

## INFLUENCES OF INFORMATION SHARING ON AIRPORT SUSTAINABILITY DEVELOPMENT

**Araya Sakburanapech**

*Department of Aerospace Engineering, Kasetsart University  
Jatujak, Ladyao, Bangkok 10900 Thailand, E-mail: [araya.sa@ku.ac.th](mailto:araya.sa@ku.ac.th)*

### ABSTRACT

**Purpose:** This paper aims to explore contributions of information and knowledge sharing to establish long-term collaboration between airport stakeholders and ultimately to develop an airport in a sustainable way.

**Design/methodology/approach:** exploratory research is considered as the fundamental research method for this study as there are insufficient study discovering an importance of knowledge sharing and stakeholder engaging on balancing economic, social and environment benefits of airports. Focus group and questionnaire are used for collecting data from perspectives of stakeholders and airport operators. The data collected are then analysed on the basis of descriptive statistical analysis.

**Findings:** there are wide varieties of stakeholders involved in running an airport. Sharing information owned by each party is important for operating aircrafts and handling passenger and cargo in timely and safely manner. This shared information is crucial for the airport operator in designing the development plan of airside and landside infrastructures with less impacts on environment and communities surrounded the airport. It will also enable the airport to successfully cooperate the stakeholders in the daily operations and also to develop long-term collaboration. It is crucial for the airport to monitor this sustainable development in the three aspects of economic, environment and social. However, the study find that economic benefits seems to be the prime performance dimension of airports in Thailand.

**Research limitations/implications (if applicable):** the findings of research shows that a sustainable quality system is considered as a critical success factor for an airport to sustain its economic development with less impacts on environment and communities around the airport.

**Originality/value:** Although there are numbers of research focusing on airport planning and developing, there are gaps in integrating environmental and social considerations into the airport development plan. Moreover, contributing factors especially for airports in Thailand in effectively carrying out these three combinations seems to be insufficient.

**Keywords:** Airport, Sustainability development, Information and knowledge sharing

### Introduction

There are many stakeholder group with divergent goals that contribute a success of airport development. They also required the airport to provide daily services in a timely and safely manner. It is vital for the airport to initially understand the stakeholders' needs and then to align those with the airport strategic directions. The airport has a strong intention to engage the stakeholders from operations to corporate level. It always encounters with challenging: identifying who the right stakeholders are, planning how to encourage those to get involve and sustaining the level of stakeholder involvement. Sharing and exchanging information is considered as a key factor to develop the win-win collaboration with trustworthiness of between the airport and stakeholders. However, they usually are reluctant in doing so as the information shared might be treated unconfidential which will affect their competitive advantage {Klievink, 2012 #34}.

This study aims to exploring a relationship of information sharing and stakeholder engaging form the perspective of airports. It also examines performance measurement for monitoring the progress of

stakeholder engagement. This result in an improvement of operations and economic benefits of the airport with deliberately protecting environmental surroundings and promoting community advantages.

### **Airport sustainability.**

Sustainability is currently recognized as one of the key research themes especially related to contemporary transport problems not only in Western world but also in Eastern world. In the context of Thailand, sustainability is one of the national development target clearly identified in the 12<sup>th</sup> National Economic and Social Development Plan {Office of the National Economic and Social Development Board, 2017 #35}. Sustainable development is defined as the maintenance of important environmental functions for present and future generations {Ekins, 1998 #36}. It also refers to the development that meets the three fundamental needs which are environmental, social and economic {Transportation Research Board, 2011 #37}. However, in practice, these needs may not be mutually supporting and their integration may involve trade-off.

The air transport sector has been increasingly emphasizing on the environmental agendas as a result of the growing air traffic. As one of the key steering members, airports contributes to economics of the nation they serve. Under complex and dynamic situations, the airports focus on how they efficiently provided services on a daily basis and also on how they sustainably expand their business without compromising safety and environmental impacts. Moreover, they provide services to various groups of customers and also interacts with numbers of stakeholders which all have varying performance requirements.

