3.8 Quality of life value

3.8.1 Economic and social

3.8.1.1 Scope of Study

Socioeconomic studies are survey studies with the objective to study socioeconomic conditions of people and communities in the study area, environmental issues that affect daily living, awareness of project information, opinions and feedback of communities on the construction phase and operation phase of the project.

The scope of the study area was designated to cover the area extending from the perimeter of U-Tapao International Airport, of up to 6 kilometers to the east and west and up to 10 kilometers to the north and south, covering 2 provinces, 4 districts, 10 subdistricts, 87 villages/communities. Details as shown in Table **3.8-1** and **Figure 3.8-1**

Table 3.8-1 Study area for socioeconomic survey classified by administrative area

Province	District	Subdistrict	Village/Community
1) Rayong	1) Ban Chang	1) Phala	1) Village No. 1 Ban Khao Khrok Tabak
			2) Village No. 2, Ban KM.16
			3) Village No. 4, Ban Khlong Sai
			4) Village No. 5, Ban Phala
			5) Eastern-Nong Muang Community
			6) Village No. 6, Ban Takat
			7) Village No. 7, Ban Khlong Sai Mai
		2) Sam Nak Thon	8) Village No. 1 Ban Sam Nak Thon
			9) Sam Nak Thon Community 1
			10) Sam Nak Thon Community 2
			11) Sam Nak Thon Community 3
			12) Phetlada Village
			13) Chuen Suk Village
			14) Chuen Suk Village, Soi Thesaban 25
			15) Chuen Suk Village, Soi Thesaban 32 A
			16) Village No. 2, Ban Chak Mak
			17) Village No. 3, Ban Sa Kaeo
			18) Sa Kaeo Community 1
			19) Sa Kaeo Community 2
			20) Village No. 4, Ban Khlong Bang Phai
			21) Rinsiri Village 3
			22) Rinsiri Village 4
			23) Chaiyapruek Ville Village
			24) Punyapat Village
			25) Country Home Aviation Village
			26) Village No. 5, Ban Yai Ra
			27) Yai Ra Community 1
			28) Yai Ra Community 2
			29) Yai Ra Community 3
			30) Village No. 6, Ban Khao Khlok
			31) Khao Khlok Community 1

Table 3.8-1 Study area for socioeconomic survey classified by administrative area

Province	District	Subdistrict	Village/Community
			32) Khao Khlok Community 2
			33) Village No. 7, Ban Nong Takhian
			34) Village No. 8, Ban Cherng Khao

Table 3.8□1 Study area for socioeconomic survey classified by administrative area

Province	District	Subdistrict	Village/Community
		3) Ban Chang	35) Ban Noen Kraprok Community
			36) Ban Chang - Phala Community
			37) Wat Khiri Pawanaram Community
			38) East Noen Kraprok Community, Prachummit
			39) Wat Ban Chang Community
			40) Eastern-Nong Muang Community
			41) Ming Mongkol Community
			42) Jor Koo Community
			43) Wirat Phatthana Department Store Community
			44) Dong Dang Community
			45) Ruam Mitr Community
			46) Health Park Community
			47) Taiwa Community
			48) Dao Pitak Community
			49) Fa Si Thong Community
			50) Ruam Chom View Noen Kraprok Community
			51) Pokpong Sataban Community
			52) Thep Mongkol Community
			53) Mathurot Community
			54) Samakkhi Nam Chai Community
			55) Village No. 1, Ban Noen Kraprok Bon
			56) Village No. 2, Ban Prachummit
			57) Village No. 3, Ban Noen Samre
			58) Village No. 4, Ban Phayun
			59) Village No. 6, Ban Noen Kraprok Lang
			60) Village No. 7, Ban Phudon Huai Mahat
	2) Mueang Rayong	4) Huai Pong	61) Soi Khiri Community
			62) Chak Luk Ya Community – East side
2) Chonburi	3) Bang Lamung	5) Huai Yai	63) Village No. 8, Ban Thung Lahan
			64) Village No. 10, Ban Nong Chak Ngaeo
			65) Village No. 11, Ban Map Fakthong
			66) Village No. 13, Ban Nong Phakkut
			67) Map Fakthong Community
	4) Sattahip	6) Na Jomtien	68) Rong Si Community
			69) Khao Chi Chan Community
		7) Bang Sare	70) Village No. 6, Ban Khao Krating Community
			71) Village No. 7, Ban Nong Hin Community

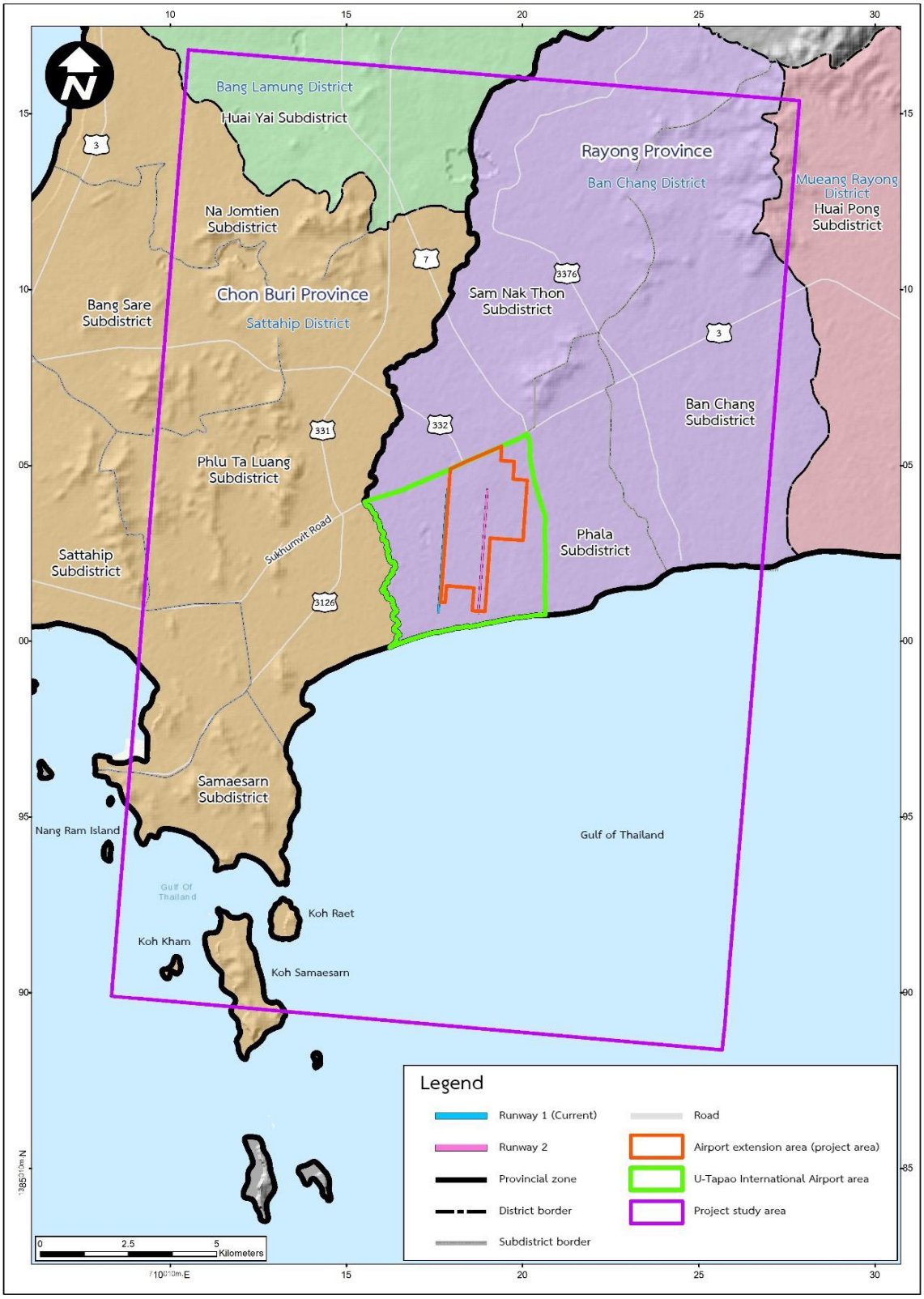
Table 3.8□1 Study area for socioeconomic survey classified by administrative area

Province	District	Subdistrict	Village/Community
			72) Village No. 11, Ban Khong Wanphen Community

Table 3.8□1 Study area for socioeconomic survey classified by administrative area

Province	District	Subdistrict	Village/Community
		8) Phlu Ta Luang	73) Village No. 1, Ban Phlu Ta Luang
			74) Village No. 2, Ban Khalot
			75) Village No. 3, Ban Khlong Phai
			76) Village No. 4, Ban Khlong Phlu Ta Luang
			77) Village No. 5, Ban Khao Bai Si
			78) Village No. 6, Ban Khao Tabaek
			79) Village No. 7, Ban Nong Ya Noi
			80) Khao Mon Community
			81) Village No. 8, Ban Nong Ya
		9) Sattahip	82) Juk Samet Community, Village No. 2
			83) Dongtan Community, Village No. 2
		10) Samaesarn	84) Village No. 1, Ban Chong Samaesarn
			85) Village No. 2, Ban Nong Nam Khem
			86) Village No. 3, Ban Hua Laem
			87) Village No. 4, Ban Nong Krachong
2 Provinces	**4 Districts**	**10 Subdistricts**	**87 Villages/Communities**

Note: Data compiled by United Analyst and Engineering Consultants Co., Ltd., 2020



Source: United Analyst and Engineering Consultants Co., Ltd. 2020

Figure 3.8□1 Study area for socioeconomic survey classified by administrative areas

3.8.1.2 Study Methods

(1) Secondary data

The study of basic socioeconomic data of the project refers to the collection of secondary socioeconomic data of the study area, from databases, statistical data, study reports, and documents from various data sources, at the provincial, district, and subdistrict levels. Relevant data include demography, population and households, occupations, incomes, expenses, and living conditions. Sources of secondary data as shown in **Table 3.8-2**

Table 3.8-2 Sources of social data/secondary variables

Data/variables	Origin of Data/Data Sources	Year
Administration and population		
Administration	Central Information System for Local Administrative Organizations, Department of Local Administration, Ministry of Interior Subdistrict Administrative Organization Municipality Office	2019 2019 2019 2019
Population	Department of Local Administration, Ministry of Interior National Statistical Office	2019 2019
Economic		
Gross Provincial Product	Office of the National Economic and Social Development Board National Statistical Office	2018 2018
Income per head of the population	Household socioeconomic survey, National Statistical Office	2017
Income - household expenditure	Household socioeconomic survey, National Statistical Office	2017
Society		
Religion	Rayong Provincial Office of Buddhism The Office of Buddhism, Chonburi Province	2018 2018
Education	Rayong Provincial Statistical Office Chonburi Provincial Statistical Office	2018 2018
Poverty	National Statistical Office	2018
Household debt	Household income and expenditure statistics, National Statistical Office	2017

Note: Since secondary data is information that has been collected from various agencies, the results of the collection in some sections only contain information at the provincial level.

(2) Primary data

were gathered from the target groups likely to be impacted by the project based on the criteria to determine the areas that may be impacted by the project and the target groups for the survey, as shown in the following details:

(2.1) Criteria for determining affected areas from impacts of the project

Project stakeholders were classified based on the key impacts of the project, namely noise impacts from aircraft taking off and landing. Areas affected by noise are designated based on disturbance from noise impacts, which are assessed using noise exposure forecasts or NEF, the standard method used to assess noise, using mathematical models that are designed to predict human disturbance levels in area impacted by noise from aircraft taking off and landing. The NEF values are represented by noise contour map showing locations of airport and surrounding areas.

Using mathematical models to predict the noise impact from aircraft taking off and landing, the input data included types of aircraft, number of aircraft, time of aircraft taking off and landing, runway used and flight path. The forecast results are shown in the form of a noise contour map. The noise level projection uses an Ldn estimation. For aircraft noise events as a measurable value, the impact level is divided into Ldn greater than 75 dBA, Ldn 70-75 dBA and Ldn 65-70 dBA and Ldn less than 65 dBA. Ldn values are not directly related to NEF values, but the relationship between Ldn and NEF is obtained from the equation Ldn ≈ NEF+35 is applicable to the noise events of aircraft flying over, with tolerance limit of ±3 dBA, and the assessment can be made to both predict the future impact in the event of the highest air traffic and to gauge impact of the current actual flight situation. The results of such assessment, in addition to being able to distinguish between buildings, structures with different land uses in the areas impacted by noise to determine level of impact, but can also be used to determine range of noise level suitable for certain types of land use in area around the airport. A further assessment of whether the resulting noise level is still appropriate for the building's activities can lead to determination of appropriate measures to prevent, resolve and mitigate noise impact. According to a research study on the noise impact from aviation practices (2010), the Department of Environmental Quality Promotion and technical recommendation on noise level criteria to determine suitable land use around airports (2016), the Pollution Control Department has set the Noise Exposure Forecast (NEF) parameters and noise level criteria to determine suitable land use around the airports. Details as shown in **Table 3.8-3**.

Table 3.8-3 Noise levelcriteria to determine appropriate land use around airports and the noise impact

Ldn (dBA)	Land use	NEF	Noise impact
Less than 65	Suitable for living.	Less than 30	The area is not affected by noise impact from the airport.
65-70	Not suitable for residential purpose (1)	30-35	Affected by noise impact from the airport and measures must be taken to find solution.
70-75	Not suitable for residential purpose (2)	35-40	Affected by noise impact from the airport and measures must be taken to find solution.

More than 75	Not suitable for residential purpose	More than 40	There is severe noise from the airport, and negotiate must be conducted to offer to purchase the property or to provide compensation.

Note: (1) No building permit should be granted, except for buildings that require installation of sound absorbing materials from the building exterior to the interior, with noise level reduction (NLR) of not less than 25 dBA, and such buildings must not be made of wood.

(2) No building permit should be granted, except for buildings that require installation of sound absorbing materials from the building exterior to the interior, with noise level reduction (NLR) of not less than 30 dBA, and such buildings must not be made of wood.

Source: A research study of noise impact from aviation practices, the Department of Environmental Quality Promotion, 2010. Technical recommendation on noise level criteria to determine suitable land use around airports, the Pollution Control Department, 2016.

Together with the 29 May 2007 Cabinet resolution Re: approval of criteria for the assessment of buildings/houses of persons affected by noise impact from Suvarnabhumi Airport in accordance with the resolution of the policy committee on the operation of Suvarnabhumi Airport and Bangkok Airport (Don Mueang) at meeting 3/2550 on 22 May 2007, to take the following actions:

- For properties located in NEF > 40, negotiate to offer to purchase the property. In case the property owner does not wish to sell, support must be given to renovate, improve or have sound-absorbing materials installed to mitigate noise impact.
- For properties located in NEF 30 - 40, support the improvement of buildings and structures in case the L90 noise disturbance level measurement results exceed 10 dBA. As for compensation for buildings and structures, the AOT shall survey and identify the number of buildings and structures affected by the noise impact which had been built prior to the start of the project's operation, and provide estimate for compensation.

The project applied the NEF, technical recommendation on noise level criteria to determine suitable land use around airports, together with the Cabinet resolution on 29 May 2007 on the approval of criteria for assessment of buildings/houses of persons affected by noise impact from Suvarnabhumi Airport, to determine the classification of areas exposed to noise impact using NEF as criteria, into 3 groups: 1) group in NEF ≥ 40 area, 2) group in NEF 30 - 40 area, and 3) group in NEF < 30 area.

(2.2) <u>Determination of target groups in the study</u>

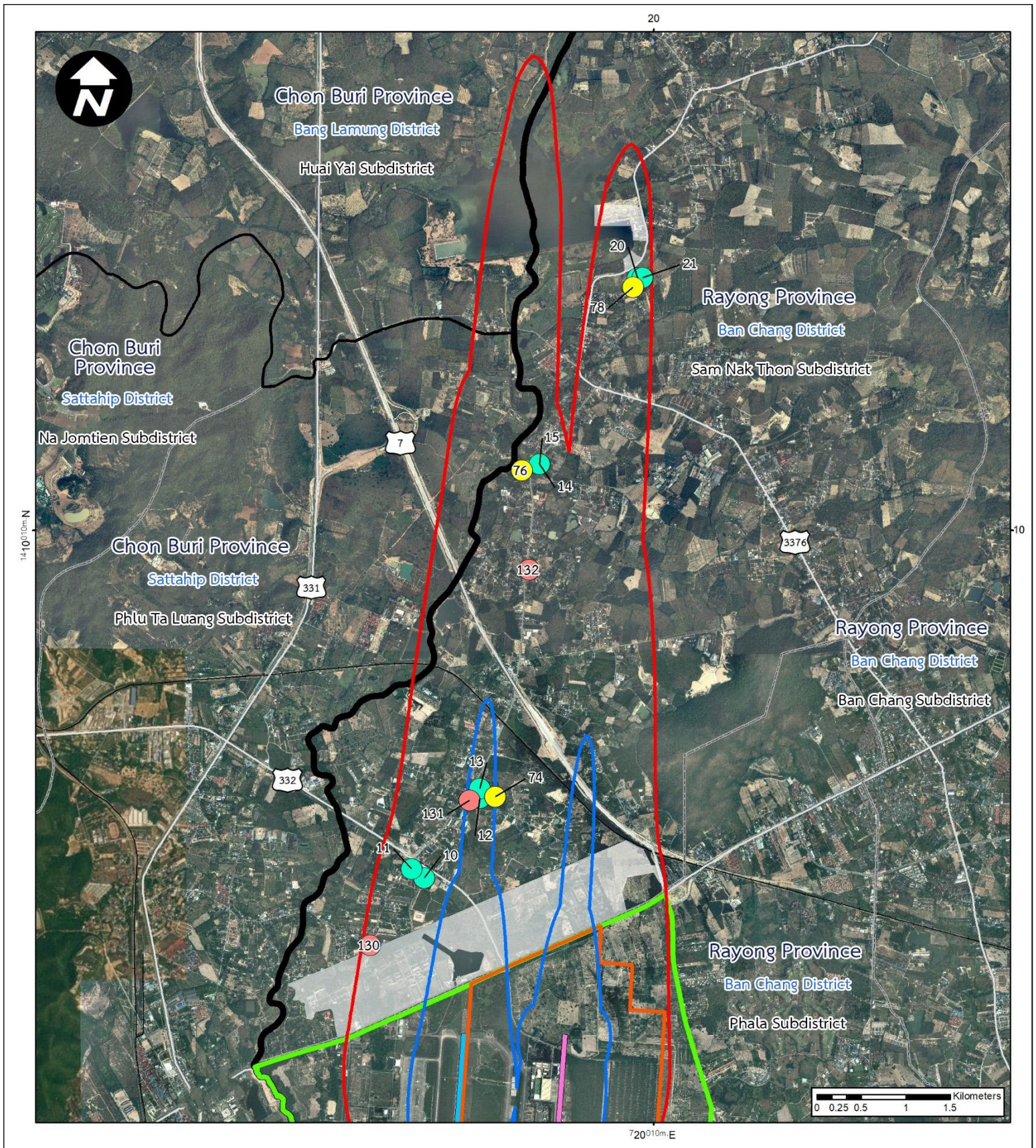
Target groups in the household socioeconomic survey of this project can be classified into 3 groups as follows:

1) Group 1 Environmentally Sensitive Area Affected in Noise Contour Area

It is a group that is sensitive to environmental impacts from construction phase and operation phase of the project. This group consisted of 3 religious sites, 8 educational institutions, and 3 medal institutions, all in the Sam Nak Thon Subdistrict of Ban Chang District, Rayong Province, by using purposive sampling method through interviews of school administrators, heads of medical institutions, and religious leaders in the noise contour area as detailed in **Table 3.8-**4 Sensitive areas affected by and **Figure 3.8-**2

Table 3.8-4 Sensitive areas affected by impact in the noise contour area

Sequence No.	Sensitive area list	Sensitive area type	Distance from project area (km)
NEF > 40 area			
1	Wat Sa Kaeo	Religious Site	1.77
2	Wat Sa Kaeo School	Educational Institution	2.73
3	Saeng Song La Child Development Center 3	Educational Institution	2.62
4	Ban Sa Kaeo Subdistrict Health Promotion Hospital	Medical Institution	2.62
NEF 30 - 40 area			
1	Wat Sombun Naram	Religious Site	5.10
2	Wat Sam Nak Krathon	Religious Site	7.15
3	Wat Sombun Naram School	Educational Institution	6.26
4	Municipal Child Development Center, Sam Nak Thon Subdistrict	Educational Institution	6.26
5	Pattanavech College of Technology	Educational Institution	1.87
6	Pattanavechsuksa School	Educational Institution	1.75
7	Wat Samnak Kathon School	Educational Institution	8.56
8	Ban Sam Nak Thon Child Development Center	Educational Institution	8.58
9	Ban Khao Khrok Subdistrict Health Promotion Hospital	Medical Institution	5.21
10	Ban Khlong Bang Phai Subdistrict Health Promotion Hospital	Medical Institution	1.48



Legend

- Provincial zone
- District border
- Subdistrict border
- Road
- Railroad
- Runway 1 (Current)
- Runway 2
- Airport extension area (project area)
- U-Tapao International Airport area
- Military area

Educational Institutions

- 10 Pattanavechsuksa School
- 11 Pattanavech College
- 12 Saeng Song La Child Development Center 3
- 13 Wat Sa Kaeo School
- 14 Wat Sombun Naram School (Tem Rat Memorial)
- 15 Sam Nak Thon Subdistrict Municipality Child Development Center in Wat Sombun Naram School
- 20 Wat Samnak Katon School
- 21 Ban Sam Nak Thon Child Development Center

Religious Sites

- 74 Wat Sa Kaeo
- 76 Wat Sombun Naram
- 78 Wat Samnak Katon

Medical Institutions

- 130 Ban Khlong Bang Phai Subdistrict Health Promotion Hospital
- 131 Ban Sa Kaeo Subdistrict Health Promotion Hospital
- 132 Ban Khao Khrok Subdistrict Health Promotion Hospital

NEF contour lines in the case of the 2019 aviation situation and aviation forecasts for 2028, 2038, and 2048 (maximum capacity 1,364 flights per day) and in all cases of inactive runways (791 flights per day) July 2021

- NEF 40 (14.30 square kilometers of land)
- NEF 30 (48.25 square kilometers of land)

Source: United Analyst and Engineering Consultants Co., Ltd. 2021

Figure 3.8□2 Location of sensitive areas impacted in the noise contour areas

2) Group 2 Community Leaders in Affected Voice Line Areas

A person who plays a role in community development and is a leader of the people sector in the project area. Use Purposive Sampling method by interviewing community leaders responsible for the area located in the noise contour area, namely subdistrict head, village head or assistant village head, chairperson of community committee, manager of housing estate juristic person. Leaders of all communities located in the noise contour area were interviewed. But because some villages had not established juristic person and had no chairperson of the village committee, the number of community leader interviewed by survey takers totaled 26 persons as shown in **Table 3.8-**5 Community.

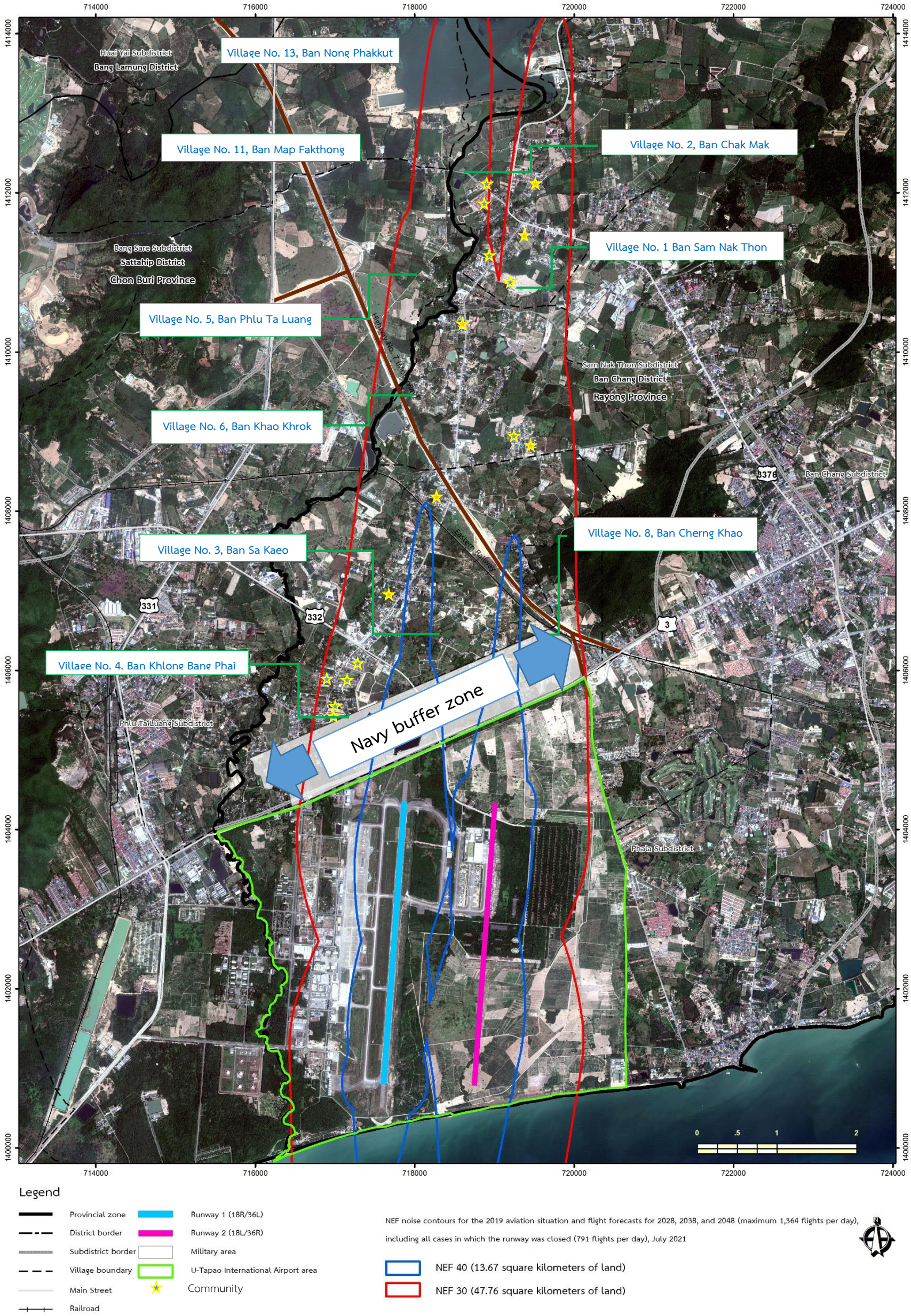
Table 3.8-5 Community leaders responsible for areas affected by impact, located in noise contour area.

Province	District	Subdistrict	Position of community leader
NEF ≥ 40 area			
Rayong	Ban Chang	Sam Nak Thon	Village head, Village No. 3, Ban Sa Kaeo *
			Subdistrict head, Sam Nak Thon Subdistrict (Village No. 4, Ban Khlong Bang Phai) *
NEF 30 - 40 area			
Rayong	Ban Chang	Sam Nak Thon	Village head, Village No. 1, Ban Sam Nak Thon
			Chairperson of Sam Nak Thon Community 1
			Chairperson of Sam Nak Thon Community 2
			Phetlada Village **
			Chuen Suk Village **
			Chuen Suk Village, Soi Thesaban 25 **
			Chuen Suk Village, Soi Thesaban 32 A **
			Chairperson of Sam Nak Thon Community 3
			Chairperson of Rinsiri Village 3
			Chairperson of Rinsiri Village 4
Rayong	Ban Chang	Sam Nak Thon	Village head, Village No. 2, Ban Chak Mak
			Community Chairperson, Sa Kaeo Community 1, Village No. 3, Ban Sa Kaeo
			Community Chairperson, Sa Kaeo Community 2, Village No. 3, Ban Sa Kaeo
			Chairperson of Chaiyapruek Ville Village, Village No. 4, Ban Khlong Bang Phai
			Chairperson of Punyapat Village, Village No. 4, Ban Khlong Bang Phai
			Country Home Aviation Village **
			Village head, Village No. 5, Ban Yai Ra
			Village head, Village No. 6, Ban Khao Khlok
			Community chairperson, Khao Khlok Community 1
			Community chairperson, Khao Khlok Community 2
			Village head, Village No. 7, Ban Nong Takhian
			Village head, Village No. 8, Ban Cherng Khao
		Phala	Chairperson, Eastern - Nong Muang Community Chair

Table 3.8□5 Community leaders responsible for areas affected by impact, located in noise contour area.

Province	District	Subdistrict	Position of community leader
Chonburi	Sattahip	Phlu Ta Luang	Ban Pluta Luang subdistrict head (Village No. 1 Ban Phlu Ta Luang)
			Village head, Village No. 5, Ban Khao Bai Si
	Bang Lamung	Huai Yai	Huai Yai subdistrict head (Village No. 8, Ban Thung Lahan)
			Village head, Village No. 11, Ban Map Fakthong
			Village head, Village No. 13, Ban Nong Phakkut
			Chairperson, Map Fakthong Community

Note: * With area under jurisdiction affected in NEF ≥ 40 and NEF 30 – 40 areas
** Village which have not registered as juristic person, and there was no chairperson of the village committee.



Source: United Analyst and Engineering Consultants Co., Ltd. 2021

Figure 3.8-3 Locations of affected villages/communities in the noise contour area

3) Group 3 Household Group

A person who has the key role to provide household data is the head of the household or person capable of providing household data and is willing to cooperate in filling out the questionnaire, with the permission of the head of the household, and classified according to the following areas affected by impact from the project.

- NEF area ≥ 40: Determination of target group setting and number of samples was implemented by surveying all households that could be located at that time as well as being households that could be reached and were willing to provide household data. Basic data were obtained from the aerial photos of Google Earth 2021. Since the study area was located specifically in NEF 40 area, the data of the Department of Local Administration 2019 was not used. Field survey of the area was used instead and it was found that the number of households in NEF ≥ 40 totaled 93 households as shown in Table **3.8-**6

Table 3.8-6 Study area of household socioeconomic survey in NEF ≥ 40 area

Province	District	Subdistrict	Village/community list	Number of households [1/]
Rayong	Ban Chang	Sam Nak Thon	Village No. 3, Ban Sa Kaeo	91
			Village No. 4, Ban Khlong Bang Phai	2
Total				**93**

Note: [1/] is preliminary data obtained from aerial photos of Google Earth 2021

- NEF 30 - 40 area: Targeting and number of samples using sampling methods calculated using Taro Yamane formula. Confidence level 95%. The target group was identified in the study area according to the Department of Local Administration information (2019), along with aerial photos (Google Earth 2021). There were 2,459 households, once calculated, 344 samples were required, classified by the administrative areas specifically within the NEF 30 - 40 area in order to spread the samples to cover all areas in direct proportion. This is called the sampling distribution. In other words, the larger population, the larger number of samples. The value obtained from the calculation is rounded up to the nearest decimal point. When the number of samples is obtained in each area, then proceed to collect data using a questionnaire, deemed the most suitable method as shown in **Equation (1)**

$$n = \frac{N}{1+Ne^2} \qquad \text{--------Equation (1)}$$

$$= \frac{2,459}{1+2,459\ (0.05)^2}$$

= 344.0

where	n	is	Number of samples
	N	is	Number of households in the study area
	e	is	Tolerance limit (5%)

Based on the calculation of the number of samples in the survey according to **Equation (1)** in the NEF 30 - 40 area, arriving at 344 samples, the lowest most appropriate number of samples for the study area's population size.

In order to select samples to conduct the survey, the method used was area sampling. Then, the number of samples were determined proportionally to the area, which is called sampling distribution, calculating the number of samples representing each area to be directly proportional to the number of households in each area as shown in **Equation (2).**

$$A = \frac{n_1 n}{N}$$ --------**Equation (2)**

where	A	is	Number of samples of target groups
	n_1	is	Number of target groups' households
	N	is	Total number of households in the study area
	n	is	Total number of samples from **Equation (1)**

Details of the number of samples in the household socioeconomic survey are presented in Table **3.8-7**

Table 3.8-7 Study area of household socioeconomic survey in NEF area 30 - 40 area

Province	District	Subdistrict	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/	Number of actual survey samples (subject)
Rayong	Ban Chang	Sam Nak Thon	Village No. 1 Ban Sam Nak Thon	92	12.9	13
			Sam Nak Thon Community 1	191	26.7	27
			Sam Nak Thon Community 3	172	24.1	25
			Phetlada Village	34	4.8	5
			Chuen Suk Village	81	11.3	12
			Chuen Suk Village, Soi Thesaban 25	59	8.3	9

Table 3.8-7 Study area of household socioeconomic survey in NEF area 30 - 40 area

Province	District	Subdistrict	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/	Number of actual survey samples (subject)
			Chuen Suk Village, Soi Thesaban 32 A	14	2.0	2
			Village No. 2, Ban Chak Mak	2	0.3	1
			Village No. 3, Ban Sa Kaeo	435	60.9	61
			Sa Kaeo Community 1	94	13.2	14
			Sa Kaeo Community 2	135	18.9	19
			Village No. 4, Ban Khlong Bang Phai	145	20.3	21
			Rinsiri Village 3	30	4.2	5
			Rinsiri Village 4	20	2.8	3
			Chaiyapruek Ville Village	64	9.0	9
			Punyapat Village	50	7.0	7
			Country Home Aviation Village	27	3.8	4
			Village No. 5, Ban Yai Ra*	0	0.0	0
			Village No. 6, Ban Khao Khrok	645	90.2	91
			Village No. 7, Ban Nong Takhian	1	0.1	1
			Village No. 8, Ban Cherng Khao	54	7.6	8

Table 3.8-7 Study area of household socioeconomic survey in NEF area 30 - 40 area

Province	District	Subdistrict	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/	Number of actual survey samples (subject)
Rayong	Ban Chang	Phala	Eastern-Nong Muang Community*	0	0.0	0
Chonburi	Sattahip	Phlu Ta Luang	Village No. 1, Ban Phlu Ta Luang*	0	0.0	0
			Village No. 5, Ban Khao Bai Si	80	11.2	12
	Bang Lamung	Huai Yai	Village No. 11, Ban Map Fakthong	34	4.8	5
			Village No. 13, Ban Nong Phakkut*	0	0.0	0
Total				**2,459**	**344.0**	**354**

Note: * Villages that are in the scope of the study area but do not have households in the area
1/ is the data from the Department of Local Administration (2019), together with the primary data obtained from aerial photos of Google Earth 2021
2/ The number of samples based on the calculation using Taro Yamane formula were distributed in proportion to the number of households in the target area.

When the sample numbers were directly proportional to the number of households arriving at 354 samples which were then enumerated through interviews with the head of household or a person authorized by the head of household who could provide household information and were willing to cooperate filling out questionnaire through interview conducted by survey takers who asked questions in detail and recorded the information.

- NEF area < 30 extending to the study area perimeter: Targeting and number of samples using sampling methods calculated using Taro Yamane formula. Confidence level 95%. The target group was identified in the study area according to the Department of Local Administration information (2019), along with aerial photos (Google Earth 2021). There were 23,444 households, once calculated, 394 samples were required as minimum suitable number classified by the administrative areas specifically within the NEF < 30 area extending to the study area perimeter in order to spread the samples to cover all areas in direct proportion. This is called the sampling distribution. In other words, the larger population, the larger number of samples. The value obtained from the calculation is rounded up to the nearest decimal point. When the number of samples is obtained in each area, then proceeded to collect data using a questionnaire, deemed the most suitable method as shown in **Equation (1)**.

$$n = \frac{N}{1+Ne^2} \qquad \text{--------Equation (1)}$$

$$= \frac{23,444}{1+23,444\ (0.05)^2}$$

= 393.3

where n is Number of samples

N is Number of households in the study area

e is Tolerance limit (5%)

In order to select samples to conduct the survey, the method used was area sampling. Then, the number of samples were determined proportionally to the area, which is called sampling distribution, calculating the number of samples representing each area to be directly proportional to the number of households in each area as shown in **Equation (2).**

$$A = \frac{n_1 n}{N}$$ --------**Equation (2)**

where A is Number of samples of target groups

n_1 is Number of target groups' households

N is Total number of households in the study area

n is Total number of samples from **Equation (1)**

When distributed in proportion to local households, the number of samples for the socioeconomic survey is as shown in Table **3.8-8**

Table 3.8-8 Study area of household socioeconomic survey in NEF area < 30 extending to the study area perimeter

Province	District	Subdistrict	Local Administrative Organization responsible for the area.	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/
Rayong	Ban Chang	Phala	Phala Subdistrict Municipality	Village No. 1 Ban Khao Khrok Tabak	119	2
				Village No. 2, Ban KM.16	91	2
				Village No. 4, Ban Khlong Sai	191	4
				Village No. 5, Ban Phala	854	15
				Village No. 6, Ban Takat	663	12
				Village No. 7, Ban Khlong Sai Mai	371	7
Rayong	Ban Chang	Sam Nak Thon	Subdistrict Municipality Sam Nak Thon	Sam Nak Thon Community 1	48	1
				Sam Nak Thon Community 2	126	3

Table 3.8-8 Study area of household socioeconomic survey in NEF area < 30 extending to the study area perimeter

Province	District	Subdistrict	Local Administrative Organization responsible for the area.	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/
				Sam Nak Thon Community 3	43	1
				Yai Ra Community 1	226	4
				Yai Ra Community 2	392	7
				Yai Ra Community 3	170	3
				Sa Kaeo Community 2	123	3
				Khao Khrok Community 1	128	3
				Khao Khrok Community 2	250	5
Rayong	Ban Chang	Sam Nak Thon	Sam Nak Thon SAO	Village No. 1 Ban Sam Nak Thon	190	4
				Village No. 2, Ban Chak Mak	339	6
				Village No. 3, Ban Sa Kaeo	359	7
				Village No. 4, Ban Khlong Bang Phai	555	10
				Village No. 5, Ban Yai Ra	133	3
				Village No. 7, Ban Nong Takhian	343	6
				Village No. 8, Ban Cherng Khao	43	1

Table 3.8-8 Study area of household socioeconomic survey in NEF area < 30 extending to the study area perimeter

Province	District	Subdistrict	Local Administrative Organization responsible for the area.	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/
Rayong	Ban Chang	Ban Chang	Ban Chang Municipality	Ban Noen Kraprok Community	75	2
				Ban Chang - Phala Community	415	7
				Wat Khiri Pawanaram Community	132	3
				East Noen Kraprok Community, Prachummit	33	1
				Wat Ban Chang Community	414	7
				Eastern-Nong Muang Community	148	3
				Ming Mongkol Community	73	2
Rayong	Ban Chang	Ban Chang	Ban Chang Municipality	Jor Koo Community	38	1
				Wirat Phatthana Department Store Community	131	3
				Dong Dang Community	44	1
				Ruam Mitr Community	71	2
				Health Park Community	30	1
				Taiwa Community	59	1
				Dao Pitak Community	65	2
				Fa Si Thong Community	47	1
				Ruam Chom View Noen Kraprok Community	111	2
Rayong	Ban Chang	Ban Chang	Ban Chang Municipality	Pokpong Sataban Community	47	1
				Thep Mongkol Community	22	1
				Mathurot Community	23	1
				Samakkhi Nam Chai Community	47	1
Rayong	Ban Chang	Ban Chang	Subdistrict Municipality Ban Chang	Village No. 1, Ban Noen Kraprok Bon	138	3
				Village No. 2, Ban Prachummit	1,190	20
				Village No. 3, Ban Noen Samre	543	10
				Village No. 4, Ban Phayun	1,086	19
				Village No. 6, Ban Noen Kraprok Lang	427	8
				Village No. 7, Ban Phudon Huai Mahat	302	6
Rayong	Mueang Rayong	Huai Pong	Municipality	Soi Khiri Community	0	0
			Map Ta Phut	Chak Luk Ya Community – East side	0	0
Chonburi	Bang Lamung	Huai Yai	Huai Yai Subdistrict Municipality	Village No. 10, Ban Nong Chak Ngaeo	0	0
				Village No. 11, Ban Map Fakthong	844	15
				Village No. 13, Ban Nong Phakkut	116	2

Table 3.8-8 Study area of household socioeconomic survey in NEF area < 30 extending to the study area perimeter

Province	District	Subdistrict	Local Administrative Organization responsible for the area.	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/
Chonburi	Sattahip	Na Jomtien	Subdistrict Municipality Khao Chi Chan	Rong Si Community	250	5
				Khao Chi Chan Community	198	4
Chonburi	Sattahip	Bang Sare	Subdistrict Municipality Kled Kaew	Village No. 6, Ban Khao Krating Community	254	5
				Village No. 7, Ban Nong Hin Community	215	4
				Village No. 11, Ban Khong Wanphen Community	115	2
Chonburi	Sattahip	Phlu Ta Luang	Phlu Ta Luang SAO	Village No. 1, Ban Phlu Ta Luang	935	16
				Village No. 2, Khalot	637	11
				Village No. 3, Ban Khlong Phai	365	7
				Village No. 4, Ban Khlong Phlu Ta Luang	457	8
				Village No. 5, Ban Khao Bai Si	526	9
				Village No. 6, Ban Khao Tabaek	1,369	23
				Village No. 7, Nong Ya Noi	1,180	20
				Village No. 8, Nong Ya	285	5
			Sattahip Municipality	Khao Mon Community (Village No. 7, Phlu Ta Luang Subdistrict)	200	4

Table 3.8-8 Study area of household socioeconomic survey in NEF area < 30 extending to the study area perimeter

Province	District	Subdistrict	Local Administrative Organization responsible for the area.	Village/community list	Number of households 1/	Number of samples from calculation (subject) 2/
Chonburi	Sattahip	Sattahip	Subdistrict Municipality	Juk Samet Community, Village No. 2	588	10
			Udomsak District	Dongtan Community, Village No. 2	1,755	30
Chonburi	Sattahip	Samaesarn	Samaesarn SAO	Village No. 1, Ban Chong Samaesarn	346	6
				Village No. 2, Ban Nong Nam Khem	575	10
				Village No. 3, Ban Hua Laem	261	5
				Village No. 4, Ban Nong Krachong	505	9
Total					**23,444**	428

Note: * Villages that are in the scope of the study area but do not have households in the area

1/ is the data from the Department of Local Administration (2019), together with the primary data obtained from aerial photos of Google Earth 2021

2/ The number of samples can be calculated using Taro Yamane formula, distributed in proportion to the number of households in the target area. Use the method selected was area sampling. Then determine the number of samples in proportion to the area, called sampling distribution by calculating the number of samples representing each area directly proportional to the number of households in each area.

