Analysis of the Airport Sustainability Plan in the Context of EONS Components

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1 Introduction

Airport administrators and all airport users experience similar problems worldwide. To provide a systematic approach to assembling and evaluating information gathered from successful airport practices can make problem solving easier. Sustainability is a main subject in aviation because of aircraft and airports. There are thousands of airports in different types in the whole world. Airport administrators want to develop sustainable practices to enhance their environmental, economic, social, and operational interests.

A number of airport administrators around the world are developing sustainability programs voluntarily or compulsorily by local ordinances. A number of countries

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like the United States prepared airport sustainability plans to consolidate sustainability practices. It is known that some sustainability practices were implemented before airport sustainability plans. And the implementation of such practices is constantly evolving. Thus, it is very difficult to interpret the results of these practices that were not done systematically. Sharing the experience regarding the preparation, development and implementation of the airport sustainability plans is very important for the countries and airports that have not yet implemented these plans. Airport Council International developed EONS perspective to existing sustainability efforts. EONS is the acronym for the four factors complementing the whole for holistic airport management.

2 Airport Sustainability Plans

Airports are a crucial part of the complex international air transport system. In this way, it is ensured that passengers, cargo, and tourism travel all over the world through the facilities of the airports. Awareness of the environmental impacts of human activities has increased over the past two decades (Cowper et al., 2011).

Airports can manage sustainability in different ways. Airport administrators decide for undertaking a sustainability plan can be the result of numerous elements. The most important factors that lead to the implementation of the sustainability plan will be examined under the title of "top drivers." Most of the airports have also undertaken airport sustainability plans because airport administrators simply believe it is the right thing. Rising energy bills, long-term energy supply, and environmental impacts of gas emissions have raised concerns among airport managers. In this direction, new sustainability practices have been started to be developed. A wide variety of sustainability practices can cause airports to lose their focus on sustainability. Therefore, sustainability plans were needed (Budd et al., 2014).

Sustainability plans keep airports to identify goals with all aviation users and stakeholders. Shared goals improve performance of airport administrators and ensure consensus to stakeholders. Airport sustainability plans are not the only way of maintaining sustainability, but they are the most organized way. Sustainability can be considered while designing an airport or can also be developed while operations are ongoing. In designing phase, airport administrators generally have outsource guidance and can decide more independent. In operational phase, sustainability plans generally include ongoing sustainability practices and can be different forms.

2.1 Developing a Sustainability Plan

Every airport must firstly develop its own definition of sustainability in the beginning of preparing a sustainability plan. While doing this, generally the sustainability practices they have applied before are taken into account. Most definition has three

dimensions: economic, social, and environmental. ACI and airport community added a fourth dimension as "operational" dimension to the definitions. Developing a sustainability plan distributes responsibilities from one person (one manager) to more than one person (the entire institution staff) in organizations. For this reason, sustainability plans help sustainability to be owned by everyone in the organization. In an airport sustainability plan, sustainability definition provides a focus for consensus-based goals. A sustainability plan is a starting point for continuous improvement. In an airport sustainability program, airport administrators have other sustainability elements like sustainable design of airport, a construction guidance, sustainability goal declaration, sustainability actions, performance measurement mechanism, other management systems, and annual sustainability application reports. Some airports implement sustainability applications on ad hoc basis instead of sustainability plans. But developing a plan is useful for setting priorities for applications.

A holistic and organized approach to sustainability planning has gained importance in the last decade. Developing sustainability practices by evaluating within the scope of EONS brings synergy to strategies and solutions. International sustainability frameworks and standards are also taken into account by airports in sustainability programs. The Global Reporting Initiative (GRI) prepared "Sustainability Reporting Guidelines and Airport Operations Sector Supplement" for airports in 2011. International Standards Organization (ISO) has many voluntary standards for sustainability such as ISO 14001 (environmental management), ISO 26000 (social responsibility), ISO 5001 (energy management), ISO 20121 (sustainable events), ISO 15392, and ISO 21000 (sustainable building construction). Other globally accepted sustainability standards are the Dow Jones Sustainability Index (DJSI) and Carbon Disclosure Project (CDP). They focus on greenhouse gases and guidance for managing sustainability (Shannon, 2017).

