

Evaluation of Helicopter Services in North Eastern Region of India

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Abstract

The Helicopter Services in North Eastern Region of India was introduced in 1992-93 to provide connectivity to common passengers to remote areas in the region and with the rest States and UTs of India at affordable cost and to evacuate people during natural calamities and medical emergencies. Presently, the helicopter services are operational in seven NE States, namely Arunachal Pradesh (1995), Sikkim (1998), Meghalaya (1999), Tripura (2002), Nagaland (2007), Mizoram (2012), and Manipur (2018). Objectives of the paper is to examine the efficiency and usefulness of the Helicopter scheme in the North East region; to find out the extent to which the scheme has facilitated connectivity for different layers of end users; and to identify the key bottlenecks and challenges faced during implementation of the scheme. With positivist frame of evaluation, both quantitative and qualitative research methods have been used for data collection. The study has been conducted in seven states and a total of 384 respondents were sampled. During the period 2016-17 to 2018-19 the budget sanctioned by the MHA for the scheme is Rs. 86 crore, Rs. 86 crore and Rs. 90 crore, respectively which have been fully utilized by the State Governments. During 2019-20, Rs.100 crore has been sanctioned and the entire amount has been fully utilized. The budget amount was reduced to Rs. 42 core in the year 2020-21. From 2016-17 to 2019-20, the overall efficiency in North Eastern Region has seen a positive trend, although, it declined in 2018-19 due to a significant decline in the number of passengers in Nagaland and Sikkim despite a marginal decline in the input variable, i.e. number of flying hours. Among the sampled beneficiaries, women participate 22 per cent, SC represent 24 percent and ST and OBC represent 31 and 12 per cent respectively. This shows that the scheme is inclusive. In addition, the flying hours are optimally utilized and scheme caters the designated objectives.

Keywords: Helicopter, Infrastructure, Transport, North East, SDG, Evaluation, India

Introduction

Historically, the North-Eastern (NE) States are inaccessible due to its strategic location which has difficult terrain, tropical climate and about 65% of its geographical area as forest cover. This aggravated after severing of East Pakistan, now Bangladesh from India. The only narrow

land passage which link NE States to mainland India is through the chicken neck in Siliguri corridor. Following is the overview of state wise population, area, density of population, percentage share of STs in total population. High percentage of ST population can be seen in all NE States.

Table 1: Overview of North East Area and Population

SI No	States	Population (as per Census 2011)	Area (Sq Km)	Population (%)	Area (%)	Density of Population (per Sq Km)	% STs in State to total population of State	% STs in the State to total ST population in India
1	Arunachal Pradesh	13,83,727	83,743	0.11	2.55	17	68.8	0.9
2	Assam	3,12,05,576	78,438	2.58	2.39	398	12.4	3.7
3	Manipur	28,55,794	22,327	0.24	0.68	115	40.9	1.1
4	Meghalaya	29,66,889	22,429	0.25	0.68	132	86.1	2.4
5	Mizoram	10,97,206	21,081	0.09	0.64	52	94.4	1
6	Nagaland	19,78,502	16,579	0.16	0.50	119	86.5	1.6
7	Sikkim	6,10,577	7,096	0.05	0.22	86	33.8	0.2
8	Tripura	36,73,917	10,486	0.30	0.32	350	31.8	1.1
9	Total NE	4,57,72,188	2,62,179	3.78	7.97	173	56.83	12
10	All India	1,21,08,54,977	32,87,263	-	-	382	8.6	

Source: Census of India

The NE region, however, has few airports accessible to limited number of locations. Lokpriya Gopinath Bordoloi International Airport in Guwahati is the gateway to NE, which is very well connected to rest of States and UTs of India and to several international cities. Other airports such as Tuting & Teju Airports in Arunachal Pradesh, Lilabari, Dibrugarh, Jorhat, Tejpur, Silchar & Rupshi Airports in Assam, Dimapur airport of Nagaland, Bir Tikendrajit airport in Manipur, Lengpui airport in Mizoram, Maharaja Bir Bikram & Kailashahar airports in Tripura, Shillong airport in Meghalaya, Pakyong airport in Sikkim are smaller airports, mostly of strategic significance with limited passenger traffic.