When the sample numbers were directly proportional to the number of households arriving at 428 samples which were then enumerated through interviews with the head of household or a person authorized by the head of household who could provide household information and were willing to cooperate filling out questionnaire through interview conducted by survey takers who asked questions in detail and recorded the information.

(2.3) Study Tools

1) Questionnaire

As an interview tool to collect data from each sample group, the questions are either close-ended or open-ended questions designed by experts, categorized by target group type, using questionnaires with similar main query structure with some difference in certain parts depending on survey target group. The questions can be classified by key issues. Details are shown in **Table 3.8-**9 and **Appendix 3–9.**

Table 3.8-9 Questionnaires classified by questions on key issues

Query issue	Classified by target group of socioeconomic survey		
	Group 1 Sensitive areas	Group 2 Leaders	Group 3 Households

General data of respondents	**Section 1** - Gender - Age - Religion - Position in agency - highest education attainment - Length of service in the agency - Domicile - Length of stay in the area	**Section 1** - Gender - Age - Religion - Position in Community - highest education attainment - Primary occupation - Domicile - Length of stay in the area - Time in office	**Section 1** - Gender - Age - Religion - Status in household - highest education attainment - Primary occupation - Domicile - Length of stay in the area

Table 3.8-10 Questionnaires classified by questions on key issues (cont.)

Query issue	Classified by target group of socioeconomic survey		
	Group 1 Sensitive areas	Group 2 Leaders	Group 3 Households
Property data	-	-	<u>Section 2</u> - Ownership of house/building - Type of residence - Type of property - Utilization of house/building
Demographic data and Community Relationships	-	<u>Section 2</u> - Population/number of households in the community - Religion - Years since community established - Community characteristics/settlement pattern - Original domicile of community members - Relationship of people in the community - Group/Club/Organization Set-up - Change in the community's living environment	-
General data of agencies	<u>Section 2</u> - Number of personnel - Time since establishment of the agency - The nature of the building and the number of buildings belonging to the agency in the area	-	-
Household socioeconomic status	-	-	<u>Section 3</u> - Household occupation - Data of household members - Household income and expenditure - Household financial status - Indebtedness and cause - Savings per month
Social Conditions and current living environment	<u>Section 3</u> - Infrastructure data - Life and property safety	<u>Section 3</u> - Infrastructure data - Life and property safety	<u>Section 4</u> - Infrastructure data - Life and property safety

	- Social conditions, community relationships - Overall current living and environmental conditions - Environmental problems that have impact on the community - Travel and transportation	- Social conditions, community relationships - Overall current living and environmental conditions - Environmental problems that have impact on the community - Travel and transportation	- Social conditions, community relationships - Overall current living and environmental conditions - Environmental problems that have impact on the community - Travel and transportation

Table 3.8-11 Questionnaires classified by questions on key issues (cont.)

Query issue	Classified by target group of socioeconomic survey		
	Group 1 Sensitive areas	Group 2 Leaders	Group 3 Households
Public Health data	Section 4 - Medical treatment - Source of drinking water - tap water - Disposal of solid waste	Section 4 - Medical treatment - Source of drinking water - tap water - Disposal of solid waste	Section 5 - Medical treatment - Public health services - Physical health, mental health
Accident, Public Disaster and Public Safety Data			Section 6 - Accident, Disaster - Emergency response drills in cooperation with - Reporting emergency in the case of aviation accident
Environmental hygiene data			Section 7 - Source of drinking water - tap water - Disposal of solid waste - Wastewater management - Living conditions and satisfaction with the living environment
Awareness of information and public relations*	Section 5 - Awareness of project information - Source of information - Demand for information - Feedback on overall project	Section 5 - Awareness of project information - Source of information - Demand for information - Feedback on overall project	Section 8 - Awareness of project information - Source of information - Demand for information - Feedback on overall project
Opinions and Feedback on the Project	Section 6 - Potential impacts from the construction phase and operation phase of the project - Improvements required to prevent/mitigate impacts in the construction phase and operation phase Opinions on the draft environmental impact prevention and resolution measures in	Section 6 - Potential impacts from the construction phase and operation phase of the project - Improvements required to prevent/mitigate impacts in the construction phase and operation phase - Opinions on the draft environmental impact prevention and resolution measures in the construction phase and operation phase	Section 9 - Potential impacts from the construction phase and operation phase of the project - Improvements required to prevent/mitigate impacts in the construction phase and operation phase - Opinions on the draft environmental impact prevention and resolution measures in the construction phase and operation phase

	the construction phase and operation phase		

Note : * Questions relating to the survey

2) Socioeconomic Survey Flip Chart

The consultant prepared a socioeconomic survey Flip Chart to present project details before conducting socioeconomic survey. The presentation consisted of background, justification, rationale, objectives of the project, project details, background, necessary reasons, and objectives of the project, details of the project, implementer, study area, procedures and implementation period, study of potential impacts on residents living or working in the project development area, nearby areas and members of the general public, measures to prevent, resolve or remedy hardship or damage resulting from impacts of the project, public participation, public relations of the project and channels for inquiry.

3) Instrument quality inspection

Conduct data validation using questionnaires as data collection tool consisting of 3 main activities:

3.1)Review of the questionnaires by experts.

The consultant has submitted questionnaires that have been created to an expert on socioeconomic data and public participation, [redacted], for review and revision to ensure content validity and construct validity to ensure the integrity of the questionnaires for use in the survey.

3.2)Provide training for survey takers.

Regarding field data collection, survey takers were required to conduct interview. Team leaders and survey takers underwent training to gain understanding of the project for 1 day on 2 December 2019. Before conducting an interview, the survey takers or interviewers must explain project details to the respondents or interviewees to make sure they have good understanding. The content of the training session consisted of information relating to the nature of the project, objectives of the survey, basic data of the target population, understanding of the questionnaires, interview technique, methods and procedures of interview, cautions, dress code, photo-taking and other essential skills required.

3.3)Provide supervisors

Provided 1 supervisor to go out and collect data for each team of 15 survey takers to supervise and implement quality control on data collection and verify data in the field, checking on the comprehensiveness of data collected each day as well as collection of data of each target group, administrative areas and completeness in the way data were filled out in various parts of the questionnaires along with collection of data as evidence. Details of the data collection team as shown in **Appendix 3–9.**

4) Survey result analysis and summary

Upon completion of the socioeconomic survey, all data collected by questionnaires were reviewed to ensure validity and completeness. Data were then organized or grouped before being analyzed and computed using ready-made SPSS (Statistical Package for the Social Sciences) for Windows program and analyzed data using descriptive statistic values, namely quantity and percentage. Data were analyzed and described in 3 groups, namely households in NEF areas ≥ 40, NEF areas 30 – 40, and NEF areas < 30 extending to the study area perimeter, sensitive areas and community leader group.

3.8.1.3 Results of the Study

(1) Secondary data

Based on the collection of basic socioeconomic data, including data at the provincial, district and subdistrict levels, of people living in the study area. Details are as follows:

(1.1) Administrative areas

The study area of the project is located in parts of Ban Chang District, Muang Rayong District, Rayong Province, and Bang Lamung District, Sattahip District, Chonburi Province. Details are shown in Table**Table** 3.8-12

Table 3.8-12 Study area in Ban Chang District, Muang Rayong District, Rayong Province, and Bang Lamung District, Sattahip District, Chonburi Province.

Local administrative organization responsible for the area	Area (square kilometers)	Number of communities/villages	Administrative area
Ban Chang District, Rayong Province			
Sam Nak Thon Subdistrict Municipality	14.80	10	Sam Nak Thon Subdistrict
Sam Nak Thon SAO	82.20	8	
Phala Subdistrict Municipality	66.00	7	Phala Subdistrict
Ban Chang Municipality	24.00	26	Ban Chang Subdistrict
Ban Chang Subdistrict Municipality	48.00	6	
Muang Rayong District, Rayong Province			
Map Ta Phut Municipality	165.56	38	Huai Pong Subdistrict
Bang Lamung District, Chonburi Province			
Huai Yai Subdistrict Municipality	153.00	13	Huai Yai Subdistrict

Table 3.8-12 Study area in Ban Chang District, Muang Rayong District, Rayong Province, and Bang Lamung District, Sattahip District, Chonburi Province.

Local administrative organization responsible for the area	Area (square kilometers)	Number of communities/villages	Administrative area
Sattahip District, Chonburi Province			
Khao Chi Chan Subdistrict Municipality	26.70	7	Na Jomtien Subdistrict
Kled Kaew Subdistrict Municipality	58.00	8	Bang Sare Subdistrict
Phlu Ta Luang SAO	54.05	8	Phlu Ta Luang Subdistrict
Sattahip Municipality	6.22	15	Sattahip Subdistrict
Khet Udomsak Subdistrict Municipality	88.25	13	
Samaesarn SAO	32.00	4	Samaesarn Subdistrict

Source: Central Information System of Local Administrative Organizations, Department of Local Administration, Accessed on 7 June 2019

(1.2) Demography

1) Population, rate of change and population density

Provincial Level

The population data of Rayong Province between 2015 and 2019 indicated that in 2019 the population peaked at 734,753, comprising 361,109 males and 373,644 females. The average population density was 206 per square kilometer. The province registered a population growth of 1.58%, trending towards steady growth. For Chonburi Province, the population data between 2015 and 2019, indicated that the population peaked at 1,558,301, comprising 762,141 males and 796,160 females. The average population density was 357 per square kilometer. The province registered a population growth of 1.48%, trending towards a steady growth. Details as shown in Table**Table** 3.8-13.

Table 3.8-13 Population, rate of change, and population density, Rayong and Chonburi provinces between 2015 - 2019

Year	Population (person)			Rate of change (percentage)	Population density (persons per square kilometer)
	Male	Female	Total		
Rayong Province					
Year 2015	339,333	349,666	688,999	-	193
Year 2016	344,310	355,913	700,223	1.63	197
Year 2017	349,775	361,461	711,236	1.57	200
Year 2018	355,539	367,777	723,316	1.70	203
Year 2019	361,109	373,644	734,753	1.58	206
Chonburi Province					
Year 2015	712,875	742,164	1,455,039	-	333
Year 2016	726,918	756,131	1,483,049	1.93	339
Year 2017	738,943	770,182	1,509,125	1.76	345
Year 2018	751,779	783,666	1,535,445	1.74	351
Year 2019	762,141	796,160	1,558,301	1.48	357

Note: Symbols – means No data

Source: Department of Local Administration, Ministry of Interior, accessed on 17 February 2020

District Level

Rayong Province: The population data of Ban Chang District between 2015 - 2019 indicated that the population peaked in 2019 at 76,106, comprising 37,953 males and 38,153 females. The average population density was 320 per square kilometer. The district registered a population growth of 1.73%, trending towards steady growth. For Muang Rayong District, the population data between 2015 - 2019, indicated that the population peaked in 2019 at 284,832, comprising 139,328 males and 145,504 females. The average population density was 554 per square kilometer. The district registered a population growth of 1.01%, trending towards a steady growth. Details as shown in **Table 3.8-14.**

Table 3.8-14 Population, rate of change, and population density, Ban Chang District and Muang Rayong District of Rayong Province between 2015 - 2019

Year	Population (person)			Rate of change (percentage)	Population density (persons per square kilometer)
	Male	Female	Total		
Ban Chang District, Rayong Province					
Year 2015	34,862	34,760	69,622	-	293
Year 2016	35,628	35,746	71,374	2.52	300
Year 2017	36,549	36,473	73,022	2.31	307
Year 2018	37,424	37,387	74,811	2.45	314
Year 2019	37,953	38,153	76,106	1.73	320
Muang Rayong District, Rayong Province					
Year 2015	133,347	138,113	271,460	-	528
Year 2016	134,789	140,547	275,336	1.43	536
Year 2017	136,495	142,319	278,814	1.26	542
Year 2018	137,918	144,062	281,980	1.14	549
Year 2019	139,328	145,504	284,832	1.01	554

Note: Symbols – means No data
Source: Department of Local Administration, Ministry of Interior, accessed on 18 February 2020

Chonburi Province: The population data of Bang Lamung District between 2015 - 2019 indicated that the population peaked in 2019 at 396,395, comprising 185,450 males and 210,945 females. The average population density was 546 per square kilometer. The district registered a population growth of 2.05%, trending towards steady growth. For Sattahip District, the population data between 2015 - 2019, indicated that the population peaked in 2018 at 165,492, comprising 90,793 males and 74,699 females. The average population density was 476 per square kilometer. The district registered a population growth of 0.81%, trending towards a decline from 2019. Details as shown in **Table 3.8-15.**

Table 3.8-15 Population, rate of change, and population density, Bang Lamung District and Sattahip District of Chonburi Province between 2015 - 2019

Year	Population (person)			Rate of change (percentage)	Population density (persons per square kilometer)
	Male	Female	Total		
Bang Lamung District, Chonburi Province					
Year 2015	169,573	192,097	361,670	-	498
Year 2016	174,021	197,134	371,155	2.62	511
Year 2017	178,093	202,023	380,116	2.41	523
Year 2018	181,880	206,560	388,440	2.19	535
Year 2019	185,450	210,945	396,395	2.05	546
Sattahip District, Chonburi Province					
Year 2015	86,987	72,408	159,395	-	458
Year 2016	89,808	73,178	162,986	2.25	469
Year 2017	90,156	74,012	164,168	0.73	472
Year 2018	90,793	74,699	165,492	0.81	476
Year 2019	89,772	75,319	165,091	-0.24	475

Note: Symbols – means No data
Source: Department of Local Administration, Ministry of Interior, accessed on 18 February 2020

Subdistrict level (municipal and non-municipal areas)

Ban Chang District, Rayong Province: The subdistrict population data in the study area, indicated that in 2019, Sam Nak Thon Subdistrict (non-municipality area) had a population of 10,747, registering a growth rate of 0.81%, with average population density of 131 per square kilometer. Phala Subdistrict Municipality had a population of 8,974, registering a growth rate of 1.77%, with average population density of 136 per square kilometer. Sam Nak Thon Subdistrict Municipality had a population of 11,484, registering a growth rate of 0.13, with average population density of 776 per square kilometer. Ban Chang Subdistrict Municipality had a population of 13,918, registering a growth rate of 4.61%, with average population density of 290 per square kilometer. Ban Chang Municipality had a population of 30,983, registering a growth rate of 1.39%, with average population density of 1,291 per square kilometer, as detailed in **Table 3.8-16** and **Table 3.8-17**.

Mueang Rayong District: The subdistrict population data in the study area indicated that in 2019, Map Ta Phut Municipality had a population of 70,714, registering a growth rate of 3.37%, with average population density of 427 per square kilometer. Details as shown in **Table 3.8-16** and **Table 3.8-17**

Bang Lamung District: The subdistrict population data in the study area indicated that in 2019, Huai Yai Subdistrict Municipality had a population of 30,123, registering a growth rate of 2.23%, with average population density of 197 per square kilometer. Details as shown in **Table 3.8-16** and **Table 3.8-17**

Sattahip District, Chonburi Province: The subdistrict population data in the study area, indicated that in 2019, Khao Chi Chan Subdistrict Municipality had a population of 9,181, registering a growth rate of 0.64%, with average population density of 344 per square kilometer. Phlu Ta Luang Subdistrict (non-municipality area) had a population of 37,599, registering a decline of -0.68%, with average population density of 696 per square kilometer. Samaesarn Subdistrict had a population of 6,268, registering a decline of -2.91%, with average population density of 196 per square kilometer. Kled Kaew Subdistrict had a population of 13,539, registering a growth of 2.13%, with average population density of 233 per square kilometer. Sattahip Municipality had a population of 22,772, with a decline of -0.87%, with average population density of 3,661 per square kilometer. Khet Udomsak Subdistrict Municipality had a population of 56,050, with a decline of -0.60%, with average population density of 635 per square kilometer. Details as shown in **Table 3.8-**16 and **Table 3.8-17**

Table 3.8-16 Population, rate of change in Rayong and Chonburi provinces between 2017 - 2019

District/Subdistrict	Population (person)									Rate of change (percentage)	
	Year 2017			Year 2018			Year 2019			Year 2018	Year 2019
	Male	Female	Total	Total	Female	Total	Male	Female	Total	Total	Total
Ban Chang District, Rayong Province											
Sam Nak Thon SAO	**5,551**	**4,713**	**10,264**	**5,805**	**4,856**	**10,661**	**5,797**	**4,950**	**10,747**	**3.87**	**0.81**
-Sam Nak Thon Subdistrict	5,551	4,713	10,264	5,805	4,856	10,661	5,797	4,950	10,747	3.87	0.81
Phala Subdistrict Municipality	**4,338**	**4,350**	**8,688**	**4,403**	**4,415**	**8,818**	**4,465**	**4,509**	**8,974**	**1.50**	**1.77**
-Phala Subdistrict	4,338	4,350	8,688	4,403	4,415	8,818	4,465	4,509	8,974	1.50	1.77
Ban Chang Subdistrict Municipality	**6,279**	**6,402**	**12,681**	**6,585**	**6,720**	**13,305**	**6,879**	**7,039**	**13,918**	**4.92**	**4.61**
-Ban Chang Subdistrict	6,279	6,402	12,681	6,585	6,720	13,305	6,879	7,039	13,918	4.92	4.61
Sam Nak Thon Subdistrict Municipality	**5,656**	**5,758**	**11,414**	**5,660**	**5,809**	**11,469**	**5,681**	**5,803**	**11,484**	**0.48**	**0.13**
-Sam Nak Thon Subdistrict	5,656	5,758	11,414	5,660	5,809	11,469	5,681	5,803	11,484	0.48	0.13
Ban Chang Municipality	**14,725**	**15,250**	**29,975**	**14,971**	**15,587**	**30,558**	**15,131**	**15,852**	**30,983**	**1.94**	**1.39**
-Phala Subdistrict	2,864	3,064	5,928	2,844	3,076	5,920	2,838	3,064	5,902	-0.13	-0.30
-Ban Chang Subdistrict	11,861	12,186	24,047	12,127	12,511	24,638	12,293	12,788	25,081	2.46	1.80
Mueang Rayong District, Rayong Province											
Map Ta Phut Municipality	**33,340**	**33,138**	**66,478**	**34,294**	**34,161**	**68,410**	**35,442**	**35,272**	**70,714**	**2.91**	**3.37**
-Huai Pong Subdistrict	10,263	10,250	20,513	10,444	10,445	20,889	10,715	10,691	21,406	1.83	2.47
Bang Lamung District, Chonburi Province											
Huai Yai Subdistrict Municipality	**13,640**	**15,049**	**28,689**	**13,975**	**15,490**	**29,465**	**14,199**	**15,924**	**30,123**	**2.70**	**2.23**
-Huai Yai Subdistrict	13,640	15,049	28,689	13,975	15,490	29,465	14,199	15,924	30,123	2.70	2.23

Table 3.8-16 Population, rate of change in Rayong and Chonburi provinces between 2017 - 2019

District/Subdistrict	Population (person)									Rate of change (percentage)	
	Year 2017			Year 2018			Year 2019			Year 2018	Year 2019
	Male	Female	Total	Total	Female	Total	Male	Female	Total	Total	Total
Sattahip District, Chonburi Province											
Phlu Ta Luang SAO	**19,458**	**17,638**	**37,096**	**19,960**	**17,896**	**37,856**	**19,576**	**18,023**	**37,599**	**2.05**	**-0.68**
-Phlu Ta Luang Subdistrict	19,458	17,638	37,096	19,960	17,896	37,856	19,576	18,023	37,599	2.05	-0.68
Samaesarn SAO	**3,185**	**3,206**	**6,391**	**3,262**	**3,194**	**6,456**	**3,074**	**3,194**	**6,268**	**1.02**	**-2.91**
-Samaesarn Subdistrict	3,185	3,206	6,391	3,262	3,194	6,456	3,074	3,194	6,268	1.02	-2.91
Kled Kaew Subdistrict Municipality	**9,125**	**4,609**	**13,734**	**8,395**	**4,861**	**13,256**	**8,411**	**5,128**	**13,539**	**-3.48**	**2.13**
-Bang Sare Subdistrict	9,125	4,609	13,734	8,395	4,861	13,256	8,411	5,128	13,539	-3.48	2.13
Khet Udomsak Subdistrict Municipality	**34,063**	**21,548**	**55,611**	**34,792**	**21,596**	**56,388**	**34,275**	**21,775**	**56,050**	**1.40**	**-0.60**
-Sattahip Subdistrict	34,063	21,548	55,611	34,792	21,596	56,388	34,275	21,775	56,050	1.40	-0.60
Sattahip Municipality	**11,039**	**12,006**	**23,045**	**10,987**	**11,985**	**22,972**	**10,883**	**11,889**	**22,772**	**-0.32**	**-0.87**
-Sattahip Subdistrict	9,271	10,154	19,425	9,220	10,111	19,331	9,124	10,021	19,145	-0.48	-0.96
-Phlu Ta Luang Subdistrict	1,768	1,852	3,620	1,767	1,874	3,641	1,759	1,868	3,627	0.58	-0.38
Khao Chi Chan Subdistrict Municipality *	**4,309**	**4,727**	**9,036**	**4,338**	**4,785**	**9,123**	**4,361**	**4,820**	**9,181**	**0.96**	**0.64**
-Na Jomtien Subdistrict	4,309	4,727	9,036	4,338	4,785	9,123	4,361	4,820	9,181	0.96	0.64

Note: *Khao Chi Chan Subdistrict Municipality was previously known as Na Jomtien SAO which then changed its name to Khao Chi Chan SAO and was upgraded from Khao Chi Chan SAO to Khao Chi Chan Subdistrict Municipality, which has jurisdiction of Na Jomtien Subdistrict (only in area outside of Na Jomtien Subdistrict Municipality) since 30 September 2011 by Notification of the Ministry of Interior.

Source: Department of Local Administration, Ministry of Interior, accessed on 21 February 2020

Table 3.8-17 Population and households classified by administrative area 2019

Administrative area	Population (person)			Number of households	Area (sq.km.)	Population density (persons per sq.km.)
	Male	Female	Total			
Ban Chang District, Rayong Province						
Sam Nak Thon SAO	5,797	4,950	10,747	4,435	82.20	131
Sam Nak Thon Subdistrict					-	-
Phala Subdistrict Municipality	4,465	4,509	8,974	5,414	66.00	136
Phala Subdistrict					-	-
Ban Chang Subdistrict Municipality	6,879	7,039	13,918	8,119	48.00	290
Ban Chang Subdistrict					-	-
Sam Nak Thon Subdistrict Municipality	5,681	5,803	11,484	5,716	14.80	776
Sam Nak Thon Subdistrict					-	-
Ban Chang Municipality	15,131	15,852	30,983	20,161	24.00	1,291
Phala Subdistrict					-	-
Ban Chang Subdistrict					-	-
Mueang Rayong District, Rayong Province						
Map Ta Phut Municipality	35,442	35,272	70,714	56,917	165.56	427
Huai Pong Subdistrict					-	-
Bang Lamung District, Chonburi Province						
Huai Yai Subdistrict Municipality	14,199	15,924	30,123	17,154	153.00	197
Huai Yai Subdistrict					-	-
Sattahip District, Chonburi Province						
Phlu Ta Luang SAO	19,576	18,023	37,599	19,360	54.05	696
Phlu Ta Luang Subdistrict					-	-
Samaesarn SAO	3,074	3,194	6,268	2,602	32.00	196
Samaesarn Subdistrict					-	-
Kled Kaew Subdistrict Municipality	8,411	5,128	13,539	6,079	58.00	233
Bang Sare Subdistrict					-	-
Khet Udomsak Subdistrict Municipality	34,275	21,775	56,050	26,132	88.25	635
Sattahip Subdistrict					-	-
Sattahip Municipality	10,883	11,889	22,772	11,958	6.22	3,661
Sattahip Subdistrict					-	-
Phlu Ta Luang Subdistrict					-	-

Table 3.8-17 Population and households classified by administrative area 2019

Administrative area	Population (person)			Number of households	Area (sq.km.)	Population density (persons per sq.km.)
	Male	Female	Total			
Khao Chi Chan Subdistrict Municipality	4,361	4,820	9,181	6,479	26.70	344
Na Jomtien Subdistrict					-	-

Note: The symbol (-) means No data

Source: Demography, population and housing statistics, which can be accessed from: http://stat.dopa.go.th/stat/statnew/statTDD/ Accessed on 19 February 2020

2) Demographic age group

Demographic age groups are classified into children (0 - 14 years), working age (15 - 59 years), and elderly (60 years and older). This section presents the demographic age groups of Rayong Province: Ban Chang District, Mueang Rayong District, and Chonburi Province: Bang Lamung District, Sattahip District, as follows:

Rayong Province

In 2015 – 2019, Rayong Province had a higher proportion of its population in the working age than in other age groups. The demographic age groups of Rayong Province in 2015 - 2019 were as follows: working age population (15 – 59 years) totaled 487,292, followed by children population (0 – 14 years) 138,424 and elderly (60 years and over) 94,548, respectively. The working age-to-children-to-elderly proportion was 5:2:1. Details as shown in **Table 3.8-**18.

Table 3.8-18 Demographic age groups of Rayong Province in 2015 - 2019

Year	Population distribution by age group (people)		
	Children (0 - 14 years)	Working age (15 - 59 years)	Elderly (60 years or older)
Year 2015	138,113	459,914	78,870
Year 2016	138,917	466,800	81,899
Year 2017	138,664	482,285	85,680
Year 2018	138,781	480,132	90,316
Year 2019,	138,424	487,292	94,548

Source: Department of Local Administration, Ministry of Interior, obtained: 17 February 2020

Ban Chang District

The population distribution of Ban Chang District according to age group was found to be similar to that of Rayong province, in which the population distribution for 2015 - 2019 had the highest proportion for the working age population (15-59 years), followed by children (0-14 years) and the elderly (60 years and above), respectively. In 2019, the working age population (15-59 years) was comprised of 7,097 people; children (0-14 years), 1,877 people; and the elderly (60 years and above), 1,303 people. This is proportional to a 4:2:1 ratio, respectively. Details are as shown in **Table 3.8-**19.

Table 3.8-19 Population distribution by age group, Mueang Rayong District, between 2015 - 2019

Year	Population distribution by age group (people)		
	Children (0 - 14 years)	Working age (15 - 59 years)	Elderly (60 years or older)
Year 2015	1,759	6,477	1,080
Year 2016	1,840	6,546	1,127
Year 2017	1,872	6,825	1,178
Year 2018	1,899	7,082	1,255

Table 3.8-19 Population distribution by age group, Mueang Rayong District, between 2015 - 2019

Year	Population distribution by age group (people)		
	Children (0 - 14 years)	Working age (15 - 59 years)	Elderly (60 years or older)
Year 2019,	1,877	7,097	1,303

Source: Department of Local Administration, Ministry of Interior, obtained: 17 February 2020

Mueang Rayong District

The population distribution of Mueang Rayong District according to age group was found to be similar to that of Rayong province, in which the population distribution for 2015 - 2019 had the highest proportion for the working age population (15-59 years), followed by children (0-14 years) and the elderly (60 years and above), respectively. In 2019, the working age population (15-59 years) was comprised of 69,546 people; children (0-14 years), 16,921 people; and the elderly (60 years and above), 13,771 people. This is proportional to a 5:1:1 ratio, respectively. Details are as shown in **Table 3.8-**20.

Table 3.8-20 Population distribution by age group, Mueang Rayong District, between 2015 - 2019

Year	Population distribution by age group (people)		
	Children (0 - 14 years)	Working age (15 - 59 years)	Elderly (60 years or older)
Year 2015	17,858	67,621	11,375
Year 2016	17,727	68,308	11,856
Year 2017	17,349	68,773	12,467
Year 2018	17,172	69,159	13,190
Year 2019,	16,921	69,546	13,771

Source: Department of Local Administration, Ministry of Interior, obtained: 17 February 2020

Chonburi Province

In 2015-2019, the population distribution of Chonburi province was found to have the highest proportion for the working age population. The distribution of age groups between 2015-2019 for Chonburi province was found to be highest for the working age population (15-59 years), followed by children (0-14 years) and the elderly (60 years and above), respectively. In 2019, the working age population (15-59 years) was comprised of 1,026,015 people; children (0-14 years), 286,901 people; and the elderly (60 years and above), 205,021 people. This is proportional to a 6:2:1 ratio, respectively. Details are as shown in **Table 3.8-**21.

Table 3.8-21 Population distribution by age group, Chonburi province, between 2015 - 2019

Year	Population distribution by age group (people)		
	Children (0 - 14 years)	Working age (15 - 59 years)	Elderly (60 years or older)
Year 2015	245,763	980,408	194,573
Year 2016	284,024	988,728	175,875
Year 2017	286,293	999,759	184,912
Year 2018	287,545	1,013,174	194,605
Year 2019,	286,901	1,026,015	205,021

Source: Department of Local Administration, Ministry of Interior, obtained: 17 February 2020

Bang Lamung District

The population distribution of Bang Lamung District according to age group was found to be similar to that of Chonburi province, in which the population distribution for 2015 - 2019 had the highest proportion for the working age population (15-59 years), followed by children (0-14 years) and the elderly (60 years and above), respectively. In 2019, the working age population (15-59 years) was comprised of 18,968 people; children (0-14 years), 5,346 people; and the elderly (60 years and above), 2,888 people. This is proportional to a 7:2:1 ratio, respectively. Details are as shown in **Table 3.8-**22.

Table 3.8-22 Population distribution by age group, Bang Lamung District, between 2015 - 2019

Year	Population distribution by age group (people)		
	Children (0 - 14 years)	Working age (15 - 59 years)	Elderly (60 years or older)
Year 2015	4,695	16,252	2,190
Year 2016	4,884	16,874	2,328
Year 2017	5,035	17,413	2,550
Year 2018	5,216	18,209	2,697
Year 2019,	5,346	18,968	2,888

Source: Department of Local Administration, Ministry of Interior, obtained: 17 February 2020

Sattahip District

The population distribution of Bang Lamung District according to age group was found to be similar to that of Sattahip District, in which the population distribution for 2015 - 2019 had the highest proportion for the working age population (15-59 years), followed by children (0-14 years) and the elderly (60 years and above), respectively. In 2019, the working age population (15-59 years) was comprised of 35,387 people; children (0-14 years), 8,858 people; and the elderly (60 years and above), 6,764 people. This is proportional to a 6:1:1 ratio, respectively. Details are as shown in **Table 3.8-**23.

Table 3.8-23 Population distribution by age group, Sattahip District, between 2015 - 2019

Year	Population distribution by age group (people)		
	Children (0 - 14 years)	Working age (15 - 59 years)	Elderly (60 years or older)
Year 2015	9,219	33,701	5,247
Year 2016	9,280	33,905	5,577
Year 2017	9,281	34,869	5,971
Year 2018	9,083	35,701	6,358
Year 2019,	8,858	35,387	6,764

Source: Department of Local Administration, Ministry of Interior, obtained: 17 February 2020

3) Unemployment rate

Rayong Province

The unemployment rate in Rayong province has been decreasing each quarter as Rayong is the main industrial manufacturing location of the country. Therefore, Rayong has a low unemployment rate when compared to the total workforce of Rayong. However, in some quarters, the unemployment rate may increase due to new graduates from various educational institutions entering the workforce, resulting in an increased unemployment rate. The unemployment rate in Rayong for quarter 4, 2019, was at 0.70, which is lower than quarter 3/2019. Details are as shown in **Table 3.8-**24.

Table 3.8-24 Number of unemployed persons and the quarterly unemployment rate of Rayong province between 2015 - 2019

Quarter/Year	Number of unemployed persons in the province	Provincial workforce	Unemployment rate in the province
1/2015	7,106	549,800	1.30
2/2015	6,061	548,929	1.10
3/2558	6,816	547,733	1.24
4/2015	4,810	542,746	0.89
1/2016	9,410	555,447	1.69
1/2017	5,187	564,595	0.91
2/2017	5,913	558,134	1.06
3/2017	7,585	549,850	1.38
4/2017	4,289	549,257	0.78
1/2018	4,026	564,238	0.71
2/2018	5,768	567,060	1.02
3/2018	4,240	564,614	0.75
4/2018	2,932	572,530	0.51
1/2019	3,345	582,290	0.57
2/2019	6,609	591,925	1.12
3/2019	5,806	576,005	1.01
4/2019	4,048	577,589	0.70

Note : Symbol - indicates no data
Source: Labor situation in Rayong province, 2015 - 2019, obtained 26 March 2020

Chonburi Province

The unemployment rate in Chonburi province has been decreasing each quarter as Chonburi is the new economic target area for Eastern Seaboard developments. It is the gateway to the EEC and the main industrial manufacturing base of the country. Therefore, Chonburi has a low unemployment rate when compared to the total workforce of Chonburi However, in some quarters, the unemployment rate may increase due to new graduates from various educational institutions entering the workforce, resulting in an increased unemployment rate. The unemployment rate in Chonburi for quarter 3, 2019, was at 0.51, which is higher than quarter 2/2019. Details are as shown in **Table 3.8-**25.

Table 3.8-25 Number of unemployed persons and the quarterly unemployment rate of Chonburi province between 2015 - 2019

Quarter/Year	Number of unemployed persons in the province	Provincial workforce	Unemployment rate in the province
1/2015	5,387	1,047,706	0.50
2/2015	7,334	1,053,492	0.70
3/2558	14,269	1,046,693	0.40
4/2015	9,788	1,035,563	0.90
1/2016	7,213	1,055,155	0.70
2/2016	5,352	1,029,935	0.50

Table 3.8-25 Number of unemployed persons and the quarterly unemployment rate of Chonburi province between 2015 - 2019

Quarter/Year	Number of unemployed persons in the province	Provincial workforce	Unemployment rate in the province
3/2016	9,582	1,017,695	0.90
4/2016	3,385	1,040,852	0.30
1/2017	7,355	1,067,325	0.70
2/2017	5,126	1,058,990	0.50
3/2017	9,746	1,029,568	0.90
4/2017	7,070	1,029,568	0.70
1/2018	6,913	1,058,165	0.65
2/2018	5,701	1,067,814	0.53
3/2018	7,488	1,053,010	0.71
4/2018	6,763	1,065,394	0.63
1/2019	1,544	1,075,773	0.14
2/2019	3,570	1,054,333	0.34
3/2019	5,416	1,048,338	0.51
4/2019	3,337	1,045,175	0.32

Note : Symbol - indicates no data
Source: Labor situation in Chonburi province, 2015 - 2019, obtained 26 March 2020

4) Latent population

Rayong Province

In 2018, Rayong province had the 7th highest latent population density in the country. When compared to the density of the population not listed in household registrations, it was found that Rayong province had a 69.0 people per square kilometer increase in population. In the beginning, if based on the population with household registrations, there is a density of 187.8 people per square kilometer. This results in Rayong province having a population density of 256.8 people per square kilometer (National Statistical Office, 2018).

Chonburi Province

In 2018, Chonburi province had the 3rd highest latent population density in the country. When compared to the density of the population not listed in household registrations, it was found that Chonburi province had a 119.4 people per square kilometer increase in population from the beginning. If based on the population with household registrations in Chonburi, there is a density of 249.4 people per square kilometer. This results in Chonburi province having a population density of 368.8 people per square kilometer (National Statistical Office, 2018).

(1.3) Economic characteristics

1) Gross Provincial Products (GPP)

Rayong Province

Gross provincial product for Rayong in 2018 was found to be worth 1,045,697 million baht. Industrial manufacturing generated the most income for the province, followed by mining and quarrying. Third was electricity, gas, steam, and air conditioning systems. Details are as shown in **table 3.8-26**.

table 3.8-26 Gross Provincial Product according to annual price, classified by production branch, for Rayong province 2016-2018

Production Branch	Gross Provincial Product (Million Baht)		
	Year 2016	Year 2017	Year 2018
Agricultural sector	18,392	22,342	18,967
Agriculture, hunting, forestry, and fisheries	18,392	22,342	18,967
Non-agricultural sector	877,959	967,866	1,026,730
Mining and quarrying	248,718	255,652	281,800
Industrial manufacturing	721,115	796,083	841,152
Electricity, gas, steam and air conditioning systems	56,536	73,696	83,220
Water supply, wastewater and waste management and related activities	2,366	2,482	2,519
Construction	7,614	6,910	7,555
Wholesale, retail, automotive repairs, personal items and household items	66,064	75,628	80,646
Transportation and storage	17,843	19,075	22,765
Accommodation and food services	3,208	3,581	4,176
Information and communications	1,392	1,528	1,702
Financial and insurance activities	10,905	11,446	12,037
Real estate activities	5,400	5,989	6,416
Professional activities, science and academic activities	23,676	25,864	26,247
Administrative activities and support services	3,966	4,340	5,203
Public administration, national defense and compulsory social security	7,755	8,037	8,967
Education	3,588	3,693	3,571
Health and social work activities	2,923	3,049	3,550
Arts, entertainment and recreation	337	425	448
Other service activities	2,174	2,217	2,295
Gross Provincial Product	**896,352**	**990,208**	**1,045,697**

Source: Office of the National Economic and Social Development Council, Obtained 12 June 2020

Chonburi Province

Gross provincial product for Chonburi in 2018 was found to be worth 1,030,949 million baht. Industrial manufacturing generated the most income for the province, followed by wholesale, retail, automotive repair, personal items, and household items. Third was electricity, gas, steam and air conditioning systems. Details are as shown in **table 3.8-27**.

table 3.8-27 Gross Provincial Product according to annual price, classified by production branch, for Chonburi province 2016-2018

Production Branch	Gross Provincial Product (Million Baht)		
	Year 2016	Year 2017	Year 2018
Agricultural sector	**17,512**	**19,580**	**19,730**
Agriculture, hunting, forestry, and fisheries	17,512	19,580	19,730
Non-agricultural sector	**886,861**	**934,623**	**1,011,219**
Mining and quarrying	3,997	3,365	3,318
Industrial manufacturing	525,865	546,716	597,115
Electricity, gas, steam and air conditioning systems	56,565	54,055	66,966
Water supply, wastewater and waste management and related activities	4,444	4,460	4,724
Construction	22,782	17,813	17,555
Wholesale, retail, automotive repairs, personal items and household items	90,290	101,209	111,368
Transportation and storage	57,498	60,028	65,041
Accommodation and food services	59,285	69,513	78,370
Information and communications	3,883	4,485	5,190
Financial and insurance activities	27,056	27,876	29,426
Real estate activities	13,361	13,911	16,474
Professional activities, science and academic activities	2,802	3,068	3,277
Administrative activities and support services	12,969	13,680	13,902
Public administration, national defense and compulsory social security	35,040	36,855	39,755
Education	11,615	12,706	12,110
Health and social work activities	10,073	10,638	11,490
Arts, entertainment and recreation	1,937	2,094	1,705
Other service activities	12,407	14,032	8,441
Gross Provincial Product	**904,373**	**954,203**	**1,030,949**

Source: Office of the National Economic and Social Development Council, Obtained 12 June 2020

2) Annual per capita income

Rayong Province

The annual GPP per capita of Rayong province in 2017 was 1,095,667 baht per capita compared to 1,006,842 baht per capita in 2016, which is an increase of 88,825 baht per capita.

Chonburi Province

The annual GPP per capita of Chonburi province in 2017 was 581,475 baht per capita compared to 546,284 baht per capita in 2016, which is an increase of 35,191 baht per capita.

3) Income and household expenditure

Rayong Province

According to the National Statistical Office, the average monthly income and expenditure of Rayong province tends to be similar. In 2017, the population of Rayong province had a monthly average income and expenditure of 27,798 and 22,699 baht per household, respectively. Details are shown in **table 3.8-28**

table 3.8-28 Average monthly income per household in Rayong Province for 2013–2017

Rayong Province	Year		
	Year 2013	Year 2015	Year 2017
Average income (baht)	30,401	30,315	27,798
Expenditure (baht)	21,873	24,434	22,699

Note: Data is compiled every 2 years
Source: Household income and expenditure statistics, National Statistical Office, obtained 14 February 2020

Chonburi Province

According to the National Statistical Office, the average monthly income and expenditure of Chonburi province tends to be similar. In 2017, the population of Chonburi province had a monthly average income and expenditure of 27,665 and 24,573 baht per household, respectively. Details are shown in **table 3.8-29**

table 3.8-29 Average monthly income per household in Chonburi Province in 2013–2017

Rayong Province	Year		
	Year 2013	Year 2015	Year 2017
Average income (baht)	28,367	27,257	27,665
Expenditure (baht)	24,934	24,182	24,573

Note: Data is compiled every 2 years
Source: Household income and expenditure statistics, National Statistical Office, obtained 14 February 2020

4) Service commerce and number of establishments

Rayong Province

Rayong has been designated as an industrial area since 1981 from the government's push for Eastern Seaboard developments, starting with the construction of Map Ta Phut Industrial Estate as the first industrial estate. It is the location of a large industrial estate with important industrial plants, namely a natural gas separation plant, petrochemical and chemical fertilizer industry groups, power plants, etc., resulting in Rayong province having high potential in terms of industrial investment and rapid industrial development. Rayong province has 3,093 factories that have been permitted to operate as of 31 January 2018, with a total investment of

1,348,538.511 million baht and a total number of 173,794 workers. There are industrial estates and industrial estates jointly operated with the private sector, industrial areas, industrial communities, and industrial parks. There are a total of 25 sites with an area of approximately 100,000 rai and a total of 2,959 factories (Rayong Four-Year Development Plan, 2018 - 2021).

Chonburi Province

From the context of the country, there have been changes in both economic and social aspects, as well as politics, that have affected the industrial sector, causing the structure of business and industry to change. For instance, small and medium-sized enterprises have an increased rate of expansion and there are new trades, services and industries, etc. which is considered an important mechanism for the growth of the country's economic system. From basic data collected on the establishments in Chonburi Province, it was found that there were a total of 72,151 establishments, which is divided into 65,806 establishments in which basic data was collected in full from a questionnaire and 6,345 business/industrial establishments. Most were retail-related establishments, comprising 21,676 establishments, followed by 12,250 food and beverage service establishments; 9,183 other activity-related establishments; 5,509 automotive sale-repair establishments; 5,326 real estate activity establishments; and 5,067 manufacturing establishments (Industrial Census 2017, Basic Data for Chonburi Province 2017).

(1.4) Social characteristics

1) Social conditions

(1) Rayong Province

- Background of Map Ta Phut Industrial Estate

The Industrial Estate is an industrial estate developed in 1989 by the Industrial Estate Authority of Thailand, which is a state-owned enterprise agency, consisting of 151 industrial factories. The main industrial divisions are the petrochemical, iron and electricity sectors. The operations of Map Ta Phut Industrial Estate have led to continuous industrial operations by the private sector, namely the Hemaraj Eastern Industrial Estate comprising 57 petrochemical and chemical factories, Pha Daeng Industrial Estate comprising 5 plastic resin factories, the RIL Industrial Estate comprising 5 chemical factories, and an industrial port area. There are industrial plants for supplying electricity, steam and water, and companies that provide container transportation services via rail, comprising 10 factories (Map Ta Phut Industrial Estate Office, data obtained August 2018).

