	Employment and GVA totally or largely related to the operation of an airport and generated within the local area	Airlines, freight agents, flight caterers, hotels, car parking
Indirect	Employment and GVA generated through the chain of goods and services suppliers, as input to direct activities	Utilities, retail, advertising, cleaning, food, construction
Induced	Employment and GVA generated from the income expenditure derived from direct and indirect activities	Retail, restaurants and entertainment
Catalytic	Employment and GVA generated through attractiveness, retention or expansion of economic activity being a result of the airport's activity	Inward investors, export companies and visitor attractions including off-site hotels

Table 1: Definition overview of economic effects of regional airports [6]

The table below presents an overview of regional economic effects associated with economic activities of various airport stakeholders.

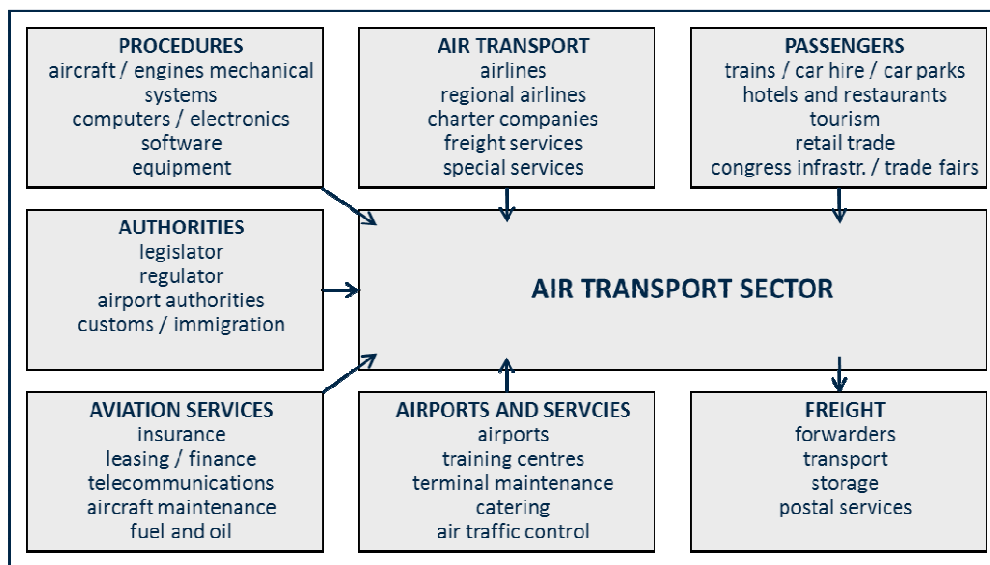


Figure 5: Key stakeholder of the air transport sector [6]

4.3 Model Approach for Regional Economic Impact Assessment

4.3.1 Approach

In general, regional economic impact assessment is a six-step-model:

1. Analysis of the economic and social structure of the airport region
2. Assessment of direct employment and income effects
3. Assessment of indirect employment and income effects
4. Compilation of induced employment and income effects
5. Analysis of catalytic effects
6. Defining fiscal effects

4.3.2 Economic and Social Structure of the Airport Region

For understanding the economic and social structure of the airport region, the following data is required as relevant information for the impact assessment:

- Population and density
- Unemployment rates
- Employees per business sector
- Number of companies per businesses category
- Gross value added per resident or employee by business categories
- Available household income per resident

The analysis of the structural data enables identification of regional strengths and weaknesses and first insight into the role and impact of the airport.

4.3.3 Direct Employment and Income Effects

Direct effects are linked to the operation of the airport and are generated from airport operators, airlines, handling companies, air navigation service providers and other businesses.

Firstly, all relevant stakeholders are requested to provide data on a number of FTEs as input for the direct employment effect' assessment. Next, the direct income effects are determined by value production data, gross value added as well as a total of gross salaries. Potential data gaps can be filled by public information sources, such as press releases and business reports or statistical estimations (e.g. regression analysis).

By applying national account systems, as published by statistical offices, sector-specific coefficient "production value per employee" can be derived. Multiplied by the number of FTEs in a particular company, net revenues can be derived. Open data on advance payments or gross wages are calculated by branch-specific coefficients: "gross value added per employee" and "wages per employee".

The regional economic impact study for Bremen Airport provides proven estimations on direct effects for the year 2012, which can serve as an example for many other assessments. (see Table 2 below).

Effect	Value
Employees	6,646
Production value	€ 1,460.7 Mln.
Production value per employee	€219,8k
Gross value added	€ 462,3 Mln.
Gross value added per employee	€ 69,6k
Total wages	€ 291,3 Mln. €
Wage per employee	€ 43,6k

Table 2: Direct effects of Bremen airport [5]

4.3.4 Indirect Employment and Income Effects

Indirect effects summarize employment and GVA generated from the chain of goods and services. Therefore, advance payments and investments are generated through contractual relationships and have a bigger impact on regional income and employment [5].

Advance payments

The compilation of advance payments for airport operating companies and other companies located in its proximity is typically conducted by a written inquiry. The missing or implausible data is in most cases filled in by sectorial average figures from official statistics.

Investments

Investments have a great impact on indirect effects of an airport. The data is collected from field research.

Indirect effects

For the estimation of the indirect gross value, the Input-Output-Chart, as published by statistical offices, provides average factors and values. Thus, the ratios between gross value added and employee salaries are calculated for every sector. Here indirect gross salaries are calculated by subtracting payments for social insurances, whereas indirect employment is estimated by defining the ratio between the average gross salary and total salaries.

4.3.5 Induced Employment and Income Effects

Triggered by direct and indirect effects, additional consumer spending lever other induced effects (multiplier effect).

It is assumed, that 'economic actors' spent their income on purchasing and consuming other goods and services, which again induces more income and employment. The remaining income is to be deducted or saved for tax payments. Therefore, the consumption rate of 60 per cent implies that 60 per cent of the direct and indirect salaries are directly spent on goods and service consumption, generating induced effects in terms of value and employment.

4.3.6 Assessment of Catalytic Effects

All direct and indirect induced effects and impacts are related to the airport operation. Additionally, employment and income effects resulting from the attractiveness of the region are taken into account in the analysis of catalytic effects. Therefore, based on reliable connectivity, companies decide to invest in the region as well as tourists may decide to use the airport as incoming gateway.

In general, many types of catalytic effects can be found in the scientific literature; nevertheless it is really hard to find a proof for direct links between a regional airport and catalytic effects. It especially applies to companies investing in the region, which may not be able to estimate the number of jobs and the amount of income which depend on the gateway function of the airport. Moreover input-output values are not available for this purpose. Based on best practices, the only reliable approach to be applied is conducting surveys among companies and investors.

Focusing on the tourism demand, it is likely to find reliable data concerning job creation in the hospitality industry and information on overnight-stays in statistics. The term "tourist" applies to private and business travellers. Air traffic passengers (incoming tourists) spend money in their destination and generate added value, income and employment. The amount of expenditure depends on the prosperity of their home countries and tourists' stay duration. At the same time people from a given region use their airport as point of departure for their vacation and business trips ("outgoing-tourism"). The outgoing tourism also generates positive economic effects, if departing passengers spend money on travel related purposes prior to their departure.

The figure below exemplifies a chosen approach for catalytic effects estimation of incoming tourists. In this case estimations come from the application of sector-specific production values.

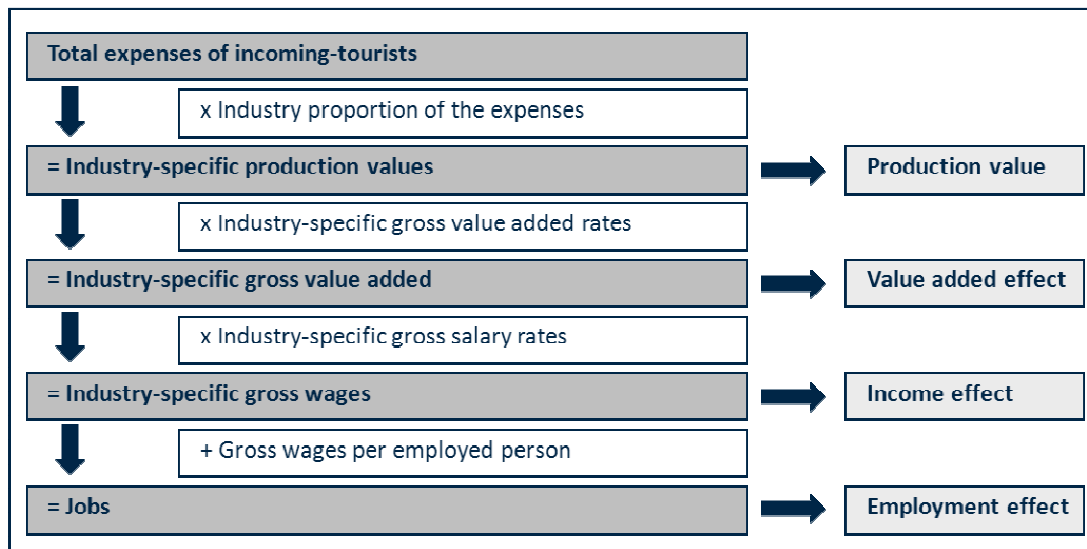


Figure 6: Determination of the income and employment effects [5]

4.3.7 Determination of Fiscal Effects

By focusing on the fiscal effects of airports, the following effects of public expenditure and public income can be identified.