Nevertheless, the region has poor inter and intra state connectivity resulting in low socio-economic development and feeling of alienation. Due to lack of development, fringe elements used to get alienated in the international borders with China, Myanmar & Bangladesh. In order to scale-up and accelerate economic, educational, health, social & other developmental indicators, the scheme of Helicopter Services in North East was kick-started in the year 1992-93. The scheme became operational in Arunachal Pradesh since 1995, Sikkim since 1998, Meghalaya since 1999, Tripura since 2002, Nagaland since 2007, Mizoram since 2012, Manipur since 2018. The scheme aims at providing affordable passenger transport in NE region, evacuation during natural calamities and for urgent medical needs etc.

The scheme is aligned with the objectives of the 2030 Agenda for Sustainable Development Goals. In the broad

canopy, the Scheme relates with the SDG Goal number 9.1 and 10.7. SDG number 10.7 is linked to the objective of facilitating orderly, safe, regular and responsible mobility of people through the implementation of well-planned policies and SDG goal number 9.1 of developing quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all. The scheme also leads to enhancement of global partnership for sustainable development is complemented by a multi-stakeholder partnership through mobilizing the shared knowledge, expertise, technology, and financial resources. The scheme intends to create effective commutation based on knowledge, expertise and financial resources. As such, armed with the vision to facilitate people in emergency

The objectives of the study are to examine the efficiency and usefulness of the Helicopter scheme in the North East region; to find out the extent to which the scheme has facilitated connectivity for different layers of end users; and to identify the key bottlenecks and challenges faced during implementation of the scheme in the North East Region,

Data and Methodology

The evaluation made use of both primary and secondary data for the assessment of the scheme's goals, processes, and outcomes. Secondary information in the form of Scheme Budget, particularly actual budget from

the Ministry of Home Affairs was obtained. As the helicopter service in north east scheme is intended for the remotest beneficiaries of a sensitive border region, the appropriateness of the scheme and coverage are important factors. To gauge the scheme outcomes, the identified stakeholders were contacted to elicit their responses on the helicopter services in the north east region. The methodology of the evaluation of the scheme consisted designing of the questionnaires, interview schedule, focus group discussions and observation. The

multiple indicators pertaining to the scheme evaluation have been taken into account as to gauge the obvious impact of the scheme on the beneficiaries. The sample size of target group has been drawn in such a way that it represented the population. However, to effectively analyse the scheme outcome on parameters designed, a proxy indicator (i.e. percentage of passengers) has aptly been used by state. By taking up a 95% of confidence level and 5% error margin, a total of 384 respondents were sampled. The sample details for each state are given as under:

Table 2: Sample Size of Study

Sl. No.	State	Total no. of passengers from 2016-17 to 2019-20	Percent Share of states in terms of total passengers of all states	State-wise Sample Size
1.	Arunachal Pradesh	69219	37.83	145
2.	Manipur	9185	5.02	19
3.	Meghalaya	7954	4.35	17
4.	Mizoram	44139	24.12	93
5.	Nagaland	26419	14.44	55
6.	Sikkim	23512	12.85	49
7.	Tripura	2553	1.39	6
Total		182981	100	384

Source: Author's computation

Budgetary allocation and expenditure pattern of the scheme

During the period from 2016-17 to 2018-19 the budget sanctioned by MHA for the scheme is Rs. 86 crore, Rs. 86 crore and Rs. 90 crore, respectively which has been fully utilized by the State Governments. During 2019-20, Rs.100 crore has been sanctioned and the entire amount has been fully utilized. The budget amount was reduced to Rs. 42 core in the year 2020-21 (MHA, 2021). On the basis of past performance, the proposed budget for the scheme is Rs. 360 crore for the period 2021-22 to 2023-24.