The beginning of Map Ta Phut Industrial Estate started from rapid industrial expansion and urbanization, which caused traffic and public utility shortages. Meanwhile, rural populations were living in poverty, causing a flood into the capital to find work. To slow down the expansion of the capital and to spread both labor and capita income among the regions, the government set guidelines to establish industrial estates in the Eastern Seaboard area. The

government therefore considered the construction of an industrial estate in the Map Ta Phut area of Rayong province as the topographical features were suitable and located not far from Bangkok. The Map Ta Phut Industrial Estate is specified in the 5th National Economic and Social Development Plan, whereby the governments developed various infrastructures to support the following industrial estates:

- The main road system is reinforced concrete with 4 traffic lanes, 40 meters wide, with 25-meter wide secondary roads.
- The electrical system has a total capacity of 1,545 megawatts.
- The raw water system has a reservoir with a total capacity of approximately 240 million cubic meters a year. Map Ta Phut Industrial Estate has prepared a water supply system comprising 100 million cubic meters of water per year. Currently, operators in Map Ta Phut Industrial Estate use approximately 72 million cubic meters a year, with water pressure at 5-6 bars.
- The water supply system has a capacity of 15,300 cubic meters per day, using a fast filtration system with water pressure at 3 - 4 bars. Currently, operators use about 5,000 cubic meters per day.
- The wastewater treatment system for the general industrial area has a treatment capacity of 4,000 cubic meters per day and a treatment capacity of 7,200 cubic meters per day for the industrial business area.
- There are deep sea ports for servicing main products, namely the general port, chemical and liquid port, steel loading port, chemical fertilizer port, and oil port.
- Telecommunications systems provide modern communication technology such as ADSL / Teleconference / Fibered Optics / Internet / E-mail.
- The area is comprised of 10,215 rai, consisting of a 7,092 rai general industrial area and 1,490 rai residential area (Development Strategic Plan 2016-2020).

The inside of Map Ta Phut Industrial Estate is comprised of petrochemical, chemical, steel, oil refineries, power plants and factory areas. The industry can be rented for a period of 30 years, with extensions considered every 20 years. Space is allocated according to the nature of the industry, with space provided for government agencies and various servicing agencies to facilitate the community as well as industrial operators, such as accommodation, government offices, municipalities, immigration police, customs, hospitals and resting places.

- Settlement of people in the Map Ta Phut Industrial Estate

In the past (1981-1989), settlement and population distribution has spread the community along National Highway No. 3 (Sukhumvit Road), centered in two areas: Map Ta Phut Sanitary District (currently Map Ta Phut Municipality) and Ban Chang Sanitary District (currently Ban Chang Municipality). In Ban Chang Sanitary District, the community is dense at the junction at the intersection between National Highway No. 3 and National Highway No. 3376. In Map Ta Phut Sanitary District, the distribution of communities is along National Highway No. 3 and the community is dense in the Map Ta Phut market area ([redacted], 2005).

From 1990 - the present, each of these communities has increased in density and dispersed into the southern part of the area, especially to the south of Sukhumvit Road. Map Ta Phut Sanitary District was upgraded to the Map Ta Phut Subdistrict Municipality in 1991 and was upgraded to the Map Ta Phut Municipality in 2001 (with a total area of approximately 165.57 square kilometers, it is a land area with approximately 144.57 square kilometers of usable land, or 87.32% of the total area, with the remaining 21.00 square kilometers being the sea). It plays a role as an industrial community and is the location of the industrial estate, deep sea port, industrial port, and new urban communities (Map Ta Phut Municipality, 2018). The Ban Chang Sanitary District was upgraded to the Ban Chang Subdistrict Municipality in 1999, then changed from Ban Chang Subdistrict Municipality to Ban Chang Municipality in 2005 (approximately 24.00 square kilometers). It plays a role as a residential community, with a high level of residential and commercial development. In addition to the coastal area on the west side of Map Ta Phut Industrial Estate in Ban Chang District, there have also been developments for tourist attractions and marine recreational sites (Ban Chang Municipality, 2018).

(2) Chonburi Province

- Background of Chonburi Province

Chonburi, or also known shortly as “Mueang Chon”, is an Eastern seaboard province that has been well-known for tourism. There is also a community that dates back to the Dvaravati era, which became a source of civilization and prosperity in many aspects, especially tourism, tradition, community, way of life and international industry. For the general population, Chonburi may be known as a seaside resort town near Bangkok, especially the Bangsaen and Pattaya beaches, which are popular with tourists, both Thais and foreigners. Millions of people a year travel to experience the beauty of this charming eastern seashore (Chonburi Provincial Office, data obtained January 2020).

Chonburi is located next to the sea and has a coastline stretching up to 160 kilometers, resulting in cool weather all year round. It is not too hot in the hot season and not too dry in the cold season as it still rains due to the southwest monsoon, especially in the inner area of the province, which has mountainous terrain and undulating plains and tends to rain more than in the coastal area. In the past, the coastal area of Chonburi was recognized as having very good weather, and could be used as rehabilitation facilities for patients and royal residences for multiple high-ranking royal families, such as for the Chakri Dynasty, as can be seen with the

magnificent royal palace of King Rama V on Koh Sichang, which has undeniably become one of the most popular tourist destinations.

- Settlement of people in Chonburi Province

Chonburi currently has a population of approximately 1,535,445 people, which includes a latent population of approximately 1,500,000 people, some of whom are migrating to work in various continuously expanding industrial sectors. However, when it comes to real local people of Chonburi, it was found that the people of Chonburi have occupations related to the sea, farming, livestock and mining. In terms of the character of the original people of Mueang Chon, known as the real people, they live a simple life. They are frugal, hard-working, diligent, friendly and always ready to welcome visitors. Even today, while Chonburi has become more prosperous and has more people migrating from different countries and living among the original people, the people of Mueang Chon still firmly maintain their traditions and culture. This is reflected in the form of various annual festivals, such as the Klang Ban merit-making ceremony and the Phanat Nikhom basket weaving ceremony, the Wan Lai Festival (Wan Lai Phra Sai Buddha image creation) following the Thai New Year, the Sriracha District Rice Festival, and fun and exciting buffalo racing traditions, as well as the Phra Buddha Sihing Festival and Chonburi Red Cross Fair. All of these clearly show the unique identity of the Chonburi people (Chonburi Provincial Office, data obtained January 2020).

2) Education

(1) Number of educational institutions and teachers

Rayong province has a total of 422 educational institutions, divided into 221 government sector educational institutions and 31 private-sector educational institutions, with a total of 9,154 teachers in Rayong province. In Ban Chang District, there are 46 educational institutions, consisting of 20 public educational institutions, 8 private educational institutions, and 16 educational institutions under the Department of Local Administrative Developments, with 944 teachers. In Mueang Rayong District, there are 109 educational institutions, consisting of 44 public educational institutions, 15 private educational institutions, and 43 schools under the Department of Local Administration, with 4,134 teachers.

Chonburi province has a total of 511 educational institutions, divided into 308 government sector educational institutions, 120 private-sector educational institutions, and 38 schools under the Department of Local Administration, with a total of 9,418 teachers in Chonburi province. In Bang Lamung District, there are 75 educational institutions, consisting of 34 public educational institutions, 32 private educational institutions, and 2 educational institutions under the Department of Local Administrative Developments, with 1,415 teachers. In Sattahip District, there are 34 educational institutions, consisting of 17 public educational institutions, 11 private educational institutions, and 1 school under the Department of Local Administration, with 919 teachers. This is shown in **Table 3.8-30**.

Table 3.8-30 Number of educational institutions and number of teachers, classified by affiliation and districts in Rayong Province, 2018, and Chonburi Province, 2017

Area	Number of institutions (places)					Number of teachers (persons)
	Public	Private	Local	Other	Total	
Rayong Province	**221**	**31**	**154**	**16**	**422**	**9,154**
Ban Chang District	20	8	16	2	46	944
Mueang Rayong District	44	15	43	7	109	4,134
Chonburi Province	**308**	**120**	**38**	**45**	**511**	**9,418**
Bang Lamung District	34	32	2	7	75	1,415
Sattahip District	17	11	1	5	34	919

Source: Rayong Provincial Statistical Office, 2017. Obtained 19 February 2020
Chonburi Provincial Statistical Office, 2018. Obtained 19 February 2020

(2) Education level

- Rayong Province

According to the 2018 data surveyed by the National Statistical Office, it was found that, out of the employed population in Rayong province, 39.20 percent had completed primary education, 20.97 percent had completed lower secondary education, and 17.01 percent had completed higher secondary education, with details as shown in **table 3.8-31**.

table 3.8-31 Number and percentage of employed persons classified by level of education for Rayong Province, 2018

Education level	Number of employed people (people)			Number of employed people Total (percentage)
	Male	Female	Total	
No education	4,181	5,095	9,276	3.08
Lower than primary education	6,332	6,562	12,894	4.28
Primary education	55,267	62,694	117,961	39.20
Lower secondary education	31,760	31,337	63,097	20.97
Upper secondary education	29,280	27,899	51,179	17.01
Tertiary education	21,755	24,777	46,532	15.46
Total	**148,575**	**158,364**	**300,939**	**100**

Source: Survey of working conditions of the population, 2018, referenced from the Rayong Provincial Statistical Office, 2018, Obtained 10 June 2019,

- Chonburi Province

According to the 2018 data surveyed by the National Statistical Office, it was found that, out of the employed population in Chonburi province, 31.33 percent had completed primary education, 20.94 percent had completed higher secondary education, and 20.53 percent had completed tertiary education, with details as shown in **Table 3.8-32**.

Table 3.8-32 Number and percentage of employed persons classified by level of education completed for Chonburi province, 2018

Education level	Number of employed people (people)			Total number of employed people (percentage)
	Male	Female	Total	
No education	6,070	7,446	13,516	2.75
Lower than primary education	9,543	10,364	19,907	4.05
Primary education	70,847	83,263	154,110	31.33
Lower secondary education	50,576	49,829	100,405	20.41
Upper secondary education	52,422	50,570	102,992	20.94
Tertiary education	47,324	53,625	100,967	20.53
Total	**236,782**	**255,097**	**491,897**	**100**

Source: Survey of working conditions of the population, 2018, referenced from the Chonburi Provincial Statistical Office, 2018, Obtained 10 June 2019,

3) Occupations of the population

(1) Rayong Province

Ban Chang District, Rayong Province: In 2018, it was found that the main occupation of the population in Ban Chang District, Phala SAO, was general labor (56.25%), followed by students (20.69%) and trade (7.80%). In Sam Nak Thon SAO, this was general labor (42.95%), followed by students (18.30%) and unemployment (8.09%). In Sam Nak Thon Subdistrict Municipality, this was general labor (43.77%), followed by students (18.65%) and trade (7.40%). Ban Chang Municipality was general labor (57.24%), followed by company employees (17.82%) and students (11.07%). Ban Chang Municipality was general labor (40.18%), followed by students (16.76%) and trade (15.35%). The principal occupation of the population in Sam Nak Thon SAO, Ban Chang SAO and Ban Chang Municipality were general hired labor, followed by students and company employees. The details are as shown in **Table 3.8-33**.

Mueang Rayong District, Rayong Province : In 2018, it was found that the principal occupation of the population in Muang Rayong District, Map Ta Phut Municipality, was company employee (29.20 percent), followed by general labor (24.76 percent) and students (19.07 percent). Details are shown in **Table 3.8-33**

Table 3.8-33 Occupation distribution of the population in the study area, Ban Chang District and Mueang Rayong District, 2018

Occupation	Percentage of people surveyed					
	Ban Chang District					Mueang Rayong District
	Phala SAO	Sam Nak Thon SAO	Sam Nak Thon Subdistrict Municipality	Ban Chang Subdistrict Municipality	Mueang Ban Chang Municipality	Mueang Map Ta Phut
1) Unemployed	7.29	8.09	4.90	4.43	5.45	4.39
2) Student	20.69	18.30	18.65	11.07	16.76	19.07
3) Agriculture (farming, crops and gardening)	0.89	3.62	3.23	1.37	2.11	0.69
4) Fisheries	1.05	0.02	0.00	0.23	0.00	0.01
5) Livestock	0.00	0.08	0.00	0.00	0.00	0.00
6) Government service	0.98	3.55	1.93	1.03	4.49	2.40
7) Employees of state-owned enterprises	0.05	0.25	0.11	0.32	0.29	0.97
8) Company employees	1.03	7.52	10.73	17.82	10.75	29.20
9) General labor	56.25	42.95	43.77	57.24	40.18	24.76
10) Trade	7.80	7.35	7.40	2.74	15.35	11.17
11) Private business	1.67	1.42	4.51	1.45	2.89	5.24
12) Other	1.40	6.84	4.74	2.32	1.73	2.10
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Basic Village Needs Information (JPT), Obtained 10 June 2019,

(2) Chonburi Province

Bang Lamung District, Chonburi Province: In 2018, it was found that the principal occupation of the population in Bang Lamung District, Huai Yai Subdistrict Municipality, was general labor (42.95%), followed by trade (17.43%) and students (11.85%). Details are as shown in **Table 3.8-34**.

Sattahip District, Chonburi Province: In 2018, it was found that the principal occupation of the people in Sattahip District, Khao Chi Chan Subdistrict Municipality, is general labor (32.83%), followed by company employees (20.85%) and trade (13.30%). In Phlu Ta Luang SAO, it was government service (47.92%), followed by were company employees (16.06%) and general labor (12.34%). In Sattahip municipality, it was general labor (25.62%), followed by government service (15.52%) and trade (15.50%). In Samaesarn SAO, it was government service

(47.92%), followed by company employees (16.06%) and general labor (12.34%). In Khet Udomsak Subdistrict Municipality, it was government service (30.85%), followed by students (16.32%) and general labor (12.75%). In Kled Kaew Subdistrict Municipality, it was government service (36.29%), followed by general labor (16.26%) and company employees (11.07%). Details are as shown in **Table 3.8-34**.

Table 3.8-34 Occupation distribution of the population in the study area, Bang Lamung District and Sattahip District, Chonburi Province, 2018

Occupation	Percentage of people surveyed						
	Bang Lamung District	Sattahip District					
	Subdistrict Municipality Huai Yai	Khao Chi Chan Subdistrict Municipality	Phlu Ta Luang SAO	Sattahip Municipality	Samaesarn SAO	Khet Udomsak Subdistrict Municipality	Kled Kaew Subdistrict Municipality
1) Unemployed	5.62	3.50	1.55	3.61	1.55	2.16	2.16
2) Student	11.85	10.70	3.24	9.09	3.24	16.32	7.02
3) Agriculture (farming, crops and gardening)	6.60	0.98	0.08	0.00	0.08	1.08	2.97
4) Fisheries	0.02	0.03	0.00	0.14	0.00	0.01	0.08
5) Livestock	0.09	0.00	0.04	0.00	0.04	0.05	0.11
6) Government service	1.63	1.64	47.92	15.52	47.92	30.85	36.29
7) Employees of state-owned enterprises	0.54	0.72	0.76	1.09	0.76	2.41	1.22
8) Company employees	7.62	20.85	16.06	9.23	16.06	12.27	11.07
9) General labor	42.95	32.83	12.34	25.62	12.34	12.75	16.26
10) Trade	17.43	13.30	5.16	15.50	5.16	9.91	6.24
11) Private business	2.55	12.11	5.95	9.55	5.95	6.00	9.13
12) Other	3.10	3.34	6.90	10.66	6.90	6.18	7.45
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Basic Village Needs Information (JPT), Obtained 19 February 2020

4) Poverty

(1) Rayong Province

Household Socioeconomic Survey data from the National Statistical Office, in Rayong from 2014 to 2018, found that, in 2018, 4.37% of people were living in poverty, or about 39,700 people, followed by 2016, in which 2.17% of people were living in poverty, or about 19,300 people. Also, in 2017, the proportion of people living in poverty was 1.88%, or about 16,900 people, respectively. Details are as shown in **Table 3.8-35**

Table 3.8-35 The number and proportion of people living in poverty in Rayong province when measured from consumer expenditures during 2014 – 2018

Rayong Province	Year				
	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018

Number of people living in poverty (thousand people)	2.8	4.7	19.3	16.9	39.7
Proportion of people living in poverty (%)	0.32	0.54	2.17	1.88	4.37

Source: Household income and expenditure statistics, National Statistical Office, obtained 17 February 2020

(2) Chonburi Province

Household Socioeconomic Survey data from the National Statistical Office, in Chonburi from 2014 to 2018, found that, in 2017, 2.12% of people were living in poverty, or about 35,500 people, followed by 2015, in which 0.61% of people were living in poverty, or about 10,000 people. Also, in 2014, the proportion of people living in poverty was 0.39%, or about 6,400 people, respectively. Details are as shown in **Table 3.8-36**

Table 3.8-36 The number and proportion of people living in poverty in Chonburi province when measured from consumer expenditures during 2014 - 2018

Chonburi Province	Year				
	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
Number of people living in poverty (thousand people)	6.4	10.0	0.5	35.5	5.7
Proportion of people living in poverty (%)	0.39	0.61	0.03	2.12	0.34

Source: Household income and expenditure statistics, National Statistical Office, obtained 17 February 2020

5) Debt

(1) Rayong Province

Household debt in Rayong (compiled: every 2 years) during 2013 - 2017 found that in 2017, Rayong province had the average debt per household of 124,478 baht, in which the average debt per household had decreased from 2015 in the amount of 21,049 baht. Details are as shown as in **Table 3.8-37**

Table 3.8-37 Average amount of debt per household in Rayong Province during 2013 - 2017

Rayong Province	Year		
	Year 2013	Year 2015	Year 2017
Average amount of debt per household (baht)	171,432	145,527	124,478

Note: Data is compiled every 2 years
Source: Household income and expenditure statistics, National Statistical Office, obtained 17 February 2020

(2) Chonburi Province

Household debt in Chonburi (compiled: every 2 years) during 2013 - 2017 found that in 2017, Chonburi province had the average debt per household of 170,023 baht, in which the average debt per household had increased from 2015 in the amount of 20,831 baht. Details are as shown as in **table 3.8-38**.

table 3.8-38 Average amount of debt per household in Chonburi Province during 2013 - 2017

Chonburi Province	Year		
	Year 2013	Year 2015	Year 2017
Average amount of debt per household (baht)	159,084	149,192	170,023

Note: Data is compiled every 2 years
Source: Household income and expenditure statistics, National Statistical Office, obtained 17 February 2020

6) Religion

The number of religious sites in the Rayong province study area is detailed as shown in **Table 3.8-39** It was found that there was a total of 315 sites, comprising 272 temples, 32 monasteries, 2 Christian churches, and 9 mosques, with a total of 2,504 and 379 monks and novices, respectively. As for Chonburi province, it was found that there was a total of 497 sites, comprising 392 temples, 60 monasteries, 15 Christian churches, and 30 mosques, with a total of 5,896 and 389 monks and novices, respectively. Details are shown in **Table 3.8-39**

Table 3.8-39 Number of religious sites, monks and novices in Rayong Province and Chonburi Province, 2018

Area	Number of places of worship (sites)					Number of monks	Number of novices
	Temples	Monasteries	Christian churches	Mosques	Total		
Rayong Province	**272**	**32**	**2**	**9**	**315**	**2,504**	**379**
Ban Chang District	15	-	-	1	16	153	72
Mueang Rayong District	60	2	2	6	70	758	217
Chonburi Province	**392**	**60**	**15**	**30**	**497**	**5,896**	**389**
Bang Lamung District	49	3	4	10	66	1,116	77
Sattahip District	20	4	2	1	27	432	10

Source: Rayong Provincial Office of Buddhism, 2018 referenced from the National Statistical Office, Obtained 19 February 2020
Chonburi Provincial Office of Buddhism, 2018 referenced from the National Statistical Office, Obtained 19 February 2020

7) Cultural traditions

(1) Rayong Province

Rayong province has traditions that are similar to other provinces in the central region. There are also local traditions that are still practiced in some areas, such as the Hae Nang Maew parade, boat racing, candle procession, and bull running traditions. There is also a tradition that is unique to this location in Thailand, which is the Thod Phapa Pak Nam Pra Sae tradition in Klaeng District. The festivals, dates, venues, and operating agencies for Rayong province are as detailed in **Table 3.8-40**

Table 3.8-40 Festivals and Traditions of Rayong Province

Festivals/Traditions	Period	Event venue	Operating agency
New Year's and Red Cross Fair Rayong Province	27 December - 3 January	Rayong Provincial Stadium	Red Cross/Chamber of Commerce Rayong Province
Fish Eating - Sports Festival Ban Chang	February	Ban Chang District	Tourism Authority of Thailand Rayong Provincial Office
Songkran Festival and good things in Rayong	11 - 16 April	Taphong Fruit Market	Business associations Tourism in Rayong Province
Fruit Festival and good things in Rayong	May - June	Fruit Market for Agriculture, Taphong Subdistrict; Nong Taphan Fruit Fair, Ban Khai District; Fruit Fair at Klaeng District and Wang Chan District.	Provincial Agriculture and Tourism Authority of Thailand Rayong Provincial Office
Sunthorn Phu Day	26 June	Sunthorn Phu Monument area Kram Subdistrict, Klaeng District	Sunthorn Phu Foundation, Office of Education Rayong Province
Product Week Festival Industry	July	Indefinite	Rayong Provincial Industrial Office and Industrial Estate Map Ta Phut in collaboration with Rayong Province
Mae Ram Phueng Beach Running Competition Half marathon	August	Mae Ram Phueng Beach	Rayong Running for Health Club in collaboration with Rayong Province
Off-season Mango Day Festival Ban Chang	October	Ban Chang District	Ban Chang District in collaboration with Rayong Province
Tak Bat Thevo Tradition	October (at the end of Buddhist Lent)	Klaeng District	Mueang Klaeng Subdistrict Municipality in collaboration with Rayong Province
King Taksin the Great Day Festival	28 December	The Shrine of King Taksin the Great area, Wat Lum Mahachai Chumpon Mueang Rayong District	Association of Thai Travel Agents Rayong Province
Travel Festival Koh Samet	November	Koh Samet	Association of Thai Travel Agents, Rayong Province

Table 3.8-40 Festivals and Traditions of Rayong Province

Festivals/Traditions	Period	Event venue	Operating agency
			Tourism Authority of Thailand, Rayong Provincial Office
Loy Krathong Festival and Floating Chedi Cloth Covering	November	Floating Chedi area Pak Nam Subdistrict, Mueang District	Association of Thai Travel Agents Rayong Province
Beach Tourism Festival Ban Phe Beach - Koh Samet	6 - 10 December	Ban Phe Beach - Koh Samet	Tourism Authority of Thailand Rayong Provincial Office

Source: Rayong Provincial Office, 2017, Obtained 19 February 2020.

(2) Chonburi Province

Chonburi province has traditions that are similar to other provinces in the central region. There are also local traditions that are still practiced in some areas, such as the buffalo decoration contest, the Klang Ban Merit-Making and Phanat Nikhom Basketry ceremony, the Wan Lai merit-making tradition, etc. The Chonburi tourism calendar is as detailed in **Table 3.8-41**.

Table 3.8-41 Festivals and Traditions of Chonburi Province

Festivals/Traditions	Period
Grand Pattaya International Music Festival	March
Annual events in Chonburi Province (Phra Buddha Sihing Parade and Chonburi Red Cross Fair) Wan Lai Sand Creation Festival, Bangsaen Pattaya Festival	April
Klang Ban Merit-Making and Phanat Nikhom Basketry Ceremony	May
Pattaya Marathon	June
Buffalo Running Festival	October

Source: Chonburi Provincial Office, 2018, Obtained 19 February 2020.

8) Population abilities

(1) Ability to read/write Thai and perform simple calculations

- Rayong Province

In Rayong province, over 99.94% of the population are able to read/write Thai and perform simple calculations, while the population that is unable to read/write Thai and perform simple calculations is 0.06%. This is similar for the population in Mueang Rayong District, in which 100% of the population is able to read/write Thai and perform simple calculations, and in the Ban Chang District vicinity, in which 99.99% of the population is able to read/write Thai and perform simple calculations and 0.01% of the population is unable to read/write Thai and perform simple calculations, as detailed in **Table 3.8-**42

Table 3.8-42 Percentage of population that are able to read/write Thai and perform simple calculations in Rayong province

Area	Total number surveyed (people)	Able to read/write Thai and perform simple calculations		Unable to read/write Thai and perform simple calculations	
		Number (people)	Percentage	Number (people)	Percentage
Rayong Province	251,209	251,066	99.94	143	0.06
Mueang Rayong District	91,554	91,554	100	0	0.00
Ban Chang District	19,832	19,831	99.99	1	0.01

Source: Thai Quality of Life Report from the Basic Needs Information (JPT), 2018

- Chonburi Province

In Chonburi province, over 99.92% of the population are able to read/write Thai and perform simple calculations, while the population that is unable to read/write Thai and perform simple calculations is 0.08%. This is similar for the population in the Bang Lamung District vicinity, in which 99.96% of the population is able to read/write Thai and perform simple calculations and 0.04 of the population is unable to read/write Thai and perform simple calculations, and in the Sattahip District vicinity, in which 99.94% of the population is able to read/write Thai and perform simple calculations and 0.06% of the population is unable to read/write Thai and perform simple calculations, as detailed in **Table 3.8-**43

Table 3.8-43 Percentage of population that are able to read/write Thai and perform simple calculations in Chonburi province

Area	Total number surveyed (people)	Able to read/write Thai and perform simple calculations		Unable to read/write Thai and perform simple calculations	
		Number (people)	Percentage	Number (people)	Percentage
Chonburi Province	431,713	431,370	99.92	343	0.08
Bang Lamung District	50,224	50,203	99.96	21	0.04
Sattahip District	38,979	38,955	99.94	24	0.06

Source: Thai Quality of Life Report from the Basic Needs Information (JPT), 2018

(2) Recognition of useful news

- Rayong Province

According to information from the Rayong Public Relations Office, it was found that communications in Rayong consisted of local newspapers (such as Palang Rayong, Rayong Daily, Burapha News, Moulchonburapha, Rayong News, Rayong Post, etc.), 5 radio broadcasting stations (Radio Thailand Rayong. MCOT Rayong, KM Radio Rayong, Ratchadamri Relations Rayong, and Smart Radio Rayong) and 6 TV/Cable TV stations (Network Cable TV Company Limited, RY. CABLE TV, S&C Communications 2001 Company Limited, Ban Chang Cable Limited Partnership, K.P. Cable Company Limited, Supercheng Company Limited, and Rayong Healthcare Company Limited). In addition, Rayong Province also has 47 community radio stations (referenced from the Thai Quality of Life Report from Basic Needs Information (JPT), 2018).

- Chonburi Province

According to information from the Chonburi Public Relations Office, it was found that communications in Chonburi consisted of local newspapers (such as Sriracha Post, Bangsaen Post, Chonburi TV, Burapha News, Chon Local Online, Chonburi Burapha, etc.), 5 radio broadcasting stations (Radio Thailand Chonburi, STR.5 Pattaya, STR.5 Sattahip, MCOT Pattaya, and RTA.14 Chonburi) and 20 TV/cable TV stations (such as CTV Cable TV Chonburi Company Limited, Sansuk Vision Company Limited, PTV Cable TV Company Limited, PTV Laem Chabang Company Limited, Banglamung Cable TV Company Limited). In addition, in Chonburi, there are up to 178 community radio stations (referenced from the Thai Quality of Life Report from Basic Needs Information (JPT), 2018).

(1.5) Review of the management of airport impacted persons' compensation fund

For the negative impacts on the people living in the development area, the economic impacts that arise may cause the public to change the characteristics of their previous occupations to a new career. Social aspects of the community changes lifestyles. Traditional livelihoods may involve other factors, such as housing transfers, interference from loud noises of aircrafts, travel, and social changes such as air conditions, water, and other natural environments.

Communities around airport development areas in many countries have experienced these problems, but they can be resolved and developed well, with cooperations between the agency that owns the projects, the public sector and the communities surrounding the areas that are directly impacted.

This study reviewed the guidelines for developing cooperation between the communities and project owner agencies in various countries, including Thailand, where affected communities cooperate in managing those issues.

1) Funds or organizations to help compensate or develop communities in England

Foreign laws relating to the establishment of a fund to compensate for damages and develop communities resulting from the development of the airport area under this study is a policy of England. The Airports National Policy Statement, prepared in accordance with the Civil Aviation Act 1982,[1] due to the development of additional airport areas in the western area. It has been specified to provide compensation for direct damages from the use of the area, noise impacts, and environmental impacts as follows:

- Air quality
- Noise
- Carbon emissions
- Biodiversity and ecosystem conservation
- Land use including open areas, green spaces, and greenbelt
- Resource and waste management
- Flooding risks
- Water sources and water quality
- Historical environment
- Topography and visual effects
- Dust, odors, artificial light, smoke and steam
- Community compensation
- Community engagement

[1] The National Archives, CIVIL AVIATION ACT 1982 [Online], 16 February 2019, source: http://www.legislation.gov.uk/

On the issue of compensation for impacts on natural resources, environmental quality, health, sanitation and quality of life, it is clearly defined in the policy on the extent of such compensation, including the establishment of an agency that provides care for those directly impacted, both personally and in the community, called **"HCEB" (HEATHROW COMMUNITY ENGAGEMENT BOARD),**[2] which is an independent agency consisting of the chairperson of the Heathrow Airport Advisory Committee pursuant to Section 35 of the Civil Aviation Act 1982) and the Airport Community Engagement Committee as set forth in The Airports National Policy Statement.

HCEB receives funds from Heathrow Airport to compensate those affected. The Board can suitably use the money after receiving approval from a full board meeting.

For those impacted, complaints can be made to the agency via **HCEB Independent Forum** on the website https://www.hceb.org.uk/ for mitigation, as well as to coordinate with the community to discuss and plan for appropriate impacts and remedies from airport developments, in addition to the initial compensation that must be received. Members participating in official discussions considered direct representatives of stakeholders and the communities are as follows:

- Local people
- Airlines and operators
- Local authorities
- Airport staff
- People impacted by noise and the environment
- Passengers
- Local business operators

The charitable organization, called **"HEATHROW COMMUNITY TRUST,"**[3], was funded by Heathrow Airport Limited, fines from airlines for noise misconduct, and fundraising from airlines and employees of Heathrow Airport to provide support and assistance to communities in the areas as follows:

- Ealing
- Hillingdon
- Hounslow
- Richmond
- Runnymede
- Slough
- South Buckinghamshire
- Welthorne

[2] HCEB, ABOUT US[Online], 16 February 2019, Source: https://www.hceb.org.uk/

[3] HEATHROW COMMUNITY TRUST, ABOUT TRUST[Online], 16 February 2019, Source: https://www.heathrowcommunitytrust.org/

- Windsor & Maidenhead

Fund amount and financing[4]

- Large Grant Programs, including environmental and sustainability projects for adolescents, are set at 2,500 to 25,000 pounds per year over a 2-year period, with a total funding of up to 200,000 pounds.
- Together Large Grants programs set at 25,000 pounds per year, with one funding round per year.
- Small Grant programs set at 2,500 pounds per year, with one funding round per year.
- Development Grant programs set at 10,000 pounds per year, with one funding round per year.

The funds received will be divided into expenses in accordance with any or all of the following:

- Investments related to building construction, furniture or equipment and one-time expenses
- Expenses, consisting of salaries or expenses for helpers and project support included in the 10% expenditure.
- Direct project expenses
- More than 10%, divided into expenses for full-time employees, administrative expenses, rent and public utilities.

From the above details, it can be seen that in terms of compensation for impacts on natural resources, environmental quality, health, sanitation, and quality of life according to the Airports National Policy Statement, the details are as clearly defined in the policy. There are also channels to monitor and allow affected persons to file complaints via the website to continually find solutions via **HCEB (HEATHROW COMMUNITY ENGAGEMENT BOARD).** It is not just a one-time compensation to get it over with.

However, in terms of community development, this promotes the quality of life of people in areas that may be impacted by the development of the airport extension area. This is not set out in The Airports National Policy Statement, which only specifies an independent organization formed as a charitable organization which will recruit members to raise funds from membership fees and donations, including fines from Heathrow Airport Limited, which is collected from airlines for noise violations in order to implement community environmental and community development projects. An implementation fee of 2,500 – 25,000 pounds is set for implementation, which will be used to carry out the project and split into necessary expenses within the organization.

[4] HEATHROW COMMUNITY TRUST, GRANT AND MAKING POLICY[Online], 16 February 2019, source https://www.heathrowcommunitytrust.org/

2) Funds or organizations to help compensate or develop communities in Singapore

Singapore does not have a fund or organization to help mitigate impacts from operation outcomes, unlike the United Kingdom, but is in the form of community development, in which Changi Airport, Singapore, has support and assistance programs available through the CHANGI FOUNDATION, a foundation established by CAG (Changi Airport Group) under the Charities Act and a Grantmaking Philanthropic Organization in April 2012 to help the disadvantaged. There is also an executive committee, known as the CAG Executive Committee, in which the CAG (Changi Airport Group) allocates net profits to the Changi Foundation annually to support projects and various projects for over 5,000 youths.[5] Examples of projects that the Foundation has implemented are as follows:

- ***Saturday Night Lights***

A quarterly soccer match is organized between CAG employees and schoolchildren from schools such as the Northlight Assumption Pathway and Spectra Secondary to allow both sides to get to know each other better, with CAG employees volunteering for training every Saturday.

- ***Numeracy Coaching Program***

Special math tutoring is organized for students at Northlight School who need additional math assistance.

- ***Youth Passport Program***

A program is organized to encourage students from Northlight school to learn and explore their interests through experience with various tasks available at the airport.

- ***Social Competence Learning Program with Metta School***

Autistic students from Metta School has regular visits to the airport to help students develop their social abilities and independence, in which the CAG staff instruct students to do things such as grocery shopping and buying food from the cafeteria.

- ***Mentorship for 5-Day Job Attachment***

To prepare students for work, the foundation has organized a 5-Day Job Attachment activity for Northlight School students. In the airport, students will gain experience with CAG agencies and airport alliances. CAG staff will act as advisors to provide counseling and promote learning for students.

[5] CHINA AIRPORT GROUP, IN ACTION [Online], 20 February 2019 Source: https://www.changiairport.com/

From the study on community development projects to promote quality of life for the people in both England and Singapore, it is evident that no community development funds are established, but instead operated in the form of a charitable organization, such as the Heathrow Community Trust in England, which provides support funds that are raised by fundraising, membership, or allotments from fines from Heathrow Airport, or foundations established in the same manner as Singapore, in which funds are supported by profits of operations under the Changi Airport Group.

3) Funds or organizations to help compensate or develop communities in Thailand

Thailand does not have funds or organizations to help heal or develop communities due to airport developments. Therefore, it is necessary to study funding or comparable independent organizations and relevant laws in order to analyze and draw conclusions for further action. The study was conducted using 3 approaches: establishment of funds, establishment of foundations, establishment of associations.

Establishment of funds

Establishment of funds to help remedy or develop communities under Thai law is done when an Act is promulgated to support the establishment of such funds. Acts are considered the most important law of Thailand after the constitution, and must be issued by a legislature in which the King has enacted with the advice and consent of the National Assembly. If the establishment of the fund does not have an Act to support it, it will not be able to take any action. Therefore, it is necessary to draft an Act to support the establishment of the fund and details of the Act are to be set as follows:

1. Source of finances for the fund. This can be either in the form of fees, fines, or other obligations.
2. Objectives for using the money, in remedial action and community development.
3. The Fund Management Committee: Specify the source, authority and duty.
4. Rules and regulations for the use of funds in accordance with the objectives.

After that, the drafting of the act shall be per the following details and procedures:[6]

(1) In the proposal of the Act, persons with the right to propose an Act are as follows:

1.1 The Cabinet

[6]Thai Parliament, Law Drafting Manual (Revised Edition) 2018 [Online], 20 February 2020 Source: https://www.parliament.go.th/

1.2 Not less than twenty members of the House of Representatives

1.3 The court or independent organizations under the Constitution, only for laws relating to the organization and laws overseen by such President of the Court and President of the organization.

1.4 Not less than ten thousand voters submitting their names to the President of the National Assembly, prepared in the form of a drafted Act on the rights and liberties of Thai people or basic policies of the state only.

In the case of an Act related to finances and presented by the persons in items 1. 2 to 1.4, it can only be proposed if endorsed by the Prime Minister.

(2) The House of Representatives shall consider the Act in 3 agendas, respectively, as follows:

Agenda 1 Accepting of Principles

In reviewing the Act in Term 1, the council will consider and request a resolution from the meeting on whether or not to accept the principles of the Act. If the council resolves to not accept the principles, that Act will be dropped. If the meeting resolves to accept the principles, the House of Representatives will assign it to the House of Representatives ordinary committee or will appoint an extraordinary committee for further consideration.

In cases in which the person proposing the Act is a member of the House of Representative, the Court, or an independent body under the constitution, and has not less than ten thousand voters, the Cabinet may request the draft for consideration prior to resolving whether to accept the principles.

Agenda 2 Stages of Committee Review

The consideration in the second agenda reviews the details of the Act on a section-by-section basis, which can be done in 2 ways:

1 Full committee review, by request of the Cabinet, or if proposed by a member to submit a motion, approved by not less than twenty members and the meeting. However, this is used in the case of an Act that is urgently required or has few details, is short and not difficult to review.

2 Review by a committee appointed by the council. If it is deemed appropriate to amend the Act, the request for an amendment shall be submitted to the chairperson of the committee reviewing the Act within 7 days from the day following the date that the Council accepts the principles of the bill, unless the Council has set a specific time for amending that Act. When the committee has completed the review, a report on the committee review will be submitted to the President of the Council.

Agenda 3 Voting to Approve or Disapprove

The meeting will decide whether or not to grant approval. In the event that the House of Representatives resolves to not approve, such Act will be dropped. If the House of Representatives resolves to approve, the President of the House of Representatives shall submit such Act to the Senate.

(3) Senate Review of the Act

The Senate will review and approve the proposed Act, divided into 3 agendas, similar to the House of Representatives. The review must be completed within 60 days. If the Act is related to finance, it must be completed within 30 days. In not completed, the meeting may decide to extend the period for another 30 days. However, if still not completed within the said period, it shall be deemed that the Senate has approved the Act.

If the Senate resolves to not approve, the Act shall be dropped and returned to the house of House of Representatives. The House of Representatives will reconsider after the 180-day period if the House of Representatives resolves to confirm the original Act with more than half of the votes, in which it shall be deemed that the Act has been approved by the National Assembly.

4) Drafting of the Act

Drafted acts that have been approved by the National Assembly are brought by the Prime Minister to the King for signature within 20 days. If the King does not approve and returns the Act, the Prime Minister will countersign the Royal Command for the Act, or, after 90 days, if the Act is not returned, the Parliament is required to reconsider the Act. If the National Assembly confirms the same resolution, with not less than two-thirds of the votes from existing members of both houses, the Prime Minister will resubmit such Act to the King. If the King's signature is not entered and returned within 30 days, the Prime Minister will announce the Act in the Government Gazette and it will be enforceable by law, as if signed by the King.

5) Promulgation of the Act

An Act can be enforced as a law after being signed by the King and published in the Government Gazette.

In terms of tax, any fund established under any Act is deemed a juristic person under that Act. There is no duty to pay personal income tax and no duty to pay juristic income tax as it does not meet the characteristics of a company or juristic partnership in accordance with the Revenue Code, Section 39.[7]

[7] Section 39 of such chapter, unless text indicates otherwise.

"Company or juristic partnership" refers to a company or juristic partnership established under Thai law or established under the laws of foreign countries and shall include:

(1) A business that is operated for trade or profit by a foreign government or an organization of a foreign government or another legal entity established by the law of a foreign country.

(2) Joint ventures, which are joint ventures for trade or profit between companies and companies, companies and juristic partnerships, equity partnerships, and juristic persons and partnerships.

Foundation establishment

Foundations under the Civil and Commercial Code, Section 110, refers to property allocated specifically for the purpose of public charity, religion, art, science, literature, education, or for any other public benefit without seeking mutual benefit, and must be registered by law.

(1) Capital for foundation establishment

Capital for the establishment of the foundation is divided into 2 cases as follows:

1. There must be a capital of not less than 500,000 baht. In the case of other assets in that amount, there must be cash of not less than 250,000 baht. When including cash and other assets, they must have a value of not less than 500,000 baht.
2. There must be a capital of not less than 200,000 baht. In the case of other assets, there must be cash of not less than 100,000 baht. When including cash and other assets, they must have a value of not less than 200,000 baht. This is for cases of foundations established for social work, to promote education, sports, religion, public disasters, and for treatment, research, and prevention of drug addition, AIDS, or foundations established by government agencies.

(2) Foundation establishment procedure

1. There must be a committee of at least 3 persons.
2. There must be a listing of assets and details of names and addresses of the owners of the property to be allocated in the establishment of the foundation, and a list of assets given to the foundation with a copy of the identification card and house registration of the person who owns the property.
3. Have a letter of promise to give the assets to the foundation.
4. Have a copy of the will in the event of applying to register a foundation or allocating assets for a foundation formed by the outcome of a will.
5. Prepare the regulations of the foundation, consisting of:
   - 5.1 Foundation name
   - 5.2 Objectives of the Foundation
   - 5.3 Foundation location and foundation branches (in the case that there are branches)
   - 5.4 Assets of the foundation upon establishment
   - 5.5 Requirements relating to the committee are as follows:
     - Number of committee members

A juristic person, or between a company and/or a juristic partnership, individuals and individuals, a non-juristic body of persons, an ordinary partnership, or other juristic person.

(3) Foundations or associations that operate businesses that generate income, but not including foundations or associations prescribed by the Minister under Section 47 (7) (b).

(4) A juristic person designated by the Director-General with the approval of the Minister and published in the Government Gazette.

- Positions of committee members
- Appointment of committee members
- Term of office
- Retirement from position
- Foundation committee meetings
- Requirements for asset management and foundation account

6. Proceed with submitting registration. In the case of head offices in Bangkok, file submissions at the district office. In the case of head offices located in the provinces, file submissions at the district office or subdistrict office.

7. At the metropolitan district office, provincial district office, or subdistrict offices, the accuracy and completeness of the documents will be reviewed. After that, the matters and comments will be submitted to the Registrar. The foundation Registrar in Bangkok is the Permanent Secretary of the Ministry of Interior and the foundation Registrar in the provinces is the provincial Governor.

8. When the Registrar responsible accepts the registration, they will issue a certificate of foundation registration (M.N.3) and announce the foundation registration to the office of the Secretariat of the Cabinet to publish in the Government Gazette and return the matter to the metropolitan district office, provincial district office, or subdistrict office, and notify the registration applicant to obtain the certificate, as well as to pay fees in accordance with the Ministerial Regulations.