According to Airport Cooperative Research Program (ACRP), airport sustainability is defined as “practices that ensure: protection of the environment, including conservation of natural resources” {Berry, 2008 #38}. It also ensures the high and stable levels of economic growth and involves the social progress which include not only airport itself but also the public. {Knudsen, 2004 #39@@author-year} illustrates that airport sustainability aims to minimizing input of resources and output of impacts while maximizing social and economic benefits. As a result, it is a challenge for the airport to determine how to balance its business needs, stakeholder concerns and environmental impacts.

An integration of stakeholder needs into the airport development plan, also known as airport master plan, is required as inputs to design and prioritise sustainable measures. Informing, consulting and engaging with wide range of stakeholders is considered as key success factors in designing the airport master plan. The planning document is also used for facilitating communication and participation of the stakeholders {Department for Transport, 2004 #40}.

Once the mutual collaboration with the stakeholders is established, the airport seeks the way to keep the relationship continue as it is. Sustainability assessment is seen as one method to indicate the progress of airport sustainability. It requires the airport to measure inputs required for operating airports and also outputs as a result or the airport operations {Upham, 2005 #41}. These sustainable measurement is developed on the perspectives of economic, social and environmental concerns.

### **Airport stakeholders**

{Burger, 2006 #43@@author-year} defines stakeholders as a group or individual who have either an interest in the issues surrounding an organization or an ability to influence those issues. From a perspective of airport, stakeholders involve those who concerns about the impact of air transport business upon the local and global environments, particularly with regard to local air quality, noise abatement and waste treatment {Rawaon, 2012 #42}.

In addition, the influence of stakeholders on airport operation and development is continually increasing. Therefore, the airport recognizes the impact of stakeholder engagement is vital for its future development. Figure 6 displays a framework of stakeholder engagement particularly for the air transport sector {Amaeshi, 2006 #44}.

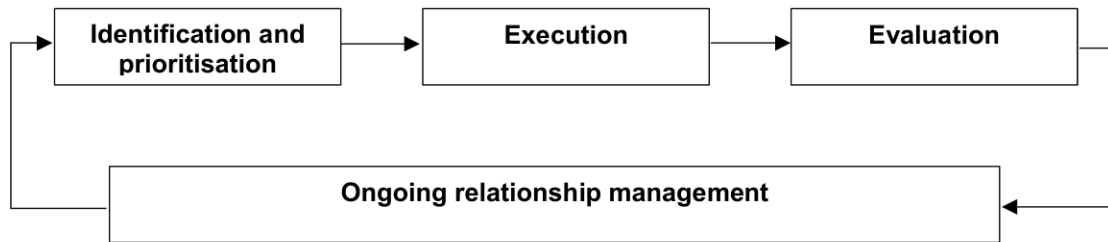


Figure 6: Stakeholder engagement framework {Amaeshi, 2006 #44}

For effective engagement, it is important to be clear who should be engaged, why, and how, before starting the activities. The first step of stakeholder engagement is to identify who the project stakeholders are. The airport design how to develop a collaboration with each group of stakeholders identified. This include a determination of participation and communication activities. To improve the engagement, the airport evaluates the activities carried out regarding to their objectives and goals. This results in a continuity of stakeholder involvement in airport sustainability development.

With the framework above, a variety of communication channels used for sharing information and exchanging information is vital for an airport to establish the mutual relationship with the stakeholders {Rawoon, 2012 #42}. The airport uses a range of participatory methods to communicate with stakeholders, including formal and informal media {Hooper, 2003 #45}. The difference of methods used for a wide range of stakeholder groups result in better willingness of stakeholder in sharing information related.

### **Research method**

This study is designed and conducted based on exploratory research discipline as there are limited research illustrating how information sharing has a crucial impact on engaging stakeholders of airports. It also examines performance measurement suited for the airports in identifying and monitoring the involvement level of stakeholders.

There are two techniques used for collecting data. Firstly, 4 airport case studies were developed and shown in this paper. Focus group meetings were carried out to bring airport operators and stakeholders altogether for a discussion about the first research questions addressed above. The data collected was analyzed on the basis of descriptive data analysis regarding to the stakeholder engagement framework.