Public expenditure	Public income
Investments and aids received from the government budget	Taxes on airport production (direct / indirect / induced)
Loss compensation for the airport operating company	Taxes raised from the usage of the airport (catalytic)
Minor social transfers	Social security contributions

Table 3: Fiscal effects of Airports

Fiscal effects account for all taxes collected from the value chain of goods and services production. In order to estimate fiscal effects in relation to direct, indirect and induced income effects the following categories of taxes should be considered:

- income taxes
- value added taxes (VAT)
- commercial and corporate taxes (revenue taxes)
- energy taxes.

In order to calculate income tax rates, the direct, indirect or induced employees' salaries are taken into account. The gross value added is considered as a baseline for the corporate tax and energy tax deduction. For the revenue taxes, the operating profit function is considered as input variable.

4.4 Regional Economic Impact Assessment of Airports – Scientific Model

The model approach presented in Figure 7 describes the context and linkage between direct effects, indirect effects, induced effects and catalytic effects.

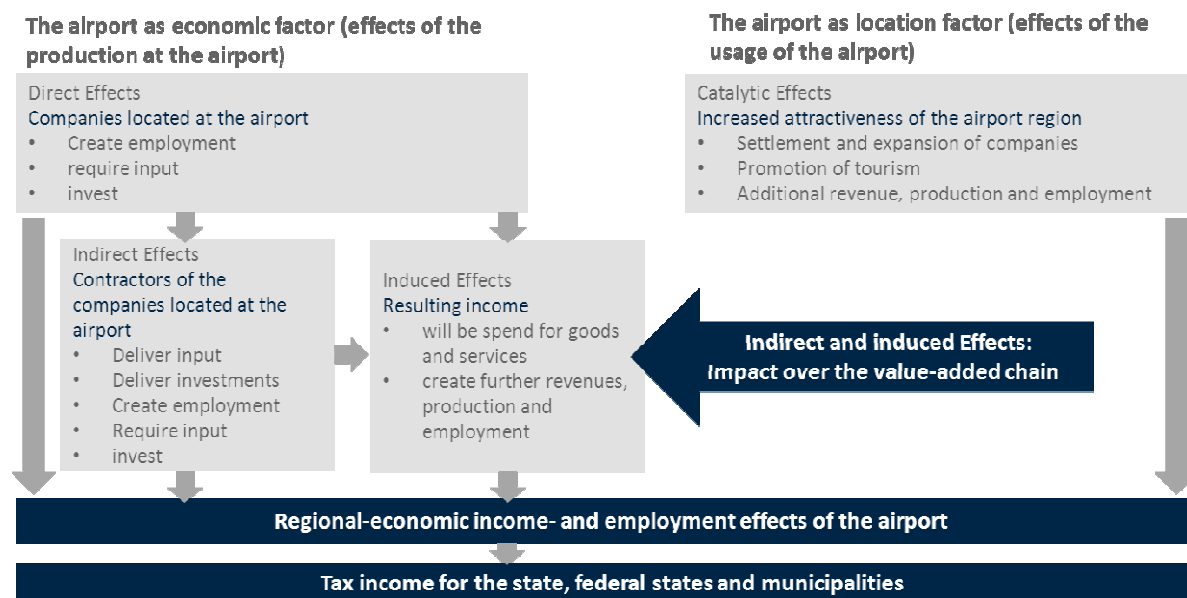


Figure 7: Regional economic impact assessment of airports – a model approach [5, 6]

5 Economic and Social Impact of the GSA Airports

5.1 Objectives and Approach

Many airport-related companies and authorities developed various impact studies as a multi-purpose tool, whose aim was to:

- prove the significance and role of airports for regional economy and society
- justify public funding and airport expansion plans

This study attempted to highlight the total contribution of the heterogeneous group of the GSA airports to economies and societies in the INTERREG North Sea Region. By acknowledging various data from partner airports, the approach provides results by taking into account all information received from individual GSA airports on the one hand, and benchmarking to close data gaps, on the other. To ensure reliable study results and conclusions, the induced and catalytic effects were not taken into account in terms of estimating numbers for these effects.

The approach follows five steps:

1. Initial analysis of GSA airports
2. Data compilation and assessment
3. Benchmarking regional economic effects of airports
4. Regional economic impact of GSA airports
5. Evaluation and discussion of results

5.2 Initial Analysis of the GSA Airports

Before assessing the regional economic impact, all GSA airports were analysed with regard to their origin, traffic performance and specific characteristics.

The GSA airports are located in the North Sea Region in Norway, Denmark, Germany, The Netherlands, Belgium and the United Kingdom. Following previously presented definitions, airports with >200k passengers are defined as regional airports, whereas smaller ones with less traffic, are classified as small regional airports.

The figure and map below provide an initial overview on all GSA partner airports.

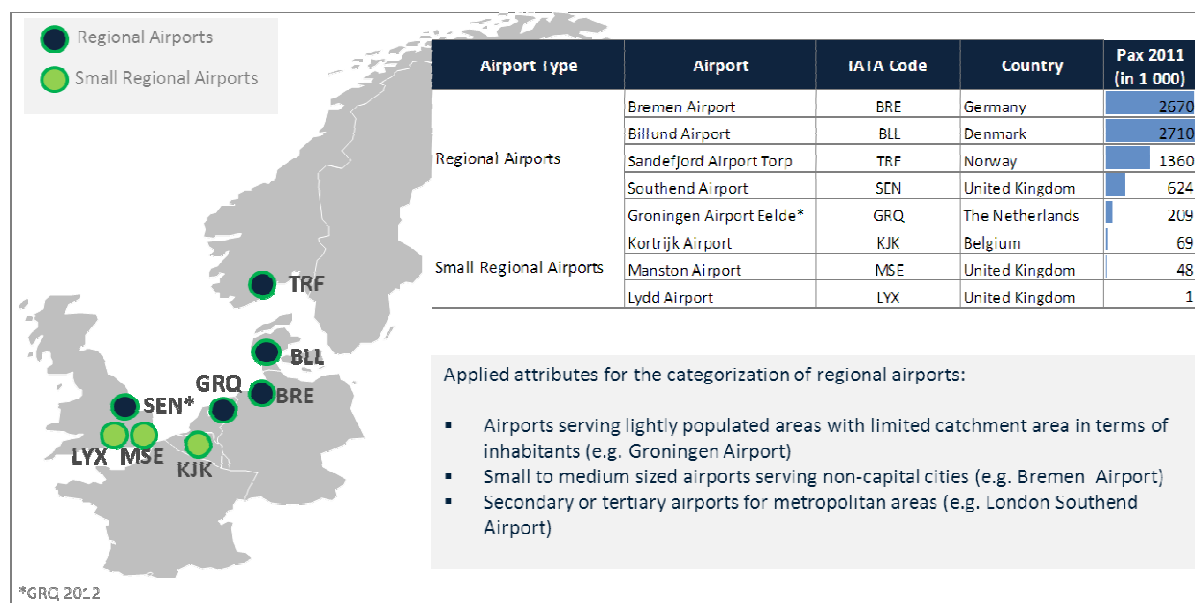


Figure 8: Overview on GSA airports

The traffic analysis underlines the heterogeneous structure of all GSA airports. Taking into consideration the passenger volume and Work Load units (passengers plus cargo in 100kg units – WLU), Bremen Airport and Billund Airport appear to be the biggest airports, followed by Sandefjord Airport Torp. As London Southend Airport started wider commercial operation in 2012, all traffic figures in the analysis are for the year 2012.

See below the traffic statistics:

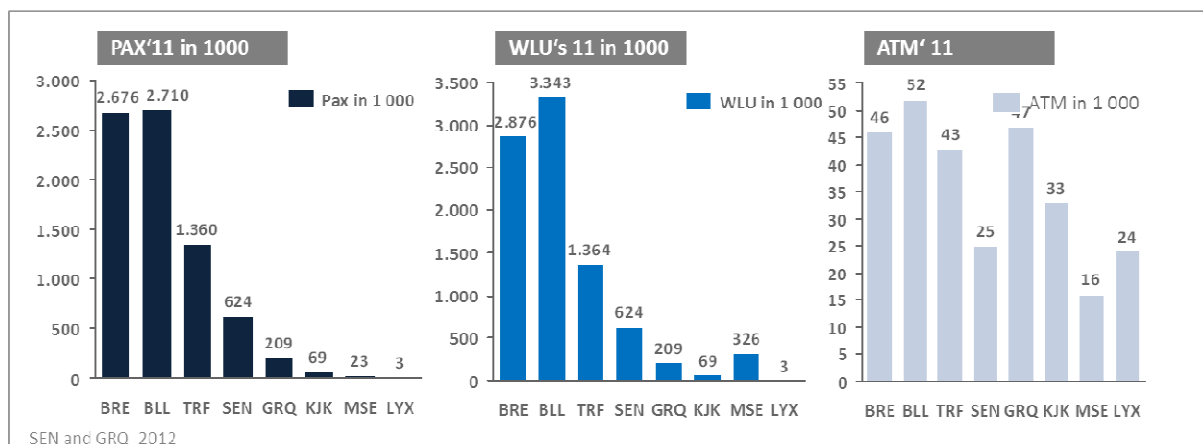


Figure 9: GSA airports – Traffic statistics

The airports under investigation show significant differences in business models and ownerships. Especially Bremen, Billund and Sandefjord Torp provide reliable network connectivity to hub airports with high flight frequency, while serving as a base for low cost carriers. Others serve as general aviation airports (Kortrijk Airport and Lydd Airport) or focus on ad-hoc cargo transportation (Manston Airport).