Association establishment

Associations according to the Civil and Commercial Code, Section 78, means the establishment of an association for any continuous joint action and not for sharing profits or incomes. It must have regulations and be legally registered. Once the association is registered, it will become a juristic person under Section 83, in addition to being established under the Civil and Commercial Code. Associations may also be established under other laws as follows:

- Trade Association Act 1966
- Funeral Assistance Act 1974
- Labor Relations Act 1975

(1) Association establishment procedure

For association establishments, there is no minimum capital requirement to use as funds for registration. Association establishment procedures therefore have the requirements as follows:

1. The group must consist of 10 people or more, and must have at least 3 members when submitting the establishment application for any joint action.

2. Set association management, which must be operated in 2 ways as follows:

2.1 Management by the committee

2.2 Management under the supervision of a general meeting

3. Set management objectives with the main purpose of caring for the interests of the members.

4. Set the association income in accordance with the objectives and resolutions of the meeting, which has the following sources of income:

4.1 Registration fee

4.2 Member maintenance fee

4.3 Events

4.5 Generating income under the objectives

5. Proceed with registering the establishment at the metropolitan district office or provincial district office. After reviewing the documents and requests to see if they are complete and correct, they will present the matter and comments to the Registrar to verify that they are correct and consider registration.

6. After registration, a certificate of registration for the association (S.K.4) will be issued and sent to announce the registration of the association to the Secretariat of the Cabinet for announcement in the Government Gazette. The matter will then be returned to the metropolitan district office or provincial district office to inform the registration applicant and to obtain a certificate and pay the fees in accordance with ministerial regulations.

(2) Foundation or association income tax

Because foundations and associations are considered legal entities under the Civil and Commercial Code if not announced by the Ministry of Finance, they are to be charitable organizations or public places under Section 47(7)(b) of the Revenue Code. Both foundations and associations shall be taxable under the same criteria. The duties of a foundation or association that have a juristic person status, paying juristic income tax, are as follows:

1. Must request a taxpayer identification number
2. Withholding tax is required when making payment to the recipients.
3. There must be a special account showing withholding tax and submitted to the Revenue Department.
4. Must file a tax return and tax remittance.

The foundation or association with [missing word] and income must include the received income before deducting any expenses in the calculation for juristic income tax, which has taxable income requirements as follows:

1. Income from business operations, namely:

1.1 Rental costs

1.2 Revenue from sales of goods and services

1.3 Capital income, such as interest and dividends, etc.

However, a foundation or association that has not been declared a charitable organization or establishment under section 47(7) (b) of the Revenue Code will be exempted from having to include the following income to be calculated in juristic income tax:

1. Registration fees or maintenance fees received from members
2. Money or assets received from donations
3. Money or assets received as gratuitous acts
4. Money obtained from private schools of foundations or associations established under the law on private schools, but not including money obtained from the sales of goods, contracted production of goods, or any other service received by private schools that are vocational schools from a person who is not a student.

The project reviewed detailed information comparing funds, foundations and associations, which have formats of acquiring capital, formats of committees, applications for registration or establishment according to the provisions, the period of establishment, and taxable incomes according to the law, as well as the advantages and disadvantages of each format. Details are as shown **Table 3.8-44** and **Table 3.8-45**

Table 3.8-44 Comparative table of funds, foundations and associations

Type	Capital	Committee and administration	Establishment operations	Establishment period	Income tax
Capital	There is no minimum amount required for setting up a fund. Subsidies for the establishment of a fund will be received from the government.	The fund management committee, background, and authority will be as approved by the National Assembly. Such details will be specified in the Fund Establishment Act and a general meeting must be held as stipulated in the Act.	Proposal of an Act by a person entitled to submit an Act to the National Assembly.	Depending on the length of time for parliamentary approval.	There is no duty to pay personal income tax and no duty to pay juristic income tax as the characteristics do not resemble a company or juristic partnership according to the Revenue Code Section 39.
Foundation	1. Capital not less than 500,000 baht 2. In the case that the foundation is established for social welfare, to promote education, sports, religion, public safety, and for the treatment, research, and protection of patients from drugs or AIDS, or foundations established by government agencies,	There must be a committee of at least 3 persons and a general meeting must be held once a year.	The committee submits an application to register the establishment of a foundation.	at least 90 days	Taxable income 1. Operating income, comprising: 1.1 Rental fees 1.2 Revenue from sales of goods and services 1.3 Capital income, such as interest and dividends, etc. Non-taxable income 1. Money or assets received from donations 2. Money or assets received as gratuitous acts 3. Money obtained from private schools of the foundation which are established under the law on private schools

Type	Capital	Committee and administration	Establishment operations	Establishment period	Income tax
	there must be a capital of not less than 200,000 baht.				
Associations	There are no capital requirements to form an association.	1. Management by the committee 2. Management under the supervision of a general meeting A general meeting must be held once a year.	The group must consist of 10 people or more, and must have at least 3 members when submitting the establishment application for any joint action.	at least 90 days	Taxable income 1. Operating income, comprising: 1.1 Rental fees 1.2 Revenue from sales of goods and services 1.3 Capital income, such as interest and dividends, etc. Non-taxable income 1. Registration fees or maintenance fees received from members 2. Money or assets received from donations 3. Money or assets received as gratuitous acts 4. Money obtained from private schools of the association which are established under the law on private schools

Table 3.8-45 Comparative table of advantages and disadvantages of funds, foundations and associations

Type	Advantages	Disadvantages
Capital	1. There is no need to seek capital for fund setup, as the government will allocate capital to carry out the fund objectives. 2. No income tax is payable. 3. There is a source of funds for certain funds from government allocations, in addition to other income channels.	An Act is required in order to establish a fund, therefore, it will take a long period of time until the Parliament resolves to approve.
Foundation	1. Operations for assistance in accordance with the objectives can be done quickly. 2. Donations can be requested to carry out the objectives of the foundation from external persons. 3. The establishment does not take a long time.	1. Juristic income tax must be paid for foundation income. 2. Must seek capital to establish a foundation.
Associations	1. Operations for assistance in accordance with the objectives can be done quickly. 2. Able to operate commercially to earn income according to the objectives or resolutions of the general meeting, but must not be for profit. 3. The establishment does not take a long time. 4. No capital is required to establish an association.	1. Juristic income tax must be paid for association income. 2. The purpose of the association's operations is limited. If registered for any operation, proceedings must be within the specific scope of such operation.

As Thailand does not have a foundation or association that aims to find ways to help remedy or develop communities due to the impact of airport constructions, there are therefore no foundations or associations that can be used for the study. In Thailand, the study can only compare funds to find ways to help remedy or develop communities due to the expansion of U-Tapao International Airport. This includes the fund's operating guidelines, source of capital, fund remedy scope, or disbursement of funds. The study will be conducted from 3 funds as follows:

1. The community development fund for areas surrounding power plants in accordance with the Energy Business Act 2007, which will help remedy communities surrounding power plants that have been affected by power plant operations.

2. The community development fund for areas surrounding power plants[8] is a fund established under section 97 (3) of the Energy Business Act 2007[9] with the objective of providing funds to improve the quality of life for the people and the environment in the communities surrounding power plants which may be impacted by the construction of the power plant or electricity generation, charged to the[10]

- A new electricity business licensee means a person receiving a license to construct a building or set up a factory from the date that the Energy Regulatory Commission's regulations on rules, procedures and conditions for remittance and spending of the Electricity Development Fund is effective onwards. Money is contributed to the fund as follows:

During the construction period (from the plant construction commencement date under the contractor engagement agreement until the commercial operation date (COD), payments are to be made annually according to the power plant installation capacity at a rate of 50,000 baht/megawatt/year.

In the first year, payment must be made within 5 business days from the date of commencement of construction of the power plant. For the following year, payment must be made within the first 5 business days of the year.

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8 ERC, Electricity Development Fund [Online], 20 February 2019, Source: http://pdf.erc.or.th/

9 Section 97 stipulates the expenditure of the Electricity Development Fund is to pay for the following operations:
(1) For compensation and subsidies for electricity industry licensees who provide services to disadvantaged power users, or to provide thorough electric services, or to promote the policy of spreading prosperity to the region (Section 97 (1)).
(2) To provide compensation to electricity users who need to pay higher electricity rates due to electrical system control center licensees ordering electrical business licensees to conduct unfair or discriminatory electricity generation operations (Section 97 (2)).
(3) For the development or rehabilitation of the localities affected by the operation of the power plant (Section 97 (3)).
(4) To promote the use of renewable energy and technology used in the operation of electrical businesses with little impact on the environment (Section 97 (4)).
(5) To promote knowledge, awareness and engagement in electricity in the society and people. (Section 97 (5)).
(6) As expenses for the management of the Electricity Development Fund (Section 97 (6)).
However, the disbursement of funds under (1), (2), (3), (4) and (5) shall be in accordance with the regulations prescribed by the ERC under the NEPC policy framework and must be clearly classified into accounts according to the spending operation.

10 ERC, Background [Online], 20 February 2019, Source: http://pdf.erc.or.th/

For the period between electricity generation (from the start of COD onwards), payments must be made to the fund monthly in accordance with the amount of electricity generated according to the type of fuel used in electricity generation, classified by type of fuel used to generate electricity at the rate shown in **Table 3.8-46**

Table 3.8-46 Collection rate for the Electricity Development Fund according to the NEPC resolution[11]

Fuel type	Satang/electrical units produced each month
Natural gas	1.0
Fuel oil, diesel	1.5
Coal, Lignite	2.0
Renewable power, wind and solar types	1.0
Renewable power, hydro types	2.0
Other types of renewable energy such as biogas, biomass Waste and waste materials, community waste, etc.	1.0

- A current electricity business licensee means a person receiving a license to construct a building or set up a factory before the date that the regulations of the Energy Regulatory Commission become effective, required to make payments to the Electricity Development Fund only during the electricity generation period.

- A licensee for electricity distribution business pays money to the Electricity Development Fund on a monthly basis, deducted from the service fee according to the rate specified by the Energy Regulatory Commission.

However, the amount of money paid to the fund must be consistent with the operations of the electricity business licensee providing services to disadvantaged power users, or providing comprehensive electric services, or to promote the policy of spreading prosperity to the region. It must also be consistent with the electricity tariff structure and investment plan in the electricity industry as prescribed by the National Policy Council, while also taking into account the impact on electricity consumers who will be burdened in the case where the electricity business licensee also pays money to the fund.

The Office of the Energy Regulatory Commission (ERC) will allocate the Electricity Development Fund in the areas impacted by power plant operations in accordance with Section 97 (3), classified into accounts by power plant, and must be appended with the name of the power plant, or the name of the subdistrict or the district, or the name of the province where the power plant is located.

[11] ERC, Background [Online], 20 February 2019, Source: http://pdf.erc.or.th/

Types of Electricity Development Funds[12]

1. Fund Type A for areas that have received sufficient allocated funds for the development of the area with full management, with more than five billion kilowatts-hour of electricity generated per year or with an income of more than fifty million baht per year or more.

2. Fund Type B for areas that have received sufficient allocated funds for the development of the area with moderate management, with less than five billion kilowatts-hour of electricity generated and with an income of more than one million baht but less than fifty million baht per year.

3. Fund Type C for areas that have received less allocated funds for the development of the area with limited management, with less than one hundred million kilowatts-hour of electricity generated and with an income of less than one million baht per year.

Details are shown in **Figure 3.8-4**

Fund type	Category A fund	Category B fund	Category C fund
Funds allocated	High (more than 50 million baht per year)	Moderate (between 1–50 million baht per year)	Low (not exceeding 1 million baht per year)
Electricity production volume	More than 5 billion kilowatt-hours per year	From 100 million – 5 billion kilowatt-hours per year	Not exceeding 100 million kilowatt-hours per year
Fund management components	1. Money or assets allocated by the Electrical Development Fund 2. KPRF. and KPRT. 3. Fund allocation and project approval 4. Procurement 5. Finance and accounting 6. Audit, Monitoring, Evaluation 7. Public relations	1. Money or assets allocated by the Electrical Development Fund 2. KPRF 3. Fund allocation and project approval 4. Procurement 5. Finance and accounting 6. Audit, Monitoring, Evaluation 7. Public relations	A maximum of 3 municipal or SAO representatives will consider approval of the community project, delegated by the ERC.

Source: ERC, Type of Electricity Development Fund [Online], 20 February 2019, Source: http://pdf.erc.or.th/

Figure 3.8-4 Types of Electricity Development Funds

Guidelines for Allocation of Electricity Development Fund

The allocation of the fund capital for use in the Electricity Development Fund for each area is announced at the power plant of the licensee at that location, allocated into 2 parts:

[12] ERC, Types of Electricity Development Fund [Online], 20 February 2019, Source: http://pdf.erc.or.th/

Part 1 not exceeding 15 percent is the annual management expense for the Electricity Development Fund in the announced area.

Part 2 not less than 85 percent is for subsidies for local development or rehabilitation of areas affected by the operation of the power plant, by offering community projects for the benefit of the people in the announced area.

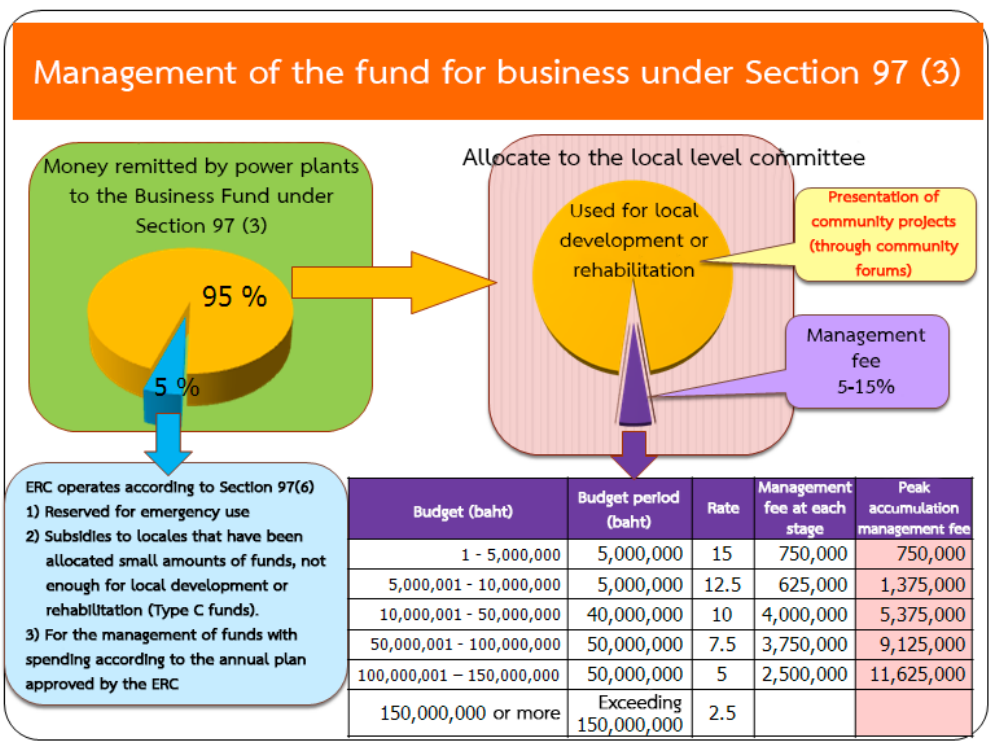
According to the regulations of the Electricity Development Fund, it is specified that the Energy Regulatory Commission has set aside not more than 5 percent of the capital to carry out the following operations:

1. Reservation for emergency use, to resolve or mitigate preliminary damages from impacts caused by the power plant as deemed appropriate by the Energy Regulatory Commission.

2. Subsidies for the development of rehabilitation of localities affected by power plant operations in which small sums have been allocated that are insufficient for local development or rehabilitation.

In this regard, the amount of money that will be provided to each locality will depend on the appropriateness as determined by the Energy Regulatory Commission.

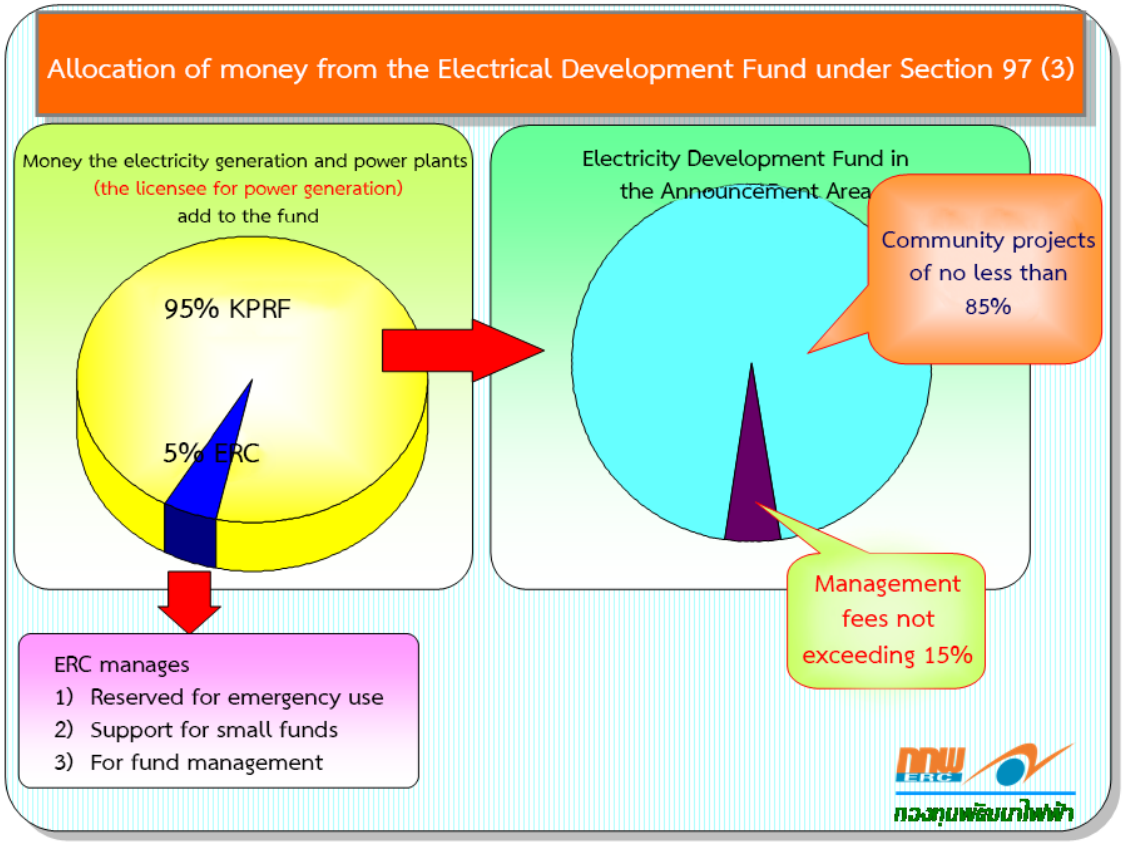
3. For the management of the Electricity Development Fund, the details are shown in **Figure 3.8-5** to **Figure 3.8-7**



Budget (baht)	Budget period (baht)	Rate	Management fee at each stage	Peak accumulation management fee
1 - 5,000,000	5,000,000	15	750,000	750,000
5,000,001 - 10,000,000	5,000,000	12.5	625,000	1,375,000
10,000,001 - 50,000,000	40,000,000	10	4,000,000	5,375,000
50,000,001 - 100,000,000	50,000,000	7.5	3,750,000	9,125,000
100,000,001 – 150,000,000	50,000,000	5	2,500,000	11,625,000
150,000,000 or more	Exceeding 150,000,000	2.5		

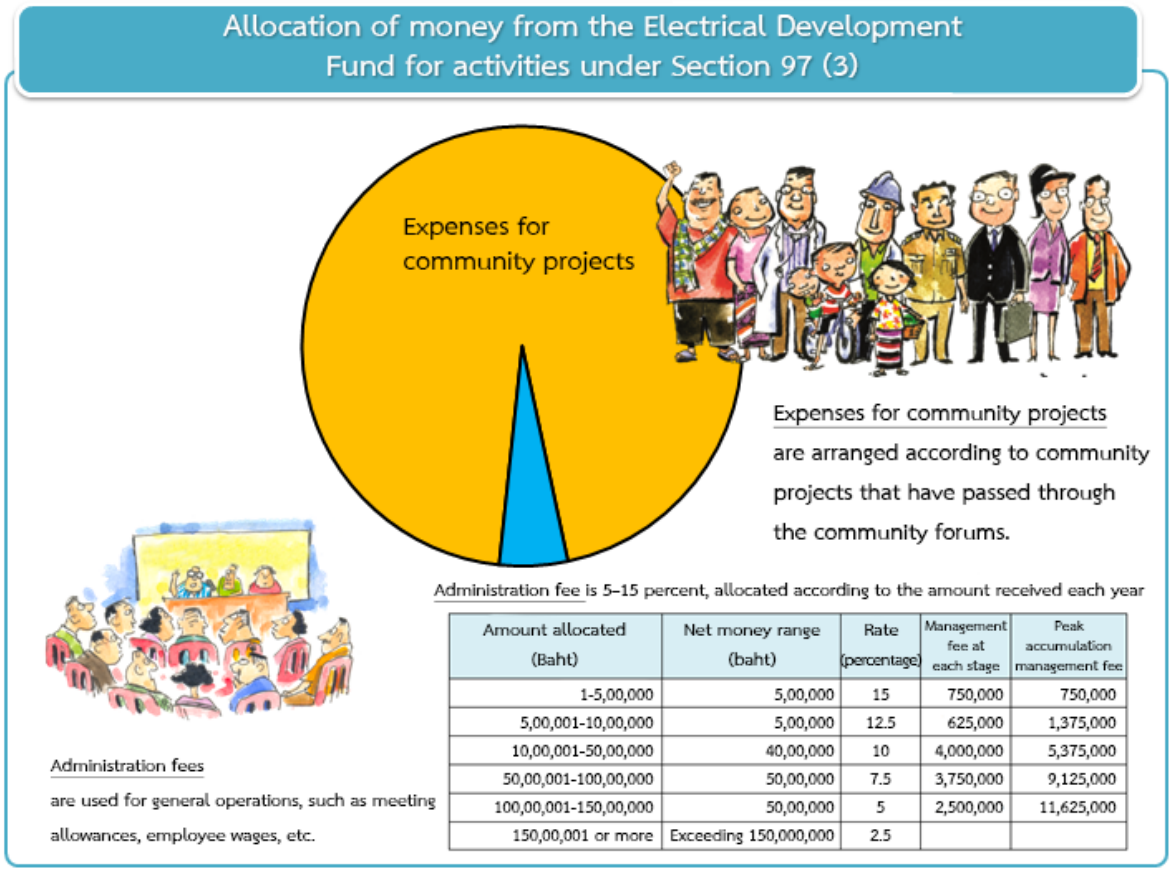
Source: ERC, Fund Management [Online], 20 February 2019 Source: http://pdf.erc.or.th/

Figure 3.8-5 Fund Management



Source: ERC, Fund Allocation [Online], 20 February 2019 Source: http://pdf.erc.or.th/

Figure 3.8-6 Fund allocation



Amount allocated (Baht)	Net money range (baht)	Rate (percentage)	Management fee at each stage	Peak accumulation management fee
1-5,00,000	5,00,000	15	750,000	750,000
5,00,001-10,00,000	5,00,000	12.5	625,000	1,375,000
10,00,001-50,00,000	40,00,000	10	4,000,000	5,375,000
50,00,001-100,00,000	50,00,000	7.5	3,750,000	9,125,000
100,00,001-150,00,000	50,00,000	5	2,500,000	11,625,000
150,00,001 or more	Exceeding 150,000,000	2.5		

Source: ERC, Fund Allocation Framework [Online], 20 February 2019, Source: http://pdf.erc.or.th/

Figure 3.8-7 Fund Allocation Framework

The study found that establishment of a community development fund in the areas surrounding the power plant requires supporting laws, namely the Energy Business Act 2007, which stipulates a large framework for the establishment of the Fund in Section 97, in which are different objectives for utilizing the fund capital. Community development funds have been established for the areas surrounding the power plant in accordance with the objective framework for the development or rehabilitation of the localities affected by power plant operations. The law grants the authority to collect payments from electricity producers or electricity suppliers. Not less than 85 percent of the fund capital will be used to subsidize the development or rehabilitation of the localities affected by the power plant's operations, which must be proposed for community projects for the benefit of the people in the announced area.

3. Suvarnabhumi Airport Environment Fund

The Suvarnabhumi Airport environment fund is currently in the process of drafting the fund Act due to the construction of Runway 3 and 4 at Suvarnabhumi Airport, which may severely affect natural resources, environmental quality, health, sanitation, and the quality of life of people in communities (EHIA), according to the announcement of the Ministry of Natural Resources and Environment. Establishing the Suvarnabhumi Airport Environment Fund is one of the

measures outlined in the project's EHIA report to mitigate and remedy the impacts people may experience from airport operations.

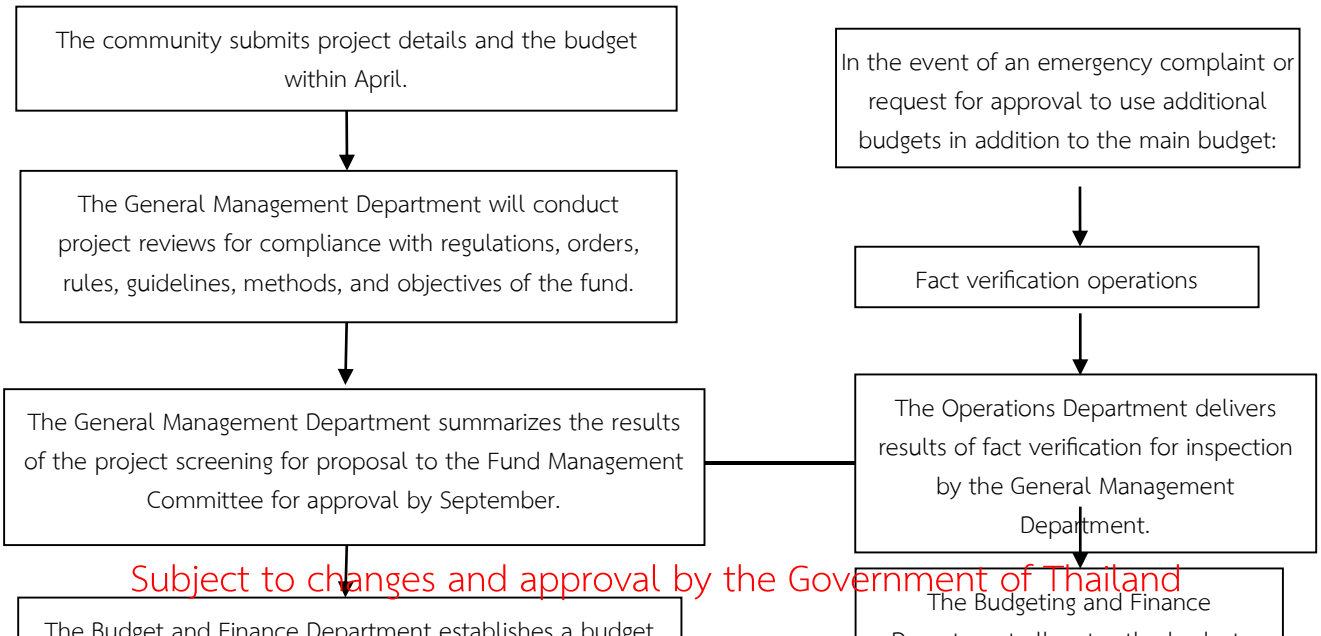
Fund goals and objectives

The fund to develop or rehabilitate the environment and the quality of life of the communities surrounding the airport that have been affected by the operations of the airport, as well as to promote the development of the environment of the communities surrounding the airport for better quality of life, is divided into 2 cases as follows:

1. Remedy for impacts from airport operations, namely:
   1.1 To resolve impacts from objects falling from aircrafts and sonic boom
   1.2 To provide compensation for environmental impacts
2. To promote the development of the environment for communities surrounding the airport, including:
   2.1 Community health promotion
   2.2 Community environmental project promotion

Action Plan

The Fund Management Department is to propose an annual action plan to the Suvarnabhumi Airport Environment Fund Management Committee under the supervision of a supervisory authority for consideration and approval, with the main activities in accordance with the objectives of the fund. In requesting to use capital from the fund, the procedure is as follows:



Source of funding

Funding comes from the collection of environmental costs from those causing the impacts, in which an AOT meeting held on 18 November 2020 resolved to collect noise charge and air pollution charges from airlines as one of the source of funds. In this regard, this is used as a source of the following funds:

1. Government contributions to fund establishment
2. Fundraising from all sectors in the form of liability rates, fees
3. Noise Charge and Air Pollution Charge from airlines
4. Funding from other channels

Short-term operations

At the meeting of the working group to support the establishment of the airport impact compensation fund under the supervision of the AOT on 18 November 2019, representatives from the Civil Aviation Authority of Thailand (CAAT) were invited to attend the meeting to give opinions on relevant legal matters. The meeting concluded the guidelines for the establishment of the Suvarnabhumi Airport Environment Fund as follows:

Short-term operations are conducted while awaiting the establishment of a juristic fund, in which AOT has set up an annual budget for environmental, social, and health management to encourage engagement, show responsibility for the community, and to continuously develop the quality of life for the community since the opening of the airport in 2006. For fiscal year 2020, the budget has allocated 38 million baht to environmental operations (i.e. environmental monitoring operations, aircraft noise measurements in case of complaints, mobile air quality monitoring), repair of structures damaged by sonic boom, hearing tests and hearing quality projects, environmental exhibitions, charitable support and supporting events for community enterprises.

Long-term operations

The long-term operation involves the establishment of the fund as a juristic entity to enable engagement from all stakeholders and to be in accordance with the objectives of the National Environment Board, which states that “the fund will generate income from the remittance of money to the fund from the users of Suvarnabhumi Airport, such as airline companies, various entrepreneurs, and passengers. The expenditure of the fund will be for resolving and preventing impacts.” AOT will present two guidelines for establishing a mutual fund to the Suvarnabhumi Airport Impact Compensation Fund Committee, which is chaired by the Permanent Secretary of the Ministry of Transport. There are also committee members from related agencies such as the Ministry of Finance, CAAT, Aeronautical Radio of Thailand Co., Ltd, the Aviation Business Operations Committee and AOT for consideration as follows:

Guideline 1: In drafting the new Airport Environment Fund Act, there are guidelines for implementing the methods and procedures for drafting of the Act in accordance with the process of enacting organic Acts in accordance with the Constitution of the Kingdom of Thailand 2017 and the Act on Legislative Drafting and Evaluation of Law 2019,

with details of the Act comprising:

(1) Source of finances for the fund, fundraising from all sectors in the form of liability rates, fees.

(2) Spending of money in environmental, social, and health operations.

(3) The fund management committee, which consists of backgrounds, authorities, and rules for spending fund capital.

The Suvarnabhumi Airport Environment Fund has not yet been fully established and is currently under review. There must be a meeting to discuss important details for the fund's establishment.

The project has reviewed the information and can compare foreign funds and Thai funds and the advantages and disadvantages of each organization/fund that has been carried out and is in the process of establishment, with details as shown in **Table 3.8-47 and Table 3.8-48**. In summary, the review of the relevant information to determine an appropriate format for fund establishment found that the U-Tapao International Airport Fund should be established with a fund management committee, in the form of separate foundations divided by objectives and goals. The details are as shown in Chapter 5, Management of the U-Tapao International Airport Impacted Persons' Compensation Fund, including references to principles under the Air Navigation Act 1954, Section 60/37, which states that an outbound passenger service charge may be collected for use in connection with airport security and maintenance purposes, procurement and improvement of airport facilities for passengers, as well as to protect the environment and reduce pollution caused by airport use, etc.

Table 3.8-47 Comparison of foreign and Thai funds

Agency	Source of funds	Executive Committee	Method of disbursement	Project	Distribution of budget use
"HCEB" (HEATHROW COMMUNITY ENGAGEMENT BOARD)	Heathrow Airport	Chairperson of the Heathrow Airport Advisory Committee, together with the HCEB	The committee can use the received money as the committee chairperson deems appropriate. The use of money must be related to the set agreements and must be agreed on beforehand.	Established the HCEB Independent Forum to receive complaints.	No data specified.
HEATHROW COMMUNITY TRUST	- Heathrow Airport Limited - Fines charged to airlines for noise violations - Fundraising from airlines and Heathrow airport employees	Trustees consist of persons who have previously worked with airlines in England, international lawyers, and include representatives from the public sector and businesses, comprising a total of 11 people, together with Grant Review Panels from various groups.	Grant Review Panels will consider approvals as proposed by trustees.	- Large Grants programs - Together Large Grants programs - Small Grant programs - Development Grant program	- Large Grants programs Set at 2,500 to 25,000 pounds per year - Together Large Grants programs set at 25,000 pounds per year - Small Grant programs set at 2,500 pounds per year - Development Grant program set at 10,000 pounds per year, with one funding round per year. - Other expenses as follows: 1. Investments related to building construction, furniture or equipment and one-time expenses 2. Salary or expenses to helpers and project support in the inclusion of 10% of expenses 3. Direct project expenses

Table 3.8-47 Comparison of foreign and Thai funds

Agency	Source of funds	Executive Committee	Method of disbursement	Project	Distribution of budget use
					4. More than 10%, divided into expenses for full-time employees, administrative expenses, rent and public utilities.
CHANGI FOUNDATION	CAG (CHANGI AIRPORT GROUP)	CEO of Changi Airport Group	As stipulated in the foundation bylaws	- Saturday Night Lights - Numeracy Coaching Program - Youth Passport Program - Social Competence Learning Program with Metta School - Mentorship for 5-Day Job Attachment	No data specified.
Community development funds for areas surrounding power plants	- New electricity business licensee - Current electricity business licensee - A licensee for electricity distribution business pays money to the Electricity Development Fund on a monthly basis, deducted from the service fee according to the rate	Office of the Energy Regulatory Commission (ERC)	The Office of the Energy Regulatory Commission (ERC) will allocate the Electricity Development Fund in the areas impacted by power plant operations in accordance with Section 97 (3), classified into accounts by power plant, and must be appended with the name of the power plan,t or the name of the		Part 1 not exceeding 15 percent is the annual management expense for the Electricity Development Fund in the announced area. Part 2 not less than 85 percent is for subsidies for local development or rehabilitation of areas affected by the operation of the power plant, by offering community projects for the benefit of the people in the announced area. According to the regulations of the Electricity Development Fund, it is specified that the Energy Regulatory Commission has set aside not more than 5 percent of the capital to carry out the following operations:

Table 3.8-47 Comparison of foreign and Thai funds

Agency	Source of funds	Executive Committee	Method of disbursement	Project	Distribution of budget use
	specified by the Energy Regulatory Commission.		subdistrict or the district, or the name of the province where the power plant is located.		- Reservation for emergency use, to resolve or mitigate preliminary damages from impacts caused by the power plant - Subsidies for the development of rehabilitation of localities affected by power plant operations in which small sums have been allocated that are insufficient for local development or rehabilitation. - For the management of the Electricity Development Fund
Suvarnabhumi Airport Environment Fund (Pending review)	- Government contributions to fund establishment - Fundraising from all sectors in the form of liability rates, fees - Noise Charge and Air Pollution Charge from airlines - Funding from other channels	The Permanent Secretary of the Ministry of Transport is the chairperson. There are also committee members from related agencies such as the Ministry of Finance, CAAT, Aeronautical Radio of Thailand Co., Ltd, the Aviation Business Operations Committee and AOT.	Per Act regulations (pending review).	1. Remedy impacts from airport operations - To resolve impacts from objects falling from aircrafts and sonic boom - To provide compensation for environmental impacts 2. To promote the development of the environment for communities surrounding the airport. - Community health promotion	Per Act regulations (pending review).

Table 3.8-47 Comparison of foreign and Thai funds

Agency	Source of funds	Executive Committee	Method of disbursement	Project	Distribution of budget use
				- Community environmental project promotion	

Table 3.8-48 Comparative table of advantages and disadvantages of each organization

Organization	Advantages	Disadvantages
"HCEB" (HEATHROW COMMUNITY ENGAGEMENT BOARD)	1. There is a fund financed by Heathrow Airport to compensate people or communities in the areas impacted by the airport, including compensation from actions that affect natural resources, environmental quality, health, and sanitation, including quality of life. 2. There are channels for those affected by various impacts to file complaints to seek compensation for damage continually, not as a one-time action. 3. There is coordination with the community to discuss and hear direct input from stakeholders and the community to plan appropriate mitigation.	There are only objectives and scopes for remedial action for individuals or communities in the event of impacts from the airport, but there are no policies in terms of community development to promote the quality of life, environment, education, or occupations of people in the area.
HEATHROW COMMUNITY TRUST	1. There is a source of funds received from Heathrow Airport, which are fines imposed on airlines in the event of noise violation, for use in various operations according to the objectives of the organization. 2. There are clear objectives in implementing projects for developing the community and community environment, which helps improve the quality of life, education, occupations, or environment in the communities.	1. There are no objectives or scope for mitigation to individuals or communities in the event of impacts from the airport. 2. Despite the sources of funding from airline fines, the implementation of various projects according to the objectives requires funding from membership fees and financing to sufficiently support the projects and to be allocated for necessary expenses within the organization.
CHANGI FOUNDATION	1. There is a certain amount of capital used for the operations of Changi Airport each year. 2. There are objectives to develop communities or help those in need by organizing various projects for participation,	There are no objectives or policies to help cure those impacted by airport operations. Instead, emphasis is placed on community development, especially for young people, which is not limited to those living in the airport area.

Table 3.8-48 Comparative table of advantages and disadvantages of each organization

Organization	Advantages	Disadvantages
	especially projects for skill development or youth promotion.	

Table 3.8-48 Comparative table of advantages and disadvantages of each organization

Organization	Advantages	Disadvantages
Community development funds for areas surrounding power plants	1. There are certain sources of financing as the fund is established under the Energy Business Act 2007 in addition to government support. Therefore, money can be collected from license applicants to contribute to the fund. 2. There are objectives to help remedy communities surrounding the power plants that are affected by power plant operations, including power plant construction or electricity generation. 3. There are objectives to improve the quality of life for people and the environment in communities surrounding the power plant, which may be affected by power plant construction or electricity generation.	1. Lack of flexibility in fund disbursement in case of urgent need to use the fund for remedial action. 2. Use of the fund to support projects that improve the quality of life for the people and environment in the community around the power plant is limited to projects that have been proposed and approved.
Suvarnabhumi Airport Environment Fund	1. There is a certain source of funds if there is a resolution approving the establishment of a fund under the Act, both in subsidies received from the government and other sources as proposed in the Act. 2. There are objectives to develop or restore the environment and quality of life in communities surrounding the airport that have been impacted by airport operations and to promote the development of the environment in communities surrounding the airport.	This is currently pending review and therefore there is no clear conclusion. There may be further changes or amendments according to the resolution of the Parliament. Therefore, it is necessary to wait for a resolution to be approved to complete the establishment of the fund.

(2) Primary data

Socioeconomic surveys were conducted using questionnaires during 16 December 2019 - 15 March 2020, 6 - 13 June 2020, and 8 - 13 August 2021. The socioeconomic surveys were conducted among study target groups who may be affected by the project. The target groups in the socioeconomic survey can be classified into 3 groups: 1) sensitive areas 2) community leaders and 3) household groups. The informant must be the head of the household, spouse or an adult child, or a person assigned by the head of the household. In conducting additional household data surveys during 8-13 August 2021, guidelines for public participation during the COVID-19 pandemic were implemented to reduce the risk of spreading COVID-19. The guidelines for household interviews/personal interviews are as follows:

1. Maps were composed based on aerial photographs from 2 December 2019, with enumeration to prepare for field trips to verify such enumeration. If there were notification channels for households, appointments were notified in advance.
2. Survey staff were identified and screened for various risks.
3. Throughout the duration of the interview, keep at least 2 meters apart and wear protective equipment with full coverage. Also notify interviewees to wear masks throughout the interview.

Community Preparation: This step is conducted in the project area to prepare the community and was the initial implementation step for the study. It is important to publicize information about the project to the target group of senior executives at provincial and local level, in addition to relevant local administrative organizations involved with the project for their information and to understand the study data. This includes asking for ideas and suggestions for the project in the form of meetings to provide preliminary information and consultation in order to for project implementation to be planned in accordance with study area administration plans before proceeding to further discuss project details.

In addition, further action is taken to prepare the community in forms and operations, in compliance with the Guidelines for Public Participation in the Procedure of Providing an Environmental Impact Assessment Report of the Office of Natural Resources and Environmental Policy and Planning (ONEP) 2019, in which the participation and hearing process is as follows:

1) The person responsible for preparing the report must enter the project area prior to the holding the public consultation (preparation process), with the following objectives:

1.1) To prepare the community by providing public information on the project details and rules for the project consultation, focusing on communicating in ways that are easy for the public to understand, such as infographics, short video clips, brochures, public relations signs, etc. in order to provide complete and sufficient information for sharing comments.

1.2) To analyze stakeholders (stakeholder analysis) in order to determine a format of public participation that is appropriate for each group of stakeholders (stakeholder engagement).

1.3) To discuss dates, times, places and formats of public consultations that are appropriate to the context of the area.

2) Persons responsible for preparing the report must proceed to organize at least 3 public consultations, with the following details:

2.1) First public consultation: A forum held to identify the EIA scope and guidelines, including project details, and to assess project alternatives so that the public, stakeholders, and relevant agencies have a chance to participate in presenting their concerns and guidelines for the EIA. The purpose of this is to provide information to the public and relevant agencies regarding upcoming project details and possible direct and indirect impacts that may occur, the scope of the study, and assessment of project alternatives. In addition, the comments and suggestions from the public consultation will be applied for use in the study to achieve a comprehensive result. The first public consultation must be held in compliance with the rules set by ONEP.