Table 3: Expenditure Pattern under the Scheme across States

(Rs. crore)				
State	2016-17	2017-18	2018-19	2019-20
Arunachal Pradesh	26.24	23.18	50.16	42.52
Meghalaya	5.22	17.74	8.15	4.09
Mizoram	6.68	11.29	8.19	3.86
Nagaland	23.04	11.22	5.9	6.7
Sikkim	4.87	6.11	2.73	2.72
Tripura	9.81	8.12	6.96	4.26

Manipur	0	0	0	1.23
MHA	10.2	8.31	6.49	5.99
Total	86	86.00	90.00	100.00

Source: MHA

Efficiency and usefulness of the Helicopter scheme

The North East (NE) region due to its physiographical limitations has difficult connectivity to the far-fetched areas and this is where the objective of Helicopter services in NE is to be fulfilled in providing connectivity in remote areas of NE region. The scheme intends to gear-up air connectivity of NE to rest of India. The Eastern Himalaya takes a sharp turn on the Indo-Myanmar border. The NE region has rough topography and is a mega earthquake prone zone caused by active fault planes beneath formed by the convergence of three tectonic plates viz. India Plate, Eurasian Plate and Burma Plate. As a result of frequent calamities and harsh geography, there are emergency situations such as evacuation during floods, earthquakes, landslides, insurgent activities etc. and these pertain to immediate medical attention. To overcome the aforementioned challenges in NE Region, the Ministry of Home Affairs has allocated budget to

six NE states initially and, later included Manipur in 2018. The NE states have been availing the services of the scheme to reach remote border areas and this has provided an alternative i.e faster and deeper connection to the people. The region is endowed with vast natural resources in terms of forests, biological diversity, and hydroelectricity potential; nevertheless, it has remained

largely underdeveloped. Both poor infrastructure and limited connectivity within the region are regarded as key constraints to the growth of NE. The utilisation of these services according to the state-wise expenditure, number of passengers using the service and the flying hours utilised has been tabled below:

Table 4: Expenditure and flying hours utilised

Year	State	Arunachal Pradesh	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	Manipur	MHA	Total
2016-17	AE	26.24 (30.49)	5.22 (6.07)	6.68 (7.76)	23.04 (26.77)	4.87 (5.66)	9.81 (11.40)	0 (0)	10.2 (11.8)	86.06 (100)
	Passenger	7749 (23.45)	2385 (7.21)	9504 (28.76)	6268 (18.97)	6280 (19.01)	850 (2.57)	0 (0)		33036 (100)
	Flying Hours	704 (17.54)	850 (21.18)	715 (17.81)	879 (21.90)	625 (15.57)	240 (5.98)	0 (0)		4013 (100)
2017-18	AE	23.18 (26.96)	17.74 (20.64)	11.29 (13.13)	11.22 (13.05)	6.11 (7.11)	8.12 (9.45)	0 (0)	8.31 (9.67)	85.97 (100)
	Passenger	17174 (37.01)	2072 (4.46)	11515 (24.81)	7732 (16.66)	7227 (15.57)	681 (1.46)	0 (0)		46401 (100)
	Flying Hours	1686 (32.76)	766 (14.88)	899 (17.46)	846 (16.43)	709 (13.77)	240 (4.66)	0 (0)		5146 (100)
2018-19	AE	50.16 (56.63)	8.15 (9.20)	8.19 (9.25)	5.9 (6.66)	2.73 (3.08)	6.96 (7.86)	0 (0)	6.49 (7.33)	88.58 (100)
	Passenger	22863 (45.64)	2417 (4.82)	10780 (21.52)	5107 (10.19)	5048 (10.07)	539 (1.07)	3334 (6.65)		50088 (100)
	Flying Hours	2121 (37.0)	766 (13.36)	889 (15.50)	793 (13.83)	608 (10.60)	240 (4.18)	316 (5.51)		5733 (100)
2019-20	AE	42.52 (59.58)	4.09 (5.73)	3.86 (5.41)	6.7 (9.39)	2.72 (3.81)	4.26 (5.97)	1.23 (1.72)	5.99 (8.39)	71.37 (100)
	Passenger	21434 (40.10)	1080 (2.02)	12340 (23.08)	7312 (13.68)	4957 (9.27)	483 (0.90)	5851 (10.95)		53457 (100)
	Flying Hours	2048 (34.87)	631 (10.74)	1085 (18.47)	941 (16.02)	478 (8.14)	240 (4.09)	450 (7.66)		5873 (100)