In addition, survey was utilized for collecting data relating to sustainable performance measurement of the four case studies from the perspectives of airport management. The data collected was analysed based on the descriptive statistical analysis.

### **Data sharing :stakeholder identifying and engaging**

There are a wide range of stakeholders involving in running airports. They include for example airlines, ground service providers, airport staffs, passengers, public transport operators and concessionaire providers. It is clearly understood that the airports are unable to utilize the same communication approaches to engage with all stakeholders. {Klievink, 2012 #34@@author-year} explained that although information sharing is known as a key factor for engaging stakeholders, it is more important to understand what the right information are to be shared with the right stakeholders at the right time with the right techniques. As a result, the airport stakeholders are categorized into 4 groups regarding to two attributes as shown in the figure below. The first one is expertise which defines as knowledge and experience of the stakeholders in sustainability development. The next attribute is willingness of stakeholders in participating with the airports in optimizing the economic and social benefits with less environmental impacts.

Based on the two attributes, the stakeholders of the four case studies selected are grouped as shown in Figure 7. It shows that 52% of the airport stakeholders prefer only to receive information from the airports. This implies that they seem not to be ready for exchanging information related to the airport sustainability development. Meanwhile, there is 34% of the stakeholders who have a readiness and willingness in exchanging the information and knowledge important for leading the airports to be greener. The airports recognize that 14% of the stakeholders are in the middle of the first two groups: 6% of them are knowledgeable but not happy to share with others and 8% are full of willingness in sharing but still lack of information useful for sharing.

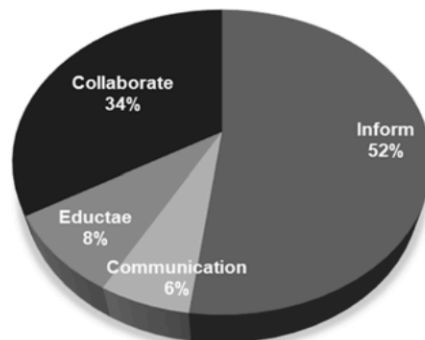


Figure 7: Average percentage of the 4 stakeholder groups of case studies

In addition, there is no relations between airport capability in terms of flight movement and passenger movement and proportion of each stakeholder group. This implies that no matter how big airports are, they can use same techniques for encouraging their stakeholders to share the information.

Table 6 shows how the four airport case studies communicate with each group of stakeholders. They all agreed that data sharing is essential at the first place in establishing the mutual relationship. They also supported that the methods used for sharing data would be the ladder for increasing the participation and influence level {Rawoon, 2012 #42}. The first level aims only for motivating the stakeholders to get involve with the airport development plan. Next, the airports expect the stakeholders to share more data, leading to knowledge sharing. Ultimately, the voice and needs of stakeholders would influence on the airport sustainability development.

Table 6: Objectives and methods of information sharing for each stakeholder groups

Low	Low	Stakeholder groups	Objectives	Data sharing methods
↓ Participation level ↓ High	↓ Influence Level ↓ High	<b>Inform</b>	To inform stakeholders about the airport development plan to raise their awareness on sustainable development and its benefits.	<ul style="list-style-type: none"> <li>• Publications</li> <li>• News bulletin</li> <li>• Public Meeting</li> <li>• Exhibition</li> </ul>
		<b>Communicate</b>	To encourage stakeholders to exchange ideas, express their interest and concerns related to the sustainability development.	<ul style="list-style-type: none"> <li>• Consultation</li> <li>• Focus group</li> </ul>
		<b>Educate</b>	To provide knowledge and relevant expertise that will help them to prepare for the sustainability development.	<ul style="list-style-type: none"> <li>• Consultation</li> <li>• Training</li> </ul>
		<b>Collaborate</b>	To initiate sustainable projects altogether and integrate their needs into the airport development plan.	<ul style="list-style-type: none"> <li>• Forming working group</li> <li>• Experimental project</li> <li>• Partnership</li> </ul>

### Sustainability performance measurement

Figure 8 illustrates an average important score of each sustainability performance dimension from airport managerial views. Service quality is mostly concerned from the managers of four airport cases while environmental impacts is less considered. Nonetheless, service quality performance does not seem to directly relate to societal benefits as it focuses only on services provided to stakeholders who directly involve aircraft operations at the airport. It includes for example aircraft gate departure delay, aircraft taxi departure delay and baggage delivery time. There is no performance measure to indicate benefits and advantages provided to community surrounded the airports. In addition, the airport manager explained that the airports recognize corporate social responsibility (CSR) activities as important method to engaging the community. Nonetheless, there is no performance indicators to show the progress of community engagement level.