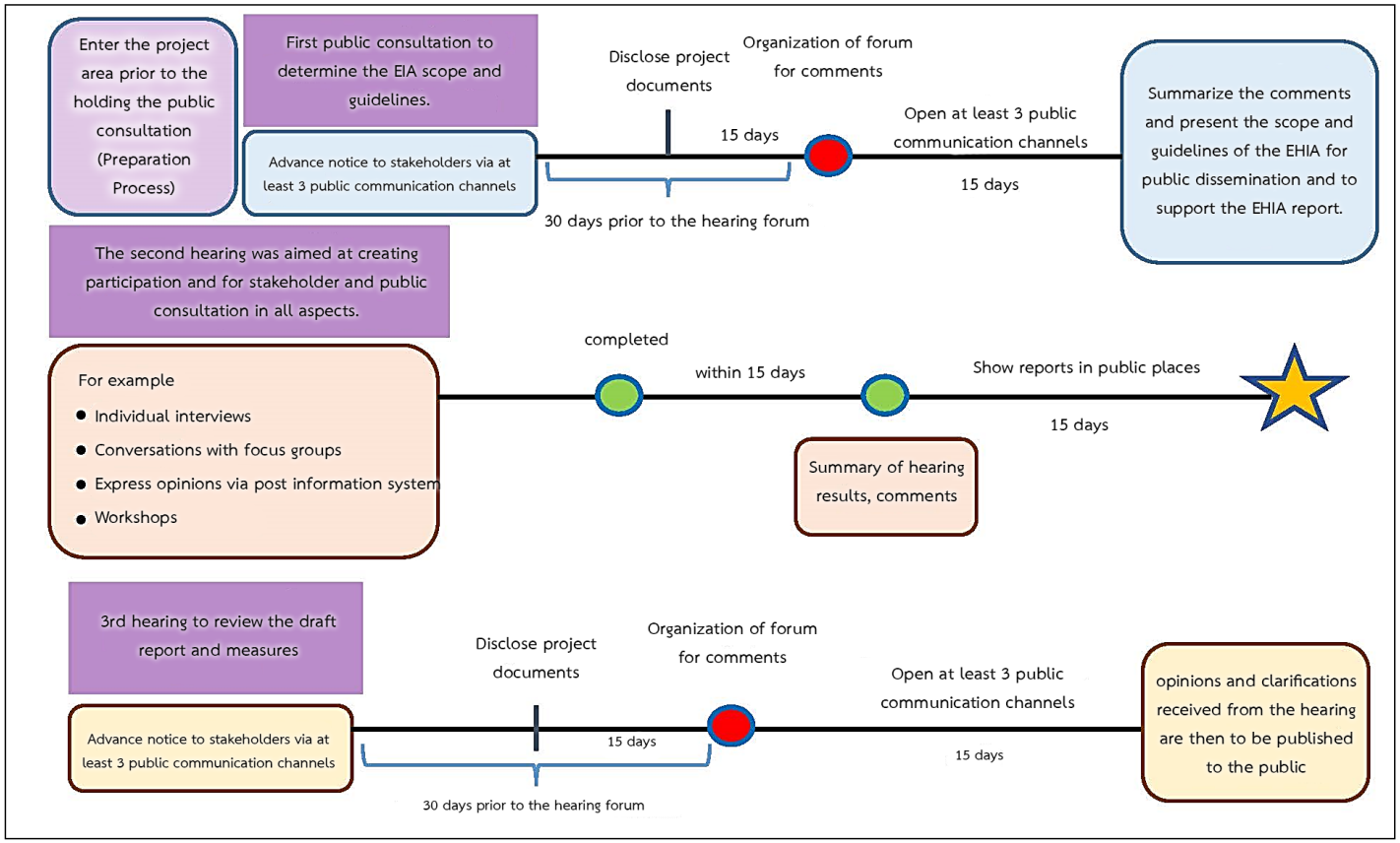
2.2) Second public consultation: A hearing for comments in the assessment and reporting stage for the purpose of public participation, to hear comments and concerns from the main target groups in all aspects. The second public consultation must be held in compliance with the rules set by ONEP, in which information must be compiled using the following methods:

- In-depth interviews with representatives of relevant parties or stakeholders
- Group discussion meetings
- Focus group discussions
- Opinion surveys by questionnaires

2.3) Third public consultation: A hearing to review the draft EIA report, environmental impact prevention and resolution measures, and environmental impact monitoring measures for the purpose of providing stakeholders and relevant agencies with the opportunity to examine the accuracy and completeness of the draft report, as well as to present information, facts and additional comments for the report, with the objective of ensuring public confidence in the draft report and measures. Opinions and recommendations from the public consultation must be integrated as an update to the draft report and measures, and must be attached as part of the report. For large and complicated projects, a broad range of public consultations may be required. Other appropriate participation techniques

may also be considered. The third public consultation must be held in compliance with the rules set by ONEP.

A summary of the public consultation process for projects requiring Environmental Impact Assessment Report for Projects, Businesses or Operations that May Have Severe Impacts on Natural Resources, Environmental Quality, Health, Sanitation, and Quality of Life of People in the Community (EHIA) is shown in **Figure 3.8-**8.



Source: Guidelines for Public Participation in the Procedure of Providing an Environmental Impact Assessment Report of the Office of Natural Resources and Environmental Policy and Planning (ONEP), 2019,

Figure 3.8-8 Diagram of public consultation process for projects requiring an Environmental Impact Assessment Report for Projects, Businesses or Operations that May Have Severe Impacts on Natural Resources, Environmental Quality, Health, Sanitation, and Quality of Life of People in the Community (EHIA).

The number of surveyed samples, classified by target group, area, period of operation, and socioeconomic survey questionnaire method is as detailed in **Table 3.8-49** and images of the field survey activities of each group is as shown in **Figure 3.8-**9

Table 3.8-49 Number of surveyed samples, classified by target group, area, period of operation, and socioeconomic survey questionnaire method.

Group	Target group	Study area	Duration of Operation	Method	Number of samples planned	Number of responses
1	Sensitive area (Place of worship/school/healthcare facilities)	Noise contour area	16 December 2019 – 15 March 2020 6 – 13 June 2020	• Purposive sampling	14	14
2	Community leader group	Noise contour area	16 December 2019 – 15 March 2020 6 – 13 June 2020	• Purposive sampling	26 *	26
3	Group of households	NEF > 40 area	6 January – 15 March 2020 and 6 – 13 June 2020 8 – 10 August 2021	• Census	93	86 **
		NEF 30 - 40 area	6 January – 15 March 2020 and 6 – 13 June 2020 8 – 10 August 2021	• The number of samples can be calculated using the Taro Yamane formula to arrive at sample size of not less than 344 samples, which when distributed by area, the result obtained is a sample size of 354. • The selection of samples using area sampling by creating a map of sampling locations based on affected areas and then calculate sampling distribution in proportion to such areas.	354	354
		NEF < 30 area extending to the study area perimeter	6 January – 15 March 2020 and 6 – 13 June 2020	• The number of samples can be calculated using the Taro Yamane formula to arrive at a sample size of not less than 394 samples, which when distributed by area, the result obtained is a sample size of 428.	428	428

Table 3.8-49 Number of surveyed samples, classified by target group, area, period of operation, and socioeconomic survey questionnaire method.

Group	Target group	Study area	Duration of Operation	Method	Number of samples planned	Number of responses
				• The selection of samples using area sampling by creating a map of sampling locations based on affected areas and then calculate sampling distribution in proportion to such areas.		
Total					915	908

Note : * As some villages in the noise contour areas do not have an established juristic person and do not have village presidents, comprising 5 villages, the true number of community leaders is only 26 samples.
** According to the a field survey, data of the household group in the NEF ≥ 40 area obtained from 86 respondents while data of 7 others could not be obtained, as detailed in **Table 3.8 51.**

(1) Sensitive area group *

(2) Community leader group *

(3) Group of households *

(4) Survey on the COVID-19 pandemic situation between 8-13 August 2021

Notes : *Images of the land surveys between 16 December 2019 – 15 March 2020 and between 6 – 13 June 2020, prior to the announcement of the National Communicable Disease Committee regulations on the comparative criteria of violations or non-compliance with the orders of communicable disease officers under Section 34 (6) of the Communicable Disease Act 2015 in the event of the outbreak of coronavirus 2019 or COVID-19 in 2021, which determines the measures for prevention of COVID-19, namely the importance of wearing face masks or cloth masks to reduce risk of infection and to prevent unhygienic conditions, and to limit exposure to COVID-19, announced 31 May 2021.

Figure 3.8-9 Some images of economic and social survey activities using the questionnaire

(2.1) Environmentally sensitive areas impacted in the noise affected areas

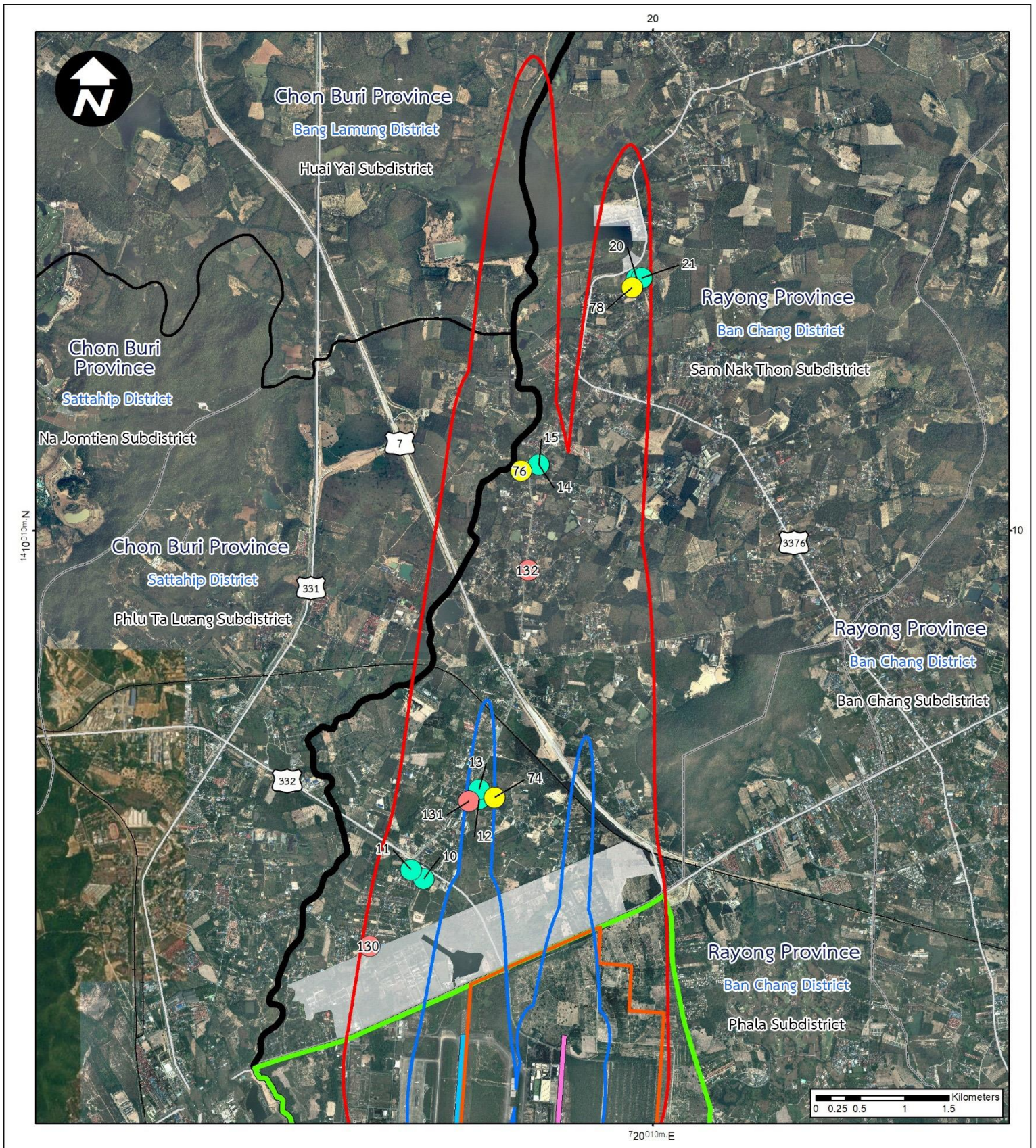
According to the field survey of the affected environmentally sensitive areas, the NEF ≥40 and NEF 30 – 40 areas, totaling 14 areas. Details are shown in **Table 3.8-**50 and **Figure 3.8-10**

Table 3.8-50 Results of survey of sensitive areas affected in the noise affected areas

No.	Agency	Position in agency	Sensitive area type	Distance from project area (km)
NEF > 40 area				
1	Wat Sa Kaeo, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Abbot	Religious Site	1.77
2	Wat Sa Kaeo School, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Director,	Educational Institution	2.73
3	Saeng Song La Child Development Center 3, Sam Nak Thon Subdistrict, Ban Chang, Rayong Province	Head of the Center	Educational Institution	2.62
4	Ban Sa Kaeo Subdistrict Health Promotion Hospital, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Public Health Official, Specialist Level	Medical Institution	2.62
NEF 30 - 40 area				
1	Wat Sombun Naram, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Abbot	Religious Site	5.10
2	Wat Samnak Katon, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Assistant Abbot *	Religious Site	7.15
3	Wat Sombun Naram, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Director,	Educational Institution	6.26
4	Municipal Child Development Center, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Head of the Center	Educational Institution	6.26
5	Wat Samnak Katon School, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Director,	Educational Institution	1.87
6	Ban Sam Nak Thon Child Development Center, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Head of the Center	Educational Institution	1.75
7	Pattanavech College of Technology, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Teacher *	Educational Institution	8.56
8	Pattanavechsuksa School, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Director,	Educational Institution	8.58
9	Ban Khlong Bang Phai Subdistrict Health Promotion Hospital, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Public Health Academic, Specialist Level *	Medical Institution	5.21

10	Ban Khao Khrok Subdistrict Health Promotion Hospital, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Registered Nurse *	Medical Institution	1.48

Note : ***** Assigned by the supervisor/director or authorized person in the agency



Legend

- Provincial zone
- District border
- Subdistrict border
- Road
- Railroad
- Runway 1 (Current)
- Runway 2
- Airport extension area (project area)
- U-Tapao International Airport area
- Military area

Educational Institutions

10 Pattanavechsuksa School
11 Pattanavech College
12 Saeng Song La Child Development Center 3
13 Wat Sa Kaeo School
14 Wat Sombun Naram School (Tem Rat Memorial)
15 Sam Nak Thon Subdistrict Municipality Child Development Center in Wat Sombun Naram School
20 Wat Samnak Katon School
21 Ban Sam Nak Thon Child Development Center

Religious Sites

74 Wat Sa Kaeo
76 Wat Sombun Naram
78 Wat Samnak Katon

Medical Institutions

130 Ban Khlong Bang Phai Subdistrict Health Promotion Hospital
131 Ban Sa Kaeo Subdistrict Health Promotion Hospital
132 Ban Khao Khrok Subdistrict Health Promotion Hospital

NEF contour lines in the case of the 2019 aviation situation and aviation forecasts for 2028, 2038, and 2048 (maximum capacity 1,364 flights per day) and in all cases of inactive runways (791 flights per day) July 2021

- NEF 40 (14.30 square kilometers of land)
- NEF 30 (48.25 square kilometers of land)

Source: Composed by United Analyst and Engineering Consultants Co., Ltd., 2021.

Figure 3.8-10 Location of sensitive areas affected in the noise contour areas

1) Religious Site

Socioeconomic survey of environmentally sensitive areas impacted in noise affected areas in the case of 3 religious sites, with details of the study as follows:

Wat Sa Kaeo

The respondent was the 55-year-old abbot of Wat Sa Kaeo and monastic dean of Sam Nak Thon Subdistrict. The respondent has held the position for 3 years after having spent 20 years at the Buddhist temple. The abbot's original domicile was unknown but he had been in the area for 16-20 years. According to the interview, Wat Sa Kaeo had 8 monks and was established about 50 years ago. The temple had approximately 80-100 visitors daily for religious ceremonies.

At present, social conditions of the community where this temple is located has been moderately impacted by drug problems, according to the respondent. The problem of unemployment/job loss among people was described as low impact. Problems related to the arrival of people from outside the community has moderate impact on the community. People in the community have a moderate sense of solidarity, helping one another, participating in cultural and charitable activities once in a while (once every 1-6 months/up to 5 times/a year). People are content with their community (respondent was asked to check all that apply) in terms of transportation and life and property safety, but they were not happy with traffic congestion during rush hours. Noise impacts attributed to traffic/vehicles was moderate, problem of dust, soot/smoke caused by vehicle exhaust fumes have moderate impact. Generally speaking, traffic situation has low impact. The respondent, however, had no experience with traveling around U-Tapao International Airport.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and the main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through publicity documents/leaflets/posters and internet and project website. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent said they expected neither positive nor negative impacts. As for the operation phase of the project, the respondent said they expected positive impacts (respondent was asked to check

all that apply). Positive economic impacts (such as growth in income, career opportunities, prosperity, thriving trade, tourism and investment) and positive social impacts (travel convenience and safety). The respondent expressed concerns that the project may cause negative impacts to the environment, health and society. Impact to air quality is expected to be moderate. Other positive impacts, including job creation, growth in income, and public engagement/CSR activities that could bring benefits, are rated moderate.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. When asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Wat Sombun Naram

The respondent was the 85-year-old abbot of Wat Sombun Naram whose highest education attainment was upper secondary school/vocational certificate level. The abbot, who has held his current position for 8 years, moved here from Nakhon Sawan Province and has resided in this area for 16-20 years. From the interview, it was found that Wat Sombun Naram has 9 monks and was established more than 50 years ago. There were approximately 20 visitors at the temple per day for religious ceremonies.

At present, social conditions of the community where this temple is located had low impact on tap water supply. The respondent said the arrival of large numbers of workers from outside the community had high impact. The local community had a high sense of solidarity. People participated in major cultural activities and engaged in charitable activities on a regular basis (once a month). People were generally content with the surrounding environment of the community: (respondents were asked to check all that apply) good living environment, life and property safety. Impacts relating to traffic problems were moderate as a result of heavy traffic. The respondent had experience traveling on the roads around U-Tapao International Airport but did not find that travel convenience was impacted in any way. The respondent also had traveled to U-Tapao International Airport by personal vehicle.

The respondent described the public health services in the community as adequate, with no problems with access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they received treatment at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was moderately satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through publicity documents/leaflets/posters and internet and project website. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent said they expected neither positive nor negative impacts. As for the operation phase of the project, the respondent said he expected neither positive nor negative impacts. The respondent expressed concerns that the project may cause negative impacts on the environment, health and social conditions. The respondent did not expect negative impacts, but that the community may benefit from CSR activities of the project, which they rated as a moderately positive impact.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Wat Samnak Katon

The respondent was the 76-year-old assistant abbot at Wat Samnak Katon, with highest education attainment at primary school level, who has held the position for 12 years, about as long as when he first arrived at the temple. The assistant abbot moved here from Chachoengsao Province about 11-15 years ago. Based on the interview, Wat Samnak Katon had 10 monks and was founded about 30 years ago. About 10 people visited the temple per day, with 50 people per day for religious ceremonies. There were six buildings in the temple, namely 1 single-story chanting hall, 3 two-story monks' living quarters, 1 single-story general-purpose building, and a single-story crematorium. The buildings are cement with glazed concrete roofing.

At present, social conditions of the community where this temple is located had high impact on electricity supply and slight impact on tap water supply. The community had a high sense of solidarity, helping one another and participating in cultural and charitable activities regularly (once a month). The respondent was content with the community: (respondent was asked to check all that apply on this issue) saying the living environment was good, transportation was convenient and there was life and property safety, the local economy was thriving. However, the respondent had no experience traveling on the roads around U-Tapao International Airport.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and the main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through chairpersons/members of local committee/community leaders. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, dissemination of information through community leaders would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent said they expected neither positive nor negative impacts. As for the operation phase of the project, the respondent said they expected neither positive nor negative impacts. The respondent expressed no concerns but said the project may cause impacts on the environment, health and social conditions. The respondent did not expect negative impacts, but that the community may benefit from growth in income, which they rated as a moderately positive impact.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

2) Educational Institution

Results of the socioeconomic survey on impacted environmental sensitive areas in the noise affected areas in the case of 8 educational institutions are as detailed below:

Wat Sa Kaeo School

The respondent was the 46-year-old Buddhist female director of Wat Sa Kaeo School, with highest education attainment at postgraduate level. She has held the position for the past 10 years, but been working at the school for 20 years. She had moved from Trang Province and has lived and worked in this area for 5-10 years. Based on the interview, the school was founded 52 years ago and offers classes from preschool year 2 to lower secondary year 3 level, with 25 teachers and 477 students. The school consists of 7 buildings: 4 two-to-three-story

buildings, 1 single-story cafeteria, 1 single-story multipurpose building, and 1 single-story office building. The buildings were made from reinforced concrete and concrete roofing.

At present, social conditions of the community where this school is located were affected by unemployment/job losses described as moderate impact by the respondent. The arrival of large numbers of people from outside the community had low impact. The community had high sense of solidarity and people were helping one another and attended major cultural and charitable activities on a regular basis (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good transportation, life and property safety, thriving businesses and economic growth at the community level. At present, the community was moderately impacted by noise from traffic/vehicles. The respondent mentioned that she had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and the main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through project staff/RTN personnel and publicity documents/leaflets/posters. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected neither positive nor negative impacts. As for the operation phase of the project, the respondent expected neither positive nor negative impacts. The respondent expressed no concerns but said the project may cause impacts on the environment, health and social conditions. The respondent did not expect positive nor negative impacts.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Saeng Song La Child Development Center 3

The respondent was a 41-year-old Buddhist female head of Saeng Song La Child Development Center 3, with highest education attainment with a bachelor's degree or equivalent. The respondent has held the position for the past 3 years, but been working at the school for 18 years. She was a native of the community. Based on the interview, the center was established 30 years ago, offers preschool education, with 3 teachers, 1 administrative personnel and 47 schoolchildren. The center has 2 single-story buildings made of reinforced concrete and concrete roofing.

At present, social conditions of the community where this school is located were affected by arrival of large numbers of people from outside the community, which the respondent described as having moderate impact. The community had high sense of solidarity and people were helping one another and attended major cultural and charitable activities occasionally (once every 1-6 months, not more than 5 times/year). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good transportation, thriving businesses (respondent was asked to check all that apply). However, there were also certain aspects of the community the respondent was not satisfied with: traffic jams during rush hours and the low level impact on solid waste/sewage management mostly due to accumulated garbage/missed collection. The respondent traveled on the roads around U-Tapao International Airport but was not affected in terms of travel convenience, and had traveled to U-Tapao International Airport by personal car.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was moderately satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through project staff/RTN personnel and internet/project website. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, delivering project documents to the home would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent said they had not been affected by positive or negative impacts. As for the operation phase of the project, the respondent had been affected by positive impacts: (respondent was asked to check all that apply) in economic aspects (growth in income, career opportunities, economic growth, thriving businesses). Negative impacts were experienced in environmental aspects (noise impact, fumes, soot and dust, heavy traffic, road accidents, access to water supply,

electricity supply, wastewater and solid waste) and health aspects (hearing impairment, mental stress, anxiety, sleeplessness, headache, allergies).

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Wat Sombun Naram School

The respondent was the 56-year-old Buddhist female director of Wat Sombun Naram School, with highest education attainment at postgraduate level. She has held the position for the past 3 years, but had been working at the school for 25 years since moving to the area from Sukhothai Province. Based on the interview, the school was founded 80 years ago, offers classes from preschool year 1 to primary year 6 level, with 14 teachers and 200 students. The school consists of 3 buildings: 2 two-story buildings and 1 single-story multipurpose building. The buildings were reinforced concrete and concrete roofing.

At present, social conditions of the community where this school is located is affected by electricity supply and illicit drugs, which were described as low impact, while there were problems with increasing cases of theft, such as burglary, described as moderate impact, along with crowdedness in the community. Cases of physical violence, such as brawls, and unemployment/job loss and arrival of large numbers of people from outside the community, were rated as low impacts. The respondent said the community had high sense of solidarity and people were helping one another and attended major cultural and charitable activities regularly (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating life and property safety and good living environment. The respondent said the community was affected by noise, described as highest impact, attributed to traffic/vehicles, while problems with dust, smoke, and soot were described as moderate impact attributed to heavy traffic. Solid waste and sewage problem caused by accumulated garbage/missed collection was described as a low impact while drainage/floodwater was rated as moderate impact attributed to clogged drainage pipes. The traffic situation was affected by growing numbers of vehicles, described as high impact. The respondent had no experience traveling on roads around U-Tapao International Airport.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste

disposal, the local agencies (SAO) collect garbage for disposal. The respondent said she was moderately satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent had was informed about the project through project staff/RTN personnel and neighbors/acquaintances. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress and public participation. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected negative impacts in environmental aspects (sewage, flooding, traffic, road damage, transportation accidents, solid waste, nature view, etc.) and in health aspects (dust from hauling of construction materials, mental stress, anxiety, sleeplessness, headache, allergies). As for the operation phase of the project, the respondent expected both positive and negative impacts, with positive economic impacts (such as growth in income, career opportunities, prosperity, thriving trade, tourism and investment) and positive social impacts (travel convenience and safety). Negative impacts were expected in social aspects (such as lifestyle change, arrival of workers from outside the community, crimes), environmental aspects (noise impact, emission fumes, soot, dust, traffic, accidents, water and electricity supplies, sewage and waste) and health aspects (hearing impairment, mental stress, anxiety, sleeplessness, headache, allergies). The respondent expressed concerns about noise and was worried the project may cause environmental, health and social impacts. However, the respondent did not expect to be affected by either negative or positive impacts.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Sam Nak Thon Subdistrict Municipality Child Development Center

The respondent was the 53-year-old Buddhist female head of Municipal Child Development Center, Sam Nak Thon Subdistrict, with highest education attainment of a bachelor's degree or equivalent. The respondent, a native of this community, has held the position for the past 6 years, since she started working at the center. Based on the interview, the center was established 12 years ago and offers preschool education, with 3 teachers and 55 schoolchildren. The center has 1 single-story building built from reinforced concrete and concrete roofing.

At present, social conditions of the community where this school is located were affected by unemployment/job loss, described as moderate impact by the respondent. The

arrival of large numbers of people from outside the community had low impact. The community had a high sense of solidarity and people were helping one another and attended major cultural and charitable activities on a regular basis (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good transportation, life and property safety, thriving businesses and economic growth at the community level. At present, the community was moderately impacted by noise from traffic/vehicles. The respondent had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (SAO) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through project staff/RTN personnel and publicity documents/leaflets/posters. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent said she had been affected by negative impacts in health aspects (such as dust from hauling of construction materials, mental stress, anxiety, sleeplessness, headache, allergies). As for the operation phase of the project, the respondent said she had been affected by negative impacts in environmental aspects (noise impact, emission fumes, soot, dust, traffic, accidents, water and electricity supplies, wastewater and waste) and health aspects (hearing impairment, mental stress, anxiety, sleeplessness, headache, allergies). The respondent expressed concerns about relocation and noise as the result of the development of the project. There were concerns that the project may cause environmental, health and social impacts but the respondent did not expect to be affected by either negative or positive impacts.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction

phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Wat Samnak Katon School

The respondent was 47-year-old Buddhist female director of Wat Samnak Katon School, with highest education attainment at postgraduate level. A native of this subdistrict, she has held the position for the past year and 3 months since she started working at the school. Based on the interview, the school was founded 44 years ago and offers classes from preschool year 2 to primary year 6 level, with 14 teachers and 160 students. The school consists of 6 buildings: 1 single-story auditorium, 2 single-story buildings, 1 single-story library, 2 two-story teachers' living quarters. The buildings were made from reinforced concrete and concrete roofing.

At present, social conditions of the community where this school is located were affected by problems with electricity supply, described as high impact, while unemployment/job loss were rated as moderate impact. Arrival of large numbers of people from outside the community were considered low impact. The community had high sense of solidarity and people were helping one another and attended major cultural and charitable activities on a regular basis (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating life and property safety, thriving businesses and economic growth at the community level. At present, the community was moderately impacted by noise from traffic/vehicles. The respondent mentioned had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (SAO) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through project staff/RTN personnel and publicity documents/leaflets/posters. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected neither positive nor negative impacts. As for the operation phase of the project, the respondent expected neither positive nor negative impacts. The respondent expressed no concerns but said the project may cause impacts on the environment, health and social conditions. The respondent did not expect positive nor negative impacts.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Ban Sam Nak Thon Child Development Center

The respondent was the 45-year-old Buddhist female director of Ban Sam Nak Thon Child Development Center, with highest education attainment at bachelor's degree level or equivalent. A native of this community, she has held the position for the past 24 years since she started working at the center. Based on the interview, the school was founded 24 years ago and offers classes from preschool education, with 3 teachers and 40 students. The school consists of 2 buildings: 1 single-story cafeteria, 1 single-story building. The buildings were made from reinforced concrete and glazed concrete roofing.

At present, social conditions of the community where this school is located are affected by problems with unemployment/job loss, described by the respondent as moderate impact. The community had high sense of solidarity and people were helping one another and attended major cultural and charitable activities on a regular basis (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating life and property safety, thriving businesses and economic growth at the community level. At present, the community was moderately impacted by noise from traffic/vehicles. The respondent had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and the main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (SAO) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through neighbors/acquaintances. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected neither positive nor negative impacts. As for the operation phase of the project, the respondent expected positive impacts (respondent was asked to check all that apply), such as economic impacts (such as growth in income, career opportunities, prosperity, thriving trade, tourism and investment) and social impacts (travel convenience and safety). The respondent expressed no concerns about the project, and commented that the project may cause environmental, health and social impacts. However, the respondent did not expect either negative or positive impacts.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Pattanavech College

The respondent was a 50-year-old Buddhist male director of Pattanavech College, with highest education attainment at bachelor's degree level or equivalent. A native of this community, he has held the position for the past 19 years since he started working at the college. Based on the interview, the school was founded 19 years ago, offers education at vocational certificate and high vocational certificate levels, with 20 teachers, 8 administrative staff, and 400 students. The college consists of 4 buildings: 1 single-story building, 1 single-story cafeteria, 1 two-story building and 1 three-story building. The buildings were made from reinforced concrete and concrete roofing.

At present, social conditions of the community where this school is located are affected by problems with unemployment/job loss, described by the respondent as low impact, and the arrival of large numbers of people from outside the community, rated as moderate impact. The community had moderate level of solidarity and people were helping one another and attended major cultural and charitable activities on a regular basis (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good transportation, but the respondent was not satisfied with higher cost of living. At present, the community's living environment has not been affected by any impacts. The respondent had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water.

There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (SAO) collect garbage for disposal. The respondent was moderately satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through publicity documents/leaflets/posters and internet and project website. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, delivery of project information documents to the home would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent had not been affected either by positive or negative impacts. As for the operation phase of the project, the respondent expected positive impacts (respondent was asked to check all that apply) in economic aspects (such as growth in income, career opportunities, prosperity, thriving trade, tourism and investment). The respondent expressed no concerns about the project, and commented that the project may cause environmental, health and social impacts. However, the respondent did not expect either negative or positive impacts.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Pattanavechsuksa School

The respondent was the 41-year-old Buddhist female director of Pattanavechsuksa School, with highest education attainment at postgraduate level. She has held the position for the past 3 years, but has been working at the school for 17 years. She moved from Chonburi Province and has lived and worked in this area between 16-20 years. Based on the interview, the school was founded 30 years ago and offers classes from preschool year 1 to upper secondary year 6 level, with 50 teachers, 10 administrative personnel and 739 students. The school consists of 4 buildings: 2 two-story buildings, 2 single-story cafeterias. The buildings were made from reinforced concrete and concrete roofing.

At present, social conditions of the community where this school is located are affected by problems with illicit drugs and unemployment/job loss and the arrival of large numbers of people from outside the community, which were described as low impacts. The community had high sense of solidarity and people were helping one another and attended major

cultural and charitable activities on a regular basis (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good living environment, good transportation, life and property safety and economic growth at the community level. At present, the community was slightly impacted by noise from traffic/vehicles. The respondent had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems with access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they received treatment at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was moderately satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through project staff/RTN personnel and publicity documents/leaflets/posters. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, organizing meetings to provide project information would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected neither positive nor negative impacts. As for the operation phase of the project, the respondent expected positive impacts (respondent was asked to check all that apply) in economic aspects (such as growth in income, career opportunities, prosperity, thriving trade, tourism and investment) and social aspects (travel convenience and safety). The respondent expressed no concerns about the project, and commented that the project may cause environmental, health and social impacts. The respondent commented that they were not negatively impacted, but had benefited in terms of income growth, described as moderate positive impact.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

3) Medical Institutions

Socioeconomic surveys were conducted in environmentally sensitive areas impacted in noise affected areas for 3 medical institutions, with study details as follows:

Ban Sa Kaeo Subdistrict Health Promotion Hospital

The respondent was a 41-year-old Buddhist female Public Health Official, Specialist Level, at Ban Sa Kaeo Subdistrict Health Promotion Hospital, with highest education attainment at postgraduate level. A native of this community, she has held the position for the past 20 years, but has been working at this organization for 1 year. Based on the interview with Ban Chang District Public Health Office, which was responsible for this health promotion hospital, the health promotion hospital had 3 permanent staff, 2 nurses and 2 other personnel, which made up adequate staff for the average of approximately 10 patients, all 10 of whom are outpatients, receiving healthcare services per day. The hospital consists of four buildings: 1 two-story health facility building, 1 single-story staff living quarters, 1 two-story staff living quarters. and 1 single-story storage building. The buildings were made of reinforced concrete and glazed concrete roofing.

At present, social conditions of the community where this hospital is located is affected by problems due to the arrival of large numbers of people from outside the community, described by the respondent as moderate impact. The community had a moderate level of solidarity and people were helping one another and attended major cultural and charitable activities occasionally (once every 1-6 months, not more than 5 times/year). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good living environment. At present, the community's living environment has not been affected by any impacts. The respondent had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through publicity documents/leaflets/posters. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, delivering project information to the home would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected neither positive nor negative impacts. As for the operation phase of the

project, the respondent expected neither positive nor negative impacts. The respondent expressed no concerns but said the project may cause impacts on the environment, health and social conditions. The respondent did not expect negative impacts, but that the community may benefit from high positive impact in terms of job opportunities and increased income at moderate level.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Ban Khlong Bang Phai Subdistrict Health Promotion Hospital

The respondent was a 42-year-old Buddhist female Public Health Official, Specialist Level, at Ban Khlong Bang Phai Subdistrict Health Promotion Hospital, with highest education attainment at bachelor's degree or equivalent. They had moved from Ubon Ratchathani Province and lived in the community for 5-10 years, holding the position for the past 3 years since joining this health facility. Based on the interview with Ban Chang District Public Health Office, which was responsible for this health promotion hospital, the health promotion hospital was founded 9 years ago and was staffed with 2 permanent staff and 1 nurse, which made up adequate staff. An average of approximately 25 patients, all of whom are outpatients, receive healthcare services per day. The hospital consists of 3 buildings: 1 two-story health facility building, 1 single-story old building and 1 two-story staff living quarters. The buildings were made of reinforced concrete and glazed concrete roofing.

At present, social conditions of the community where this hospital is located are affected by problems with the arrival of large numbers of people from outside the community, described by the respondent as a moderate impact. The community had moderate level of solidarity and people were helping one another and attended major cultural and charitable activities occasionally (once every 1-6 months, not more than 5 times/year). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good living environment. At present, the community's living environment has not been affected by any impact. The respondent had not traveled on roads around U-Tapao International Airport often enough to give an opinion on traffic situations.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and the main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For

waste disposal, the local agencies (SAO) collect garbage for disposal. The respondent was very satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through publicity documents/leaflets/posters. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, delivering project information to the home would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected neither positive nor negative impacts. As for the operation phase of the project, the respondent expected neither positive nor negative impacts. The respondent expressed no concerns but said the project may cause impacts on the environment, health and social conditions. The respondent did not expect negative impacts, but that the community may benefit from high positive impact in terms of job opportunities and increased income at moderate level.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

Ban Khao Khrok Subdistrict Health Promotion Hospital

The respondent was a 46-year-old Buddhist female licensed nurse practitioner at Ban Khao Khrok Subdistrict Health Promotion Hospital, with highest education attainment at bachelor's degree or equivalent. Having lived and worked in the community for 16-20 years, the respondent has held the position for the last 20 years since they starting working at this health facility. The respondent declined to reveal her original domicile. Based on the interview with Ban Chang District Public Health Office, which was responsible for this health promotion hospital, the health promotion hospital was founded 37 years ago and staffed with 3 permanent staff, consisting of 2 nurses and 1 massage therapist. An average of approximately 20 patients, all of whom are outpatients, receive treatment per day. The health facility consists of 2 buildings: 1 two-story Ban Khao Khrok Subdistrict Health Promotion Hospital building and 1 single-story staff living quarters. The buildings have roofing materials made of glazed concrete.

At present, social conditions of the community where this hospital is located are affected by problems with the arrival of large numbers of people from outside the community, described by the respondent as a moderate impact. The community had a high level of solidarity and people were helping one another and attended major cultural and charitable

activities regularly (once a month). The respondent was content with the community, (the respondent was asked to check all that apply on this issue) stating good living environment. However, they were not satisfied with general conditions (the respondent was asked to check all that apply on this issue) stating rising cost of living. At present, the community's living environment has been affected by heavy traffic, which was described as a moderate impact. The respondent had traveled on roads around U-Tapao International Airport but was not affected by any impact on travel convenience. The respondent also reported having traveled to U-Tapao International Airport with personal car.

The respondent described the public health services in the community as adequate, with no problems concerning access to healthcare services. When ill (respondent was asked to check all that apply on this issue), they are treated at a public hospital. The main drinking water source is widely available bottled water and the main source of water for utilization is tap water. There were no problems with the quality and quantity of drinking water and tap water. For waste disposal, the local agencies (subdistrict administrative organization) collect garbage for disposal. The respondent was moderately satisfied with the surrounding environment.

On awareness of project information (respondent was asked to check all that apply), the respondent was informed about the project through project staff/RTN personnel and publicity documents/leaflets/posters. The respondent said publicity and dissemination of project information was needed as people would like to find out more and want to be kept up to date on the latest project study progress. According to the respondent, delivery of project documents to the home would be the most suitable method.

Asked to comment on the construction phase of the project, the respondent expected neither positive nor negative impacts. As for the operation phase of the project, the respondent expected neither positive nor negative impacts. The respondent expressed no concerns but said the project may cause impacts on the environment, health and social conditions. The respondent did not expect positive nor negative impacts.

Asked to comment on the draft environmental and health impact prevention and resolution measures on 8 key issues in the construction phase of the project, the respondent said the measures had adequate coverage. Asked about the draft measures on 9 key issues in the operation phase of the project, the respondent also said they had adequate coverage. Asked to give an opinion on the overall draft environmental and health impact prevention and resolution measures, the respondent said they had adequate coverage both during the construction phase and operation phase of the project. The respondent offered no other suggestion on the matter.

(2.2) Community leaders in the noise affected areas

Socioeconomic survey of 26 community leaders in noise affected areas. As Rinsiri 3 and Rinsiri 4 housing estates were still under the management of the same real estate developer, the number of samples totaled 25. Details are as shown in **Table 3.8-**51

Table 3.8-51 Survey results from community leaders in noise affected areas

No.	Village/community namelist	Position of the leader	Distance from project area (km)
NEF ≥ 40 area			
1	Village No. 3, Ban Sa Kaeo, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village head *	1.87
2	Village No. 4, Ban Khlong Bang Phai, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Sam Nak Thon Subdistrict Head *	1.32
NEF 30 - 40 area			
3	Village No. 1, Ban Sam Nak Thon, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village head *	6.45
4	Sam Nak Thon 1 Community, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Community President	6.53
5	Sam Nak Thon 2 Community, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Community President	6.21
6	Sam Nak Thon 3 Community, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Community President	6.77
7	Rinsiri 3 Housing Estate, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Project owners **	2.31
8	Rinsiri 4 Housing Estate, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Project owners **	2.53
9	Village No. 2, Ban Chak Mak, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village head *	9.81
10	Sa Kaeo 1 Community, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Community President	3.59
11	Sa Kaeo 2 Community, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Community President	2.61
12	Chaiyapruek Ville Housing Estate, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village President	2.39
13	Punyapat Housing Estate, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village President	3.08
14	Village No. 5, Ban Yai Ra, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village head *	5.13
15	Village No. 6, Ban Khao Khrok, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village head *	4.40

16	Khao Khrok 1 Community, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Community President	4.77
17	Khao Khrok 2 Community, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Community President	4.64
18	Village No. 7, Ban Nong Takhian, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village head *	9.28
19	Village No. 8, Ban Cherng Khao, Sam Nak Thon Subdistrict, Ban Chang District, Rayong Province	Village head *	1.88
20	Eastern - Nong Muang Community, Phala Subdistrict, Ban Chang District, Rayong Province	Community President	1.12
21	Village No. 1, Ban Phlu Ta Luang, Phlu Ta Luang Subdistrict, Sattahip District, Chonburi Province	Subdistrict Head of Phlu Ta Luang Subdistrict	2.94
22	Village No. 5, Ban Khao Bai Si, Phlu Ta Luang Subdistrict, Sattahip District, Chonburi Province	Village head *	3.01
23	Village No. 8, Ban Thung Lahan, Huai Yai Subdistrict, Bang Lamung District, Chonburi Province	Subdistrict Head of Huai Yai Subdistrict	12.28
24	Village No. 11, Ban Map Fakthong, Huai Yai Subdistrict, Bang Lamung District, Chonburi Province	Village head *	8.00
25	Village No. 13, Ban Nong Phakkut, Huai Yai Subdistrict, Bang Lamung District, Chonburi Province	Village head *	10.64
26	Map Fakthong Community, Huai Yai Subdistrict, Bang Lamung District, Chonburi Province	Community President	11.68

Note: * With area under jurisdiction affected in NEF ≥ 40 and in the NEF 30 – 40 areas

** Rinsiri 3 Housing Estate and Rinsiri 4 Housing Estate still had no chairperson, the same developer (project owner) continued to manage the two housing estates

Summary table of socioeconomic survey using questionnaire of community leaders in affected areas that fall within noise contour areas (NEF ≥ 40 and NEF 30 – 40 areas) are shown in **Appendix 3–10.**

Section 1 General data of respondents

Gender: 15 male respondents (60.0%) and 10 female respondents (40.0%). Age bracket: 12 respondents over 51-60 years of age (48.0%), 6 aged 41-50 (24.0%), 4 over 60 (16.0%), 2 aged 31-40 (8.0%), and 1 aged 21-30 (4.0%). Religion: Buddhism, 25 respondents (100%).

Most of the respondents held positions in the community/village, namely 13 community/village chairs (52.0%), followed by 12 subdistrict heads/village heads (48.0%). Of this, 7 had served in their current position for less than 5 years (28.0%); followed by 6 having served between 11-15 years (24.0%), 4 serving between 5-10 years (16.0%), 4 serving between 16-20 years

(16.0%) and 3 having served for more than 20 years (12.0%), and 1 having served for an unspecified period (4.0%).

