

COMPARATIVE STUDY ON NOISE TAX AND CHARGES
MEASUREMENT IN CIVIL AVIATION^{*}

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Abstract

The aviation industry is an important part of the national economy. However, the air transport sector also causes a great deal of environmental damage, especially in terms of noise pollution. The imposition of taxes and charges on Heathrow Airport in the United Kingdom and Paris Charles de Gaulle Airport in France is one approach that has been adopted to combat noise pollution.

In addition, the study in this article compares the principles of environmental taxation, International Civil Aviation Organization (ICAO) charges policies, EU legislation and comparative studies on UK, French, and Thai law with regard to noise tax and charges.

Moreover, the result showed that noise was successfully reduced by the policy applied at airports in the UK and France. The existing legislation does not allow the imposition of a noise tax in Thailand. However, it is possible to impose noise charges, but this can only be achieved if there are substantial amendments in the directive no. 51/2561 from the Pollution Control Department (PCD) and Air Navigation Act B.E. 2497 (1954).

Keywords: Environmental tax, Noise charges, Civil aviation, Economic instrument, Balanced approach

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1. Introduction

Noise pollution is an environmental issue that can harm humans and animals. Noise and vibration, also known as noise pollution, are undesirable sounds exceeding sound limits and last long enough to damage human health.¹

Furthermore, the logistics and travel sectors are significantly affected by the aviation industry. However, noise and vibration, particularly engine noise which is considered one of the main sources of noise, cause significant annoyance within the aviation industry.² In addition, several efforts have been made to reduce noise from air transport through laws and regulations that encouraged the aviation industry to use quieter engines and establish an appropriate compensation system for injured persons.

Moreover, an environmental tax has been considered an effective way to control emissions of pollutants by some countries, such as the United Kingdom and France. However, with regard to Thai legislation, there is no direct taxation system that can be regarded as an environmental tax.³ Moreover, the International Civil Aviation Organisation (ICAO) also stipulates the policy on charges as guidance for the member states to consider before imposing any charging policy.

2. Measures on aviation noise taxation

This chapter discusses the definition of environmental tax, principles and types of tax, and the charges policy given by the ICAO.

2.1 Environmental tax principle and types of tax

Generally speaking, the function of normal taxation is to collect revenue for the state and enable it to manage effectively; however, there are two further functions that may be exploited by the government. The first is to reduce inequality in terms of income and wealth, and the second is used to regulate behaviour.⁴ The primary goal of environmental taxation is to provide a taxation system to levy on pollution emissions to change the behaviour of both the producer and consumer to reduce pollution emissions. For example,

¹ Udomsak Sinthipong, Kodmai Kurekud Singwadlom (5th edn, Winyuchon 2018) (อุดมศักดิ์ สินธิพงษ์, กฤตหมาย เกี่ยวกับสิ่งแวดล้อม (พิมพ์ครั้งที่ 5, วิญญาณ 2561)).

² Bernie Baldwin, 'How Crossover Jets Are Meeting the Noise Challenge' (Aviation Week & Space Technology, Dec 18, 2017) <<https://aviationweek.com/crossover-narrowbody-jets/how-crossover-jets-are-meeting-noise-challenge>> accessed 3 August 2023.

³ Khemruthai Sumawong and others 'Karnsuksa kodmai lae marttakarn jungjai tang pasi peuua songserm tulakij seekieow' (2017) 8 (เขมรุทธิ์ สุมาวงศ์ และคณะ, 'การศึกษากฎหมายและมาตรการจูงใจทางภาษีเพื่อส่งเสริมธุรกิจสีเขียว' (2560) 8) <<http://www.fpo.go.th/ereresearch/getattachment/da044aae-f340-41a5-bf55-140d250fa998/9113.aspx>> accessed 3 August 2023.

⁴ Reuven S. Avi-Yonah, 'The Three Goals of Taxation' (2006) 60 Tax Law Review 1.

the producer may reduce the emissions of certain pollution activities or refrain from using or reducing certain products which are considered to be harmful to the environment.