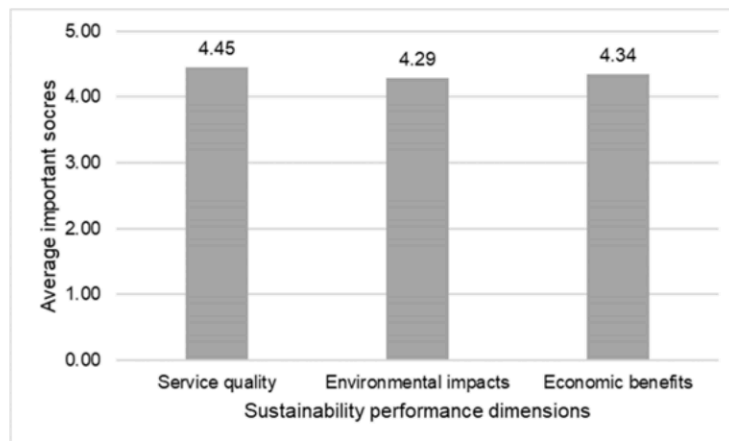


Figure 8: Average important score of sustainability performance dimensions

Moreover, environmental performance has been viewed with less differences from perspectives of the four case studies as shown in Figure 9. This reflects from the fact that the airports tend to comply with relevant statutory requirements. {Upham, 2001 #46@@author-year} stated that UK and European airports emphasise to monitor environmental impacts only to meet the legitimacy. However, from perspectives of sustainability development, airports would put more efforts to deliberately protect environment by reducing wastes as a result of airport operations.

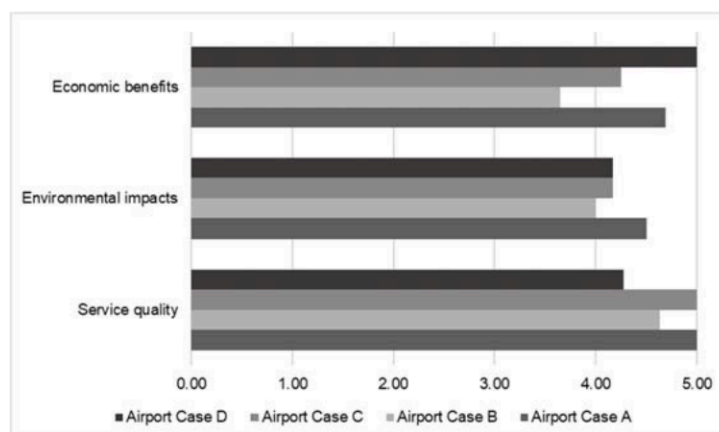


Figure 9: Sustainability performance dimensions from the views of 4 airport case studies

To monitor the participation level of stakeholders, an airport would require not only sustainability performance indicator but also an assessment of engagement activities done regarding to the objectivities. In doing so, data sharing between the airport and stakeholders seems to be a base requirement.

## **Conclusion**

An optimization of economic, social and environmental benefits are the fundamental principles for airport sustainability development, which is similar to other transportation modes. It is clearly shown that the stakeholder needs are important for the airports in constructing the development plan. As such, engagement activities need to be established for sharing and exchanging relevant information. This is also used for raising the stakeholders' awareness about benefits of sustainability development. In addition, to ensure the mutual collaboration, the airports determine performance measurement in at least three aspects. They are economic, environment and social impacts. From the four case studies, it shows that performance indicators of social impacts might not be sufficient. Corporate social responsibility activities might be used as supplemental methods. In addition, the airports tend to monitor the environmental impacts only to meet relevant statutory requirements.

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