Note: AE = Actual Expenditure (In Rs. Crore)

Parenthesis contain percentage share

Source: Author's computation

As the Total Aggregate Expenditure under the scheme changes across the years, yet there is an increase in Total Flying Hours, which has pushed the number of passengers using the facility by a notable amount. Among all the North-eastern states, Arunachal Pradesh has spent astoundingly high over the years and has led to the gearing up the highest number of beneficiaries using the helicopter services. The mountainous ranges and sub-

mountainous terrain of Arunachal Pradesh has played an instrumental role in the passenger increase over the years. In the year 2019-20, the Aggregate Expenditure by other North-eastern states differ abysmally, but the number of passengers using the services and the number of flying hours differ considerably across the states. Mizoram, despite spending just 5.81% of the total expenditure of North-Eastern states, has the second highest share

in number of passenger using the helicopter services (23.08%) and the number of flying hours (18.47%).

Coverage of beneficiaries

The user of Helicopter Scheme has been mostly in urban area, which is 58.6%, because of availability of infrastructure and more than two-third users are males. The reason for inclination of services being availed by the urban male population is due to presence of more trading centers in urban areas which is mostly handled by males. Sikkim has highest number of users from rural area, which is 75%, followed by Arunachal Pradesh, 65.80% and then by Manipur, 52.38%. The female beneficiaries are highest in Sikkim, which is 56.25% and almost one-third of the female users are from Mizoram. Arunachal Pradesh and Meghalaya differ marginally in case of female users availing the scheme. The availability of the helipads and airport infrastructure in urban area is the biggest reason for people using the facility are mostly from urban towns.

Table 5: Location and gender of beneficiaries

States	Location		Gender	
	Rural	Urban	Female	Male
Arunachal Pradesh	25 (65.79)	13 (34.21)	11 (28.95)	27 (71.05)
Assam	74 (48.05)	80 (51.95)	29 (18.83)	125 (81.17)
Manipur	11 (52.38)	10 (47.62)	2 (9.52)	19 (90.48)
Meghalaya	23 (21.9)	82 (78.1)	25 (23.81)	80 (76.19)
Mizoram	6 (50)	6 (50)	4 (33.33)	8 (66.67)
Nagaland	0 (0)	14 (100)	2 (14.29)	12 (85.71)
Sikkim	12 (75)	4 (25)	9 (56.25)	7 (43.75)
Tripura	8 (33.33)	16 (66.67)	3 (12.5)	21 (87.5)
Grand Total	159 (41.41)	225 (58.59)	85 (22.14)	299 (77.86)

Note: Parenthesis contains percentage share in total

Source: Author's computation

Social Category of beneficiaries

As per the above table of social category, at least one-third of the users are of general category, followed by scheduled tribes (STs), scheduled castes (SC) and other backward classes (OBCs). Since Arunachal Pradesh has more than 50% of population in ST category and this also explains that the highest numbers of users are from Arunachal Pradesh, followed by Sikkim (50%) and Mizoram (41.67%). For Scheduled Caste (SC), Meghalaya has highest number of users, followed by Manipur and Assam. Assam and Manipur differ marginally in case of OBC category, that is by 0.42%.