The GSA airports differ significantly in terms of the ownership structure. While many airports in the United Kingdom have been privatized (e.g. London Southend Airport is owned and operated by the Stobart Group), other GSA airports are managed by private entities but at the same time are owned by public authorities. The figure below provides further details of each airport.

BRE	BLL	TRF	SEN
<ul style="list-style-type: none"> Regional Airport PUBLIC Ownership Close to city centre Strong LOCAL BUSINESS (Airbus, MB) RYANAIR TERMINAL 	<ul style="list-style-type: none"> Regional Airport PUBLIC Ownership Big a CARGO consolidation service (63,000 t. pa) Strong LOCAL BUSINESS (Lego) Home based LCC 	<ul style="list-style-type: none"> Regional Airport PUBLIC / PRIVATE Ownership DIVERSIFIED CUSTOMER base incl. KLM, Ryanair, SAS 	<ul style="list-style-type: none"> Regional Airport PRIVATE Ownership New Airport Infrastructure in use since 2012 TRAIN STATION at terminal Based LCC
GRQ	KJK	MSE	LYX
<ul style="list-style-type: none"> Regional Airport PUBLIC Ownership Focus on touristic carriers and LCC New LCC ops. FLIGHTSCHOOL A/P 	<ul style="list-style-type: none"> Small Regional Airport PUBLIC Ownership Focus on BUSINESS AVIATION Flight schools & Helicopter Strong local business 	<ul style="list-style-type: none"> Small Regional Airport PRIVATE Ownership Currently for SALE High CARGO volumes (Ad hoc cargo) 	<ul style="list-style-type: none"> Airfield PRIVATE Ownership BUSINESS AVIATION Very limited RWY length

Figure 10: Characteristics of GSA airports

5.3 Data Compilation and Assessment

As specified in the previous chapter (4.3), literature provides widely accepted methodologies to calculate direct, indirect, induced and catalytic effects generated from airport operations. Respective impact studies on regional characteristics and strengths were developed mostly by universities, consultancies and trade associations for specific airport regions.

The purpose of the study was to highlight the total contribution of GSA airports to economies and societies in the INTERREG North Sea Region. Taking into account all available data, the balanced approach enables obtaining reliable results by including detailed information from individual GSA airports. Benchmarking is applied to fill gaps in direct and indirect effects at airport level. In order to ensure reliable results and conclusions of the study, induced and catalytic effect are not quantified.

The figure below provides an overview of availability of the GSA airport impact studies along with reference years.

Airport	IATA Code	Country	Regional Economic Study	Reference Year	Action
Bremen Airport	BRE	Germany	✓	2011	Adoption
Billund Airport	BLL	Denmark	✗	-	Estimation
Sandefjord Airport Torp	TRF	Norway	✗	-	Estimation
Southend Airport	SEN	United Kingdom	✓	2011	Adoption
Groningen Airport Eelde	GRQ	The Netherlands	✗	-	Estimation
Kortrijk Airport	KJK	Belgium	✓	2006	Adoption
Manston Airport	MSE	United Kingdom	✓	2010	Adoption
Lydd Airport	LYX	United Kingdom	✗	-	Estimation*

* An economic Impact study was completed as part of the planning application but is not publicly available.

Table 4: Availability of regional economic impact studies for GSA airports

Direct and indirect employment effects and the value contribution are adopted for the airport of Bremen [5], Southend [9], Kortrijk [10] and Manston [6]. For the remaining GSA airports respective estimations are assumed by benchmarking.

5.4 Benchmarking airports in terms of their effect on regional economy

The selection of airports is based on the database analysis of regional economic studies against the following criteria:

- Regional airport
- Small regional airport and airfield
- North West European Countries
- Reference year between 2000 and 2011

16 airport specific regional economic studies are available as input for further benchmarking purposes [4][5][6][7][8][9][10][11][12][13][14][15][16].

Type	Airport	IATA Code	Country	PAX (in mln)	WLU (in mln)	ATM (in 1000)	Reference Year	RES Quality
Regional Airports	Bristol	BRS	UK	5	5	78	2005	●
	Hahn	HHN	DE	3	5	37	2005	●
	Liege	LGG	B	0	5	46	2006	●
	Aberdeen	ABZ	UK	3	3	109	2009	●
	Bremen	BRE	DE				2011	●
	Leipzig-Halle	LEJ	DE	2	2	42	2001	●
	Brussel-Charleroi	CRL	B	2	2	66	2006	●
	Dortmund	DTM	DE	2	2	44	2006	●
	Münster-Osnabrück	FMO	DE	2	2	39	2007	●
	Southend	SEN	UK				2011	●
	Friedrichshafen	FDH	DE	1	1	44	2008	●
	Kassel-Calden	KSF	DE	1	1	35	2005	●
	Ostend	OST	B	0	1	33	2006	●
	Antwerp	ANR	B	0	0	55	2006	●
Small Regional Airports	Kortrijk	KJK	B				2006	●
	Manston	MSE	UK				2010	●

Table 5: Airports benchmarking – overview

All listed airports were assessed according to their recorded Work Load Units. Considering the threshold of 200k WLU, the airports were divided into a group of regional airports and small regional airports.

By focusing on air traffic movements (ATM), the traffic volumes revealed to be independent from the size of the airports. Especially smaller airports recorded high values generated from flight school and maintenance activities for small aircraft (e.g. Kortrijk airport).

Benchmarking is a measurement tool, where specific indicators result in a metric of performance. Therefore, the defined KPIs must be relevant for further comparison of airport performance in terms of their regional economic impact. As WLU volumes reflect traffic sizes regardless of business, regional airports are benchmarked according to the following indicators:

- Direct jobs per mln WLU's
- Indirect jobs per mln WLU's
- Direct gross value added (GVA) per mln WLU's
- Indirect gross value added (GVA) per mln WLU's

Employment impact and value creation at small regional airports and airfields are mainly related to the air traffic movements, therefore the following indicators are defined:

- Direct jobs per 1000 ATM
- Indirect jobs per 1000 ATM
- Direct gross value added (GVA) per 1000 ATM
- Indirect gross value added (GVA) per 1000 ATM

The table below presents the benchmarking results.

Type	Airport	IATA Code	Country	Direct Jobs / Mln WLU	Indirect Jobs / Mln WLU	Direct GVA (Mln) / Mln WLU	Indirect GVA (Mln) / Mln WLU
Regional Airports	Bristol	BRS	UK	490	150	20	40
	Hahn	HHN	DE	430	600	20	30
	Liege	LGG	B	350	590	30	50
	Aberdeen	ABZ	UK	770	840	50	50
	Bremen	BRE	DE	2310	4490	160	300
	Leipzig-Halle	LEJ	DE	890	1620	50	80
	Brussel-Charleroi	CRL	B	430	490	30	40
	Dortmund	DTM	DE	760	1300	60	80
	Münster-Osnabrück	FMO	DE	1000	1280	50	70
	Southend	SEN	UK	1750	340	80	10
	Friedrichshafen	FDH	DE	1030	1910	50	100
	Kassel-Calden	KSF	DE	1730	2540	110	140
	Ostend	OST	B	390	410	30	30
	Average			950	1270	60	80

Table 6: Regional airports – benchmarking results

The assumed heterogeneity of airports is confirmed by the above results. The results show that Bremen airport has an outstanding significance for the regional economy also in comparison with

other airports such as Bristol [5][8]. The comparison also shows that UK and German airports differ from other airports with regard to the impact indicators; the first group shows comparably low values of indirect effects and the latter rather high indirect impact (compare regional economic studies).

Model calculations show 950 direct jobs and €60 mln. direct GVA per 1 mln. WLU and indirect 1270 jobs and 80 mln. GVA per 1 mln. WLU.

The average values match study findings of the Airport Council International (ACI), according to which the average value of 950 jobs per 1 million passengers is estimated.

Type	Airport	IATA Code	Country	Direct Jobs / 1 000 ATM	Indirect Jobs / 1 000 ATM	Direct GVA (Mln) / 1 000 ATM	Indirect GVA (Mln) / 1 000 ATM
Small Regional Airports	Antwerp	ANR	B	9	15	1	1
	Kortrijk	KJK	B				
	Manston	MSE	UK	9	15		
	Average			7	12	0	1

Table 7: Small regional airports – benchmarking results

Based on a small sample of small regional airports, it is estimated that 7 direct jobs and € <1 mln. direct GVA per 1000 ATM and 12 indirect jobs and € 1 mln. indirect GVA per 1000 ATM shall be generated.

5.5 Economic Impact of Regional Airports - Regression Analyses

Apart from the benchmarking of studies on regional economic impact, other approaches were also assessed. Regression analyses were setup to derive equations for better estimations of regional economic impact.