In sustainability practices, it is encouraged to use the management approach cycle (plan, implement, improve, and maintain) according to a perspective. By means of this method, it is possible to define the process step by step. It will also be easier to measure the performance of the process. With this method, sustainability turns into a value shared by all stakeholders. By making a sustainability plan, airports can use their resources better, bring together sustainability practices, increase communication with stakeholders, and guide sustainability-related activities. Sustainability management can be built as a stand-alone system or it can be incorporated into the existing management system (SAGA, 2010).

2.2 Top Drivers for Airport Sustainability

Developing and implementing an airport sustainability plan inside of sustainability program can be influenced by drivers, aids, and barriers. Airport administrators choose sustainability plans for several reasons. Generally specific factors that are driving airports to develop sustainability plans include worldwide awareness, airline

industry pressure, rising energy costs, environmental obligations, resource conservation, aging infrastructure, facility lifecycle costs, and enabling technologies according to SAGA. Cost reduction is the main cause, and improving environmental performance is a benefit beside that cause. Sustainability funding is another important reason for developing airport sustainability plans. It is seen that the views of the stakeholders also affect the sustainability practices.

Florida airport has an airport sustainability guidebook and airport administrator listed benefits of sustainability planning to Florida's airports. Benefits are listed below (Florida Airport Sustainability Guidebook):

- Increases the safety
- Reduces airport operational costs
- Causes more efficient use of airport facilities
- Better tackles changing energy costs
- Stretches funding
- Increases airport's operational efficiency
- Prevent environmental impacts
- Develops community support and positively impacts airport perceptions

2.3 Top Aids for Airport Sustainability

Once a sustainability plan has been prepared some aids assist the implementation. These aids consist of a variety of factors such as funding, training, analytic tools, employee engagement, and internal communications. Public demands, consultant team and planning tools, non-aviation regulatory organizations, maintenance cost savings, cost-benefit analysis, and audit results are the main aids according to airport administrators.

2.4 Top Barriers for Airport Sustainability

Financial problems are the most common reason for avoiding sustainability practices. Lack of funding and costs of new technology create the primary barrier to sustainability programs. Lack of initiative or direction, cultural bias (blocking proactive precautions), limited resources, lack of cost-benefit analysis, readiness of staff, lack of common goals between stakeholders, grandfather rights of airport users, infrastructure needs, lack of available time, old habits, and limited training opportunities are the main examples of barriers for airport sustainability.

3 EONS Components

EONS is the acronym for the four factors complementing the whole for holistic airport management (SAGA, 2010). As mentioned above, airport community adopts sustainability definition to airport operational system. EONS components gain importance according to that definition. Economic viability, operational efficiency, natural resource conservation, and social responsibility are influenced by airport sustainability initiatives. A single initiative affects not only an EONS component.

While the EONS components do not offer a specific approach to target setting or reporting, they do assist in the elaboration and analysis of an airport sustainability plan from different perspectives (Shannon, 2017).

Economic viability is the main component underlying all other components. Economic viability can be enhanced in several ways, including revenue generation, decreased costs, and success in capital expenditure projects. Financial aspects force airports to consider which projects to prioritize or pursue. Especially, the projects involving the renewal of infrastructure facilities require quite a large capital investment. Airports are also using sustainability plan to meet economic goals that will mitigate and benefit the community and stakeholders (SAGA, 2010: p.6). And there is a financial return as a result of the implementation of recycling programs, even these projects require investment in their first phase. When airports consider firstly economic viability component, the first projects they usually apply are LED lighting and recycling projects. Small airports have less funding, because of that they must think economic viability in the first place. Airports often act on financial priorities when sustainability practices are confronted with irrevocable priorities such as maintenance priorities.

Economic viability component refers to achieving the highest social return on physical and natural capital. It means the operating efficiency of airport. International Air Transportation Association released the 9th edition of the worldwide slot guidelines in 2019 and pointed out that improving airport efficiency means of promoting the sustainable development for aviation. Economic viability usually related with operational efficiency (Wan et al., 2020).