Table 6: Social categories of beneficiaries

States	General	OBC	SC	ST
Arunachal Pradesh	9 (23.68)	1 (2.63)	2 (5.26)	26 (68.42)
Assam	51 (33.12)	30 (19.48)	34 (22.08)	39 (25.32)
Manipur	7 (33.33)	4 (19.05)	7 (33.33)	3 (14.29)
Meghalaya	28 (26.67)	6 (5.71)	40 (38.1)	31 (29.52)
Mizoram	4 (33.33)	1 (8.33)	2 (16.67)	5 (41.67)
Nagaland	14 (100)	0 (0)	0 (0)	0 (0)
Sikkim	4 (25)	1 (6.25)	3 (18.75)	8 (50)
Tripura	10 (41.67)	2 (8.33)	5 (20.83)	7 (29.17)
Grand Total	127 (33.07)	45 (11.72)	93 (24.22)	0.99

Note: Parenthesis contain percentage share in total

Source: Author's computation

Source of Information

The greatest source of information even in the remotest corner of North East, to which the helicopter service is extended, is internet. The word of mouth, i.e. through family friends is the second most important source. While it's good that internet is spreading the information, it's not leveraging end user experiences by online reservation facility, online availability of seats, rescheduling, postponement or cancellation of helicopter sorties, mechanism to cancel booked ticket, online payment or online refund. It's sad that an important leg in the supply chain, the travel agent is not integrated into the business. E-/M-Governance and transparency shall encourage participation of travel agencies in this helicopter sector business.

Table 7: Source of information about the service

Family/ Friends	133 (34.64)
Internet	212 (55.21)
Newspaper/ Magazines	12 (3.13)
Other	3 (0.78)
Travel Agency	24 (6.25)
Grand Total	384 (100)

Source: Author's computation

Purpose and Frequency of availing helicopter services

Most of our sample have completed to and fro sorties in the same trip, meaning they haven't faced bad weather and technical snag and hence able to complete their trip entirely by helicopter service. While we understand that weather is most troubling in Arunachal Pradesh,

completing to and from trip by helicopter is least in Nagaland followed by Sikkim. This indicates that, Nagaland and Sikkim have other avenues, i.e. road and railways all weathered connectivity with plenty of conveyances without much hassles. In case of Sikkim, tourist possibly prefer land route one side to enjoy the scenic beauty of the land scape. Mizoram is the remotest among all NE states. It's so rugged, without any valley

and undulating terrain for ease of travel by road, no rail network to the core of the star, it's no wonder that people travelling by helicopter prefer to travel back by the same mode. Besides, sample size is adequate and representative for the state of Meghalaya and Assam representing travel between Guwahati and Meghalaya and Guwahati and Arunachal Pradesh.

Table 8: Purpose of Availing Helicopter Services

States	Evacuation during natural calamity	Medical emergency	Normal Commuting	Other	Travelling for security purpose	Grand Total
Arunachal Pradesh	2 (5.26)	6 (15.79)	30 (78.95)	0 (0)	0 (0)	38 (100)
Assam	2 (1.3)	0 (0)	146 (94.81)	3 (1.95)	3 (1.95)	154 (100)
Manipur	0 (0)	0 (0)	21 (100)	0 (0)	0 (0)	21 (100)
Meghalaya	4 (3.81)	0 (0)	97 (92.38)	2 (1.9)	2 (1.9)	105 (100)
Mizoram	1 (8.33)	2 (16.67)	7 (58.33)	1 (8.33)	1 (8.33)	12 (100)
Nagaland	0 (0)	0 (0)	14 (100)	0 (0)	0 (0)	14 (100)
Sikkim	2 (12.5)	1 (6.25)	13 (81.25)	0 (0)	0 (0)	16 (100)
Tripura	1 (4.17)	0 (0)	23 (95.83)	0 (0)	0 (0)	24 (100)
Grand Total	12 (3.13)	9 (2.34)	351 (91.41)	6 (1.56)	6 (1.56)	384 (100)

Source: Author's computation

Table 9: Frequency of Availing to and Fro Helicopter Services in NE by Beneficiaries