2.1.1 The crucial environmental tax principle

The “polluter pays principle” (PPP), which determines who should be held responsible or obligated to pay for the levy on noise pollution emissions, is a key principle. The PPP stipulates that the party polluting or causing environmental damage should be held liable for any consequential damage.⁵ This principle is also stated in the Rio Declaration on the Environment and Development (1992) that national authorities should promote the measures that would indicate the environmental cost and use the economic instrument to support the concept that the polluter should “bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment”.⁶ According to the PPP, the government should provide the appropriate measures to ensure that the real polluters are the party responsible for the pollutants produced by their actions and also provide the social cost, which would be a loss on such activity.

2.1.2 Types of environmental taxation

There are four types of taxation as follows:

1. Pigouvian tax is a type of tax that stipulates a fixed rate and does not depend on the value of any economic activity. The tax rate shall be determined by the amount of pollution emitted or the number of loss from the economic activity that has occurred. Negative externalities are a consequence of these actions, and the tax rate for Pigouvian taxes is determined to be in line with the level of social cost affected by the externality.⁷

2. Indirect Environmental tax is a type of tax which is charged in relation to factors relating to the manufacture or quantity of goods consumed⁸ when such production or consumption has an influence on the emissions of pollution.

3. Earmarked tax is a type of tax that the government would be levying and using for a particular purpose. The earmarked tax would not only focus on the revenue levied from the tax, but also include the revenue levied from charges, and that revenue would be unable to be used for purposes other than the designated purpose.⁹

⁵ Udomsak Sinthipong (n 1) 35.

⁶ Rio Declaration on the Environment and Development, 1992, Article 16.

⁷ University of Calgary, ‘Pigouvian Tax’ (University of Calgary, 2016). <https://energyeducation.ca/encyclopedia/Pigouvian_tax> accessed 3 August 2023.

⁸ Jaume Freire-González, ‘Environmental Taxation and the Double Dividend Hypothesis in CGE Modelling Literature: A Critical Review’ (2019) 40 Journal of Policy Modeling 194.

⁹ Fiscal Policy Office, ‘Study on Guideline to Increase Efficiency of the Earmarked Taxes and Other Revenues to Maintain Fiscal Discipline’ (2018) 6-7.

4. Other tax.

2.2 Origin of the balanced approach and environmental levy

The 33rd Session of the ICAO Assembly took place in 2001. Important noise procedures and practices were introduced in that session, which were the “Balanced Approach” and the practice on “Noise-related Charges”. In 2005, the principles were incorporated into Annex 16, Volume 1, and ratified once more at the 36th session in 2007.¹⁰

In addition, the practice of noise-related charges and tax incentives could be considered as one of the measures of land-use planning and management, which is one of the principal elements of the ICAO’s Balanced Approach.

2.3 Differences between charges and tax

The revenue from taxation generally is not on a cost specific basis and does not apply entirely to Civil Aviation; tax is levied on local and national governments for the purpose of raising revenue. On the other hand, charges are a levy, which are designed to recover the cost of providing services and facilities, in this case for civil aviation.¹¹

In respect of the European Commission (EC), the form of noise charges levied throughout the European airports would take the form of an extra landing charge or specific charges or tax, which would differ from country to country as an incentive to promote the use of quieter aircraft and to financially support any noise reduction programmes.¹² Thus, in the view of the EC, the noise charges could be in the form of tax or charges regardless of what term would be used.

2.4 ICAO’s policy on noise charges

The ICAO encourages member states to incorporate the four key principles of charging policy in their legislation as follows:¹³

1. Non-discrimination;
2. Cost relatedness;
3. Transparency;

¹⁰ Krittika Lertsawat, ‘Waduy Kanjudkarn Mollapawa TangSiang Jark Arkardsayarn Paitai Anusunyar Chicago’ (2013) (กฎหมาย เดิมสวัสดิ์, ‘ว่าด้วยการจัดการมลภาวะทางเสียงจากภาคยานภายในต่ออนุสัญญาชีค็อก’ (2556)) <<https://soundgoodproject.wordpress.com/2014/04/08/ว่าด้วยการจัดการมลภาวะ/>> accessed 19 June 2023.

¹¹ International Civil Aviation Organisation, ‘ICAO’s Policies on Charges for Airports and Air Navigation Services’ Doc 9082 (9th edn, 2012) forward vii.

¹² Commission of the European Communities, Communities from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions, Air Transport and the Environment, towards Meeting the Challenges of Sustainable Development, COM (1999) 640 final, p. 18.