While analysing a set of impact studies, several regressions were computed and interpreted. After a review of the first results followed by experts' discussions, the approach was disregarded due to the following reasons:

- Limited number of observations and input data
- Multicollinearity between independent variables
- Limited significance of results

The regression analysis' results and findings have not been considered any further, however for scientific purposes it seems promising to extend the approach.

An insight and more details on the regression analysis are provided in the appendix.

5.6 Regional Economic Impact of the GSA Airports

The overall regional economic impact of GSA is calculated by summarizing available data of direct and indirect effects, as well as estimations for all GSA airports. Firstly, the airport-related data, which is available in regional economic studies, is applied. Secondly, estimations for regional GSA airports as Billund, Sandefjord and Groningen are derived by weighting calculated average KPI values according to the airport-specific WLU volumes. For Lydd airport estimations are computed by weighting average KPI values (effect per 1 000 ATM) with respective volumes of air traffic movements. Finally, the total economic impact is derived from the summary of values and effect per airport.

Results are listed in the table below.

Type	Airport	IATA Code	Country	Direct Jobs	Indirect Jobs	Direct GVA (Mln)	Indirect GVA (Mln)	Reliability	Source
Regional Airports	Bremen Airport	BRE	DE	6650	12500	450	870	1	RES
	Billund Airport	BLL	DK	3170	4250	190	270	0	Estimation
	Sandefjord Airport Torp	TRF	NO	1290	1740	80	110	0	Estimation
	Southend Airport	SEN	UK	1080	210	50	10	1	RES
	Groningen Airport Eelde	GRQ	NL	200	270	10	20	0	Estimation
Small Regional Airports	Kortrijk Airport	KJK	B	150	230	10	10	1	RES
	Manston Airport	MSF	UK	140	250	0	0	1	RES
	Lydd Airport	LYX	UK	40	70	0	0	0	Estimation
GSA Airports				12730	19920	800	1299		

Table 8: Regional economic impact of GSA airports

Table 8 shows that the GSA partners play a significant role in the regional economies in the INTERREG IVb North Sea Region. All GSA airports generate in total, 33,000 direct and indirect FTEs and a total gross value added of more than two billion Euros.

Due to data limitations and methodological uncertainties the study setup has not considered the analysis and estimation of induced effects and catalytic effects (see 4.3.1 and 5.1). Nevertheless, the positive contribution of induced and catalytic effects, as proved by other assessments, has been recognized and there is prospect of the total regional economic impact of the GSA airports on the welfare of the North Sea Region to be even higher.

Figure 11 provides employment values in total and GVA impact (Gross Value Added) of the GSA airports.

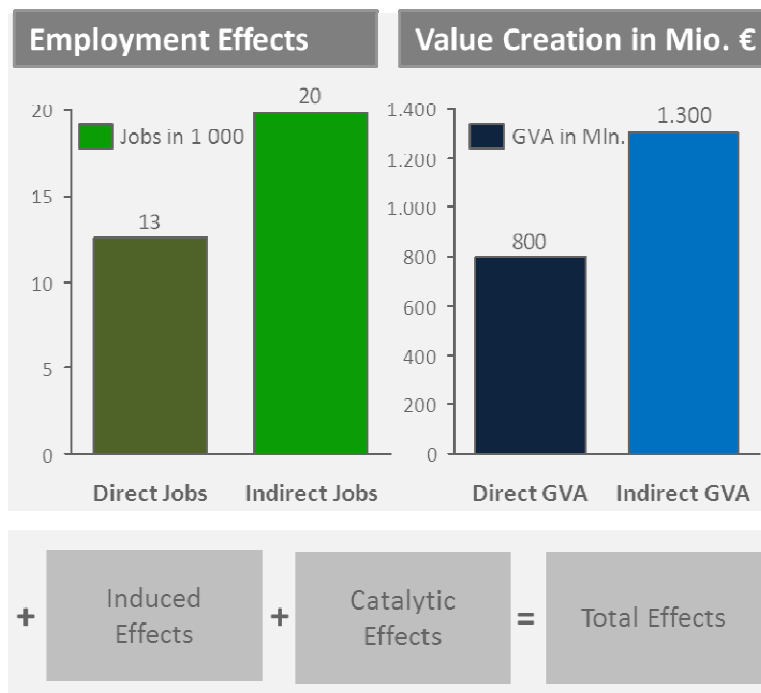


Figure 11: Regional economic impact of GSA airports – total value

5.7 Evaluation of Results

The key objective of the study was to assess and validate the overall regional economic impact of GSA airports by developing a pragmatic approach, and following that, to arrive at clear conclusions. Therefore, all available regional economic studies and data have been taken into consideration in the applied methodology. The average values for airports have been assumed too, yet without any impact assessment.

The chosen approach incorporates consideration of certain advantages and disadvantages:

Advantages	Disadvantages
Pragmatic approach for assessment of regional economic effects	Higher reliability of airport specific regional economic impact studies
Full consideration of available studies	Methodological differences in the analysed regional economic studies might lead to distortions
Calculated benchmarks confirmed by wider ACI study methodology	Local conditions cannot be considered (e.g. BLL and Legoland)
Representative data as a sample for benchmarking (e.g. countries, types of airports)	Regression tests show decreasing significance of smaller airports
High significance as conclusions are exclusively made on reliable direct and indirect effects	Not a representative sample size for benchmarking small regional airports
...	...

Table 9: Applied approach – evaluation

Summary of the study results and findings:

- The estimated direct and indirect employment and income influence of all GSA airports underlines their significant role for the economic welfare for the INTERREG IVb North Sea region.
- Positive contribution of the GSA airports to the welfare of the North Sea Region, in terms of induced and catalytic effects, has been recognised. There is also prospect that the overall regional economic impact will be even higher.
- The number of direct employment effects underlines the strong role of the GSA airport operators, which account for a total of 13,000 FTEs and a GVA of € 800 mln.
- The study results outline 20,000 FTEs and € 1,200 mln of GVA. As indirect effects depend on the operation of GSA airports - the total number of estimated indirect effects underlines the role of the GSA airports, which can be listed as follows:
 - They serve as regional gateway for companies (e.g. Groningen Airport) and households,
 - Business location factor for regional development (e.g. Kortrijk Airport, Manston Airport),
 - Foreign Direct Investments (e.g. Airbus S.A. at Bremen Airport),
 - Infrastructure to attract inbound tourism (Sandefjord, Legoland in Billund),
 - Complementary airport infrastructure to major hub airports (e.g. Southend Airport).

6 Trends and Challenges for Regional Airports

6.1 SWOT Analysis

The SWOT analysis is based on interviews with representatives of all the above mentioned GSA airports. The participants were asked to define their own, as well as other regional airports' strengths, weaknesses, opportunities and threats.[17][18][19][20][21][22][23][24]. Further consideration of market analyses and study input allowed to prepare feedback, which was generalized and harmonized for the sake of better universality and validity.

6.1.1 Strengths

Regional airports offer significantly lower landing and parking charges as well as lower handling fees to attract airlines and traffic volumes from other competing (hub) airports. As regional airports are comparably uncongested and unconstrained, passengers and airlines benefit from relatively short processing times and reliable service levels (waiting time at the security control, minimum turnaround times, etc.), which is considered as an advantage especially in metropolitan areas with congested hub airports (e.g. for Southend Airport). Moreover, regional airports enable high punctuality levels as the complexity of ground processes and process dependencies (e.g. transfer processes) are limited in comparison with hub airports.

Considering the economic and social impact as well as the gateway function, regional airports are widely supported by regional governments, authorities and economic associations in terms of funding, legislation and approvals. Especially in remote regions, such as Billund, Sandefjord or Groningen, the majority of neighbours typically have a positive attitude towards airport operations.

Internal	Strengths <ul style="list-style-type: none"> • Low operational costs for airlines (landing fees, handling charges, parking fees) • High customer convenience and short processing times • High competitive service levels for airlines and other customer groups • High operational stability (punctuality) • Significant regional economic impact 	Weaknesses <ul style="list-style-type: none"> • High strategic dependence on a number of airlines • Relatively high unit costs • Inflexible staff roster (seasonality, peak times) • Dependence on public funding / subsidies • Limited potential for non-aviation revenues (retail) • Low margin business (lack of private equity) • Limited natural catchment area and demanding strategic dependence on a limited number of airlines
	Opportunities <ul style="list-style-type: none"> • Development and upgrade of airport infrastructure • Attracting airlines and traffic from congested hub airports • Development of niche markets (e.g. charter, cargo, MRO) • Increasing additional revenues by developing airport business areas (offices, hotels, etc.) • Better regional marketing and distribution of public funds • Smart cost reductions (energy supplier, etc.) 	Threats <ul style="list-style-type: none"> • Increasing cost pressure due to tightening European regulations • Distortions about national taxation on aviation • Continuous increase of jet fuel prices and energy costs • Reduction of public funding / subsidies for regional airports • Increasing public pressure on regional airports • Growing competition between aircraft and high-speed trains

Figure 12: Regional airports – SWOT analysis

6.1.2 Weaknesses

Key challenges for regional airports arise out of the high strategic and economic dependence on a limited number of airlines, often associated with the same type of traffic (e.g. Low Cost). Therefore, airports aim to diversify the customer base in order to reduce risks and economic dependence.