States	No	Yes	Grand Total
Arunachal Pradesh	3 (7.89)	35 (92.11)	38 (100)
Assam	17 (11.04)	137 (88.96)	154 (100)
Manipur	1 (4.76)	20 (95.24)	21 (100)
Meghalaya	5 (4.76)	100 (95.24)	105 (100)
Mizoram	(0)	12 (100)	12 (100)
Nagaland	3 (21.43)	11 (78.57)	14 (100)
Sikkim	3 (18.75)	13 (81.25)	16 (100)
Tripura	1 (4.17)	23 (95.83)	24 (100)

Source: Author's computation

Perception of end users

Nagaland and Manipur are in the same pedestal and from same geography. Therefore, from the sample pooled, we don't see any medical or disaster related travels. The road and rail connectivity to important cities (Dibrugarh) of Assam may be one of the reasons. However, there is a silver lining in Arunachal Pradesh, where there is some use for medical service. In case of Meghalaya, the road connectivity between Shillong or Tura with Guwahati is so good and reliable that, rather than waiting for any medical emergency evacuation by

helicopter, they prefer road. Helicopter service is used mostly for business, tourism and officials in Meghalaya. From commercial point of view, it's heartening that most of the travel in all states is for business, administrative, education and tourism etc. It's to be noted that the travellers from Assam fall under other states helicopter scheme, especially Meghalaya and Arunachal Pradesh. Most of the users revealed that service is unpredictable and not available for general public and this corroborates with view of published sources (Prasad, 2018: InsideNE, 2019; Jha, 2019; Sangno, 2020)

Table 10: Perception of end users on quality of services

States	Ticket booking process	Ticket pricing	Quality of service	Cleanliness of Helicopter	Overall Service Level
Arunachal Pradesh	3.6	3.1	3.6	3.7	4.0
Assam	3.7	2.6	3.5	3.8	3.7
Manipur	3.9	2.5	3.7	3.6	3.7
Meghalaya	3.4	2.9	3.5	4.2	4.0
Mizoram	3.3	2.5	3.8	4.2	4.3
Nagaland	3.4	4.6	4.0	4.3	4.3
Sikkim	3.6	2.7	2.8	3.4	4.5
Tripura	3.6	2.7	3.8	3.6	3.6
Grand Total	3.6	2.8	3.5	3.9	3.9

Source: Author's Computation

The satisfaction level of end users/ travellers in different aspects of availing helicopter service is astounding. The service provider, the locals of NE, possess the reputation of showing great hospitality to mainland Indians and international travellers and empathy to the difficulties of the passengers. The end users are also easily content and show empathy to the service providers, considering the difficulties under which the service provider operates under different limiting conditions. Higher price shall allow more sorties within the same budget. Higher price shall reduce opacity, and official travel, allowing most deserving end users to avail the benefits of the connecting remote India to urban facilities. However, the sample from Arunachal Pradesh and Nagaland rated pricing above 3. Rest rated it above 2.5, but below 3. While the scale of 1 to 5 indicates 1 as least and 5 as best, 2.5 is the optimum. Most of the sample end users have rated each component of service indicators above optimal. E-&M-Governance shall enhance the satisfaction in ticket booking to much higher score. At present samples from all state rate ticket booking above 3 and below 4. The quality of service is rated highly. The government

officials in charge of helicopter service at airport took utmost care in booking, issuing boarding pass, doing COVID clearances, transporting luggage and passengers from security check in to helicopter and repeating the same process at the time of de-boarding. There is a very high rating on the cleanliness of the helicopter by all the sampled end users. The overall rating by end users outweighs the individual components.

Input Use Efficiency

Input use efficiency, also known as the productivity ratio refers to the extra unit of output generated from an additional unit of input. This indicates as to how efficient the input (funds disbursed in the context of the scheme) was in terms of generating the required output (the beneficiaries covered). The efficiency of input use can be computed by taking a simple ratio of output to input. A higher input use efficiency ratio indicates that output is maximized without requiring more of any input values or use of input is minimized while satisfying at least the given output levels.