¹³ International Civil Aviation Organisation, ‘Sixth Worldwide Air Transport Conference’ (Sixth Worldwide Air Transport Conference, Montréal, 2013) 10 <https://www.icao.int/Meetings/SUSDEV-AT/Documents/ATConf6_10009.pdf> accessed 3 August 2023.

4. Consultation with the users.

Generally, the details related to the policies on charge are contained in DOC 9082 of the ICAO's document.

3. European Union laws and noise tax and charges legislation of the United Kingdom and France

3.1 Related EU laws

The main EU laws related to aircraft noise are the Environmental Noise Directive (END), Directive 2009/12/EC, and EU Regulation No. 598/2014.

3.1.1 Environmental noise directive

The END is considered as a directive in EU law. The Directive is binding on all member states, requiring the members to achieve a specific objective set by the Directive; however, the forms and methods to achieve the objective are up to the individual members' choices.¹⁴ Furthermore, the objectives of the END are to establish common methods to avoid, prevent, or reduce noise damage, including annoyance, due to exposure to environmental noise. Furthermore, the END requires member states to use noise mapping, ensure that the information on environmental noise is accessible to the public, adopt an action plan based on information from the noise mapping results to prevent and reduce the effect of environmental noise where the exposure level could be harmful to health, and maintain the exposure level where the environmental noise quality is good.¹⁵

3.1.2 Directive 2009/12/EC

In this directive, the ICAO charges policy, includes four key principles taken into account by the EU. Additionally, article 3 of this directive emphasises that the principle of non-discrimination does not prevent the imposition of the modulation of the charges and can be imposed on several issues, including the environmental issue.¹⁶

3.1.3 Regulation No. 598/2014

Regulation No. 598/2014 is considered as a regulation in EU law, which means that it would have general application and will be entirely binding and followed by all member states.¹⁷ Furthermore, the main goal of this regulation is to limit and reduce the number of people affected by noise from aircraft and improve the noise climate, where a noise issue

¹⁴ Consolidated version of the Treaty on the Functioning of the European Union [2012] OJ C326/47 art. 288, para. 3.

¹⁵ Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 Relating to the Assessment and Management of Environmental [2002] OJ L189/12 art. 1.

¹⁶ Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on Airport Charges [2009] OJ L 70.

¹⁷ *ibid*, para. 2.

has been identified, and processed by consistently applying the noise-related operating restriction on an airport-by-airport basis following the balanced approach.¹⁸

3.2 Legislation in the United Kingdom

In general, the noise issue from airports in the UK is managed by airport operators and local authorities; however, there is an exception for some airports, which are Gatwick, Heathrow, and Stansted, which are the UK's busiest airports, where the Secretary of State manages the noise issue. These airports are also known as designated airports.¹⁹

3.2.1 Regulations and policy

In general, the noise issue in the UK is regulated by the Environmental Protection Act 1990; however, the noise emitted from aircraft was an exception under section 79(6).²⁰ The main statute regulating the noise issue from aircraft was the Civil Aviation Act 1982.

Furthermore, for a licensed airport, the airport operators would have the power to impose fixed charges on aircraft operators due to noise emissions from specific aircraft or a specific class of aircraft regarding the amount of noise emitted from such aircraft, or to the extent or the nature of any inconvenience from such aircraft's noise. This aimed to encourage aircraft operators to use quieter aircraft and mitigate the harmful effect of aircraft noise.²¹

For the designated airport, which is regulated by the Secretary of State for Transport, the Secretary could specify the requirements that would be relevant for taking off or landing, including noise charges, which the aircraft operators would have to follow in order to limit or mitigate the damage of noise and vibration.²²

3.2.2 Application of noise charges at Heathrow Airport

In the case of Heathrow Airport, the rate of the noise charges levied from aircraft operators is different depending on the amount of noise each aircraft produces when taking off and landing, and the period of the day that such aircraft is operating.²³

¹⁸ Regulation (EU) No 598/2014 of the European Parliament and of the Council of 16 April 2014 on the Establishment of Rules and Procedures with Regard to the Introduction of Noise-Related Operating Restrictions at Union Airports within a Balanced Approach and Repealing Directive 2002/30/EC [2014] OJ L173/65 art. 1 para. 1.