The operation of regional airports is associated with high fixed costs and unit costs resulting from the construction and maintenance of infrastructure, ground service equipment costs and full-time staff employment. According to the GSA airports survey, labour costs are considered to be the biggest challenge. The reason for that is complexity of a staff roster in relation to the daily, weekly, monthly and seasonal variations in peak and off-peak traffic. Many regional airports experience strong operational peaks when feeding hub airports, but also experience lack of work load during off-peak periods. The interviewed partners have observed much stronger variation of traffic volume in different seasons, whose consequence is overemployment in winter (95% available staff for 50% passengers as compared with summer time).

Regional airports experience strong financial challenges in comparison with hub airports, due to the customer structure (low revenues by handling charges and non-aviation revenues) and traffic volume (lack of demand, temporarily overcapacities). Hence, many regional airports do not operate at a profitable cost base and rely on public sector funding, which is the subject of several assessments of European institutions aimed to avoid uncompetitive behaviour in open markets. In order to mitigate the risk of negative impacts of European legislation on public subsidies, regional airports need to find solutions to improve their profitability.

For many regional airports most relevant revenue sources remain aeronautical services and charges, which are under high pressure in airport competition and in negotiations with airport users. The limited number of passengers, employees, and 'meeters and greeters' limits the exploration of non-aeronautical revenues at regional airports as compared with mid-sized and hub-airports.

Many regional airport operators, commonly considered as low-margin businesses, have very limited access to private equity as a source of development for the airport. However, it is the location and expected demand which attract private investors (e.g. development of Southend Airport in greater London area by Stobart Group).

Over the last few decades many regional airports have been upgraded, aiming particularly to attract low cost carriers. Initially the passenger numbers increased, as low-cost passengers accepted longer access times to regional airports in return for low ticket prices. Nowadays, however, more and more regional airports are competing with mature low cost demand while Low Cost Carriers start to shift parts of their business to metropolitan areas.

6.1.3 Opportunities

Public authorities consider funding and support of regional airports as instrument and opportunity for location development, regional job and value creation, gateway development and attracting inward investments.

As European hub airports have been facing more and more capacity constraints related to the cost increase and operational challenges, regional airports, which are close to metropolitan areas, benefit from an overspill of passenger and cargo volumes. Nevertheless, it is likely that some stakeholders, such as maintenance companies or flight schools, might decide to relocate their activities to other, smaller airports.

The land available in dedicated zones of regional airports could be managed by real estate agencies, which fact would bring additional revenues from the development of business parks and renewable energy plants (e.g. Weeze Airport decided to lease parts of the area for the use of solar panels).

To mitigate the risk of tightening legislation and regulations for regional airports as well as to make use of regional businesses, cross-stakeholder networks need to be developed in order to improve community based relationships.

New technologies, funding opportunities and proactive management approaches allow regional airports to keep their costs at a competitive level. Business performance might also be improved by more efficient energy use, funding power plants and developing cooperation models in order to share procurement and maintenance costs.

6.1.4 Threats

Regional airports operate in a highly regulated environment, often focused on hub airports, which does not consider the needs of smaller airports. Regional airports need to face increasing costs of operations, changes in national and European legislation, which limit the willingness to invest capital and discourage potential investors. One of the most important threat reveals of tightening safety and security regulations, which are hard to comply with, and what is more, the unpredictability of regulatory adoptions might harm the overall airport business. Apart from that, national taxes on aviation were introduced, which leads to continuous distortions in cross border competition of airports. The tightening regulatory environment might be also seen as part of a sceptical public discourse on global sustainability and carbon emission in the context of the role and responsibility of the entire aviation sector.

The growing costs of energy supply and limited funding opportunities (e.g. assessment of guidelines for airport subsidies by the European Commission) accompanied by increasing jet fuel prices tighten the economic viability, especially of small and regional airports. More threats arise out of the increasing competition between airports, modes of transports and technology. Following the principles of the free market, many regional airports have been upgraded in the last decade, thanks to which they attracted new airlines and traffic, and thus strengthened regional economy. However,

overcapacities, operational inefficiencies and continuous losses might tighten market conditions.

Additionally, as hub airports are more and more limited by capacity, hub airlines such as Lufthansa or British Airlines tend to shift rare slots from low-margin feeder connections to more valuable routes to intercontinental destinations. This has a negative impact on the regional connectivity as hub feeder flights from remote regions are subject to reductions or changes.

Supported by heavy investment in European high-speed rail networks, regional airports might also face bigger competition from railways, what might result in a stagnation or decrease of the passenger volume, especially to/from short-haul destinations (e.g. Amsterdam – London, Brussels-Paris-London).

Finally, on the basis of studies on technology trends, it is expected that there will be higher penetration of market by substitution technologies, such as video conferencing. Some of these technologies are already available, but potential impacts on the growth of air traffic demand are still to be examined.

6.2 European Airport Policy Outlook

The following section provides an outlook of European airport policy, focusing on the key initiatives which might cause significant changes over the next years:

- European Airport Package,
- Assessment of European Aviation Guidelines,
- EU Safety Regulations.

6.2.1 EU Airport Package

The European Commission has proposed a set of regulation entitled “EU Airport Package” to boost capacity and enhance quality at airports. The proposed regulations relate to airport slot policies, ground handling and aircraft noise [25].

- In order to exploit the optimum slot capacity airlines shall be entitled to sell slots, provide transparency and adherence for the use of airport slots.
- Airports shall play a stronger role in coordinating ground handling services while the minimum number of service providers shall be lifted. Apart from that, respective working conditions should be controlled and protected by national authorities.
- Decisions on noise restrictions shall be more transparent and cost-effective and therefore clear to the public.

The European Commission expects wide-scale benefits for all key stakeholders:

- Passengers shall experience higher reliability of air transport networks, punctuality levels and lower fares
- Airlines shall improve slot holdings and shall have more choice with regard to ground handling companies
- Airports shall provide better customer services and use infrastructure more efficiently
- Ground Handling companies shall face fair competition
- Noise restrictions shall be more transparent to populations
- EU economy shall be able to generate significant economic benefits.

6.2.2 Review of EU Aviation Guidelines

After implementation of aviation guidelines (1994, 2005) for airports financing and start-up aid for airlines departing from regional airports, the European Commission has begun an evaluation of aviation sector as it has evolved tremendously in the last few years. [26]

The following cases were brought up:

- Various court verdicts confirmed that building and operating an airport shall be considered as economic activity and therefore subject to aviation guidelines
- Complex procedures for establishing the start-up aid for routes under Public Service Obligations become evident,
- Increasing number of reports stating duplication loss making airports and growing overcapacities of regional airports.

The Commission's assessment on the application of the State Aid rules to the aviation industry, aims to ensure smooth functioning of the internal market, for which it is important to find the right balance between the contribution of airports and airlines to regional development distortions of competition in a liberalised industry.[26]

The assessment is still open and can result in:

- no action (1994 and 2005 aviation guidelines remain unchanged without any modification);
- modification of the 1994 and 2005 aviation guidelines;
- application of the general State Aid rules.

In case of any changes to the aviation guidelines, public authorities along with airports and airlines will be affected by that and might be required to change funding practices. Since smaller regional airports currently benefit from the public sector financial support, any changes to the policy might challenge funding mechanisms fundamentally.

6.2.3 EU Safety Regulation

Based on EC Regulation 1108/2009 the European Parliament and European Council extended the competences of EASA (European Aviation Safety Agency) in 2009 to safety aerodromes, air traffic management and air navigation services. [27]

In December 2001 EASA published „Authority, Organization and Operations Requirements for Aerodromes“ - draft regulations for aerodromes in a Notice of Proposed Amendment (NPA) In general, following ICAO Annex 14, the proposed regulations contain new elements, such as content and structure additions. Significant changes are expected on existing concepts, responsibilities, certificates and requirements related to safety oversight, aerodrome design and operations with economic and financial implications for airports. Airport associations fear, that regional airports and airfields struggle to achieve full compliance due to specific characteristics, such as very short runways.

Following the consultation period, the regulations, which are expected to come into force in 2014, with a 48-month-implementation period and regulatory compliance, shall be made applicable to national aviation authorities and aerodrome operators. [27]

7 Critical Success Factors for Regional Airports

By comparing different types of regional airports some business models seem to be more successful in terms of traffic volumes or revenues than others. Taking into account the results presented in the previous sections, the following critical success factors can be identified for regional airports:

- **Catchment Area:** typically defined by the 60 to 90 minutes driving time isochrones. The quality of the catchment area relates to the number of competing airports, its inhabitants, gross domestic product, household income, strength and global integration of regional economy and business clusters, as well as attractiveness for incoming tourism.
- **Airport Infrastructure:** infrastructure, which is a key factor for regional airports, is defined by the capacity and the level of service as prerequisite for efficient airport operation, as well as its acceptance by airlines, passengers and other customer groups.
- **Operating Hours:** Extended operating hours at regional airports are important for airlines, which use the airport as base for aircraft. Airlines need to produce a significant number of block hours per aircraft to perform profitable operations and therefore they require flexible night flight regulations.
- **Airlines and Connectivity:** the success of an airport is measured by the level of airline engagement, number of carriers serving the airport and connectivity. Considering a given framework of conditions and regional attractiveness, an airline decides to base and/or serve the airport (or not) by highly profitable route connections; the presence of airlines and the route network is based on the size of the catchment area, the regional connectivity and airport specific employment and value generation. Following that step, other stakeholders might be attracted, e.g. investments, new routes, business parks, etc.
- **Airport Management:** The term is related to understanding of future trends and challenges, as well as awareness of specific strengths, weaknesses, opportunities and threats. Successful airport managers follow reliable long-term development plans to ensure long-lasting profitability and corporate social responsibility to stakeholders and other external parties.
- **Stakeholder Cooperation:** Stakeholder cooperation and communication, which constitute foundations of successful airport management to favour full business development along with economic associations, to optimise airline marketing and develop incoming tourism with travel agencies. Cooperation with authorities helps to improve regulatory conditions, whereas transparent and open communication with communities improves the public acceptance of airports.