Table 11: Input Use Efficiency of Flying Hours

Year	Arunachal Pradesh	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	Manipur	North-East
2016-17	11.007	2.806	13.292	7.131	10.048	3.542	0	8.232
2017-18	10.186	2.705	12.809	9.139	10.193	2.838	0	9.017
2018-19	10.779	3.155	12.126	6.440	8.3026	2.246	10.551	8.737
2019-20	10.466	1.712	11.373	7.770	10.370	2.013	13.002	9.102

Source: Author's Computation

In the Input-Use efficiency, Passengers are taken to be the output and the flying hours as input. Now, from 2016-17 to 2019-20, the overall efficiency in North Eastern region has seen a positive trend, although, it declined in 2018-19 due to a significant decline in the number of passengers in Nagaland and Sikkim despite a marginal decline in the input variable, i.e. number of flying hours.

Key-Bottlenecks & Challenges

Booking Mechanism for Helicopter Ride in North East: There's no mechanism of booking a Helicopter ride online in North East and there's no surety that once the ticket is confirmed, helicopter will going to fly. Passenger has to come physically at the respective counters of the Helicopter Service provider for the booking of the tickets. But if booking of tickets become an online process, then people whose ticket got cancelled because of cancellation of Helicopter ride due to bad weather, which is a very frequent process in North East would not be prefer for helicopter ride on the next day, which is the case now. So, booking process of Helicopter ride will be a boon only if there's a certainty of helicopter ride. So, wherever there is a dedicated helicopter for a particular route likewise from Guwahati to Shillong, the certainty of helicopter ride is very high and for such routes, online process of booking tickets will definitely bring more transparency, efficiency, enhances the outreach and reduces the cost.

Audit System: It is observed that payment of excess subsidies have been made to state governments. These excess payments could have been avoided. The MHA may therefore take remedial measures by reviewing the adequacy of the internal control system in vogue and strengthen the system by introduction of an effective check in the accounting software to avoid such instance in future.

Competitive Bidding Process: State Government should follow the competitive bidding process through e-tender for hiring of helicopter operator or it can be done through Central Public Procurement portal of the MHA.

Bill Payment Process: The helicopter operators and the State Governments should reduce the in-ordinate delay in submission of bills. There should be submission of bills by the State Governments to the MHA every month to ensure smooth flow of budget allocation.

Low Budget: Reportedly all the states were of the opinion that allocated budget is less for smooth functioning of the scheme. Some states of NE even suggested for enhance the MHA share of subsidy to 90 per cent, which is the case with most of the centre-sector schemes.

Volatile weather: Weather is most volatile in North East Region for the most of the time of year. There is frequent cancellation of helicopter rides due to bad

weather. As a result sanctioned flying hours are not utilized and there is less number of passengers availing the schemes. Helicopter services providers are obliged to give preference to the passengers whose flights were cancelled on the previous day that's why new passengers would not be able to get the confirmed booking of tickets.

No connectivity in rural areas: Currently, helicopter routes are operational mostly in urban areas that too respective capitals of the states. There is a high demand from the rural population for extending the routes and services in unreached areas of North East.

No Functioning on Sundays: There is no functioning of helicopter services on any routes on Sundays in North East. However, most passengers demand the service on Sundays, being a holiday, so it's convenient for travel on that day. Functioning on Sunday will also lead to utilisation of sanctioned flying hours and increase in number of passengers.