Highest education attainment: 10 (40.0%) respondents stated upper secondary school/vocational certificate, followed by 5 (20.0%) stating associate degree/high vocational certificate, 3 (12.0%) lower secondary school, 3 (12.0%) bachelor's degree or equivalent, 2 (8.0%) completed primary school, 1 (4.0%) postgraduate and 1 (4.0%) unspecified.

Principal occupation of the respondents: 6 private business owners (24.0%), 6 farmers (24.0%), 4 traders (16.0%), 2 private company employees (8.0%), 2 general laborers (8.0%), 2 government pensioners (8.0%), 2 unpaid workers/homemakers (8.0%), and 1 fishery/aquaculture worker (4.0%).

There were 15 respondents who had lived in their respective communities for more than 20 years (60.0%), followed by 6 who had lived there for 5-10 years (24.0%) and 6 who lived there for 11-15 years (24.0%), and 2 for 16-20 years (8.0%). Reasons for moving to live and work in the community (respondents was asked to check all that apply on this issue) comprised of 6 respondents moving for a change of career or new occupation (66.6%), 2 moving to be with family or a spouse (16.7%), 2 moving for government work (16.7%), and 2 relocating due to land expropriation for the airport (16.7%). When asked about likelihood of relocating elsewhere, most of the respondents, comprising 24 (96.0%) respondents, said they would not move away, reasoning that they had a job or family in the community, etc., while 1 respondent (4.0%) said they were undecided, depending on the economic situation.

Section 2 Demographic Data and Community Relations

On the number of households in the study area, there were 643 households. Of this, 549 were officially registered and 94 were unregistered. Natives accounted for 83.0% of total population, and people who have moved in accounted for 17.0%. On religion: 98.7% were Buddhist, 1.0% was Christian, and 0.3% was Muslim.

The average establishment time of the community was 34.2 years, with 12 (48.0%) communities characterized as suburban, followed by 5 (20.0%) housing estates, 4 (16.0%) urban communities or municipalities, 3 (12.0%) high-density communities, and 1 (4.0%) low-cost housing community.

On social harmony in the community, 13 respondents (52.0%) rated social harmony as moderate while 12 (48.0%) rated social harmony as good. 19 respondents (76.0%) said that people help and support one another, 4 (16.0%) said they participated in cultural and charitable activities every once in a while, while 2 (8.0%) said they were tight-knit. On how likely members of the community were to cooperate in helping to resolve common problems, 14 (56.0%) said people occasionally cooperated depending on issues, 10 (40.0%) said people were willing to work together to solve problems, while 1 (4.0%) said people rarely cooperated.

22 respondents (96.0%) said their communities held regular meetings, while 1 (4.0%) said their community did not. 21 respondents (84.0%) specified that their communities joined together to form committees, while 4 (16.0%) said there was no forming of organizations. The top 3 organization types set up by the communities were committees for the management of occupational/livelihood promotion funds, stated by 16 respondents (29.1%); committees for the management of funds to financially support farmers, 10 respondents (18.2%); and committees for the management of funds for female empowerment and other community development projects, 7 respondents (12.7%).

On changes in community living environments over the past 10 years: drastic change was described by 15 respondents (60.0%), moderate change by 7 (28.0%), and slight change by 3 (12.0%). Asked to name the top 3 changes, road improvement was stated by 10 (22.2%), new buildings was stated by 8 (20.5%) and economic growth at community level was stated by 6 (8.4%). Asked about the top 3 causes of such changes: economic growth was named by 19 (36.6%), followed by better management named by 14 (25.9%) and population growth named by 10 (18.5%).

Section 3 Current Social and Environmental Data

Social issues: The 25 community leaders indicated that the top 3 social issues that had the biggest impact on their respective communities were: illicit drugs (92.0%), causing moderate impact (36.0%), low impact (32.0%) and high impact (24.0%); electricity supply (88.0%), causing moderate impact (44.0%) low impact (36.0%), and high impact (8.0%); and unemployment/job loss (76.0%) causing moderate impact (28.0%), high impact (16.0%), low impact (16.0%) and least impact (16.0%). Details are as shown in **Table 3.8-52** Current data on social impacts .

Table 3.8-52 Current data on social impacts in areas overseen by community leader respondents

Social issues	Not affected (percentage)	Affected (percentage)	Level of impact (percentage)				
			Least	Low	Moderate	High	Highest
Public utility services							
- Electricity	**12.0**	**88.0**	0.0	36.0	44.0	8.0	0.0
- Water supply	**36.0**	**64.0**	8.0	40.0	16.0	0.0	0.0
Life and property safety							
- Illicit drugs	**8.0**	**92.0**	0.0	32.0	36.0	24.0	0.0
- Theft, such as burglary	**84.0**	**16.0**	4.0	8.0	4.0	0.0	0.0
- Physical violence, such as quarrels	**88.0**	**12.0**	0.0	12.0	0.0	0.0	0.0
Community density/satisfaction with community	**96.0**	**4.0**	0.0	0.0	4.0	0.0	0.0
Community relationships and harmony	**60.0**	**40.0**	0.0	20.0	20.0	0.0	0.0
Unemployment/job loss	**24.0**	**76.0**	16.0	16.0	28.0	16.0	0.0
Influx of people from outside the community	**32.0**	**68.0**	0.0	12.0	44.0	12.0	0.0

Environmental Issues: At present, in community areas overseen by respondents, it was found that the 3 most serious environmental impact issues were dust/soot/smoke (98.0%) caused by traffic/vehicles, causing moderate impact (56.0%), low impact (16.0%), high impact (16.0%), and highest impact (4.0%); impact to traffic conditions (56.0%) caused by heavy traffic and poor road conditions, causing low impact (28.0%), moderate impact (24.0%), and least impact (4.0%); noise issues (56.0) caused by aircraft, causing low impact (36.0%), moderate (12.0%) high impact (4.0%) and highest impact (4.0%). Details are as shown in **Table 3.8-53.**

Table 3.8-53 Current data on social impacts in the areas overseen by respondents who are community leaders

Environmental Issues	Not affected (percentage)	Affected (percentage)	Level of impact (percentage)				
			Least	Low	Moderate	High	Highest
1. Noise	**44.0**	**56.00**	0.0	36.0	12.0	4.0	4.0
2. Dust/soot	**2.0**	**98.0**	0.0	16.0	56.0	16.0	4.0
3. Solid waste/sewage	**72.0**	**28.0**	0.0	28.0	0.0	0.0	0.0
4. Wastewater	**100.0**	**0.0**	0.0	0.0	0.0	0.0	0.0
5. Drainage/floodwater	**80.0**	**20.0**	0.0	12.0	8.0	0.0	0.0
6. Traffic conditions	**44.0**	**56.0**	4.0	28.0	24.0	0.0	0.0
7. Odor	**100.0**	**0.0**	0.0	0.0	0.0	0.0	0.0
8. Drinking-utility water shortages	**100.0**	**0.0**	0.0	0.0	0.0	0.0	0.0
9. Vibration	**100.0**	**0.0**	0.0	0.0	0.0	0.0	0.0

24 respondents (96.0%) reported having traveled on the roads around U-Tapao International Airport while 1 (4.0%) had no experience traveling around U-Tapao International Airport. Of those who had experience traveling around U-Tapao International Airport, 18 (72.0%) reported no impact on their travel convenience, 6 (24.0%) reported low impact and 1 (4.0%) reported moderate impact. Regarding such impacts, 4 (57.1%) said it was inconvenient to use the airport, followed by 2 stating traffic congestion (28.6%), and 1 stating travel inconvenience (14.3%).

Among respondents, 15 (60.0%) indicated they had never used air services at U-Tapao International Airport and 10 (40.0%) had.

Section 4 Public Health Data

Public health services in the respective areas of respondents were rated adequate by 21 (84.0%) and inadequate by 4 (16.0%). In addition, 23 (92.0%) reported never having any problem accessing healthcare services, while 2 (8.0%) indicated some problems. All 25 respondents (100.0%) said when they became ill, they seek medical treatment at government hospitals.

Sources of drinking water for community consumption came from the purchase of bottled or barreled water according to 17 respondents (68.0%); vending machines for 7 respondents (28.0%); and 1 respondent (4.0%) reported drinking tap water. All indicated that there was no problem with supply of drinking water. For sources of water for community utilization, 22 respondents (88.0%) said they used tap water and 3 (12.0%) said they use water from groundwater wells. All reported having no problem with water supply for general utilization.

All 25 respondents (100.0%) said they discarded solid waste in containers provided by subdistrict administrative organization or municipality, which collect the waste for disposal. 24 respondents (96.0%) were moderately satisfied with the living environment of their community, while 1 (4.0%) was very satisfied.

Section 5 Awareness of Information and Public Relations

Awareness of project information: 25 respondents (100.0%) said they were informed about the project, receiving information from the top 3 sources: The 1st public consultation on 4 July 2019 at Grand Ballroom 1-3, Purimas Breach Hotel and Spa, Ban Chang District, Rayong comprising 26 respondents (37.1%); from local administrative organizations, comprising 14 respondents (20.0%); and project staff/RTN personnel, comprising 11 respondents (15.7%). All 25 respondents (100.0%) said there is a need to implement additional dissemination of project information/public relations activities.

Additional information that respondents needed: (respondents were asked to check all that apply on this matter) 19 respondents (76.0%) said they would like to know more on project study progress and 6 respondents (24.0%) wanted to know more about public participation activities.

On appropriate format or methods for publicizing project information: (respondents were asked to check all that apply) 24 respondents (96.0%) preferred attending meetings, and 1 (4.0%) wanted project information to be notified through community leaders.

Opinions of respondents on the development of the project: Among communities in noise affected areas in which opinion surveys were conducted on socioeconomics using questionnaires, comprising 25 respondents, it was found that 19 (76.0%) said they agreed with the overall development of the project, while 6 (24.0%) offered no comment, saying they had not received sufficiently detailed project information and would like to find out more, as shown in **Figure 3.8-**11

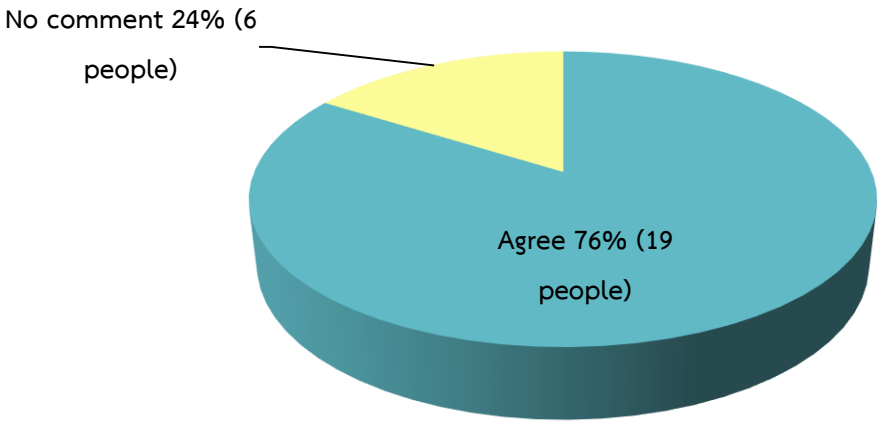


Figure 3.8-11 Opinions on project developments from interviews with community leaders

Section 6 Opinions and Feedback on the Project

The opinions on the project during the construction phase and operation phase are shown in Table**Table3.8-54**

Table3.8-54 Opinions on the project in the construction phase and operation phase from community leader respondents

Impact Issues	Construction Phase				Operation Phase			
	Positive		Negative		Positive		Negative	
	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage
1.Economic (Positive: employment, income distribution, growth, trade, tourism promotion, investment, air transportation, career, income growth, businesses in community, trade in construction materials, local tax revenue. Negative: increased consumption of fuel and increased fuel costs from traffic congestion).	1	4.0	0	0.0	14	37.8	0	0.0
2.Social (Positive: working in the local area, more time to spend with family, social changes, less travel time, travel safety. Negative: changes in lifestyle and wellbeing, unable to use existing roads, arrival of outside workers could bring crime problems).	0	0.0	1	20.0	10	27.0	1	6.7

Table3.8-54 Opinions on the project in the construction phase and operation phase from community leader respondents

Impact Issues	Construction Phase				Operation Phase			
	Positive		Negative		Positive		Negative	
	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage
3.Environmental (Positive: utilization of previously neglected areas, improved land use, traffic, transportation, energy saving. Negative: wastewater, flooding, traffic congestion, dust, road damage, hauling of construction materials, more accidents from increased transportation and higher traffic volumes, impacts from noise, fumes from emissions, consumption of water, electricity, waste, impact on scenery).	0	0.0	4	80.0	1	2.7	10	66.7
4.Health (Positive: more opportunities for medical care from various health facilities due to community prosperity. Negative: loss of hearing, stress, anxiety, sleeplessness, headache, allergies).	0	0.0	0	0.0	12	32.4	3	20.0
5.No comments	0	0.0	0	0.0	0	0.0	1	6.7
Total	**1**	**4.0**	**5**	**100.0**	**37**	**100.0**	**15**	**100.0**

Opinions on the draft environmental and health impact prevention and resolution measures in the construction phase and operation phase are as follows:

Construction Phase

The opinions on the adequacy of the draft environmental and health impact prevention and resolution measures in addressing main impacts of the project in the construction phase are as detailed in **Table 3.8-**55

All 25 respondents (100.0%) stated that the draft measures had adequate coverage for noise, vibration, air quality (dust), surface water/sea water/marine ecology, terrain ecology, waste management, transportation, economic, social, and public health (health).

Table 3.8-55 Opinions on draft environmental impact prevention and resolution measures in the construction phase from community leader respondents

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	25	100.0	0	0.0	0	0.0	25	100.0
2. Air quality (dust)	25	100.0	0	0.0	0	0.0	25	100.0
3. Surface water quality/seawater/ marine ecology	25	100.0	0	0.0	0	0.0	25	100.0
4. Terrain ecology	25	100.0	0	0.0	0	0.0	25	100.0
5. Waste management	25	100.0	0	0.0	0	0.0	25	100.0
6. Transportation	25	100.0	0	0.0	0	0.0	25	100.0
7. Economic and social	25	100.0	0	0.0	0	0.0	25	100.0
8. Public health (health)	25	100.0	0	0.0	0	0.0	25	100.0

Operation Phase

Opinions on the adequacy of the draft environmental impact prevention and resolution measures in addressing the main impacts of the project in the operation phase, are as detailed in **Table3.8 -**56, summarized as follows:

All 354 respondents (100.0%) stated that the draft measures had adequate coverage for noise, vibration, air quality (dust), surface water/sea water/marine ecology, terrain ecology, waste management, transportation, economic, social, relocation and replacement of assets, and public health (health).

Table3.8 -56 Opinions on draft long-term environmental impact prevention and resolution measures in the operation phase from community leader respondents

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	25	100.0	0	0.0	0	0.0	25	100.0

2. Air quality (emissions and volatile organic substances)	25	**100.0**	0	0.0	0	0.0	25	**100.0**
3. Surface water quality/seawater/ marine ecology	25	**100.0**	0	0.0	0	0.0	25	**100.0**
4. Terrain ecology	25	**100.0**	0	0.0	0	0.0	25	**100.0**
5. Waste management	25	**100.0**	0	0.0	0	0.0	25	**100.0**
6. Transportation	25	**100.0**	0	0.0	0	0.0	25	**100.0**
7. Economic and social	25	**100.0**	0	0.0	0	0.0	25	**100.0**
8. Property relocation and replacement	25	**100.0**	0	0.0	0	0.0	25	**100.0**
9. Public health (health)	25	**100.0**	0	0.0	0	0.0	25	**100.0**

When the respondents were asked about their concerns about the project, 13 (52.0%) expressed moderate concerns, followed by 8 respondents (32.0%) stating they had no concerns, 2 respondents (8.0%) that were slightly concerned, and 2 respondents (8.0%) that were highly concerned.

Opinions on the overall draft measures: 24 (96.0%) community leaders in noise affected areas indicated that the draft measures had adequate coverage, while 1 (4.0%) was undecided/offered no comment. Details are shown in **Table 3.8-57** and **Table 3.8-12.**

Table 3.8-57 Opinions on the overall draft environmental and health impact prevention and resolution measures in the construction phase and operation phase from community leader respondents

Opinion	Number (people)	Percentage
Adequate	24	96.0
Inadequate	0	0.0
Not sure/no comment	1	4.0
Total	**25**	**100.0**

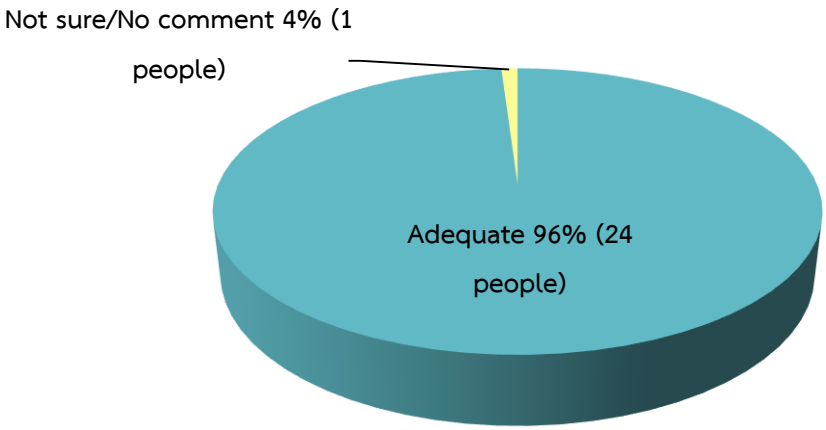


Table 3.8-12 Opinions on the overall draft environmental and health impact prevention and resolution measures in the construction phase and operation phase of community leader respondents

(2.3) Household groups

1) Household groups in NEF ≥ 40 areas

According to the field survey on socioeconomic data, there were 93 households located in NEF ≥ 40 area, but data was obtained from 86 households in the NEF ≥ 40 area. Data could not obtained from 7 households in the area. Details are as shown in **Table 3.8-58**.

Table 3.8-58 Details of households in which socioeconomic data could not be obtained

No.	Supplementary images	Notes:
1	  	Socioeconomic survey of households in the area (house number 15/11). Follow ups were made through various methods as follows : 1st visit, field survey on 24 January 2020 at 11.00, found no one at the address; 2nd visit, field survey on 26 January 2020 at 17.00, no one was home; 3rd visit, field survey on 27 June 2020 at 12.30, no one was home; 4th visit, field survey on 30 August 2020 at 18.00, no one was home and according to next-door neighbor, the homeowner had gone to live with their children; 5th visit, on 6 October 2020, a letter with questionnaire attached was sent by registered mail, requesting the homeowner to fill questionnaire and return it. Having checked the registered post status at Thailand Post website (https://track.thailandpost.co.th/), it was found that the recipient had received the questionnaire but did not return it to the project.
2	 	Socioeconomic survey of households in the area (no house number). Follow-ups were made through various methods as follows : 1st visit, field survey on 25 January 2020 at 12.30, found no one at the address; 2nd visit, field survey on 26 June 2020 at 07.00, no one was home; 3rd visit, field survey on 26 June 2020 at 16.00, no one was home; 4th visit, field survey on 30 August 2020 at 14.00, met the homeowner who declined to give interview, reasoning that they had already attended the 2nd public participation where they had already filled a questionnaire and returned it during the meeting (assessment form the project requested participants to fill).

Table 3.8-58 Details of households in which socioeconomic data could not be obtained

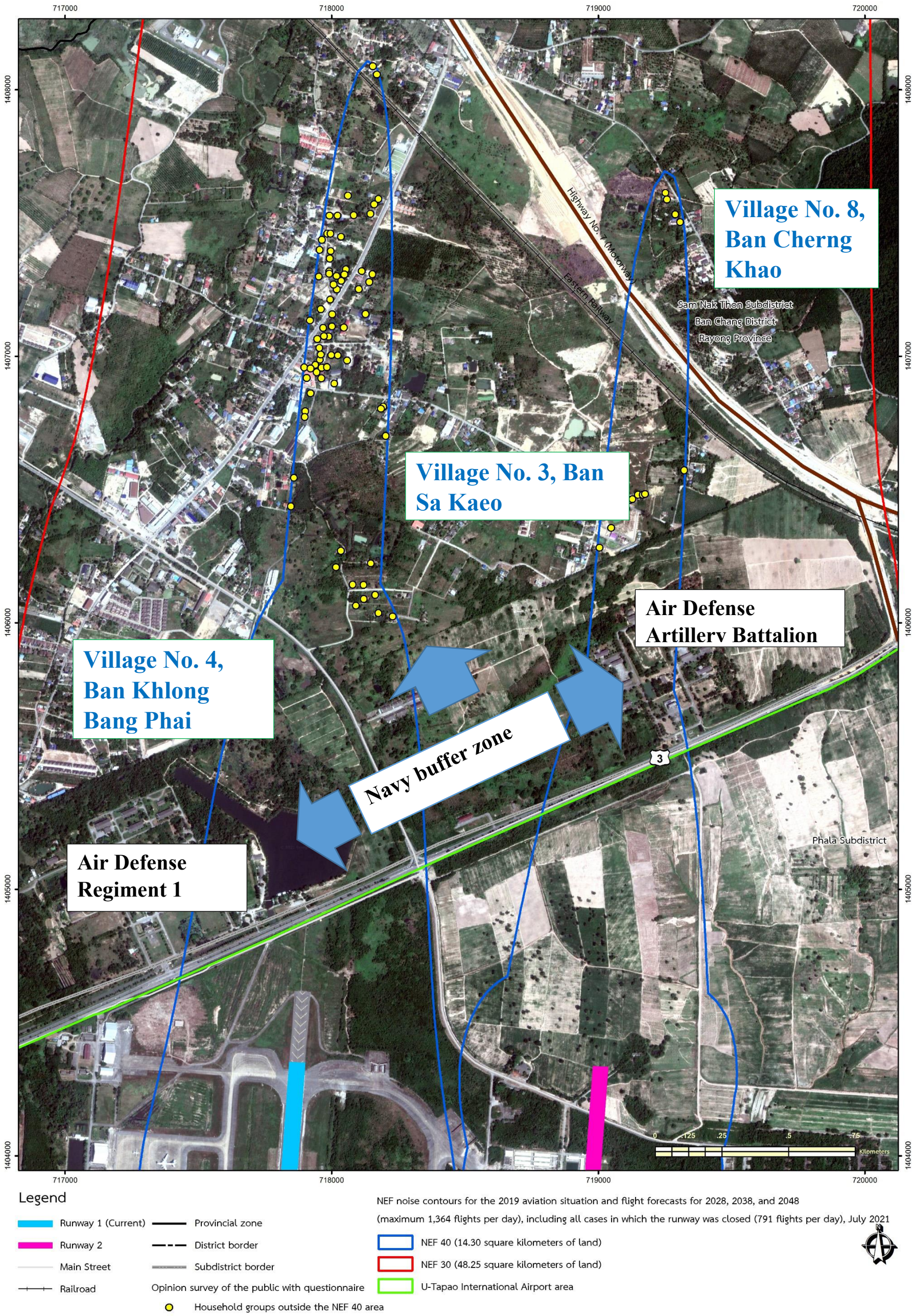
No.	Supplementary images	Notes:
3	 	Socioeconomic survey of households in the area (house number 3/3) Follow-ups were made through various methods as follows : 1st visit, field survey on 25 January 2020 at 14.00, found no one at the address; 2nd visit, field survey on 26 June 2020 at 08.00, no one was home; 3rd visit, field survey on 26 June 2020 at 17.00, no one was home; 4th visit, field survey on 30 August 2020 at 14.00, met the homeowner, the same person as in case 2, who declined to give interview, reasoning that they had already attended the 2nd public participation where they had already filled a questionnaire and returned it during the meeting (assessment form the project requested participants to fill).
4	 	Socioeconomic survey of households in the area. Follow-ups were made through various methods as follows : 1st visit, field survey on 24 January 2020 at 13.00, found no one at the address; 2nd visit, field survey on 26 January 2020 at 16.00, no one was home; 3rd visit, field survey on 27 June 2020 at 17.00, no one was home; 4th visit, field survey on 30 August 2020 at 19.30, met the homeowner who declined to give interview, reasoning that they had already attended the 2nd public participation meeting and insisted that they would only negotiate for the project to purchase their land.
5	 	Socioeconomic survey of households in the area. Follow-ups were made through various methods as follows : 1st visit, field survey on 26 January 2020 at 09.00, found no one at the address; 2nd visit, field survey on 26 January 2020 at 15.00, no one was home; 3rd visit, field survey on 27 June 2020 at 18.00, no one was home; 4th visit, field survey on 30 August 2020 at 20.30, no one was home. Having checked official records, it was found that the property was owned by the Sam Nak Thon Subdistrict Administrative Organization for use as temporary shelter for the elderly as part of the “Thongthin Thai” project in honor of HM the late King Rama 9’s 80th birth anniversary. The person who was granted possession of the property has no ownership in the property, which is

Table 3.8-58 Details of households in which socioeconomic data could not be obtained

No.	Supplementary images	Notes:
		owned by Sam Nak Thon Subdistrict Administrative Organization. Therefore, the property is non-transferable.
6	  	Socioeconomic survey of households in the area (house number 40/10). Follow-ups were made through various methods as follows: 1st visit, field survey on 8 August 2021 at 13:30, nobody was found at the address; 2nd visit, on 9 August 2021 at 10.00, nobody was home; 3rd visit, on 10 August 2021 at 15.00, no one was home; 4th visit, on 11 August 2021 at 18:00, no one was home. A telephone number was obtained but the homeowner could not be reached; 5th follow up on 13 December 2021, a letter with questionnaire attached was sent by registered mail requesting the homeowner to fill and return the questionnaire. Having checked the registered post status at Thailand Post website: (https://track.thailandpost.co.th/), it was found that the mail could not be delivered (house locked up and inaccessible).
7	 	No house or building on this property. It was believed that any pre-existing structure was demolished sometime in 2021. That structure could be observed in aerial photos.

For they socioeconomic surveys among 86 households in the NEF ≥ 40 area, the surveyed household locations are shown in **Figure 3.8-13** However, in NEF ≥ 40 areas, some household locations are not shown because they are government agencies, unutilized areas, farmland, swampy areas, unbuilt areas or certain plots of land owned by government agencies, especially those along both sides of Sukhumvit Road, which has been designated as a navy buffer zone, as well as the Air Defense Regiment 1 and Air Defense Artillery Battalion. The details of the socioeconomic surveys

using questionnaires for households in NEF ≥ 40 area have been summarized as shown in **Appendix 3–10.**



Source: Composed by United Analyst and Engineering Consultants Co., Ltd., 2021.

Figure 3.8-13 Locations of 86 household survey samples in NEF ≥ 40 area

Section 1 General data of respondents

Gender: 45 female respondents (52.3%) and 41 male respondents (47.7%). Age bracket: over 60 years old, 25 respondents (29.1.%); followed by 51-60 years of age, 24 respondents (27.9%); aged 41-50, 19 respondents (22.1%); aged 31-40, 12 respondents (14.0%); aged 21-30, 4 respondents (4.7%); aged 18-20, 2 respondents (2.2%). Religion: Buddhism, totaling 86 respondents (100.0%).

Status in household: 56 (65.0%) respondents were the head of household, 19 (22.1%) were the spouse of the head of household, 5 (5.8%) were children of the head of household, 4 (4.7%) were a relative/resident, 1 (1.2%) was a parent, and 1 (1.2%) was an employee. Respondents who were not the head of the household had been assigned by the head of household to provide information.

Highest education attainment: 26 (30.2%) respondents stated elementary school, followed by 20 (23.3%) stating lower secondary school, 19 (22.1%) bachelor's degree, 14 (16.3%) upper secondary school/vocational certificate, 5 (5.8%) associate degree/high vocational certificate, and 2 (2.3%) postgraduate.

Principal occupation: 23 (26.7%) respondents are in general labor, followed by 20 (23.3%) civil servant/state enterprise employees, 18 (20.9%) unpaid workers/homemakers, 11 (12.8%) traders, 8 (9.3%) private company employees, 4 (4.7%) owning a private business, and 2 (2.3%) farmers.

Original domicile: 54 respondents (62.8%) were native of this subdistrict, 32 (37.2%) moved from elsewhere. For the respondents who moved into this area, 18 (59.4%) had lived in this area for more than 20 years, 6 (18.8%) had lived in this area for 5-10 years, 4 (12.5%) had lived in this area for less than 5 years, 2 (6.3%) for 16-20 years, 1 (3.1%) for 11-15 years. Regarding the reason for moving here to live or work (respondents were asked to check all that apply): 15 respondents (46.9%) stated change of occupation or job, 11 (34.4%) followed family/spouse, 3 (9.4%) stated travel convenience, 2 (6.3%) for access to public utilities, and 1 (3.1%) stated choice of affordable properties.

When asked about likelihood of resettling elsewhere, 57 respondents (66.3%) said they had no intention of moving anywhere, reasoning they were attached to their native place, having family and jobs in the area etc.; 19 (22.1%) said they were undecided, saying they would wait to see how serious the impacts would be; 6 (7.0%) said they would move out, saying they were worried by impacts, especially loud noise, and would like to move closer to work, etc.; while 4 (4.7%) declined to give an answer.

Section 2: Property data

The majority of the respondents, comprising 66 respondents (76.7%), had ownership of the property they lived on; 7 (8.1%) rented; 7 (8.1%) said the property belonged to their parent/relative; 3 (3.5%) said the property belonged to the subdistrict administrative organization; 2 (2.3%)

said the property belonged to their employer; and 1 (1.2%) declined to give information. Regarding property ownership and possession documents, 79 properties (91.9%) had land deed titles; 4 (4.7%) had other land use right documents, such as PBT5, NS3K, rental agreements, etc.; and 3 (3.5%) declined to disclose any documentation.

The majority of the respondents, comprising 63 respondents (73.3%), lived on the property as owner, 16 (18.6%) lived as a dependent, 4 (4.7%) would not provide their status information, and 3 (3.5%) were receiving support from the SAO. On property type, the majority of properties, comprising 79 properties (91.9%), were detached houses, 4 (4.7%) were semi-detached houses and 3 (3.5%) were terraced houses, rooms or townhouses.

Age of property: 34 properties (39.5%) were over 20 years old, 14 (16.3%) were less than 5 years, 14 (16.3%), 11 (12.8%) were 5-10 years old, 11 (12.8%) were 11-15 years old, 11 (12.8%) were 16-20 years old, and 5 persons (5.8%) did not specify how old their properties were. As for property characteristics: 60 properties (69.8%) were single-story buildings, 20 (23.3%) were two-story buildings, 2 (2.3%) were buildings higher than two-stories, 2 (2.3%) were one-story buildings on stilts, and 2 (2.3%) declined to give information.

Property utilization: The majority of buildings, comprising 82 buildings, (95.3%) were used primarily for residence, while 4 (4.7%) were used for both residence and place of business.

Property by building materials: 74 (86.0%) were made of concrete or bricks and mortar, 6 (7.0%) made of cement and timber and 6 (7.0%) made of wood. As for roofing materials, 69 (80.2%) were made of glazed concrete, 13 (15.1%) made of cement fiber, 2 (2.3%) made of metal sheets and 2 (2.3%) had a zinc roof.

Section 3: Household economic data

The number of persons who actually lived in the households surveyed averaged 4 persons per household. Of this, an average of 3 were income-earners. The average number of children under the age of 15 was 2 children, comprising 17.9% (46 cases); the average number of working-age persons per household was 3, comprising 67.3% (173 cases); and the average number of elderly persons (over the age of 60) per household was 2, comprising 14.8% (38 cases).

Principal occupations contributing to main sources of household income: 32 respondents (37.2%) were in general labor, 16 (18.6%) were private company employees, 12 (14.0%) were traders, 10 (11.6%) were civil servant/state enterprise employees, 9 (10.5%) owned a private business, 4 (4.7%) were government pensioners/recipient of old age allowances, 2 (2.3%) were in farming, and 1 (1.2%) declined to provide an answer.

Secondary occupation: The majority, comprising 75 respondents (87.2%), did not have a secondary occupation; 9 respondents (10.5%) who said they had secondary source of income said they earned extra money doing general labor and had rooms for rent, while 2 (2.3%) declined to answer.

Most of the respondents, comprising 75 respondents (27.2%), had no problems in their occupation; 10 (11.6%) respondents had some problems. The main problem was sufficient income, comprising 1 respondent (1.2%).

The total household income averaged 22,859 baht per month and total household expenditure averaged 16,521 baht per month. On income adequacy, 31 respondents (36.0%) said they were satisfied and had some savings, 29 (33.7%) said they had enough to live on but no savings, 18 (20.9%) said they did not make enough but had no debts, 7 (8.1%) said they did not earn enough and had to borrow money, and 1 (1.2%) declined to give information. On household debt, 45 respondents (52.3%) reported having debt, 34 (39.5%) reported not having debt and 7 (8.1%) declined to answer. On factors contributing to household debt, 18 respondents (38.3%) said they needed to take loans to cover household expenses, 13 (27.6%) said they took loans for their occupation, 11 (23.4%) said they took loans for home renovation, 3 (6.4%) took loans for education, and 2 (4.3%) took loans for automobile-related costs.

Section 4 Current Social and Environmental Data

Social issues: From the 86 respondents, the top 3 social issues believed to cause the significant impact to their communities comprised the arrival of people from outside the community (53.3%), consisting of moderate impact (13.3%), low impact (13.3%), least impact (10.7%), high impact (9.3%) and highest impact (6.7%); followed by unemployment/job loss (48.0%), consisting of least impact (17.3%), low impact (12.0%), moderate impact (10.7%), and high impact (8.0%); and electricity system service impacts (30.7%), consisting of lowest impact (14.7%), low impact (10.7%), moderate impact (4.0%), and highest impact (1.3%). Details are as shown in **Table 3.8-**59 Current social impact.

Table 3.8-59 Current social impact data in the NEF ≥ 40 area in which respondents households are located

Social issues	Not affected (percentage)	Affected (percentage)	Level of impact (percentage)				
			Least	Low	Moderate	High	Highest
Public utility services							
- Electricity	**69.3**	**30.7**	14.7	10.7	4.0	0.0	1.3
- Water supply	**70.7**	**29.3**	16.0	1.3	9.3	0.0	2.7
Life and property safety							
- Illicit drugs	**73.3**	**26.7**	10.7	10.7	4.0	1.3	0.0
- Theft, such as burglary	**76.0**	**24.0**	9.4	13.3	0.0	1.3	0.0
- Physical violence, such as quarrels	**80.1**	**19.9**	9.3	9.3	0.0	1.3	0.0
Community density/satisfaction with community	**82.6**	**17.4**	2.7	10.7	4.0	0.0	0.0
Community relationships and harmony	**73.3**	**26.7**	6.7	10.7	8.0	0.0	1.3
Unemployment/job loss	**52.0**	**48.0**	17.3	12.0	10.7	8.0	0.0

Influx of people from outside the community	**46.7**	**53.3**	10.7	13.3	13.3	9.3	6.7

On social harmony and how likely it was that people in the community would help and support one another, 62 respondents (72.1%) answered moderately likely, 9 (10.5%) answered less likely, 8 (9.3%) answered highly likely, and 7 (8.1%) expected no help. On the level of their participation in the community's cultural and charitable activities, 40 respondents (46.5%) said they participated once in a while, 24 (27.9%) said occasionally, 14 (16.3%) said never, 8 (9.3%) said regularly (once a month).

Environmental issues: At present, respondents are affected by disturbances/annoyances from the environment with the top three issues being noise impacts (80.0%), followed by dust, soot and smoke (62.7%), and vibration impacts (47.4%) as detailed in Table**Table** 3.8-60 as follows:

- On noise disturbances, 60 respondents (80.0%) reported being impacted, consisting of 27 respondents reporting moderate impact (36.0%), 7 (22.7%) reporting high impact, 8 (10.7%) reporting low impact, 4 (5.3%) reporting highest impact and 4 (5.3%) reporting lowest impact. On the sources of noise, 35 (58.3%) respondents stated aircrafts, followed by 23 (38.3%) stating traffic/vehicle noise, 1 (1.7%) stating construction and 1 (1.7%) declining to answer.

- On dust/soot and smoke, 47 respondents (62.7%) reported being impacted with 15 (20.0%) respondents reporting moderate impact, 13 (17.3%) reporting low impact, 11 (14.7) reporting high impact, and 8 (10.7%) reporting least impact. As for sources of dust/soot and smoke, 28 (39.4%) stated automobile emissions, followed by 15 (21.1%) stated businesses/industrial plants, 11 (15.5%) stated burning of grass or road dust, 9 (12.7%) stated construction, and 8 (11.3%) stated traffic/vehicles.

- On solid waste/sewage problems, 13 (17.3%) respondents reported being impacts, with 7 (9.3%) reporting least impact, 3 (4.0%) reporting low impact, and 3 (4.0%) reporting moderate impact. On sources of solid waste/sewage issues, 6 respondents (46.1%) stated waste accumulation/missed collection, 5 (38.5%) stated waste from other areas, and 2 (15.4%) declined to answer.

- On sewage problems, 13 respondents (17.3%) reported being affected. Of this, those who reported low impact totaled 8 (10.7%), least impact 3 (4.0%), and moderate impact 2 (2.7%). As for sources of sewage problem, those who stated household discharge totaled 10 (76.9%), followed by those who stated restaurant/entertainment venues 3 (23.1%).

- On drainage/floodwater problems, 13 respondents (17.3%) reported being affected. Of this, 9 (12.0%) reported low impact, 3 (4.0%) reported least impact, and 1 (1.3%) reported moderate impact. As for the sources of drainage/floodwater problem, 8 (61.5%) stated heavy rain, 4 (30.8%) stated drainage failure, and 1 (7.7%) declined to answer.

- On traffic problems, 16 respondents (21.3%) reported being impacted. Of this, those who reported low impact totaled 10 (13.3%), least impact totaled 2 (2.7%), moderate impact totaled 2 (2.7%), and high impact totaled 2 (2.7%). As for the sources of traffic problems, 7 (31.3%) stated excessive number of vehicles, 5 (31.3%) stated poor road conditions, 2 (12.5%) stated traffic violations, and 2 (12.5%) declined to answer.

- On odor problems, 11 respondents (14.7%) reported being affected. Of this, 5 (6.7%) reported low impact, 3 (4.0%) reported moderate impact, 2 (2.7%) reported least impact, 1 (1.3%) reported high impact. As for sources of odor, 6 (54.5%) stated solid waste, 3 (27.3%) stated sewage pipes, and 2 (18.2%) stated vehicle exhaust fumes.

- On drinking water-tap water shortage, 12 respondents (16.0%) reported being impacted. Of this, 5 (6.6%) reported moderate impact, 3 (4.0%) reported low impact, 2 (2.7%) reported least impact and 2 (2.7%) reported high impact. As for causes of the drinking water-tap water shortage, 8 (66.6%) stated low rainfall, 2 (16.7%) stated other cause, and 2 (16.7%) declined to answer.

- On vibration problems, 35 respondents (47.4%) reported being affected. Of this, 13 (17.1%) reported moderate impact, 10 (13.2%) reported high impact, 7 (9.2%) reported low impact, 4 (5.3%) least impact, and 2 (2.6%) highest impact. As for sources of vibration, 22 (61.1%) stated road traffic, and 14 (38.9%) stated aircrafts. Details are as shown in **Table 3.8-60.**

Table 3.8-60 Current environmental impact data for respondents from household groups in NEF ≥ 40 areas

Environmental Issues	Not affected (percentage)	Affected (percentage)	Level of impact (percentage)				
			Least	Low	Moderate	High	Highest
1. Noise	**20.0**	**80.0**	5.3	10.7	36.0	22.7	5.3
2. Dust/soot	**37.3**	**62.7**	10.7	17.3	20.0	14.7	0.0
3. Solid waste/sewage	**82.7**	**17.3**	9.3	4.0	4.0	0.0	0.0
4. Wastewater	**82.6**	**17.4**	4.0	10.7	2.7	0.0	0.0
5. Drainage/floodwater	**82.7**	**17.3**	4.0	12.0	1.3	0.0	0.0
6. Traffic conditions	**78.7**	**21.3**	2.7	13.3	2.7	2.7	0.0
7. Odor	**85.3**	**14.7**	2.7	6.7	4.0	1.3	0.0
8. Drinking-utility water shortages	**84.0**	**16.0**	2.7	4.0	6.6	2.7	0.0
9. Vibration	**52.6**	**47.4**	5.3	9.2	17.1	13.2	2.6

The number of household vehicles reported by the respondents totaled 107 motorcycles (56.3%) and 83 four-wheeled automobiles (43.7%). The highways regularly used include Sukhumvit Road (passing in front of U-Tapao International Airport), used by 48 respondents (33.1%); Highway 332, Sattahip-Sam Nak Thon, used by 36 respondents (24.8%); Highway 331 Sattahip-Khao Hin Son, used by 33 respondents (22.8%); Highway 3126 linking entry point to U-Tapao International Airport and Juk Samet Port, used by 18 respondents (12.4%); Phala Road used by 9 respondents (6.2%); and 1

respondent declined to give information (0.7%). The top 3 reasons for commuting were: for work, reported by 44 respondents (48.3%); for business, 21 (23.1%); and tourism, 11 (12.1%).

When asked about impact on travel on road networks around U-Tapao International Airport, 59 respondents (68.6%) reported no impact, 9 (10.5%) report low impact, 4 (4.7%) reported high impact, and 3 (3.5%) reported moderate impact. The top 3 issues of such impact were traffic congestion, reported by 8 respondents (50.0%); travel inconvenience reported by 5 (31.3%); and rise in number of accidents reported by 2 (12.5%). When asked about how often they used U-Tapao International Airport, 57 respondents (66.3%) said they never used the airport, while 29 (33.7%) reported having used the airport.

Regarding convenience of traveling to U-Tapao International Airport without using a personal car, 57 respondents (66.3%) declined to answer, 11 (12.8%) reported moderate convenience, 8 (9.3%) report little convenience, 7 (8.1%) reported inconvenience, while 3 (3.5%) reported highest convenience.

When asked about needs and suggestions on transportation and services for traveling to and from U-Tapao International Airport, respondents said they would like to see improvements to reduce traffic congestion, followed by expansion of traffic lanes to improve traffic flow, shuttle bus services to and from the airport, expansion of the main gate for entry-exit at the airport, more traffic signs directing traffic into the airport, more public transportation modes to and from the airport, allowing motorists to pass through the airbase without having to apply to obtain security passes, and providing security to ensure public safety for residents living around the airport. Details are as shown in **Appendix 3-10.**

Section 5 Public Health Data

Public health data as provided by respondents: 44 respondents (51.2%) indicated that at least one member of their household had been sick while 42 (48.8) reported that no member of their household had been sick. The top 3 common illnesses reported by respondents were colds or respiratory infection, reported by 19 respondents (44.2%); hypertension, lung complications or diabetes, reported by 14 (32.5%); and complications relating to blood circulation, reported by 3 (7.0%).