8 Summary

The study covered the following pre-defined objectives:

- Assessment of the GSA airports' impact on regional economy,
- Understanding of the strategic position of regional airports,
- Development of a policy outlook, as a guideline for further advice on policy.

The results of the study on the GSA airports proved their significant contribution to the economic welfare of the NSR as well as their functional role and importance for the region. They serve as:

- Regional gateway (e.g. Groningen Airport),
- Business location factor for regional development (e.g. Kortrijk Airport, Manston Airport),
- Lever to bring foreign investments (e.g. Airbus S.A. at Bremen Airport),
- Infrastructure to attract potential inbound tourism (Sandefjord, Legoland in Billund),
- Complementary infrastructure for major hub airports (e.g. Southend Airport).
- The study estimations underline the significance of numbers:
 - Direct effects account for 13,000 FTEs and a GVA of € 800 mln. in total.
 - Indirect effects account for 20,000 FTEs and GVA of € 1.2 bln. in total.
- By acknowledging positive contribution of induced and catalytic effects, it can be assumed the impact of GSA airports on the welfare of the North Sea Region should be even bigger

The strategic position of regional airports has been assessed by the SWOT analysis, with the following results:

- Strengths: comparably low operational cost both for airport users and high customer convenience,
- Weaknesses: high dependence on a number of airlines, high unit cost for airport operators, dependence on public funding, little potential to generate non-aviation revenues,
- Opportunities: development of infrastructure and business, traffic flow-over from congested hub airports, better airport marketing,
- Risks and threats: increasing cost pressure and tightening regulations at European level

It is likely that the analysed European airport policy and safety regulations will have significant economic and financial implications for regional airports. It is important to keep the balance between the contribution of regional airports to regional development and measures to intensify competition.

9 Conclusions and Recommendations

Following the analysis of general advantages, long-term risks and short-term operational challenges, strategic recommendations have been developed.

The following figure provides an overview of key questions, overall strategic assessment and recommendations.

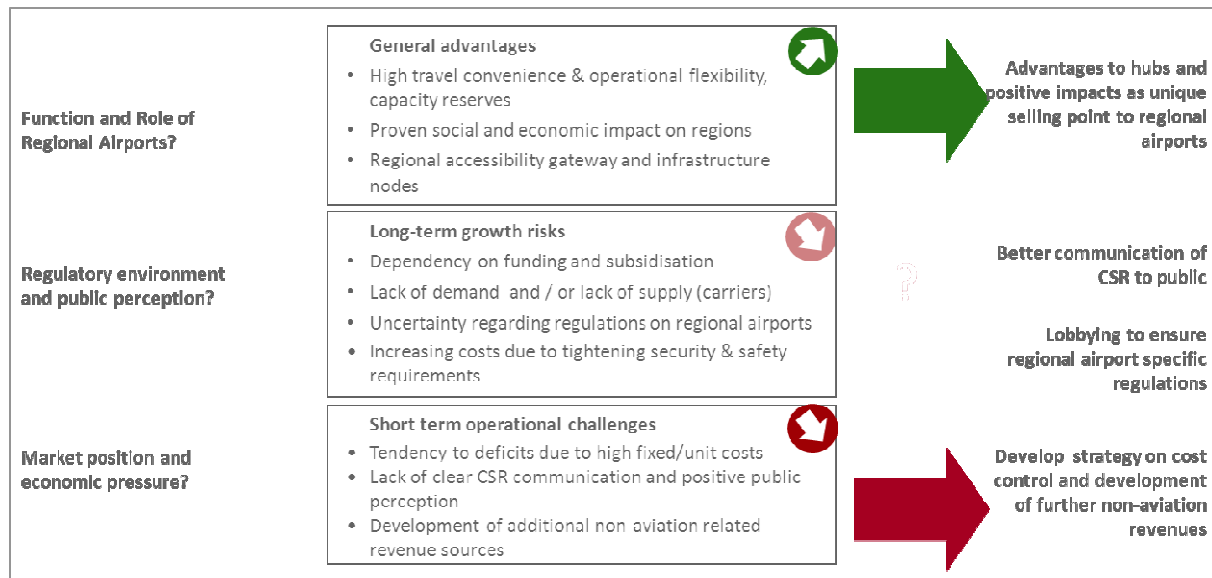


Figure 13: Conclusions and recommendations of the study

Taking into consideration the acknowledged impacts of airports, it can be stated that regional airports play an outstanding functional role, serving as gateway and business location factors, in regions under their operation. Significant economic impacts are achieved by airport operators, which contribute to the overall wealth of regions.

On the basis of assessment of future risks and challenges for airports, the study recommends the following measures to be taken by decision-makers:

- Implement unique selling points as a marketing strategy in order to explore traffic potentials
- Improve public communication and corporate social responsibility to gain public acceptance
- Strengthen lobbying so that EU official regulations were implemented at regional airports
- Develop strategy for the target-oriented cost-control and the increase of non-aviation revenues and public funding

Having recognized the function and role of regional airports, the following policy recommendations can be formulated and submitted to European institutions and rule-makers:

- Link between funding and regional determined economic impact of regional airports
- Take into account characteristics of regional airports while making decision at EU level (e.g. EASA rule-set, aviation guidelines)
- Apply economic impact assessment at Regional Airports in the EU to achieve transparency of

economic benefits (e.g. holistic model for impact assessment)

- Provide funding for regional airports in Europe, to support implementation of European regulations.

List of References

- [1] ACI Europe, York Aviation: The Social and Economic Impact of Airports in Europe, 2004
- [2] Helios, European Regional Airports Study, Final Report, 2009
- [3] J. Sorgenfrei: Regionalflughäfen. Funktionen und Wirkungen, 1989
- [4] R. Klophaus: Volkswirtschaftliche Bedeutung von Regionalflughäfen und Verkehrslandeplätzen, März 2006
- [5] Desel, Klophaus: Regionalökonomische Bedeutung des Verkehrsflughafens Bremen, Juni 2011
- [6] York Aviation: Manston Airport, Economic Impact of Night Flying Policy, Final Report, 2011
- [7] York Aviation: BAA Aberdeen, Economic Impact of Aberdeen Airport, Executive Summary, 2010
- [8] John Whitelegg, The Economic Impact of Bristol Airport, 2005
- [9] Optimal Economics, Southend Airport Economic Impact Assessment, Final Report, 2009
- [10] National Bank of Belgium, Economic Importance of Air Transport and Airport Activities in Belgium – Report, 2011
- [11] R. Klophaus, K. Heuer, Zentrum für Recht und Wirtschaft des Luftverkehrs, Regionalökonomische Bedeutung und Perspektiven für den Flughafen Frankfurt-Hahn, 2007
- [12] R. Klophaus, Zentrum für Recht und Wirtschaft des Luftverkehrs, Regionalökonomische Auswirkungen und Bedeutung des Flughafens Kassel-Calden, 2006
- [13] R. Klophaus, Zentrum für Recht und Wirtschaft des Luftverkehrs, Umwegrentabilität des des Flughafens Friedrichshafen als Wirtschaft- und Standortfaktor, 2008
- [14] Konopka, Der „neue“ Flughafen Leipzig/Halle – Die Bedeutung des Airports für luftverkehrsaffine Unternehmen, 2001
- [15] R. Malina, Institut für Verkehrswissenschaften an der Universität Münster, Prognose der regionalwirtschaftlichen Effekte des Dortmund Airport für 2020, 2008
- [16] R. Malina, Institut für Verkehrswissenschaften an der Universität Münster, die regionalwirtschaftliche Bedeutung des Flughafens Münster/Osnabrück, 2008
- [17] Billund Airport: Klausholm, J., Hansen, M.; Interview SWOT Analysis; 21.06.2012
- [18] London Southend Airport: Petrie, S.; Interview SWOT Analysis; 23.07.2012
- [19] Manston Airport: Dukes, S., Ratcliffe, J.; Interview SWOT Analysis; 25.07.2012
- [20] Lydd Airport: Dukes, S., Ratcliffe, J.; Interview SWOT Analysis; 25.07.2012