¹⁹ The Law Library of Congress, 'Airport Noise Regulations' (2020), 1, 12.

²⁰ UK Environmental Protection Act 1990, s. 79(6).

²¹ UK Civil Aviation Authority, 'Environmental Charging - Review of the Impact of Noise and NOX Landing Charges. CAP 1119' (2013).

²² UK Civil Aviation Act 1982, s. 78(1).

²³ Andreas Wittmer and Claudio Noto, 'Time-differentiated Airport Noise Surcharges: From Economic Theory to Policy Practice' in Kevin Cullinane (ed.), *Airline Economics in Europe*, Volume 8, (Emerald Publishing Limited 2019).

Moreover, the noise charges are levied based on the certified noise levels of the aircraft, and the aircraft would be classified into a noise category based on the ICAO's noise standards.²⁴

3.3 Legislation in France

In 2019, France adopted amendment N°CD1784, which publicly changed the scope of noise pollution from being a mere annoyance to an environmental and health threat that was as important as air pollution, and enacted noise pollution into French law.²⁵

Moreover, the French government has imposed several taxes on the civil aviation industry for noise pollution, the noise pollution tax, also known as TNSA. The TNSA has been imposed on aircraft operating in several French airports for the noise pollution each aircraft has produced.²⁶

Furthermore, the French Civil Aviation Authority (DGAC) is subordinate to the French Ministry of Ecological Transition. DGAC is responsible for levying taxes on civil aviation, including TNSA.

3.3.1 Regulations and policy

The French Environmental Code has established the Noise Disturbing Plan (PGS) to provide noise insulation assistance for residents who live nearby airports that are suffering from noise pollution. PGS indicates the zones and considers which resident may be eligible to receive the grant for noise insulation; however, the resident can only receive this support under certain conditions, and only 12 French airports have PGS.²⁷

Additionally, the source of financial assistance for noise insulation costs for the residents and the cost of acoustic checks provided by the airport operator are from the TNSA.²⁸ In general, the TNSA is used to provide financial assistance for the residents that live nearby airports.²⁹ The tax is based on the decimal logarithm (log) of the MTOW of the

²⁴ Heathrow Airport Limited, 'Heathrow Airport Limited Conditions of Use including Airport Charges from 1 January 2020' (2019). <https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/doing-business-with-heathrow/flights-condition-of-use/conditions-of-use-documents/Heathrow_Conditions_of_Use_2020.pdf> accessed 3 August 2023.

²⁵ Charles Edouard Millgate, 'Acoustica's International Expansion: the French Market' (MSc, University Institute of Lisbon 2020).

²⁶ French Ministry of the Ecological Transition, 'Aeronautical Taxes' <<https://www.ecologie.gouv.fr/en/aeronautical-taxes>> accessed 3 August 2023.

²⁷ ACNUSA, 'PGS–Noise Disturbance Plan' <<https://www.acnusa.fr/en/pgsnoise-disturbance-plan/65>> accessed 1 February 2021.

²⁸ French Environmental Code Art. R571-85.

²⁹ Marta Villar Ezcurra, 'Noise Pollution Taxes: a Possibility to Explore' in Mona Hymel, Larry Kreiser, Janet E. Milne, and Hope Ashiabor (eds.), *Innovation Addressing Climate Change Challenges* (Edward Elgar Publishing 2018) 121.

aircraft and the take-off period of the day, and the acoustic group of an aircraft are used as the coefficient modulation to calculate the amount of tax.³⁰

In addition, at some airports France also imposed landing charges, which were multiplied by the noise level according to the acoustic group of the aircraft. Moreover, the French law set the conditions for levying the landing charges in the French Civil Aviation Code³¹ that the airports could levy the charges for the services provided to aircraft operators, such as the airport's facilities and equipment provided by the airports.