On available healthcare services in the area as reported by respondents, when someone in the household was sick (respondents were asked to check all that apply), 64 (80.0%) said they went to public health facilities, 9 (11.3%) purchase over-the-counter medicines, 6 (7.5%) went to private hospital, and 1 (1.2%) preferred self-healing.

In the past year to date, the majority, comprising 84 respondents (97.7%) reported that none of the members of their household experienced any health problems; 2 respondents (2.3%) reported that someone in their household had mental problem (respondents were asked to check all that apply); mental stress was reported by 2 respondents (66.7%); and anxiety was reported by 1 respondent (33.3%). When asked about possible causes of mental issues, the respondents said they did not know what caused such mental problems. For the respondents possibly knowing how such mental issue developed, they stated that it was caused by the airport

expansion project, which made the family worried about land expropriation, as well as work-related stress and stress caused by noise from nearby factories. In the case of households with family members experiencing mental problems, most respondents chose to wait for the problem to heal itself.

Regarding hearing health, 80 (93.0%) respondents reported that no one in their household had any hearing problems and 6 (7.0%) reported at least one member of household having hearing problems. As for the likely causes of hearing problems, the hearing issue was attributed to health issues 1 time (50.0%) and to work-related hearing problem 1 time (50.0%).

Most respondents 79 (91.9%) reported no problem using healthcare services and 7 (8.1%), reported some problems. As for causes of the problems (respondents were asked to check all that apply), large number of patients seeking health services was stated six times (60.0%), insufficient number of health personnel was stated 2 times (20.0%), health facilities being too far away was stated 1 time (10.0%) and high medical cost was stated 1 time (10.0%).

On disease control and health promotion activities in the community, 70 respondents (81.4%) reported not being aware of any such activities and 16 (18.6%) said there were disease control and health promotion activities, such as prevention of dengue fever, anti-drug campaign, anti-rabies campaign, screening tests for cervical cancer, physical fitness promotion in the community, etc. When asked about their participation in those activities, 70 respondents (81.4%) reported not having participated in those activities while 16 (18.6%) said they had participated. Details are as shown in **Appendix 3–10.**

Section 6 Accident, Public Disaster, and Public Safety Data

When asked if respondents had previously been in an accident, 70 (93.3%) reported not having been in an accident or a public disaster, and 4 (5.3%) reported having been in either an accident or a public disaster. Asked what the respondents would do if they encountered an accident or a public disaster (respondents were asked to check all that apply), 45 (48.9%) said they would do nothing; 42 (45.7%) said they would call emergency services, hotline 1669, police hotline 191, or notify a community leader, etc.; and 5 (5.4%) said they would help themselves.

On participation in joint emergency response drills with local agencies, 73 respondents (98.7%) reported not having participated and 73 (97.3%) said they would not know how to notify authorities in case of an aviation accident, while 2 (2.7%) said they knew that they should call U-Tapao International Airport on the telephone. When asked if what they would do if their health was affected in an aviation accident, 74 respondents (98.7%) said they would seek medical treatment at a hospital, while 1 (1.3%) said they would seek help from the community leader. Details are as shown in **Appendix 3–10.**

Section 7 Environmental Health Data

On sources of drinking water, 75 respondents (87.2%) said they purchased bottled drinking water, 6 (7.0%) reported they used tap water, 2 (2.3%) said they drank filtered tap water, and 2 (2.3%) said they purchased water from water vending machines. On quantity and

quality of drinking water, 82 respondents (95.3%) reported not having any problem while 4 (4.7%) reported problems with cloudy water.

On sources of water for general utilization, 78 respondents (90.7%) reported using tap water, 6 (7.0%) said they used shallow well water, and 2 (2.3%) said they used artesian well water. On quantity and quality of water, 74 (86.0%) reported no problem and 12 (14.0%) reported problems with cloudy water, sedimentation, and the smell of chlorine.

On air quality, 73 respondents (84.9%) reported no problems and only 13 (15.1%) reported problems with air pollution and dust.

On management of wastewater from household use, 49 respondents (57.0%) said wastewater from their household was discharged into a drainage ditch or public drainage pipe, 36 (41.9%) discharged into the ground, and 1 (1.2%) discharged into a canal.

On management of wastewater from toilets in their household, 47 respondents (54.7%) reported using a septic tank which was occasionally pumped out and disposed of, 34 (39.5%) used a mound septic system, and 5 (5.8%) installed a ready-made septic tank.

On solid waste from households, 83 respondents (96.5%) put solid waste into containers to be collected for disposal by the SAO or municipality and 3 (3.5%) burned their solid waste on household grounds.

On satisfaction with living environment, 63 respondents (73.3%) said they were moderately satisfied, 14 (16.3%) said they were very satisfied, 6 (7.0%) reported no satisfaction, and 3 (3.5%) were less satisfied. Details are as shown in **Appendix 3-10.**

Section 8 Awareness of Information and Public Relations

Awareness of project information: 73 respondents (84.9%) said they had received project information. The top three sources of information were neighbors or acquaintances, stated by 24 respondents (27.0%); 1st public hearing on 4 July 2019 at Grand Ballroom 1-3, Purimas Beach Hotel and Spa, Ban Chang District, Rayong, stated by 20 (22.5%); and from the chairperson/committee member/community leader, stated by 16 (18.0%). 12 respondents (16.0%) said they only became aware of the project information from this interview. 66 respondents (76.7%) commented that additional information dissemination and public relations efforts were needed while 20 (23.3%) said there was no need to disseminate additional information.

Additional information that respondents needed: Respondents were asked to check all that apply on this matter, in which 71 respondents (82.6%) said they would like to learn more about progress status of the project's studies, and 15 respondents (17.4%) wanted to know more about public participation activities.

On appropriate formats or methods for publicizing project information: (respondents were asked to check all that apply) 48 respondents (53.9%) preferred attending meetings, 29 (32.6%) wanted project information documents sent to their home, 6 (6.7%) wanted

information channeled through community leaders, and 6 (6.7%) wanted information disseminated through the internet/website.

Respondents' opinion on the development of the project: Of the 86 households in NEF ≥ 40 area in which opinion surveys were conducted using questionnaires, it was found that 74 households (86.0%) agreed with the project overall; 7 (8.1%) had no comment on this matter because, having listened to project staff, they still could not understand the project and said that as long as the construction had not started, they would hold off giving opinion; while 5 (5.8%) disagreed because they were worried about impacts that could change the environment for the worse, causing hardship to people who had been living here before the project was in place. Details are as shown in **Figure 3.8-**14.

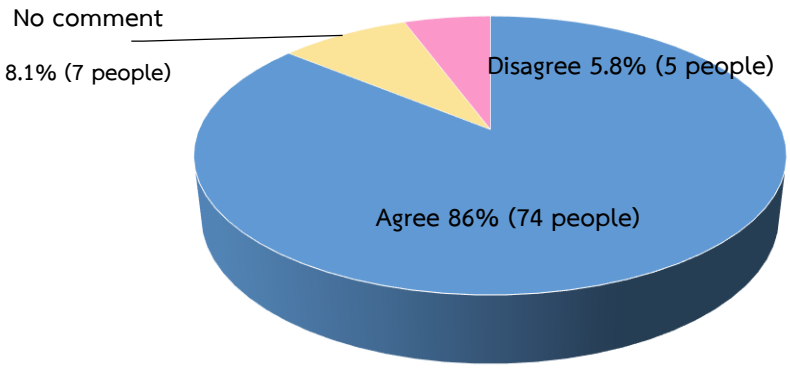


Figure 3.8-14 Opinions on project developments from respondents representing households in NEF > 40 areas

Section 9 Opinions and Feedback on the Project

Construction Phase

According to opinions on impacts of the construction phase of the project, 36 respondents (48.0%) said they were unlikely to be impacted, 24 (32.0%) said they expected both positive and negative impacts, 10 (13.3%) said they were not sure about impacts, 3 (4.0%) believed they would be adversely affected, and 2 (2.7%) said they expected positive impacts.

On likely impacts of the construction phase of the project (respondents who expected positive impacts were asked to check all that apply), economic impacts were selected by 26 respondents (40.6%), social impacts by 16 (25.0%) and environmental by 10 (15.6%). As for likely negative impacts, social impacts and health impacts were both selected by 16 respondents (25.8%), environmental impacts by 14 (22.6%) and economic impacts by 4 (6.5%). Details are as shown in **Table** 3.8-61.

Operation Phase

According opinions on impacts in the operation phase of the project, 36 respondents (48.0%) expected both positive and negative impacts, 24 (32.0%) expected no impact, 5 (6.7%) were not sure, 5 (6.7%) expected negative impacts, and 5 (6.7%) expected positive impacts.

On likely impacts of the operation phase of the project (respondents who expected impacts were asked to check all that apply), for positive impacts, economic impact was selected by 41 respondents (46.1%), social by 18 (20.2%), environmental by 14 (15.7%), and health by 10 (11.2%). As for negative impacts, environmental impact was selected by 30 respondents (30.6), health by 26 (26.5), social by 16 (16.3%), and economic by 11 (11.2%). Details are as shown in **Table 3.8-61**

Table 3.8-61 Opinions on the project in the construction phase and operation phase from respondents of households in the NEF ≥ 40 Area

Impact Issues	Construction Phase				Operation Phase			
	Positive		Negative		Positive		Negative	
	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage
1.Economic (Positive: employment, income distribution, growth, trade, tourism promotion, investment, air transportation, career, income growth, businesses in community, trade in construction materials, local tax revenue. Negative: increased consumption of fuel and increased fuel costs from traffic congestion).	26	40.6	4	6.5	41	46.1	11	11.2
2. Social (Positive: working in the local area, more time to spend with family, social changes, less travel time, travel safety. Negative: changes in lifestyle and wellbeing, unable to use existing roads, arrival of outside workers could bring crime problems).	16	25.0	16	25.8	18	20.2	16	16.3
3. Environmental (Positive: utilization of previously neglected areas, improve land use, traffic, transportation, energy saving. Negative: wastewater, flooding, traffic congestion, dust, road damage, hauling of construction materials, more accidents from increased transportation and higher traffic volumes, impacts from noise, fumes from emissions, consumption of water, electricity,	10	15.6	14	22.6	14	15.7	30	30.6

Table 3.8-61 Opinions on the project in the construction phase and operation phase from respondents of households in the NEF ≥ 40 Area

Impact Issues	Construction Phase				Operation Phase			
	Positive		Negative		Positive		Negative	
	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage
generation of waste, impact on nature view).								
4. Health (Positive: more opportunities for medical care from various health facilities due to community prosperity. Negative: loss of hearing, stress, anxiety, sleeplessness, headache, allergies).	0	0.0	16	25.8	10	11.2	26	26.5
5. No comments	12	18.8	12	19.4	6	6.7	15	15.3
Total	**64**	**100.0**	**62**	**100.0**	**89**	**100.0**	**90**	**100.0**

Opinions on the draft environmental and health impact prevention and resolution measures in the construction phase and operation phase are as follows:

Construction Phase

The opinions on the adequacy of the draft environmental impact prevention and resolution measures in addressing main impacts of the project in the construction phase are as detailed in **Table3.8 -**62

- **Noise and vibration**

The majority of respondents, 73 (84.9%), indicated that the draft measures had adequate coverage, while 11 (12.8%) had no comment, stating that they did not have enough information or had not seen how the project works, and 2 (2.3%) said they were inadequate, suggesting that since the construction area was close to the community, a wall or a barrier should be built to absorb the noise during construction.

- **Air quality (dust)**

The majority of respondents, 74 (86.0%), indicated that the draft measures had adequate coverage, while 8 (9.3%) had no comment, stating they did not have enough information or had not seen how the project and the overall transportation networks work, and 4 (4.7%) said they were inadequate, believing that the increasing number of aircrafts taking off and landing at the airport would mean more fuel being consumed, leading to increased pollution.

- **Surface water quality/seawater/marine ecology**

The majority of respondents, 79 (91.9%), indicated that the draft measures had adequate coverage, while 4 (4.7%) had no comment, stating they did not have enough information or had not seen how the project works, and 3 (3.5%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Terrain ecology**

The majority of respondents, 80 (93.0%), indicated that the draft measures had adequate coverage, while 4 (4.7%) had no comment, stating they did not have enough information or had not seen how the project works, and 2 (2.3%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Waste management**

The majority of respondents, 80 (93.0%), indicated that the draft measures had adequate coverage, while 4 (4.7%) had no comment, stating they did not have enough information or had not seen how the project works, and 2 (2.3%) said they were inadequate, saying garbage collecting trucks do not operate in certain areas, and no waste bins were provided.

- **Transportation**

The majority of respondents, 81 (94.2%), indicated that the draft measures had adequate coverage, while 3 (3.5%) had no comment, stating they did not have enough information or had not seen how the project works, and 2 (2.3%) said they were inadequate, stating that traffic congestion was getting worse.

- **Economic and social**

The majority of respondents, 80 (93.0%), indicated that the draft measures had adequate coverage, while 5 (5.8%) had no comment, stating they did not have enough information or had not seen how the project works, and 1 (1.2%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Public Health (Health)**

The majority of respondents, 80 (93.0%), indicated that the draft measures had adequate coverage, while 3 (3.5%) had no comment, stating they did not have enough information or had not seen how the project works, and 3 (3.5%) said they were inadequate, stating that dust and smoke was adversely affecting the health of people in the community.

Table3.8 -62 Opinions on draft environmental impact prevention and resolution measures in the construction phase from respondents of households in the NEF ≥ 40 Area

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	73	84.9	2	2.3	11	12.8	86	**100.0**
2. Air quality (dust)	74	86.0	4	4.7	8	9.3	86	**100.0**
3. Surface water quality/seawater/ marine ecology	79	91.9	3	3.5	4	4.7	86	**100.0**
4. Terrain ecology	80	93.0	2	2.3	4	4.7	86	**100.0**
5. Waste management	80	93.0	2	2.3	4	4.7	86	**100.0**
6. Transportation	81	94.2	2	2.3	3	3.5	86	**100.0**
7. Economic and social	80	93.0	5	5.8	1	1.2	86	**100.0**
8. Public health (health)	80	93.0	3	3.5	3	3.5	86	**100.0**

Operation Phase

Opinions on the adequacy of the draft environmental impact prevention and resolution measures in addressing the main impacts of the project in the operation phase, as detailed in **Table3.8 -**63**.**

- **Noise and vibration**

The majority of respondents, 74 (86.1%), indicated that the draft measures had adequate coverage, while 10 (11.6%) had no comment, and 2 (2.3%) said they were inadequate, reasoning that they lived near the construction area and that they had been impacted by aircraft noise, but did not make any suggestion on what additional measures should be created.

- **Air quality (emissions and volatile organic substances)**

The majority of respondents, 75 (87.2%), indicated that the draft measures had adequate coverage, while 8 (9.3%) had no comment, but did not make any

suggestion on what additional measures should be created, and 3 (3.5%) said they were inadequate, reasoning that they lived close to the airport.

- **Surface water quality/seawater/marine ecology**

The majority of respondents, 78 (90.7%), indicated that the draft measures had adequate coverage, while 6 (7.0%) had no comment, and 2 (2.3%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Terrain ecology**

The majority of respondents, 81 (94.2%), indicated that the draft measures had adequate coverage, while 4 (4.7%) had no comment, and 1 (1.2%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Waste management**

The majority of respondents, 82 (95.3%), indicated that the draft measures had adequate coverage, while 3 (3.5%) had no comment, and 1 (1.2%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Transportation**

The majority of respondents, 82 (95.3%), indicated that the draft measures had adequate coverage, while 2 (2.3%) had no comment, and 2 (2.3%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Economic and social**

The majority of respondents, 80 (93.0%), indicated that the draft measures had adequate coverage, while 5 (5.8%) had no comment, and 1 (1.2%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Resettlement and replacement of assets**

The majority of respondents, 81 (94.2%), indicated that the draft measures had adequate coverage, while 4 (4.7%) had no comment, and 1 (1.2%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

- **Public Health (Health)**

The majority of respondents, 81 (94.2%), indicated that the draft measures had adequate coverage, while 2 (2.3%) had no comment, and 3 (3.5%) said they were inadequate, but did not make any suggestion on what additional measures should be created.

Table3.8 -63 Opinion on draft environmental impact prevention and resolution measures in the operation phase from respondents of households in the NEF ≥ 40 Area

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	74	86.0	2	2.3	10	11.6	86	100.0

2. Air quality (emissions and volatile organic substances)	75	87.2	3	3.5	8	9.3	86	**100.0**
3. Surface water quality/seawater/ marine ecology	78	90.7	2	2.3	6	7.0	86	**100.0**
4. Terrain ecology	81	94.2	1	1.2	4	4.7	86	**100.0**
5. Waste management	82	95.3	1	1.2	3	3.5	86	**100.0**
6. Transportation	82	95.3	2	2.3	2	2.3	86	**100.0**
7. Economic and social	80	93.0	1	1.2	5	5.8	86	**100.0**
8. Property relocation and replacement	81	94.2	1	1.2	4	4.7	86	**100.0**
9. Public health (health)	81	94.2	3	3.5	3	3.5	86	**100.0**

When asked about respondents' concerns about the project, it was found that 32 (37.2%) had moderate concerns, 20 (23.3%) had no concerns, 18 (20.9%) had slight concerns, and 16 (18.6%) said they were very concerned.

Opinions on the overall draft measures: Household groups in the NEF ≥ 40 area expressed their opinions on the draft measures, in which 75 respondents (87.2%) indicated that the draft measures had adequate coverage and 11 (12.8%) said they were inadequate. Details are as shown in **Table 3.8-**64 and **Figure 3.8-15**Figure 3.8-15.

Table 3.8-64 Opinions on the overall draft environmental and health impact prevention and resolution measures in the construction phase and operation phase from respondents of households in the NEF > 40 area

Opinion	Number (people)	Percentage
Adequate	75	87.2
Inadequate	11	12.8
Total	**75**	**100.0**

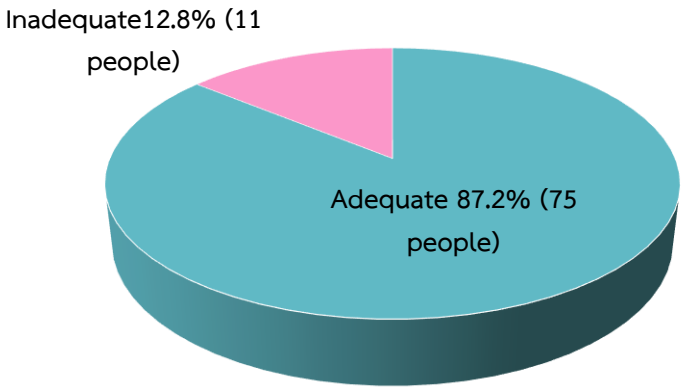


Figure 3.8-15 Opinions on the overall draft environmental and health impact prevention and resolution measures during the construction phase and operation phase from respondents of household groups in NEF > 40 areas

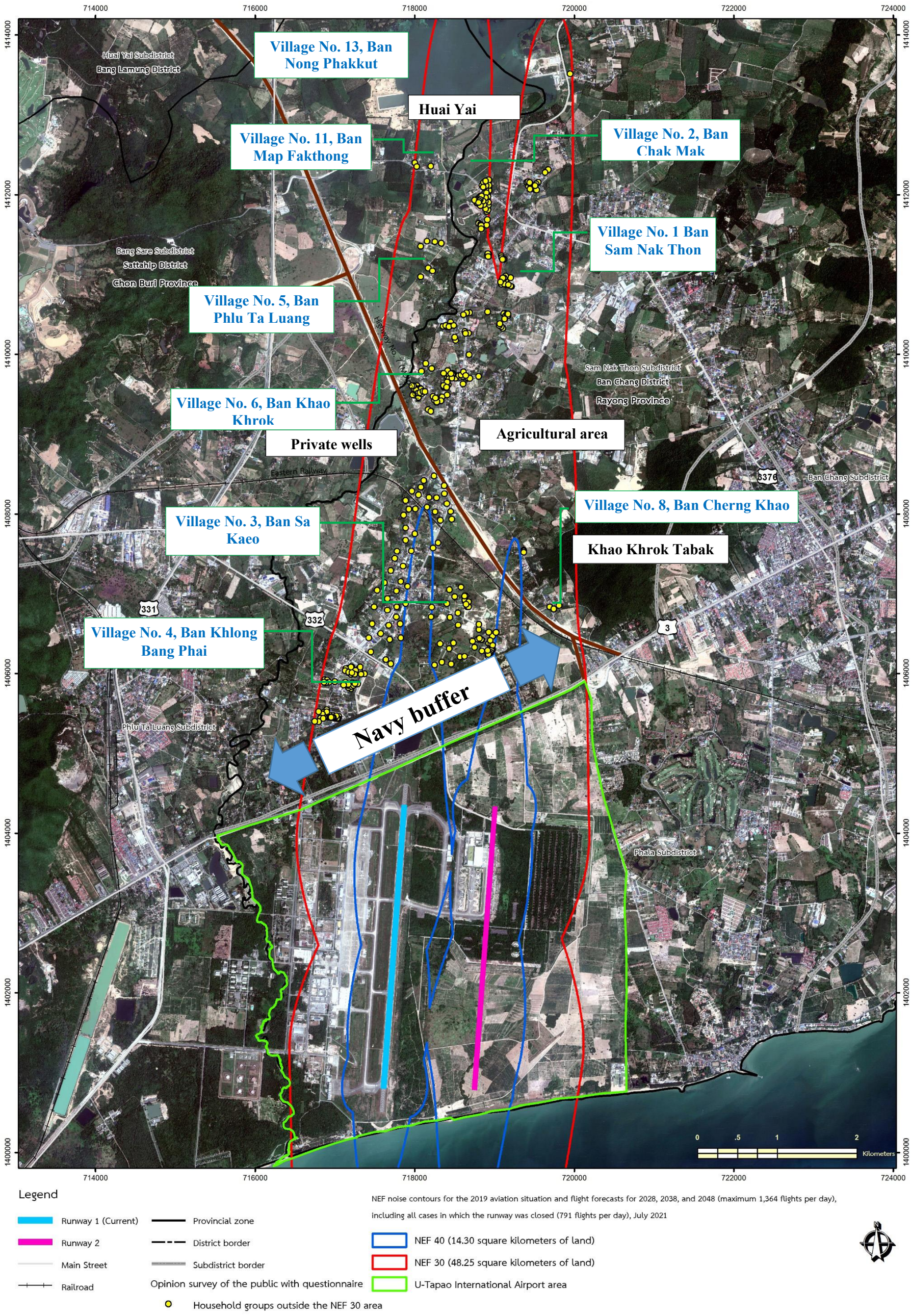
Opinions and feedback: Respondents offered opinions and suggestions on the implementation of the construction of the Runway and Taxiway 2 project, U-Tapao International Airport, as follows:

- Take care of road traffic/traffic disruptions, implement noise prevention and management throughout the project's operation phase.
- Solve the dust problems in the long term, help people who do not have ownership of the land along the canals and land belonging to Buddhist temples they had lived on.
- Publicity of information should be implemented through a variety of channels, including delivery of documents by post to people's homes as local organizations, such as the SAO and municipalities, had been too slow disseminating information that did not reach everyone.
- Details of the project should be provided in more detail, especially regarding the impact of noise on the community and compensation. The timeline for filing compensation claims should be explained clearly and easy to understand (use language that can be easily understood by the general public).
- Public safety must be guaranteed throughout the operation phase.
- Implement any project that does not disturb the people.
- In addition to installing sound-absorbing material, the project should help people who were impacted by the construction of runways at airport, and members of the communities that have not relocated should be given priority to be employed and work at U-Tapao International Airport over people from outside the area.
- Provide scholarships to children in the area, and build outdoor exercise areas.

- Provide additional information, such as on alternative housing or benefits that local people are entitled to.

2) Household groups in NEF 30-40 areas

Socioeconomic survey of household group in the NEF 30 – 40 area comprising 354 households, covers the survey locations as shown in **Figure 3.8-16**. The summary table detailing the results of the socioeconomic survey using a questionnaire for local households in the NEF 30 – 40 area are shown in **Appendix 3–10.**



Source: United Analyst and Engineering Consultants Co., Ltd. 2021.

Figure 3.8-16 Locations of household survey samples in NEF 30-40 area, totaling 354 samples

Section 1 General data of respondents

Gender: 205 female respondents (57.9%) and 149 male respondents (42.1%). Age bracket: aged 41-50 years, 114 respondents (32.2%); 51-60 years of age, 78 (22.0%); over 60 years 76 (21.5%); 31-40 years 70 (19.8%); 21-30 years, 13 (3.7%); 18-20 years, 3 (0.8%). Religion: Buddhism, 353 respondents (99.7%) and Christianity, 1 respondent (0.3%).

Status in household: 216 (61.0%) respondents were the head of household, 94 (26.6%) were the spouse of the head of household, 20 (5.6%) were a parent, 13 (3.7%) were children of the head of household, 5 (1.4%) were a relative/resident, 4 (1.1%) were in-laws, and 2 (0.6%) were employees. Respondents who were not head of household had been assigned by head of household to provide information.

Highest education attainment: 129 (36.4%) respondents stated elementary school, followed by 74 (20.9%) stating lower secondary school, 53 (15.0%) associate degree/high vocational certificate, 46 (13.0%) upper secondary/vocational certificate, 38 (10.7%) bachelor's degree or equivalent, 10 (2.8%) postgraduate, 3 (0.9%) no formal education, and 1 (0.3%) currently studying.

Principal occupation: 93 (26.3%) respondents stated general labor, followed by 90 (25.4%) stating government pensioner/unpaid worker/homemaker, 73 (20.6%) private company employee, 44 (12.4%) trader, 24 (6.8%) private business, 20 (5.6%) civil servant/state enterprise worker, 6 (1.7%) unspecified occupation, and 4 (1.1%) farmer.

Original domicile: 198 (55.9%) respondents were natives of this subdistrict, 155 (43.8%) moved from elsewhere, 1 (0.3%) declined to answer. Of the respondents who moved into this area, those who had lived in this area for more than 20 years comprised 41 respondents (26.5%); for 5-10 years, 35 (22.6%); for less than 5 years, 31 (20.0%); for 16-20 years, 24 (15.5%); for 11-15 years, 23 (14.8%); and declined to provide information, 1 (0.6%). As for reason for moving here to live or work (respondents were asked to check all that apply): 67 (41.4%) stated change of occupation or job, 59 (36.4%) followed family/spouse, 17 (10.5%) access to public utilities, 7 (4.3%) choice of affordable properties, 5 (3.1%) choice of different property types, 5 (3.1%) relocated for government jobs, and 2 (1.2%) travel convenience.

When asked about likelihood of resettling elsewhere, 303 respondents (85.6%) said they had no intention of moving anywhere, reasoning they were attached to their native place, having family and jobs in the area, etc.; 42 (11.9%) said they were undecided, saying such decision depended on economic situation; 9 (2.5%) said they would move out, saying they were thinking of relocating their home to another province.

Section 2: Property data

The majority of respondents, 302 (85.3%), had ownership of the property they lived on, 25 (7.1%) said the property belonged to their parent/relative, 24 (6.8%) said they lived on leased land, rental property/rented room, 2 (0.6%) lived on property belonging to

employer, and 1 (0.3%) declined to give information. Regarding type of property ownership and possession documents, 329 (93.0%) had land deed titles, 21 (5.9%) did not specify, 4 (1.1%) had other types of documents.

On residential status of home and buildings, the majority of respondents had the status of owner, 306 (86.4%); lived as a dependent, 43 (12.1%); as caretaker/employees, 3 (0.9%); and would not provide their status information, 2 (0.6%). On property type, the majority of properties, 331 (93.5%), were detached houses; 14 (4.0%) were terraced houses, rooms or townhouses; 5 (1.4%) were resorts; 3 (0.8%) were semi-detached houses; and 1 (0.3%) was unspecified.

Age of property: Respondents did not provide information, 108 (30.5%); 5-10 years, 93 (26.3%); less than 5 years, 57 (16.1%); 11-15 years, 46 (13.0%); 16-20 years, 27 (7.6%); and over 20 years, 23 (6.5%). As for property characteristics: single-story, 328 (92.7%); two-story, 23 (6.5%); and more than two-stories, 3 (0.8%).

Property utilization: the majority of buildings were used primarily for residence, comprising 328 (92.7%), and used for both residence and place of business, 26 (7.3%).

Property by building materials (top 3 materials): 339 (95.7%) were made of concrete or bricks and mortar, 13 (3.7%) were made of cement and timber, 1 (0.3%) was made of gypsum boards, and 1 (0.3%) was made of wood. As for roofing materials, 278 (78.5%) were made of glazed concrete, 64 (18.1%) were made of cement fiber, 11 (3.1%) were made of metal sheets, and 1 (0.3%) was a zinc roof.

Section 3: Household economic data

The number of persons who actually lived in the surveyed households averaged 6 persons per household. Of this, 3 on average were income-earners. The average number of children under the age of 15 was 1 child (number of total children, 98 or 4.6%). The average number of working age persons per household was 6 (total of 1,916 or 90.8%) and the average number of elderly (over the age of 60) per household was 1 (total of 96 or 4.6%).

Principal occupation: 93 (26.3%) stated general labor, followed by 90 (25.4%) unpaid worker/homemaker, 73 (20.6%) private company employee, 44 (12.4%) trader, 24 (6.8%) private business, 20 (5.7%) civil servants/state enterprise worker, 6 (1.7%) unspecified occupation, and 4 (1.1%) farmer.

Secondary occupation: Most respondents, 330 (93.2%), did not have secondary occupation. The 24 (6.8%) respondents who said they had secondary source of income were engaged in general labor, online retailing and sewing, etc.

Most of the respondents said they had no problems in their occupation, totaling 288 persons (81.4%), and 66 (18.6%) reported having occupational problems. The problems stated were decreased income, economic slowdown, labor shortage, rising labor cost.

The total household income averaged 42,663 baht per month and total household expenditure averaged 33,423 baht per month. On income adequacy, those who said they were satisfied and had some savings totaled 182 respondents (51.4%); not earning enough and had to take loans, 59 (16.7%); had enough to live on but no savings, 51 (14.4%); not making enough but had no debts, 50 (14.1%); and declined to provide information, 12 (3.4%). On household debts, 295 households (83.3%) had no debts and 59 households (16.7%) reported having debts. On factors contributing to household debts, 37 (62.7%) said they needed to take loans for work, 15 (25.4%) said they need loans to cover household expenses, 4 (6.8%) for education, 2 (3.4%) for home renovation, and 1 (1.7%) for medical expenses.

Section 4 Social Conditions and current environment

Social issues: The 316 respondents stated the top 3 social issues they believed would cause significant impact to their community as possible unemployment/job loss (11.6%), in which respondents expected moderate impact (4.8%), least impact (3.1%), low impact (2.8%), and high impact (0.9%); arrival of people from outside the community (11.0%), in which respondents expected moderate impact (5.1%), high impact (3.6%), low impact (2.0%), and least impact (0.3%); and impact to electricity access (10.7%), in which respondents expected low impact (5.1%), least impact (4.8%), and moderate impact (0.8%). Table 3.8-65

Table 3.8-65 Information on current social conditions in communities from respondents of household groups in the NEF 30 - 40 area

Social issues	Not affected (percentage)	Affected (percentage)	Level of impact (percentage)				
			Least	Low	Moderate	High	Highest
Public utility services							
- Electricity	89.3	10.7	4.8	5.1	0.8	0.0	0.0
- Water supply	93.8	6.2	4.2	2.0	0.0	0.0	0.0
Life and property safety							
- Illicit drugs	90.7	9.3	4.0	4.2	1.1	0.0	0.0
- Theft, such as burglary	94.9	5.1	2.8	2.3	0.0	0.0	0.0
- Physical violence, such as quarrels	99.2	0.8	0.8	0.0	0.0	0.0	0.0
Community density/satisfaction with community	98.9	1.1	0.3	0.8	0.0	0.0	0.0
Community relationships and harmony	90.4	9.6	0.3	3.7	4.8	0.8	0.0
Unemployment/job loss	88.4	11.6	3.1	2.8	4.8	0.9	0.0
Influx of people from outside the community	89.0	11.0	0.3	2.0	5.1	3.6	0.0

On social harmony and likelihood of helping one another, 241 respondents (68.1%) rated moderate likelihood, 72 (20.4%) rated high likelihood, 32 (9.0%) said low likelihood, 5 (1.4%) said not likely, and 5 (1.4%) declined to specify. On level of their participation in community's cultural and charitable activities, 309 (87.3%) said they took part regularly, 24 (6.8%)

said occasionally, 16 (4.5%) said once in a while, and 5 (1.4%) declined to provide information. Details are as shown in **Appendix 3–10**.

Environmental issues: Respondents identified the top 3 environmental problems that currently cause annoyance and disturbances as traffic conditions (21.8%), followed by dust/soot and smoke (20.6%), and noise (13.0%). Details of each of the problems are shown in **Table 3.8-**66 as follows:

- On noise problem, 46 respondents (13.0%) reported being affected. Of this, low impact was reported by 27 (7.6%), moderate impact by 14 (4.0%); high impact, 4 (1.1%); and least impact, 1 (0.3%). As for sources of noise, traffic/vehicles was reported by 41 (89.1%); declined to say, 3 (6.5%); and construction activity, 2 (4.3%).

- On dust/soot and smoke, 73 respondents (20.6%) reported being impacted. Of this, those who reported moderate impact totaled 31 (8.8%); low impact, 25 (7.1%); high impact, 13 (3.7%); least impact, 2 (0.5%); and highest impact, 2 (0.5%). As for sources of dust/soot and smoke, 64 (87.7%) stated traffic/vehicles, followed by 7 (9.6%) stating vehicle emissions, and 2 (2.7%) declining to give information.

- On solid waste/sewage, 18 (5.1%) reported being impacted. Of this, 12 (3.4%) respondents reported low impact, 5 (1.4%) reported moderate impact, and 1 (0.3%) reported least impact. On sources of solid waste/sewage problems, 18 (100.0%) respondents stated waste accumulation/missed collection.

- On the problem of foul smelling water sources, none of the 354 respondents (100.0%) reported having any problem.

- On drainage/floodwater problem, 10 respondents (2.8%) reported being affected. Of this, 5 (1.4%) reported least impact, 5 (1.4%) reported low impact. As for the sources of drainage/floodwater problem, 7 (70.0%) stated drainage failure, and 3 (30.0%) stated heavy rain.

- On traffic problem, 77 respondents (21.8%) reported being impacted. Of this, those who reported moderate impact totaled 42 (11.9%), those who reported high impact 17 (4.8%), low impact 12 (3.4%), least impact 5 (1.4%), and highest impact 1 (0.3%). As for the sources of traffic problems, 49 (63.6%) stated excessive number of vehicles, 17 (22.1%) stated poor road conditions, 8 (10.4%) stated traffic violations, and 3 (3.9%) declined to answer.

- On the problem of foul smelling water source, none of the 354 respondents (100.0%) reported having any problems.

- On drinking - utility water shortages, none of the 354 respondents (100.0%) reported having any problems.

- On vibration problems, 3 respondents (0.9%) reported being affected. Of this, 2 (0.6%) reported low impact, 1 (0.3%) reported moderate impact. As for sources of vibration, 2 (66.7%)

stated construction activity while 1 (33.3%) stated road traffic/vehicles. Details are as shown in **Table 3.8-**66.

Table 3.8-66 Information on hardship/disturbances based on current environmental conditions reported by respondents representing household groups in the NEF 30 - 40 area

Environmental Issues	Not affected (percentage)	Affected (percentage)	Affected (percentage)				
			Least	Low	Moderate	High	Highest
1) Noise	**87.0**	**13.0**	0.3	7.6	4.0	1.1	0.0
2) Dust/soot	**79.4**	**20.6**	0.5	7.1	8.8	3.7	0.5
3) Solid waste/sewage	**94.9**	**5.1**	0.3	3.4	1.4	0.0	0.0
4) Wastewater	**100.0**	**0.0**	0.0	0.0	0.0	0.0	0.0
5) Drainage/floodwater	**97.2**	**2.8**	1.4	1.4	0.0	0.0	0.0
6) Traffic conditions	**78.2**	**21.8**	1.4	3.4	11.9	4.8	0.3
7) Odor	**100.0**	**0.0**	0.0	0.0	0.0	0.0	0.0
8) Drinking water-tap water shortage	**100.0**	**0.0**	0.0	0.0	0.0	0.0	0.0
9) Vibration	**99.1**	**0.9**	0.0	0.6	0.3	0.0	0.0

The number of household vehicles reported by the respondents totaled 492 motorcycles (57.0%) and 371 four-wheeled automobiles (43.0%). Highways regularly used by respondents included Sukhumvit Road (passing in front of U-Tapao International Airport), used by 151 respondents (31.3%); 110 (22.8%) declined to specify; Highway 331 Sattahip-Khao Hin Son was used by 85 respondents (17.6%); Highway 332, Sattahip-Sam Nak Thon was used by 77 respondents (16.0%); Highway 3126 linking entry point to U-Tapao International Airport and Juk Samet Port was used by 34 respondents (7.1%); and Phala Road was used by 25 respondents (5.2%). The top 3 reasons for commuting were: work, reported by 200 respondents (53.1%); business, 109 (28.9%); and trading, 49 (13.0%).

When asked about impact on traveling by road networks around U-Tapao International Airport, 340 respondents (96.0%) reported no impact, 8 (2.3%) reported low impact, and 6 (1.7%) reported moderate impact. The top 3 impacts comprised travel inconvenience, reported by 5 respondents (35.7%); heavy traffic congestion stated by 4 (28.6%); and difficulty in accessing the airport stated by 3 (21.4%). When asked about how often they used U-Tapao International Airport, 289 respondents (81.6%) said they never used the airport, while 65 (18.4%) reported having used the airport. Details are as shown in **Appendix 3-10**.

Section 5 Public Health Data

Local public health data as provided by respondents: 246 respondents (69.5%) stated that no members of their household had been sick and 108 (30.5%) reported that at least one member of their household had been sick. The top 3 common illnesses reported by respondents were colds or respiratory infection, reported by 104 respondents (61.9%); heart condition, kidney disease, hypertension, cholesterol, diabetes, gout, etc. reported by 36 (21.4%); and digestive disease by 11 (6.5%).

On healthcare services in the area as reported by respondents, when someone in the household was sick (respondents were asked to check all that apply), 283 (72.4%) said they went to public health facilities, 56 (14.3%) went to a private hospital, 46 (11.8%) purchased over-the-counter medicines, and 6 (1.5%) preferred self-healing.

In the past year to date, 340 respondents (100.0%) reported having no mental health problems in their households.

On hearing problems, no hearing problems in the household were reported by 347 (98.0%) respondents and hearing problems were reported by 7 (2.0%). The top 3 causes reported were: age-related, reported by 4 (57.1%); health-related by 2 (28.6%); and unknown cause by 1 (14.3%).

Most respondents 310 (87.6%) reported no problems using local healthcare services and 44 (12.4%) reported some problems. As for causes of problems (respondents were asked to check all that apply), under-staffing was stated by 27 respondents (60.0%), too many patients by 16 (35.6%), health facilities being too far away stated by 1 (2.2%); and high medical cost stated by 1 (2.2%).

On disease control and health promotion activities in the community, 336 respondents (94.9%) reported being aware of such activities, such as anti-dengue fever campaigns, health check ups, aerobic dance, etc. Only 18 (5.1%) said they never heard of such activity. When asked about their participation in those activities, 217 respondents (61.3%) reported having participated, and 137 (38.7%) said they never participated. Details are as shown in **Appendix 3–10.**

Section 6 Accident, Public Disaster, and Public Safety Data

On accidents and public disasters, all respondents 354 (100.0%) reported never having been in an accident or public disaster. All 354 (100.0%) also reported never have participated in emergency response drills organized by local agencies. All 354 (100.0%) also reported not knowing how to report a public disaster in case of an aviation accident. Details are as shown in **Appendix 3–10**.

Section 7 Environmental Health Data

On sources of drinking water, 292 respondents (82.5%) said they purchased bottled drinking water, 46 (13.0%) reported drinking filtered tap water, and 16 (4.5%) purchased filtered drinking water from vending machines. On quantity and quality of drinking water, all 354 respondents (100.0%) reported not having any problems.

All 354 respondents (100.0%) reported using tap water for general utilization, with 316 (89.3%) reported having no problems with quantity and quality of water, while 38 (10.7) reported some problems. Problems mentioned were light flow or cloudy tap water.

On air quality, all 354 respondents (100.0%) reported having no problem.

On household wastewater management, all 354 respondents (100.0%) reported that wastewater was discharged into drainage ditches or public drainage pipe.

On the management of wastewater from household toilets, all 354 respondents (100.0%) reported they had had installed septic tanks or septic mound systems.

On solid waste from households, all 354 respondents (100.0%) reported placing solid waste in provided containers to be collected by SAO or municipality or district office.

On how satisfied they were with their living environment, 247 respondents (69.8%) expressed high level of satisfaction, 103 (29.1%) said they were moderately satisfied and 4 (1.1%) said they had low level of satisfaction. Details are as shown in **Appendix 3-10**.

Section 8 Awareness of Information and Public Relations

Awareness of project information: 297 respondents (83.9%) said they had received project information, in which the top 3 sources comprised neighbors or acquaintances, as stated by 275 (75.8%); from a chairperson/committee member/community leader, 45 (12.4%); from the internet/project website, 17 (4.7%); and respondents who reported first hearing of the project from this interview, 57 (16.1%). All 354 respondents (100.0%) said additional publicity/public relations were needed.

Additional information that respondents needed: Respondents were asked to check all that apply on this matter, in which 272 respondents (76.8%) said they would like to find out more about progress status of studies of the project, and 82 (23.2%) wanted to know more about public participation activities.

On appropriate formats or methods for publicizing project information: (respondents were asked to check all that apply) The top 3 methods named by respondents comprised 252 (71.2%) respondents wanting project information documents delivered to their home, 88 (24.9%) preferring to attend meetings, and 14 (3.9%) wanting project information channeled through community leaders.

The opinions of the respondents on the development of the project: Household groups in the NEF 30-40 area agreeing with the overall project totaled 289 respondents

(81.6%) and those who had no comment totaled 65 (18.4%), stating that the project details received from interview staff were not clear on some issues, and thus they could not offer their opinions. Initially, they thought the proposed measures were adequate but they were still unsure whether such measures could be implemented in full. Details are as shown in **Figure 3.8-**17.