-
- [21] Groningen Airport Eelde: de Jong, O., Sweringa, R., van Os, B.; Interview SWOT Analysis; 28.09.2012
 - [22] Kortrijk International Airport: van Eeckhoutte, S.; Interview SWOT Analysis; 20.08.2012
 - [23] Sandefjord Airport Torp: Guren, L.; Interview SWOT Analysis; 03.08.2012
 - [24] Bremen Airport: Dencker, D., Krüger, A.; Interview SWOT Analysis; 13.09.2012
 - [25] European Commission, DG Move, EU airports – boosting capacity and promoting quality, Citizens Summary, 2012
 - [26] European Commission, DG Comp, Consultation on review of the Community guidelines on financing of airports and start-up aid to airlines departing from regional airports, 2013
 - [27] EASA, EASA News 10, Modern Aerodrome Rules For Europe, 2012

Appendices

1 GSA airport profiles

1.1 Billund Airport - a Profile

General Airport Information			
Internal	Strengths	Weaknesses	
	<ul style="list-style-type: none"> Second largest airport in Denmark Strong cargo market/business segment (consolidation services) Natural regional demand for cargo ops 2 based airlines 	<ul style="list-style-type: none"> Strong dependency on LCC traffic (30% of total traffic) High labour costs & high unit costs Seasonal staff rostering problems/suboptimal rosters No sustainability strategy/no alignment with overall strategy – lack in internal & external communication Diverging shareholder interest 	
External	Opportunities	Threats	
External	<ul style="list-style-type: none"> Exploitation of non-aviation related business area Further improvement of "service" offered (lounge, self check in, self bag drop) improvement of airport access (public) through build up of train station 	<ul style="list-style-type: none"> Overlapping catchment area with Hamburg Airport (loosing leisure travellers) Possible aviation tax to be introduced in Denmark Bilateral agreement favouring CPH as main hub of Denmark 	

1.2 Bremen Airport - a Profile

General Airport Information			
Internal	Strengths	Weaknesses	
	<ul style="list-style-type: none"> Large catchment area especially for low cost travellers Profitable operations No dependency on one carrier (diversified cust. base) Close proximity to city centre & good public transport connection Based a/c & LCC base 	<ul style="list-style-type: none"> Political influence on airport Noise disturbance due to close proximity to city centre Lack of market power against airlines in negotiations Price sensitive customers 	
External	Opportunities	Threats	
External	<ul style="list-style-type: none"> Capacity reserves Flexibility to react to market developments Demand for network extension 	<ul style="list-style-type: none"> Political environment will change night flight regulation Market volatility Increasing costs through (weather, ops limits, etc.) Increasing operational limitations 	

1.3 Sandefjord Airport Torp – a Profile

General Airport Information		
Number of Passengers (rounded)	1.360.000 (2011)	
Number of Runways	1	
Major Carriers	KLM, Norwegian, Ryanair, Wizzair	
Internal	Strengths	Weaknesses
	<ul style="list-style-type: none">▪ Very good standing within catchment area▪ Small and efficient airport with short process-times▪ Different airlines offering a good mix of leisure and business passengers	<ul style="list-style-type: none">▪ Limitations for growth on long-term▪ Small A/p area/property limiting extension of parking area▪ Limited physical space for additional revenue-generation (such as parking and retail)
	Opportunities	Threats
External	<ul style="list-style-type: none">▪ Ability to increase market-share in the Oslo-area and south of A/p▪ Exploit non-aviation related revenues▪ Increasing pax due to improved access	<ul style="list-style-type: none">▪ Airlines leaving the airport due to better operating / financial conditions at other airports▪ Subsidisation/favouring of public airports through national authorities

1.4 Groningen Airport Eelde – a Profile

General Airport Information		
Number of Passengers (rounded)	149.000 (2011)	
Number of Runways	2	
Major Carriers	Transavia	
Internal	Strengths	Weaknesses
	<ul style="list-style-type: none">▪ Good accessibility – convenient and quick travel, close parking and low parking fees▪ Short processing times▪ High importance for regional economy▪ Regional acceptance of the airport	<ul style="list-style-type: none">▪ Dependency on single airline(s) / traffic type▪ Niche market with lots of competitors▪ Need of high investments due to strong growth▪ High labour costs (peak and off-peak staff rostering)
External	Opportunities	Threats
	<ul style="list-style-type: none">▪ Growth after RWY-extension▪ Expansion of efficient own handling-business▪ Urban industry conglomerate with energy industry park▪ Exploring potentials of incoming tourism	<ul style="list-style-type: none">▪ Opposition through residents▪ Overlapping catchment areas with other regional airports

1.5 London Southend Airport – a Profile

General Airport Information		
Number of Passengers (rounded)	740.000 (2012)	
Number of Runways	1	
Major Carriers	Easyjet	
Internal	Strengths	Weaknesses
	<ul style="list-style-type: none"> New infrastructure and terminal High media attention Good partnership with Easyjet (long term, up to 2 Mio pax) Very short ways and less time needed for travel (Unique selling point in LON area) Maintenance service offered 	<ul style="list-style-type: none"> Small catchment area Missing customer loyalty (needs to sustain and increase no of pax) Cost / revenue ratio (high start up costs)
External	Opportunities	Threats
	<ul style="list-style-type: none"> Successful regional AP with high private investment Improved local economy, up to 6000 new jobs Competitive advantage due to short ways / time benefits and the overall package with high customer service 	<ul style="list-style-type: none"> Growth at other airports (New RWY at Stansted or Gatwick) Governmental decisions In transparent & unpredictable regulations

1.6 Kortrijk Airport - a Profile

General Airport Information		
Number of Passengers (rounded)	69.000 (2011)	
Number of Runways	1	
Major Carriers	Business Aviation	
Internal	Strengths	Weaknesses
	<ul style="list-style-type: none"> Location, easy access, minimum travel time Customers who are willing to pay higher price for flexibility and convenient travel VIPs of the region support the airport 	<ul style="list-style-type: none"> Lack of capital (waiting for funding of investments since 6-7 years) Dependability on small client base and regional economic development (ups & downs)
External	Opportunities	Threats
	<ul style="list-style-type: none"> GSA project and study for rebuilding the airport Become the business airport of the Eurometropolitan area Increasing congestion and degraded access of major airports in the proximity leading to migration of customers to KJK 	<ul style="list-style-type: none"> Lack of long term (political) support Lack of capital and threat of not generating capital needed On-going tightening of regulations

1.7 Manston Airport & Lydd Airport – a Profile

General Airport Information			
Number of Passengers (rounded)	MSE 23.000 (2011) LYX 3.000 (2011)		
Number of Runways	1		
Major Carriers	NA		
Internal	Strengths	Weaknesses	
	<ul style="list-style-type: none"> Manston: Long runway, overspill traffic from congested airports, no airspace constraints, improved rail- and road-connection, (potential new Thanet Parkway station), travel convenience through speed of travel for passenger (especially compared to other LON a/p) Both: Rising demand, fast processes Operating in high margin niche market 	<ul style="list-style-type: none"> No scheduled airlines, competition with major airports, direct catchment of less than 1 Mio people overlapping with each other Lydd: short rwy & nuclear power plant 3.5 km next to the rwy 	
External	Opportunities	Threats	
	<ul style="list-style-type: none"> Manston: Expansion of leisure sector and entering of the prime market, further expansion into dedicated cargo business Lydd: Focus on private business sector Lack of UK national policy framework 	<ul style="list-style-type: none"> Manston: Small time window to get traffic from London airports before new RWYs are granted at those a/ps Sale of the airport means that its future is uncertain but it is also an opportunity for new investment once in new ownership Lydd: No RWY-extension, greater protection of environmental area 	

2 Regression analysis - results

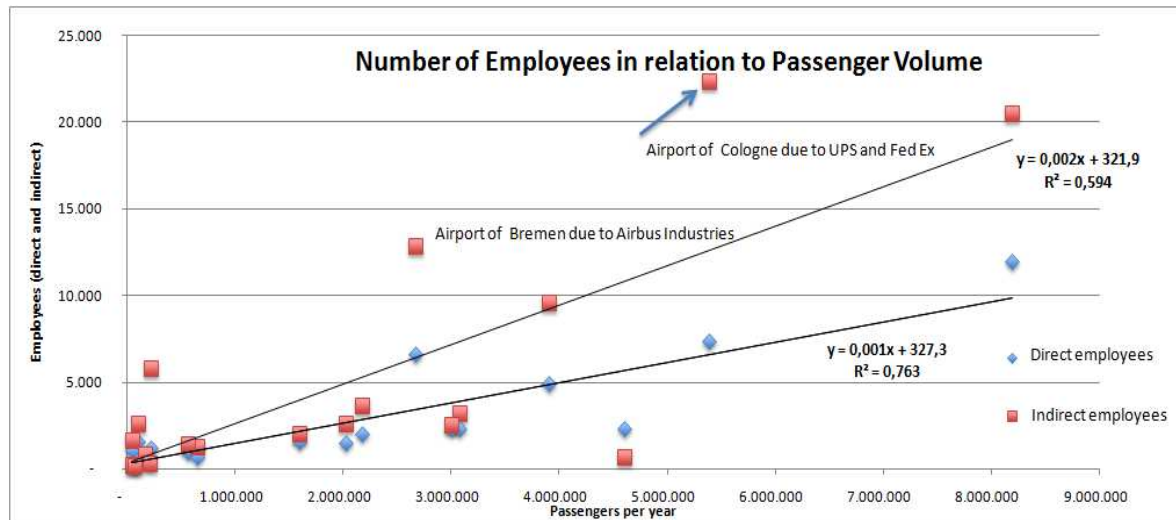


Figure 14: Number of employees in relation to the passenger volume

The regression analysis on direct employees and indirect employees underlines the acceptable quality of fit (coefficient of determination). However, some business models and airports strongly deviate from the trend. The airports of Cologne and Bremen for example with a special structure of companies on the airport like Airbus S.A.S. or the Integrators Fed Ex and UPS in Cologne have a significant number of employees, which are not covered by the function.