3.1 Operational Efficiency

Airports are places where direct and indirect activities related to flight are carried out together. In the selection and implementation of sustainability practices, operational efficiency concept should be carefully incorporated into decision processes. If airports can integrate their operational processes and sustainability processes, the probability of their sustainability plans to be successful will increase. Considering the operational efficiency concept as a priority, the developed sustainability practices are generally related to energy and climate by airport administrators. For energy saving, airport administrators use smart meters, motion-sensitive lighting, and lower

and higher temperature settings for buildings. Greenhouse gas inventories and cogeneration power plant that makes electricity from natural gas for terminal buildings can be used by airports as another options. In airport sustainability plans, operational efficiency is considered by two subclass. These are airside operational efficiency and facility operational efficiency.

Sustainability practices developed in the airside operational efficiency subclass are reducing existing approach distances, establishing automatic aircraft releases, and adopting NetGen air traffic technologies, such as direct descent. Sustainability practices developed in the facility operational efficiency subclass are tracking monthly utility charges to manage airport's consumption of energy, water, and other resources. An example is that is an initiative to partner with energy firms to maximize potential revenue generation on land that was not producing revenue benefits to offset airport operational costs and reduce fossil-fuel energy consumption. A study showed that "developing a corporate sustainability culture should be a source of competitive advantage in the long run" by Harvard Business School (Oppenheim & Stuchtey, 2015).

3.2 Natural Resource Conservation

The concept of sustainability is often primarily perceived by people only as related to the environment. Green buildings, green procurement, and environmental management systems are main sustainability practices mostly related to natural resource conservation component. Noise management programs are another sustainability example.

While environmental sustainability practices reduce environmental impacts, they also provide financial and operational benefits (Lynes & Dredge, 2010). Strategies to reduce the use of raw material resources benefit airports both environmentally and economically. Besides these strategies, strategies to reduce emissions to the atmosphere, reduce waste generation, prevent water pollution, and protect biodiversity are other options for airport administrators (Landrum & Brown Company, 2012).

Wide range of natural resource conservation practices is currently in operation at UK airports. It is expected that the number of airports using such strategies will increase over time. This data will turn into know-how with the emergence of the result data of the applications in the aviation sector. Surprisingly, however, most environmental sustainability practices are carried out at airports in areas with pollution problems such as Europe, North America, and Asia. Continuation of these practices in the same way is of great importance in terms of sustainability (Budd et al., 2014).

Many airports around the world are installing solar photovoltaic systems in order to reduce the environmental impact of energy usage and to reduce the need for traditional fossil-based fuels (Baxter et al., 2019). Thus, airports had to carry out their practices and operations in a more environmentally friendly way (Coyle et al., 2015).

3.3 Social Responsibility

Due to the nature of aviation, airports have to operate in a social environment. Airports are a center of interest and a source of employment for those living in the vicinity. Airport stakeholders (airport employees, aircraft owners, tenants, passengers, interact socially, operators, and service providers) interact socially at airports. Social practices usually have no costs and could be a part of management functions such as human resources. Employees of airport can participate voluntary charities and social responsibility projects. Nearly all of the social responsibility projects required little to no investment. Main social responsibility concept is maintaining a good relationship between stakeholders. Developing an airport sustainability plan with the joint effort of the stakeholders is the first step to achieve this.

4 Conclusion

Among the many methods that airport management can use to manage sustainability practices, the option to develop an airport sustainability plan is the most effective way. In addition, although the amount of benefits provided by airport sustainability plans varies from airport to airport, the emissions they provide in general will cause sustainability to be accepted as a cultural value all over the world.

Airport administrators view sustainability as a process not as an end goal. To be a sustainable airport, an airport sustainability plan should be a living process in accordance with the resources available. Airport administrators should establish a separate sustainability team to involve all stakeholders in the airport sustainability plan. With this method, airport employees and management can be integrated effectively.

Airport sustainability plans bring together airport stakeholders such as airport users, tenants, consultants, employees, regulatory organizations, and governmental bodies. Thus, stakeholders will be more willing to embrace the plan and sustainability program if they participated to develop it. And ideas came from different sources help to create a more robust product. A sustainability committee can be more useful in the early stage of sustainability planning.

Sustainability planning should first be designed as a pilot program by airports and then implemented after a familiarization process. If airports do not want to implement the sustainability plan, various implementation options are available. For example, it can use the GRI infrastructure to prioritize and support reporting efforts. Or they can use the SDGs to set their own priorities and define how they will support sustainability with them.

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