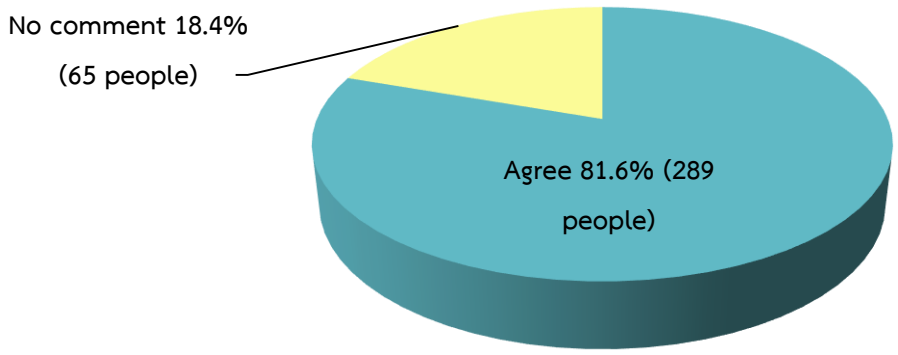


Figure 3.8-17 Opinions about the development of the project as told by respondents representing households in NEF 30 – 40 area

Section 9 Opinions and Feedback on the Project

Construction Phase

According to opinions on impacts of the construction phase of the project, 312 respondents (88.1%) said they were unlikely to be impacted, 19 (5.4%) said they expected negative impacts, 14 (4.0) were not sure, 6 (1.7%) offered no comment, and 3 (0.8%) said they expected both positive and negative impacts.

Respondents who said they expected impacts from the construction phase of the project (respondents were asked to check all that apply) offered no comment on positive impacts. On negative impacts: health impact was mentioned by 11 respondents (52.4%) and environmental impact by 10 (47.6%). Details are as shown in **Table 3.8-**67

Operation Phase

According to the opinions on impacts of the operation phase of the project, 217 respondents (61.3%) said they expected positive impacts, 83 (23.4%) said they were unlikely to be impacted, 31 (8.8%) said they expected both positive and negative impacts, 14 (4.0) said they expected negative impacts, and 9 (2.5%) said they were unsure.

In this respect, respondents expecting to be impacted by the project during the operation phase (respondents expecting to be impacted were asked to check all that apply), stated that they expected to receive positive impacts, consisting of economic impacts, comprising 233 respondents (94.0%); social impacts, comprising 11 respondents (4.4%); and environmental impacts, comprising 4 respondents (1.6%). Negative impacts consisted of environmental impacts,

comprising 44 respondents (93.6%) and health impacts, comprising 3 respondents (6.4%). Details are as shown in **Table 3.8-67**

Table 3.8-67 Opinions on the project in the construction phase and operation phase from respondents of households in the NEF 30 - 40 Area

Impact Issues	Construction Phase				Operation Phase			
	Positive		Negative		Positive		Negative	
	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage
1.Economic (Positive: employment, income distribution, growth, trade, tourism promotion, investment, air transportation, career, income growth, businesses in community, trade in construction materials, local tax revenue. Negative: increased consumption of fuel and increased fuel costs from traffic congestion).	0	0.0	0	0.0	233	94.0	0	0.0
2. Social (Positive: working in the local area, more time to spend with family, social changes, less travel time, travel safety. Negative: changes in lifestyle and wellbeing, unable to use existing roads, arrival of outside workers could bring crime problems).	0	0.0	0	0.0	11	4.4	0	0.0
3. Environmental (Positive: utilization of previously neglected areas, improved land use, traffic, transportation, energy saving. Negative: wastewater, flooding, traffic congestion, dust, road damage, hauling of construction materials, more accidents from increased transportation and higher traffic volumes, impacts from noise, fumes from emissions, consumption of water, electricity, waste, impact on scenery).	0	0.0	10	47.6	4	1.6	44	93.6
4. Health (Positive: more opportunities for medical care from various health facilities due to community prosperity. Negative: loss of hearing, stress, anxiety, sleeplessness, headache, allergies).	0	0.0	11	52.4	0	0.0	3	6.4
Total	**0**	**0.0**	**21**	**100.0**	**248**	**100.0**	**47**	**100.0**

Opinions on the draft environmental and health impact prevention and resolution measures in the construction phase and operation phase are as follows:

Construction Phase

The opinions on the adequacy of the draft environmental impact prevention and resolution measures in addressing main impacts of the project in the construction phase are as shown in **Table 3.8-**68, summarized as follows:

All 354 respondents (100.0%) stated that the draft measures had adequate coverage for noise, vibration, air quality (dust), surface water/sea water/marine ecology, terrain ecology, waste management, transportation, economic, social, and public health (health).

Table 3.8-68 Opinions on draft environmental impact prevention and resolution measures in the construction phase from respondents of households in the NEF 30 - 40 Area

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	354	**100.0**	0	0.0	0	0.0	354	**100.0**
2. Air quality (dust)	354	**100.0**	0	0.0	0	0.0	354	**100.0**
3. Surface water quality/seawater/ marine ecology	354	**100.0**	0	0.0	0	0.0	354	**100.0**
4. Terrain ecology	354	**100.0**	0	0.0	0	0.0	354	**100.0**
5. Waste management	354	**100.0**	0	0.0	0	0.0	354	**100.0**
6. Transportation	354	**100.0**	0	0.0	0	0.0	354	**100.0**
7. Economic and social	354	**100.0**	0	0.0	0	0.0	354	**100.0**
8. Public health (health)	354	**100.0**	0	0.0	0	0.0	354	**100.0**

Operation Phase

Opinions on the adequacy of the draft environmental impact prevention and resolution measures in addressing the main impacts of the project in the operation phase, as detailed in **Table 3.8-**69, are summarized as follows:

All 354 respondents (100.0%) stated that the draft measures had adequate coverage for noise, vibration, air quality (dust), surface water/seawater/marine ecology, terrain ecology, waste management, transportation, economic, social, relocation and replacement of assets, and public health (health).

Table 3.8-69 Opinions on draft environmental impact prevention and resolution measures in the operation phase from respondents of households in the NEF 30 - 40 area

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	354	**100.0**	0	0.0	0	0.0	354	**100.0**
2. Air quality (emissions and volatile organic substances)	354	**100.0**	0	0.0	0	0.0	354	**100.0**
3. Surface water quality/seawater/ marine ecology	354	**100.0**	0	0.0	0	0.0	354	**100.0**
4. Terrain ecology	354	**100.0**	0	0.0	0	0.0	354	**100.0**
5. Waste management	354	**100.0**	0	0.0	0	0.0	354	**100.0**
6. Transportation	354	**100.0**	0	0.0	0	0.0	354	**100.0**
7. Economic and social	354	**100.0**	0	0.0	0	0.0	354	**100.0**
8. Property relocation and replacement	354	**100.0**	0	0.0	0	0.0	354	**100.0**
9. Public health (health)	354	**100.0**	0	0.0	0	0.0	354	**100.0**

When asked about respondents' concerns about the project, it was found that 303 (85.6%) had no concerns, 30 (8.5%) expressed moderate concerns, 21 (5.9%) had slight concerns.

Opinions on the overall draft measures: All 354 respondents (100%) were of the opinion that overall the draft environmental and health impact prevention and resolution measures for the construction phase and operation phase had adequate coverage. Details are as shown in **Table 3.8-**70 and **Table 3.8-**18

Table 3.8-70 Opinions on the overall draft environmental and health impact prevention and resolution measures in the construction phase and operation phase from respondents of households in the NEF 30 - 40 area

Opinion	Number (people)	Percentage
Adequate	354	100.0
Inadequate	0	0.0
Total	**354**	**100.0**

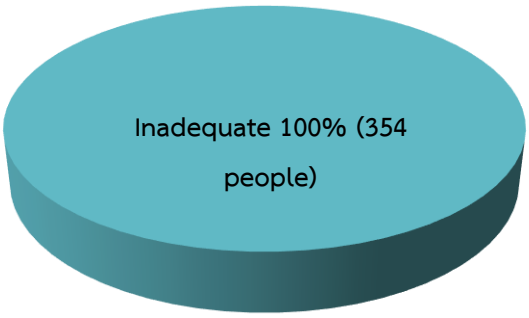


Table 3.8-18Opinions on the overall draft environmental and health impact prevention and resolution measures in the construction phase and operation phase of respondents of households in the NEF 30 - 40 area

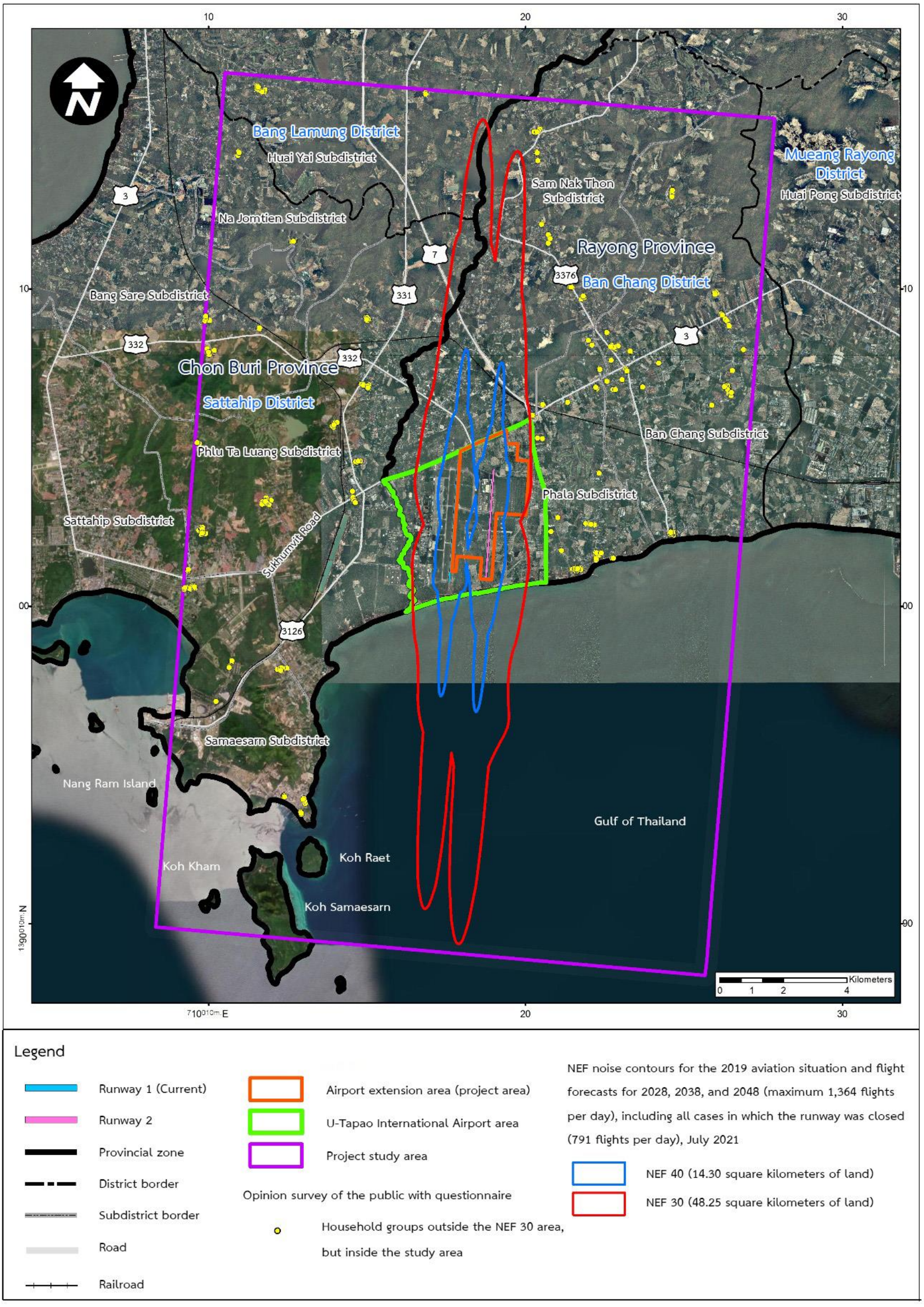
Feedback and suggestions: Respondents offered opinions and feedback on the implementation of the Runway and Taxiway 2 Construction Project, U-Tapao International Airport, as follows:

- Implement both the construction phase and operation phase of the project with utmost care to prevent problems and ensure minimal impact.
- Keep the public informed on the progress status of the project.
- Implement good management to ensure economic benefits, growth on trade, income growth, and better quality of life.
- The construction phase needs to be well managed to prevent problems.
- Take care of people affected by noise impact from aircrafts.
- Organize regular meetings to discuss issues with the community.
- Implement operations in accordance with good management standards, both for machinery and personnel.
- Keep in mind the importance of benefits that the community should gain from the construction of the airport.
- Put in place special management in areas affected by airport construction.
- Give priority to environmental issues to prevent and mitigate impacts.

3) Households in the NEF < 30 area extending to the study area perimeter

Socioeconomic survey of households in the NEF < 30 extending to the study area perimeter comprised 428 households, covering the survey locations as shown in **Figure**

3.8-19. The summary table detailing the results of the socioeconomic survey conducted using a questionnaire for households in the NEF < 30 area extending to the study area perimeter is as shown in **Appendix 3–10**.



Source: Composed by United Analyst and Engineering Consultants Co., Ltd., 2021.

Figure 3.8-19 Locations of survey samples in the NEF < 30 area extending to the study area perimeter, totaling 428 samples

Section 1 General data of respondents

Gender: 275 female respondents (64.3%) and 153 male respondents (35.7%). Age bracket: aged over 60 years, 117 (27.3%); 51-60 years, 113 (26.4%); 41-50 years, 91 (21.3%); 31-40 years, 74 (17.3%); 21-30 years, 30 (7.0%); and 18-20 years, 3 (0.7%). Religion: Buddhism, 427 (99.8%) and Islam, 1 (0.2%).

Status in household: 188 (43.9%) respondents were the head of household, 163 (38.1%) were the spouse of the head of household, 38 (8.9%) were children of head of household, 25 (5.8%) were a parent, 10 (2.3%) were a relative/resident, and 4 (1.0%) were in-laws. Respondents who were not the head of household had been assigned by the head of household to provide information.

Highest education attainment: 180 (42.1%) respondents stated elementary school, followed by 71 (16.6%) stating lower secondary school, 68 (15.9%) upper secondary school/vocational certificate, 49 (11.4%) bachelor's degree or equivalent, 36 (8.9%) associate degree/high vocational certificate, 21 (4.9%) no formal education, and 1 (0.2%) postgraduate.

Principal occupation: 133 (31.1%) stated trading, 100 (23.4%) unpaid worker/homemaker, 87 (20.3%) general labor, 59 (13.8%) private company employee, 31 (7.2%) civil servant/state enterprise employee, 14 (3.3%) private business, agriculture and 2 (0.5%) aquaculture, and 5 (0.5%) declined to provide information.

Original domicile: 231 (54.0%) were natives of this subdistrict and 197 (46.0%) had moved from elsewhere. For those who moved from elsewhere, 77 (38.9%) respondents had lived in this area for more than 20 years, 38 (19.2%) had lived in this area for 5-10 years, 37 (18.7%) for 16-20 years, 32 (16.1%) for 11-15 years, and 14 (7.1%) for less than 5 years. As for reason for moving here to live or work: (respondents were asked to check all that apply) change of occupation or job was stated by 144 (73.1%), followed family/spouse stated by 50 (25.4%), choice of property type stated by 1 (0.5%), choice of affordable properties stated by 1 (0.5%), and setting a new home in the area stated by 1 (0.5%).

When asked about likelihood of resettling elsewhere, 391 (91.4%) said they had no intention of moving anywhere, reasoning they were attached to the area and enjoyed the company of good neighbors, etc.; 28 (6.5%) said they were undecided, saying such decision depended on the family; while 9 (2.1%) said they would move out, saying they intended to move back to their hometown.

Section 2: Property data

The majority of respondents, 304 (71.0%), had ownership of the property they lived on; 56 (13.1%) said they lived on rented property (leased land, rental house/rented room); 41 (9.6%) said the house belonged to children, a spouse or was provided as welfare benefits; 24 (5.6%) said the property belonged to their parent/relative; 2 (0.5%) lived on property belonging to an employer; and 1 (0.2%) declined to give information. Regarding types of property ownership and possession documents, 386 (90.2%) had land deed titles and 42 (9.8%) had other type of documents, such as PBT5 or NS3K, rental agreement, etc.

Most respondents, 351 (82.0%), lived on the property as owner and 77 (18.0%) lived as a dependent. On property type, the majority of properties 376 (87.9%) were detached houses, 45 (10.5%) were terraced houses, rooms or townhouses, 6 (1.4%) were semi-detached houses, and 1 (0.2%) was a two-story cement house.

Age of property: Over 20 years, 208 (48.6%); 5-10 years, 80 (18.7%); 16-20 years, 68 (15.9%); 11-15 years, 56 (13.1%); less than 5 years, 12 (2.8%); and unspecified age, 4 (0.9%). As for property characteristics: single-story, 339 (79.2%); two-story, 82 (19.2%); one-story on stilts, 4 (0.9%); and more than two-stories, 3 (0.7%).

Property utilization: the majority of buildings were used primarily for residence, 416 (97.2%); used for both residence and place of business, 10 (2.3%); and used solely as place of business, 2 (0.5%).

Property by building materials: 360 (84.1%) were made of concrete or bricks and mortar, 56 (13.1%) made of cement and timber, and 11 (2.6%) made of wood. As for roofing materials, 315 (73.6%) were made of cement fiber, 98 (22.9%) made of glazed concrete, and 9 (2.1%) made of metal sheets.

Section 3: Household economic data

The number of persons who actually lived in the surveyed households averaged 4 persons per household. Of this, 3 on average were income-earners. The average number of children under the age of 15 was 1 child (number of total children 396 or 21.1%, the average number of working age persons per household was 3 (total of 1,127 or 59.9%) and the average number of elderly (over the age of 60) per household was 1 (total of 358 or 19.0%).

Principal occupations providing the main source of household income: 148 respondents (34.6%) identified as a private company employee, 103 (24.1%) as a trader, 79 (18.5%) as general labor, 64 (14.9%) as civil servant/state enterprise employee, 28 (6.5%) had a private business, 3 (0.7%) as an unpaid worker/homemaker, 2 (0.5%) as a farmer, and 1 (0.2) engaged in aquaculture.

Secondary occupation: the majority, 358 (83.6%), did not have secondary occupation, and 70 (16.4%) who said they had a secondary source of income were engaged in general labor, trading and agriculture.

Most of the respondents said they had no problems in their occupation, totaling 425 persons (99.3%), and 3 (0.7%) reported having occupational problems. The problems stated were economic slowdown.

The total household income averaged 34,769 baht per month and total household expenditure averaged 24,621 baht per month. On income adequacy, those who said they were satisfied and had some savings totaled 315 respondents (73.6%); had enough to live on but no savings, 85 (19.9%); not earning enough and having to take loans, 19 (4.4%); and not making enough but having no debts 9 (2.1%). On household debts, 392 households (91.6%) had no debts and 36 households (8.4%) reported having debts. On factors contributing to household debts, (respondents were asked to check all that apply), loans to cover household expenses were stated by 29 (56.9%), for work by 17 (33.3%), for education by 3 (5.9%) and for home renovation by 2 (3.9%).

Section 4 Social Conditions and current environment

Social issues: The 428 respondents named the top 3 social issues they thought would cause significant impact to their community as illicit drug problems (48.8%), having moderate impact (22.0%), low impact (13.5%), least impact (11.7%), and high impact (1.6%); problems relating to arrival of people from outside the community (39.7%), having moderate impact (19.2%), high impact (11.2%), low impact (4.4%), highest impact (2.8%) and least impact (2.1%); and problems related to access to tap water services (33.4%), having moderate impact (16.4%), high impact (9.3%), highest impact (5.4%), low impact (1.6%) and least impact (0.7%). Details are as shown in **Table 3.8-**71.

Table 3.8-71 Current social conditions in the community as told by respondents of households in the NEF < 30 area extending to the study area perimeter

Social issues	Not affected (percentage)	Affected (percentage)	Level of impact (percentage)				
			Least	Low	Moderate	High	Highest
Public utility services							
- Electricity	**79.4**	**20.6**	2.6	4.7	7.0	5.4	0.9
- Water supply	**66.6**	**33.4**	0.7	1.6	16.4	9.3	5.4
Life and property safety							
- Illicit drugs	**51.2**	**48.8**	11.7	13.5	22.0	1.6	0.0
- Theft, such as burglary	**79.9**	**20.1**	6.6	9.3	4.0	0.2	0.0
- Physical violence, such as quarrels	**96.8**	**3.2**	2.6	0.2	0.2	0.2	0.0
Community density/satisfaction with community	**99.3**	**0.7**	0.0	0.5	0.2	0.0	0.0
Community relationships and harmony	**85.7**	**14.3**	0.2	1.9	7.0	4.7	0.5
Unemployment/job loss	**93.8**	**6.2**	4.9	0.2	0.9	0.2	0.0
Influx of people from outside the community	**60.3**	**39.7**	2.1	4.4	19.2	11.2	2.8

On social harmony and likelihood of helping one another, 266 respondents (62.2%) rated moderate likelihood, 138 (32.2%) rated high likelihood, 14 (3.3%) said unlikely, and 10 (2.3%) said low likelihood. On level of their participation in community's cultural and charitable activities, 138 (32.2%) said they never participated, 128 (29.9%) reported they took part occasionally, 103 (13.8%) participated once in a while, and 59 (13.8%) took part regularly.

Environmental issues: Respondents identified the top 3 environmental problems that currently caused hardship and disturbance as dust/soot and smoke (47.7%), noise (46.1%), and traffic conditions (4.0%). Details of each of the problems are shown in **Table 3.8-**72 as follows:

- On noise problems, 196 respondents (46.1%) reported being affected. Of this, moderate impact was reported by 99 (22.4%), high impact by 47 (11.0%), low impact by 24 (6.1%), least impact by 13 (3.3%) and highest impact by 13 (3.3%). As for sources of noise, those who identified traffic/vehicles totaled 187 (95.4%), construction activity 7 (3.6%), and those who declined to say 2 (1.0%).

- On dust/soot and smoke, 204 respondents (47.7%) reported being impacted. Of this, those who reported moderate impact totaled 99 (23.1%), high impact 55 (12.9%), low impact 23 (5.4%), highest impact 15 (3.5%), and least impact 12 (2.8%). As for sources of dust/soot and smoke, 186 (91.2%) stated traffic/vehicles, 14 (6.8%) stated vehicle exhaust fumes, 2 (1.0%), 1 (0.5%) stated factory and 1 (0.5%) stated grass burning.

- On solid waste/sewage problems, 5 respondents (1.1%) reported being impacted. Of this, respondents who reported moderate impact totaled 3 (0.7%), those who reported low impact 1 (0.2%) and high impact 1 (0.2%). On sources of solid waste/sewage problems, those who stated waste from else where being dumped in the area totaled 2 (40.0%), accumulation/missed collection 2 (40.0%), while 1 (20.0%) stated local factories.

- On the problem of foul smelling water sources, 3 respondents (0.6%) reported being affected, with moderate impact reported by 1 (0.2%), high impact 1 (0.2%) and highest impact 1 (0.2%). As for the sources of foul smelling water, household sewage discharge was stated by 2 (66.7%) and sewage discharge from factories by 1 (33.3%).

- On drainage/floodwater problem, 12 respondents (2.8%) reported being affected. Of this, 4 (0.9%) reported moderate impact, 4 (0.9%) reported highest impact, 2 (0.5%) reported least impact and 2 (0.5%) reported low impact. As for the sources of drainage/floodwater problem, 6 (50.0%) stated heavy rain, 5 (41.7%) stated drainage failure, 1 (8.3%) stated other cause.

- On traffic problem, 17 respondents (4.0%) reported being impacted. Of this, those who reported high impact totaled 7 (1.6%), those who reported low impact 4 (1.0%), moderate impact 3 (0.7%), least impact 2 (0.5%), and highest impact 1 (0.2%). As for the sources of traffic problems, 14 (82.3%) stated excessive number of vehicles, 2 (11.8%) stated traffic violations, and 1 (5.9%) stated poor road conditions.

- On odor problem, 4 respondents (0.9%) reported being affected. Of this, 3 (0.7%) reported moderate impact, 1 (0.2%) reported low impact. As for sources of odor, 2 (50.0%) stated causes they did not specify, 1 (25.0%) stated uncollected solid waste, and 1 (25.0%) stated vehicle exhaust fumes.

- On drinking - utility water shortages, 1 respondent (0.2%) reported being affected, with 1 (0.2%) reporting being moderately impacted by the shortage of drinking water.

- Utility water shortage stated to be due to lack of rainfall by 1 respondent (100.0%)

- On vibration problems, 4 respondents (0.9%) reported being affected, with highest impact reported by 2 (0.5%), moderate impact by 1 (0.2%) high impact 1 (0.2%). As for the sources of vibration problems, 4 respondents (100.0%) stated traffic/vehicles.

Table 3.8-72 Information on hardship/disturbance based on current environmental conditions from respondents of households in the NEF < 30 area extending to the study area perimeter

Hardship/disturbance from current environmental conditions	Not affected Percentage	Not affected Percentage	Affected (percentage)				
			Least	Low	Moderate	High	Highest
1) Noise	53.9	46.1	3.3	6.1	22.4	11.0	3.3
2) Dust/soot	52.3	47.7	2.8	5.4	23.1	12.9	3.5
3) Solid waste/sewage	98.9	1.1	0.0	0.2	0.7	0.2	0.0
4) Wastewater	99.4	0.6	0.0	0.0	0.2	0.2	0.2
5) Drainage/floodwater	97.2	2.8	0.5	0.5	0.9	0.0	0.9
6) Traffic conditions	96.0	4.0	0.5	1.0	0.7	1.6	0.2
7) Odor	99.1	0.9	0.0	0.2	0.7	0.0	0.0
8) Drinking water-tap water shortage	99.8	0.2	0.0	0.0	0.2	0.0	0.0
9) Vibration	99.1	0.9	0.0	0.0	0.2	0.2	0.5

The number of household vehicles reported by the respondents totaled 667 motorcycles (61.6%) and 399 four-wheeled automobiles (36.9%), and others, such as bicycles, tractors, 16 (1.5%). The highways regularly used by respondents included Sukhumvit Road (passing in front of U-Tapao International Airport), used by 337 respondents (49.7%); Highway 331 Sattahip-Khao Hin Son used by 138 respondents (20.4%); Highway 332, Sattahip-Sam Nak Thon used by 64 respondents (9.4%); and Phala Road used by 59 respondents (8.7%). Others, such as Highways 36, 3376 (Sukhumvit-Ban Chang) was used by 42 (6.2%) and Highway 3126 linking the entry point to U-Tapao International Airport and Juk Samet Port by 38 (5.6%). The top 3 reasons for commuting were: for business reported by 263 respondents (31.3%), for work 244 (29.0%), and tourism 149 (17.7%).

When asked about the impact on travel by road networks around U-Tapao International Airport, 400 respondents (93.5%) reported no impact, 21 (4.9%) reported moderate

impact, 4 (0.9%) reported high impact, 3 (0.7%) reported low impact. The top 3 impacts were traffic congestion reported by 22 (81.5%), increase number of accidents by 3 (11.1%), travel inconvenience reported by 1 (3.7%) and 1 respondent (3.7%) declined to provide information. When asked about how often they used U-Tapao International Airport, 361 respondents (84.3%) said they never used the airport, while 67 (15.7%) reported having used the airport.

On how convenient it was for respondents to travel to U-Tapao International Airport without using a personal car, 423 respondents (98.8%) declined to answer, 3 (0.7%) reported moderate convenience, and 2 (0.5%) reported inconvenience. Details are as shown in **Appendix 3–10.**

Section 5 Public Health Data

Local public health data as provided by respondents: 304 (71.0%) reported that at least one member of their household had health problems and 124 (29.0%) indicated that no member of their household had been sick. The top 3 common illnesses reported by respondents were colds or respiratory infections reported by 277 respondents (50.9%); followed by skin disease and allergies by 123 (22.5%); and others, such as heart condition, diabetes, hypertension, kidney, thyroid diseases, etc., by 63 (11.6%).

On healthcare services in the area as reported by respondents, when someone in the household was sick (respondents were asked to check all that apply), 331 (65.2%) said they went to public health facilities, 156 (30.7%) purchased over-the-counter medicines, 17 (3.3%) preferred self-healing, and 4 (0.8%) went to a private hospital.

In the past year to date, most respondents 425 (99.3%) reported that none of the members of their household had any mental health problems, 3 respondents (0.7%) reported that someone in their household had a mental problem. All of the mental problems were attributed to mental stress. All 3 respondents (100.0%) who reported mental problem in the household said they did not know the cause of such mental problem but one respondent (33.3%) attributed the mental problem to anxiety. In the case of mental problems, 2 respondents (66.7%) said they expect the mental problem to self-heal, while 1 (33.3%) said they see a psychiatrist or therapist.

Regarding hearing problems, 426 (99.5%) respondents reported that no one in their household had any hearing problems and 2 (0.5%) reported at least one member of household having a hearing problem. As for the likely causes of hearing problems, the hearing issue was attributed to an accident by 1 respondent (50.0%) and to age-related hearing problems by 1 respondent (50.0%).

Most respondents 397 (99.3%) reported no problems using local healthcare services and 3 (0.7%) reported some problems. As for causes of problems, all 3 respondents (100.0%) said the health facility was too far away from where they lived.

On disease control and health promotion activities in the community, 363 respondents (84.8%) reported not being aware of any such activities and 65 (15.2%) said there were disease control and health promotion activities, such as prevention of dengue fever, anti-drug campaign, anti-rabies campaign, screening tests for cervical cancer, physical fitness promotion in the community,

etc. When asked about their participation in such activities, 363 respondents (84.8%) reported not having participated in those activities while 65 (15.2%) said they had participated. Details are as shown in **Appendix 3–10**.

Section 6 Accident, Public Disaster, and Public Safety Data

On the most common accidents in the community, 41 respondents (9.6%) named road accidents, which were attributed to speeding, recklessness and drowsy driving by 24 (58.5%), and unknown causes by 17 (41.5%). All 428 respondents (100.0%) reported not having been in an accident.

On participation in joint emergency response drills with local agencies, all 428 respondents (100.0%) reported not having participated at all. They also said they did not know how to report emergency in case of an aviation accident. Details are as shown in **Appendix 3–10.**

Section 7 Environmental Health Data

On sources of drinking water, 423 respondents (98.8%) said they purchased bottled drinking water, 4 (1.0%) reported drinking tap water, and 1 (0.2%) drank rainwater. On quantity and quality of drinking water, 427 respondents (99.8%) reported not having any problem and 1 (0.2%) reported having problems, but did not say what problem.

On sources of water for utilization, 409 (95.6%) reported using tap water, 12 (2.8%) used shallow well, and 7 (1.6%) used water from artesian well. On quantity and quality of water, 303 (70.8%) reported no problem and 125 (29.2%) reported problems such as cloudy water, sediments, and the water appearing yellow, black, and red, and having a metallic smell.

On air quality, all 428 respondents (100.0%) reported no problems.

On management of wastewater from household utilization, 362 respondents (84.6%) said wastewater from their household was discharged into drainage ditch or public drainage pipe, 59 (13.8%) discharged into the ground, 4 (0.9%) installed a grease trap, and 3 (0.7%) reported discharged into a wastewater treatment system.

On management of wastewater from household toilets, 282 respondents (65.9%) said wastewater from their household toilet was discharged into septic tanks which was occasionally pumped out for disposal, 100 (23.4%) said they installed mound septic system, and 46 (10.7%) installed ready-made septic tank.

On solid waste disposal, 426 respondents (99.5%) said they placed solid waste into provided containers for collection by the SAO, municipality or district office, while 2 (0.5%) said they disposed of solid waste by open burning on the household grounds.

On how satisfied they were with their living environment, 257 respondents (60.0%) expressed moderate level of satisfaction, 152 (35.5%) said they were very satisfied, 11 (2.5%) said low level of satisfaction, while 9 (2.0%) expressed dissatisfaction. Details are as shown in **Appendix 3-10**.

Section 8 Awareness of Information and Public Relations

Awareness of project information: 122 respondents (28.5%) said they had received project information, in which the top 3 sources comprised a neighbor or acquaintance, as stated by 285 (68.2%); from project staff or the RTN personnel, by 61 (14.6%); and from the internet/project website, by 33 (7.9%). Respondents who reported first hearing of the project from this interview totaled 306 (71.5%). A total of 254 respondents (59.3%) said additional publicity/public relations were needed while 174 (40.7%) said there was no need for further publicity or information dissemination.

Additional information that respondents needed: (Respondents were asked to check all that apply on this matter) 336 respondents (78.4%) said they would like to find out more about progress status of studies of the project, 87 (20.3%) wanted to know about public participation activities, and 5 (1.3%) declined to provide information.

On appropriate format or method for publicizing project information: (respondents were asked to check all that apply) 183 (42.8%) wanted project information document delivered to their home, 105 (24.5%) preferred leaflets, publicity posters or signboards, and 56 (13.1%) wanted to attend briefing meetings.

Opinions of respondents on project developments: In the opinion survey of households in the NEF < 30 area extending to the study area perimeter conducted using questionnaires in, which 428 respondents were interviewed, it was found that 422 (98.6%) agreed with overall project and 5 (1.2%) offered no comment, stating they did not have enough information or saw no connection with or did not think they would ever use U-Tapao International Airport, while 1 (0.2%) disagreed with the development of the project, reasoning that they did not live near or see any use for the airport, as shown in **Figure 3.8-**20.

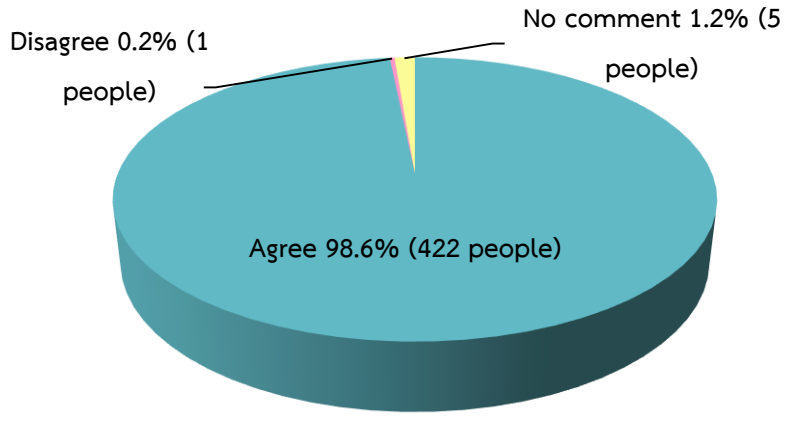


Figure 3.8-20 Opinions on project developments from respondents of households in the NEF < 30 area extending to the study area perimeter

Section 9 Opinions and Feedback on the Project

Construction Phase

According to survey of opinions on impacts of the construction phase of the project, 340 respondents (79.4%) said they were unlikely to be impacted, 70 (16.4%) said they expected positive impacts, 14 (3.3%) expected negative impacts, and 4 (0.9%) said they expected both positive and negative impacts.

On likely impacts of the construction phase of the project (respondents who expected positive impacts were asked to check all that apply), economic impacts were selected by 70 respondents (70.7%), social impacts by 18 (18.2%) and environmental by 10 (10.1%). As for likely negative impacts, environmental impact was selected by 16 (76.0%), economic impact by 1 (4.8%), social impact by 1 (4.8%), and health impact by 1 (4.8%). Details are as shown in **Table 3.8-**73.

Operation Phase

According to opinions on impacts of the operation phase of the project, 246 respondents (57.5%) said they were unlikely to be impacted, 167 (39.0%) said they expected positive impact, 14 (3.3%) expected both positive and negative impacts, and 1 (0.2%) expected negative impacts.

For respondents expecting to be impacted by the operation phase of the project (respondents were asked to check all that apply), on positive impacts, economic impact was mentioned by 91 (43.3%), social by 76 (36.2%), environmental by 34 (16.2%), and health by 6 (2.9%). On negative impacts, social impact was mentioned by 12 (48.0%), economic by 2 (8.0%) and environmental by 2 (8.0%). Details as shown in **Table 3.8-**73.

Table 3.8-73 Opinions on the project in construction phase and operation phase from respondents of households in the NEF < 30 area

Impact Issues	Construction Phase				Operation Phase			
	Positive		Negative		Positive		Negative	
	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage
1.Economic (Positive: employment, income distribution, growth, trade, tourism promotion, investment, air transportation, career, income growth, businesses in community, trade in construction materials, local tax revenue. Negative: increased consumption of fuel and increased fuel costs from traffic congestion).	70	70.7	1	4.8	91	43.3	2	8.0
2. Social (Positive: working in the local area, more time to spend	18	18.2	1	4.8	76	36.2	12	48.0

Table 3.8-73 Opinions on the project in construction phase and operation phase from respondents of households in the NEF < 30 area

Impact Issues	Construction Phase				Operation Phase			
	Positive		Negative		Positive		Negative	
	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage	Number (Respondent)	Percentage
with family, social changes, less travel time, travel safety. Negative: changes in lifestyle and wellbeing, unable to use existing roads, arrival of outside workers could bring crime problems).								
3. Environmental (Positive: utilization of previously neglected areas, improved land use, traffic, transportation, energy saving. Negative: wastewater, flooding, traffic congestion, dust, road damage, hauling of construction materials, more accidents from increased transportation and higher traffic volumes, impacts from noise, fumes from emissions, consumption of water, electricity, waste, impact on scenery).	10	10.1	16	76.0	34	16.2	2	8.0
4. Health (Positive: more opportunities for medical care from various health facilities due to community prosperity. Negative: loss of hearing, stress, anxiety, sleeplessness, headache, allergies).	0	0.0	1	4.8	6	2.9	0	0.0
5. No comments	1	1.0	2	9.6	3	1.4	9	36.0
Total	**99**	**100.0**	**21**	**100.0**	**210**	**100.0**	**25**	**100.0**

Opinions on the draft environmental and health impact prevention and resolution measures in the construction phase and operation phase are as follows:

Construction Phase

The opinions on the adequacy of the draft environmental impact prevention and resolution measures in addressing main impacts of the project in the construction phase are as detailed in **Table 3.8-**74, summarized as follows:

All 428 respondents (100.0%) stated that the draft measures had adequate coverage for noise, vibration, air quality (dust), surface water/seawater/marine ecology, terrain ecology, waste management, transportation, economic, social, and public health (health).

Table 3.8-74 Opinions on draft environmental impact prevention and resolution measures in the construction phase from respondents of households in the NEF < 30 area extending to the study area perimeter

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	428	**100.0**	0	0.0	0	0.0	428	**100.0**
2. Air quality (dust)	428	**100.0**	0	0.0	0	0.0	428	**100.0**
3. Surface water quality/seawater/ marine ecology	428	**100.0**	0	0.0	0	0.0	428	**100.0**
4. Terrain ecology	428	**100.0**	0	0.0	0	0.0	428	**100.0**
5. Waste management	428	**100.0**	0	0.0	0	0.0	428	**100.0**
6. Transportation	428	**100.0**	0	0.0	0	0.0	428	**100.0**
7. Economic and social	428	**100.0**	0	0.0	0	0.0	428	**100.0**
8. Public health (health)	428	**100.0**	0	0.0	0	0.0	428	**100.0**

Opinions on the adequacy of the draft environmental impact prevention and resolution measures in addressing the main impacts of the project in the operation phase, as detailed in **Table 3.8-**75 **are summarized as follows:**

All 428 respondents (100.0%) stated that the draft measures had adequate coverage for noise, vibration, air quality (dust), surface water/seawater/marine ecology, terrain ecology, waste management, transportation, economic, social, relocation and replacement of assets, and public health (health).

Table 3.8-75 Opinions on draft environmental impact prevention and resolution measures in the operation phase from respondents of households in the NEF < 30 area extending to the study area perimeter

Draft Environmental Impact Prevention and Resolution Measures	Adequate		Inadequate		No comments		Total	
	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage	Number (people)	Percentage
1. Noise and vibration	428	**100.0**	0	0.0	0	0.0	428	**100.0**

2. Air quality (emissions and volatile organic substances)	428	**100.0**	0	0.0	0	0.0	428	**100.0**
3. Surface water quality/seawater/ marine ecology	428	**100.0**	0	0.0	0	0.0	428	**100.0**
4. Terrain ecology	428	**100.0**	0	0.0	0	0.0	428	**100.0**
5. Waste management	428	**100.0**	0	0.0	0	0.0	428	**100.0**
6. Transportation	428	**100.0**	0	0.0	0	0.0	428	**100.0**
7. Economic and social	428	**100.0**	0	0.0	0	0.0	428	**100.0**
8. Property relocation and replacement	428	**100.0**	0	0.0	0	0.0	428	**100.0**
9. Public health (health)	428	**100.0**	0	0.0	0	0.0	428	**100.0**

When asked about respondents' concerns about the project, it was found that 422 (98.6%) had no concerns, 4 (0.9%) expressed high level of concern, 2 (0.9%) had moderate concerns.

Opinions on the overall draft measures: All 428 respondents (100%) were of the opinion that overall the draft environmental and health impact prevention and resolution measures during the construction phase and operation phase had adequate coverage. Details are as shown in **Table 3.8-**76 and **Figure 3.8-**21.

Table 3.8-76 Opinions on the overall draft environmental and health impact prevention and resolution measures during the construction phase, and operation phase from households in the NEF < 30 area extending to the study area perimeter

Opinion	Number (people)	Percentage
Adequate	428	100.0
Inadequate	0	0.0
Total	**428**	**100.0**

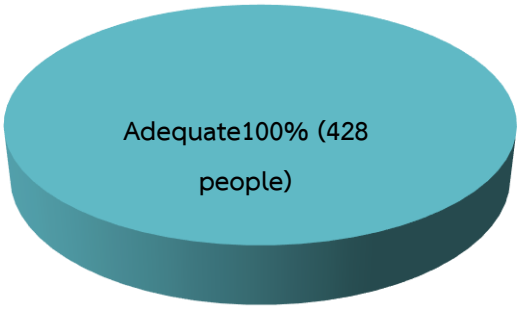


Figure 3.8-21 Opinions on the overall draft environmental and health impact prevention and resolution measures in the construction phase and operation phase from respondents of households in the NEF < 30 area extending to the study area perimeter

Opinions and feedback: Respondents offered opinions and feedback on the implementation of the Runway and Taxiway 2 Construction Project, U-Tapao International Airport, as follows:

- Request that meetings be organized to clarify project details and public participation.
- Request regular meetings between the project owner and community.
- Public awareness of the project remains low among the communities. More publicity activities, such as handing out leaflets about the project, should be implemented.
- Strict environmental protection measures should be implemented.
- We have confidence in the project's measures to control and mitigate impacts but would like reassurance that they will be consistently implemented.
- We would like the project to reach out more to the communities.

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