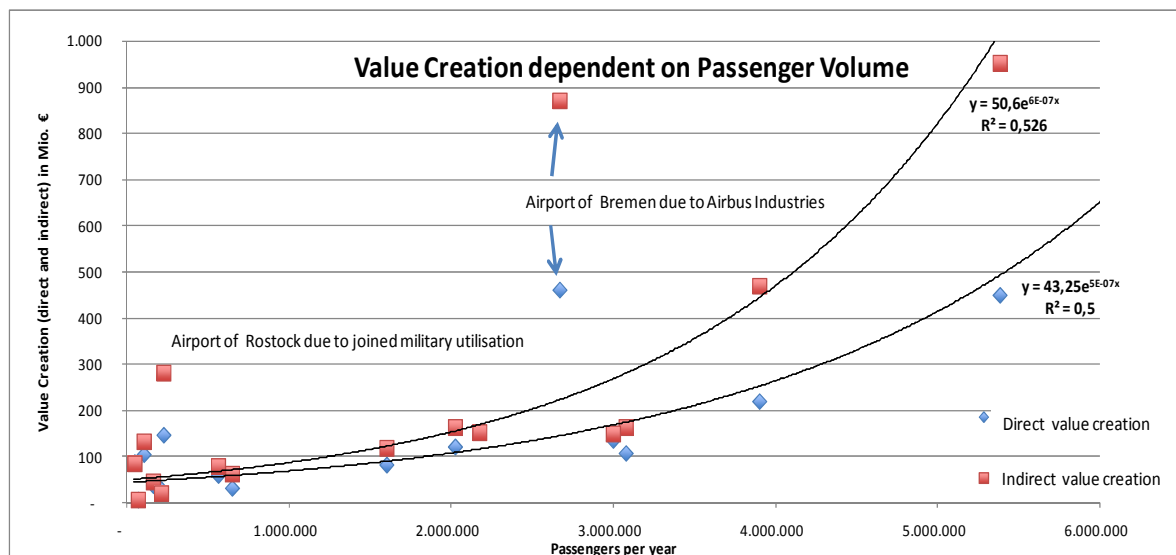


Figure 15: Value creation in relation to the passenger volume

The direct and the indirect value creation in million Euros relates to the number of passengers per year and is demonstrated in the figure above.

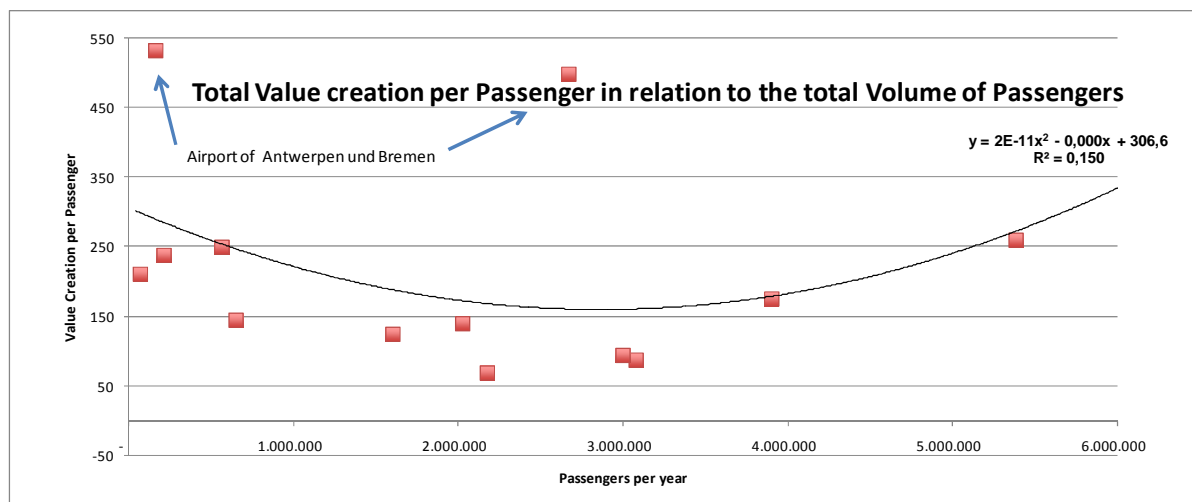


Figure 16: Total value creation per passenger in relation to the passenger volume

The individual regression analysis for the dependent passenger and independent value creation is not able to provide a reliable equation, as required.

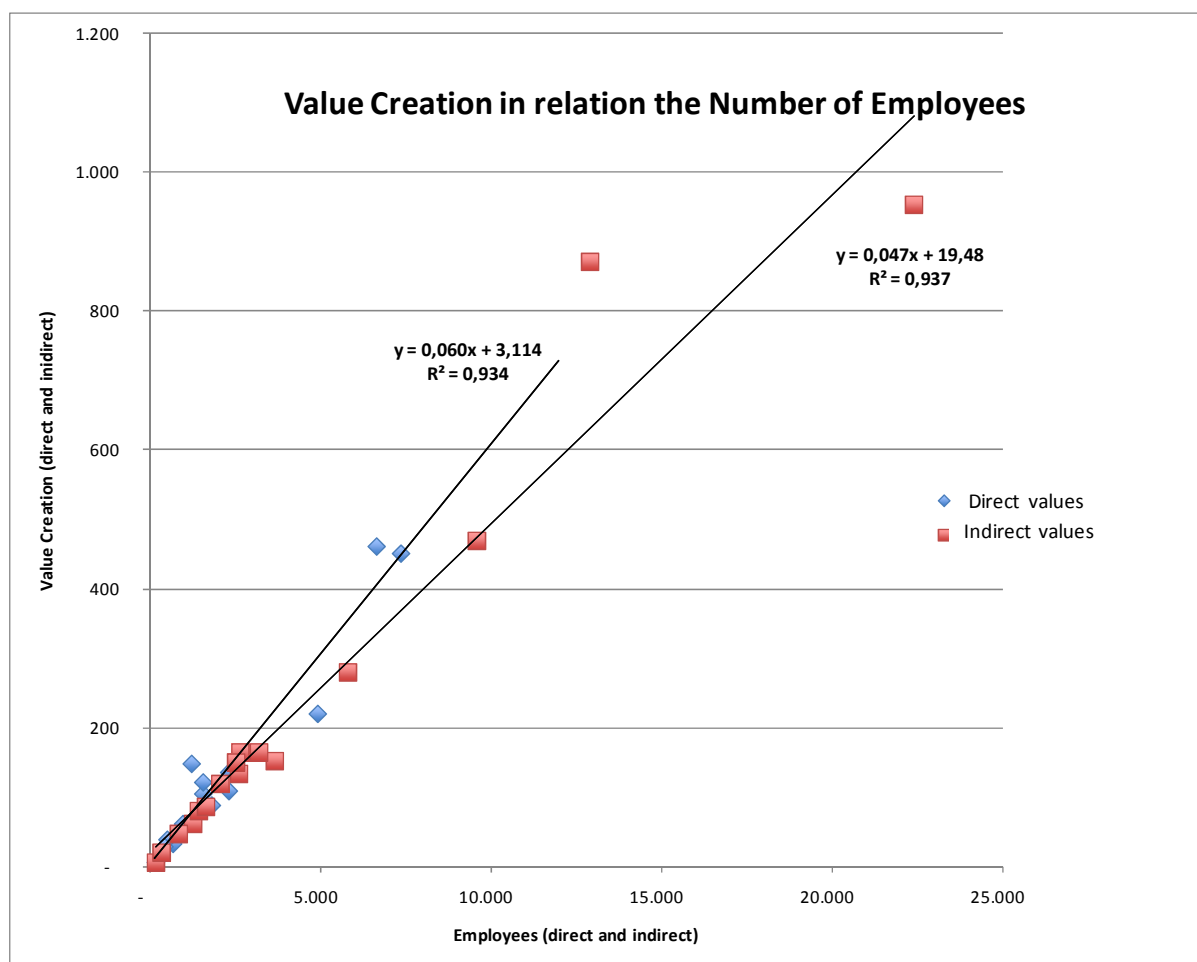


Figure 17: Value creation in relation to the number of employees

High significance can be observed by setting direct and indirect employees as dependent variables to direct resp. indirect value creation as independent variables.





provincie Drenthe



Contact

Provincie Drenthe: Project Management
Mr. Ben van Os, b.os@drenthe.nl
Ms. Deirdre Buist, d.buist@drenthe.nl
Website: www.greenairports.eu

Graphic design
Docucentrum, provincie Drenthe

ROM&N13040306

March 2013