3.3.2 Application of noise tax and charges at Paris Charles de Gaulle Airport

The Paris Charles de Gaulle (CDG) Airport is classified in the first group of TNSA, which is the highest tax rate of all the categories. Moreover, the sum of tax was calculated according to the decimal logarithm of the MTOW; the coefficient modulation were the take-off period, acoustic group of the aircraft, and the tax rate.³²

Additionally, CDG Airport applied the noise charges in the form of the modulation of the aircraft landing charges, which was stipulated into two periods of the day and evening, and the night. Depending on the period of aircraft operation, the proportion of charges was different at CDG Airport.³³

4. Thai law and analysis

4.1 Thai law

In the context of Thai law, the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992) defined a broad scope of the meaning of “Pollutant”; noise and vibration were also included in this definition. Basically, the pollutant in this definition was an item that could affect the environmental quality or be harmful to the health and hygiene of the people.³⁴ The condition caused by such a pollutant was also the meaning of the “Pollution” referred to in the Act.

However, Thailand does not have a policy on environmental taxation directly; nevertheless, a levy which could be considered as an indirect form of environmental taxation is available in Thai law, such as charges and penalties.³⁵

³⁰ ACNUSA, ‘Rapport Annuel 2019’ (September 2019) <<https://www.acnusa.fr/sites/default/files/2021-12/Rapport%20annuel%202019.pdf>> accessed 3 August 2023.

³¹ French Civil Aviation Code arts. R224-1, R224-2.

³² French General Tax Code Art. 1609 Quatervicies A.

³³ Andreas Wittmer and Claudio Noto (n 23).

³⁴ Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992) s. 4.

³⁵ Khemruthai Sumawong and others (n 3) 39.

In addition, there are three government agencies relevant to the noise pollution policy, which are the Office of Natural Resources and Environmental Policy and Planning (ONEP), Pollution Control Department (PCD), and the Civil Aviation Authority of Thailand (CAAT).³⁶

Moreover, in 2018, the PCD issued the directive³⁷ to create a joint committee between the PCD, ONEP, CAAT, and other organisations to deal with pollution from airports, including noise pollution. The committee's president and vice president were the PCD's representatives. Additionally, clause 4 of the committee's responsibilities stipulated that the committee could perform other duties assigned by the PCD. Thus, from the detail mentioned above, the primary authority that oversaw the decisions on the regulations related to pollution from civil aviation in this committee was the PCD.

Thus, the duties and authority of the CAAT relating to noise pollution from aircraft were limited since Thailand had other public sector agencies that had the authority and duties to regulate noise pollution. As a consequence, the situation of the overlapping and lack of authority of the CAAT caused the regulation of noise pollution from aircraft to lack unity and confusion since the PCD, ONEP, and CAAT had a similar duty to monitor and control the noise pollution from aviation, which could lead to the question of the appropriateness of the PCD to be the primary authority to resolve the issue of noise pollution from aviation. Hence, the problem mentioned above caused the operation related to noise pollution from aviation to be less efficient.

4.1.2 Regulations and policy

According to the Air Navigation Act B.E. 2497 (1954), the owner or operator of a licensed airport only levies revenue for the use of the airport in the case of service charges, tariffs, or any other form of monetary remuneration on several matters.³⁸

Additionally, the author, considered the possibilities of the noise charges according to such Act. The charges could be classified into two types of charges, which are the departure passenger service charges and other service charges, tariffs, or any other form of monetary remuneration mentioned under section 56.³⁹

³⁶ Kachaporn Juntapoon and Somchai Phiphuthawat, 'Onggone GumGub Doolae Darn Monlapis Tarng Siang Jark Arkardsayarn' (2015) 4 MFU Connexion: Journal of Humanities and Social Sciences 72 (คชากรณ์ จันทาพูน และสมชาย พิพุธวัฒน์, 'องค์กรกำกับดูแลด้านมลพิษทางเสียงจากอากาศยาน' (2015) 4 MFU Connexion: Journal of Humanities and Social Sciences 72).

³⁷ Kumsung Krom Khuapkhum Momlapit Tee 51/2561 (คำสั่งกรมควบคุมมลพิษ ที่ 51/2561)

³⁸ See, Air Navigation Act B.E. 2497 (1954) s. 56 par. 1.

³⁹ Air Navigation Act B.E. 2497 (1954) s. 56 (1), (5).

4.1.3 Case study of Suvarnabhumi Airport

Suvarnabhumi Airport is the busiest international airport in Thailand in terms of aircraft movement, passenger volume, and freight and mail operated by the AOT.⁴⁰ However, Suvarnabhumi Airport has received numerous lawsuits related to noise pollution. In 2019, the Airport of Thailand Company Limited (AOT) had to pay compensation in 43 lawsuits related to noise pollution. In the case of Suvarnabhumi Airport, the amount of compensation AOT paid was about 127.29 million Thai Baht.⁴¹

In addition, in the passenger terminal complex of Suvarnabhumi Airport, noise insulation technologies, such as three layers of fabric membrane, have been adopted as noise barriers. Noise charges or tax schemes could provide financial support for noise reduction projects like this. However, as previously mentioned, no noise charges and tax schemes are currently applied to Suvarnabhumi Airport.

4.2 Analysis

4.2.1 General comparison between the studied countries

The UK has not imposed a noise tax on civil aviation. Furthermore, the noise charges scheme used in the UK could be separated into two categories. First, the normal airports, which were not regulated by the Secretary of State to impose the noise charges scheme in their airports, and the designated airports, which were treated differently and had to follow the criteria of the Secretary of State.

Moreover, the French approach, mentioned in Chapter 3.3, levied on both the noise charges and noise tax, which served different purposes. France considered noise pollution as important as air pollution. The French laws related to charging and taxing involve several laws.

On the other hand, the Thai approach has considered noise as pollution along with other forms of pollution under the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992), which created the authority and duties to public sector agencies relevant to the environment and civil aviation, which caused overlapping and a lack of unity. Furthermore, to reduce this problem of overlapping and lack of unity, the government issued a directive to form a committee to deal with pollution from the airports mentioned in Chapter 4.1.1. However, most of the authority and duties on aviation noise pollution were on the side of the public sector agencies related to the environment, not the CAAT, which had more expertise in civil aviation. For the tax and charges at Suvarnabhumi Airport, currently, there is no tax and charges on noise pollution. However, for

⁴⁰ Airport of Thailand PLC, 'AOT Air Traffic Report 2018' (2019) 1.

⁴¹ Airport of Thailand PLC, 'Annual Report 2019' (2019) 102.

the noise charges, the Air Navigation Act B.E. 2497 (1954) stipulated the form of the charges, which could be imposed as noise charges due to the relevant laws supporting the application of such charges in the future. These are the departure passenger service charges and other service charges under section 56 (5).⁴²

4.2.2 Comparison with the polluter pays principle

When considering the Heathrow noise charges with the PPP mentioned in Chapter 2.1.1, the charges scheme complied with this principle since the aircraft operators, the polluters in the scope of the PPP, were subjected to the charges.

On the other hand, when comparing the noise charges in the French studied airport, CDG Airport, with the PPP mentioned in Chapter 2.1.1, the result was similar to the Heathrow noise charges since the airline operators were subjected to pay such charges. The result was also similar to the case of the TNSA, which the airline operators or the polluters had to pay the tax.

For Suvarnabhumi Airport, when comparing the concept of the departure passenger service charge with the PPP mentioned in Chapter 2.1.1, the result was not in favour of the departure passenger service charge since the PPP aimed to make the polluter pay the tax, which were the aircraft operators in the case of noise from the aircraft. However, the departure passenger charge was collected from the passenger, who was not the polluter but the consumer. Moreover, comparing other charges and the PPP, since the concept of other charges is broad, it depends on the policymaker's decision. The decision to impose the other charges may or may not comply with the PPP, depending on the circumstances and characteristics of such charges.

4.2.3 Comparison with the environmental tax

When considering the Heathrow noise charges scheme with the tax principle mentioned in Chapter 2.1.2, this charges scheme should be categorised as an earmarked tax.

In addition, when comparing the noise charges at the CDG Airport and the TNSA to any category of the tax, the noise charges should be considered as an indirect tax as mentioned in Chapter 2.1.2. In the case of the TNSA, it should be categorised as an earmarked tax since the TNSA's specific purpose was mainly used for noise insulation for the residents living nearby the airport, so it was similar to the concept of the earmarked tax, which was a tax used for a specific purpose.

Moreover, when comparing the concept of the environmental tax, the Thai law on the departure passenger service charge, applied in Suvarnabhumi Airport, was an indirect tax since it was applied to the passenger or the consumer, which indirectly affected the price of the goods or ticket. In the case of other charges, this could not be concluded; nevertheless,

⁴² Air Navigation Act B.E. 2497 (1954) .56 (5).

it could be one of the types of environmental tax depending on the characteristic of the charges.

4.2.4 Comparison with the ICAO's four key principles

When compared to the four key principles of charging given by the ICAO, the UK noise charges scheme applied at Heathrow Airport and the French noise charges and tax used at CDG Airport comply with the four key principles mentioned in Chapter 2.4.

For Thai law, both departure passenger service charges and the other charges could, or possibly could not, comply with the four key principles depending on the facts.

5. Conclusions and Recommendations

5.1 Conclusions

Noise pollution from aircraft is not only annoying, it can also lead to more serious health problems. In addition, economic instruments to resolve noise pollution problems caused by aircraft in many countries are environmental taxes and charges. This infers that the tax principle to resolve noise pollution is the environmental tax principle, which is a tax that aims to change the target-specific behaviour on environmental matters.

Moreover, the noise tax has a crucial principle known as the PPP, which designates that the party who should pay for the pollution is the party who causes the damage to the environment or the polluter. There are several types of environmental taxation that are used to resolve environmental matters.

Additionally, the ICAO has tried to find a way to resolve this environmental problem, so the ICAO stipulated the standards and recommended practices for the member states to follow. Moreover, the important principles to consider before making a policy on any charges are the four key principles.

Likewise, the UK and France have differently applied the principle of noise tax and charges. The UK applied only the noise charges from aircraft according to the ICAO's standards. However, France applied both noise charges and noise tax in their civil aviation. Therefore, applying noise charges is possible in Thailand, but the noise tax is not permissible according to the current laws.

Moreover, Thailand still has a problem with the public sector agencies' authority and duties and the appropriate laws to resolve noise pollution from aircraft.

5.2 Recommendations

The author has divided the recommended approaches into two approaches as follows:

Approach I

Approach I is a concept that has developed the law according to UK law. The law on the environment should give more authority to the CAAT to resolve the noise pollution from aircraft. The Thai Minister of Transport should have the authority to designate an airport similar to the Secretary of State in the UK by designating a busy airport in Thailand, which in this context would be Suvarnabhumi Airport. After designating such an airport, the Minister, through the advice of the CAAT, should set an appropriate rate of noise charges at such an airport by considering the overall charges of the airport and use noise charges as an incentive. As such, these noise charges should not gain any additional revenue to the airport or government.

According to the directive mentioned in Chapter 4.1, the representative of the CAAT should be at least a vice president or president in this committee to increase the efficiency of resolving the environmental problems.

Moreover, the revenue collected from the airport should be used in the scope of air navigation facilities, services, or environmental purposes. For the night period, Suvarnabhumi Airport should impose multiple charges to discourage night operations, so as to reduce the number of people suffering from noise pollution.

For the type of noise charges, the collection for both the take-off and landing would be a possible solution since this could fill the gap of some aircraft operations. These would not be subjected to the noise charges, such as the collection of noise charges on landing if the aircraft operated after night time, as the airport operator could not collect the extra charges from such operation. However, the system of collection for both the take-off and landing used at Heathrow Airport could fill this gap.

In summary, this approach involves the law and authority of a public sector agency. The author recommends assigning more authority to the CAAT to resolve the noise pollution from aircraft since the CAAT is a specialist in the field of civil aviation and to reduce the overlapping of authority between the public sector agencies. Furthermore, the author recommends the UK method of designating airports by the Minister of Transport instead of waiting for the airport to propose the use of the charge. The noise charges in this approach would be mainly imposed as a matter of an incentive.

For the airport operator, the author recommends that the operator should provide a sufficient study of their local noise issues so the operator can decide on the possibility of imposing noise charges and the appropriate amount of the charges to impose at the airport.

Approach II

Approach II would be used only when the government noticed that the introduction of noise charges, according to Approach I, was insufficient and they would need to find a way to provide noise insulation for the people living nearby the airport by levying additional tax, as in the French approach. This approach could also find a way to provide compensation for noise insulation for the people living nearby the airport. However, the government would need to develop a noise mapping system to determine the area, which would be affected by the noise and also need to adjust several laws, such as the tax law to support the levy on the environmental issue, and other possible related laws, which could lead to complexity and difficulty to apply this approach. Thus, the author suggests that this approach should be used only as a final solution when there is no other way to resolve the noise problem, and there would be a lot of people needing to be compensated.