Conclusion and Suggestions

The Helicopter Services Scheme in North East was introduced during the financial year 1992-93 to provide connectivity to common passengers to remote areas in the region and with the rest of India at affordable cost and to evacuate people during natural calamities and medical emergencies. There is a positive relationship between increase in actual flying hours and number of passengers availing the services under the scheme. Number of end users has increased proportionately more than increase in flying hours. Utilization of flying hours, in such difficult terrain, and weather and restriction of defense flying zone is strongly dependent on more number of helicopters. As the sanction of number of helicopters and ceiling hours is decided by MHA, GoI, it's recommended to increase flying hours and helicopters in the states, which are performing reasonably well in ceiling hours use and flying number of passengers. The analysis of states revealed that most inaccessible states and places have performed best in the utilization of the services. E.g. Beneficiaries of Arunachal Pradesh, and Mizoram have immensely benefitted in proportion of passengers flown by the helicopter services.

The Governance and operation of the scheme at the state level is managed by the state government officials. The operator is solely responsible for technical part of the operation and maintenance of the flight. The end user services provided by Government officials, such as enquiry, seat reservation, payment for ticket etc. are done through manual record keeping. Enquiry and advance seat reservation can be done by mobile phone. It seems, there is not much advance ticket booking facilities for common passengers and the helicopter services can be assigned to Government officials in short notice. This

means that, common passengers can only get a chance at the last moment, if the helicopter is not diverted for government officials. Therefore, a transparency in the advance booking system needs to be in place. Online enquiry, booking, payment, AI based chatbots, telephonic call services assisted by interactive voice response (IVR) followed with resolution of the request by customer care representative for the entire NE under one platform can be useful for people planning travel in the entire NE business, adventure sports and tourism tours. Disclosure of available seats in every route should be available to the public online. A robust North East helicopter scheme management system should be developed for smooth and effective implementation of the scheme.

Suggestion for improvement of scheme

Increase in regional connectivity: Most of the remote locations of the State are connected once or twice in a week. Frequency of services may be increased to some strategic locations.

Evacuation during Natural Calamity: Operational cost of requisition of the helicopters for evacuation of marooned people during the natural calamity as well as supply of relief materials due to disruption of road by natural calamity may be entitled under the Subsidy Scheme.

Transportation during medical emergency: Operational cost for requisition of the helicopters for evacuation of patients during medical emergency may be entitled under the Subsidy Scheme.

Alteration in scheme from initial approved plan: More subsidies fare should be charged from students who are commuting for academic reasons and belong to below poverty line and from senior citizens who are commuting for medical treatment and belongs to below poverty line.

Improving the effectiveness and outreach of the scheme: Booking of helicopter ride should be an online process, which will bring more transparency and enhance the outreach of the helicopter scheme.

Infrastructure Gap: Helicopter Booking Services are available either at airport or at helipads, which are located at a very distant places from the main city or habitation and travelling to the booking office in a hilly terrains is quite pain for the local commuters. So, online services will not only save time but also bring the transparency and helps in cost cutting. In most of the North East Region population in India do not prefer using digital transfer of funds, they still rely on the cash transaction system only and the reason behind this is the unavailability of Network for most parts of North East Region that's why digital modes of transactions like paytm, Google-Pay, Phone-Pe, Amazon-Pay, Samsung-

Pay, etc. do not have the reachability to this part of India. If the helicopter ride got cancelled due to some technical fault then the Helicopter operator has to compensate the passenger against the cancellation of ride. To enhance the coverage by adding some new locations like Dirang, Balem, Chambang, Deomali, Raga etc. to maximize the outreach of the services to meet the needs of the people.

Encouraging tourism to the international border areas packages with Helicopter rides (Heli-Tourism): North East Region has immense potential in the civil aviation sector and helicopters can boost tourism in this part of India like it is already been done in Uttarakhand with Char-Dham Yatra package with chopper rides, Jammu & Kashmir with Vaishno Devi Yatra package with chopper ride, etc.

Boosting of Tourism at International Borders help in building infrastructure and last mile connectivity: Boosting Tourism at the international borders will help in the last mile connectivity and building infrastructure. If India can boost such tourism towards its side at India-China border then the last mile connectivity is also possible and building of infrastructure at international borders will be encouraged and justifiable by Indian side. If there will be dedicated helicopter available for cities adjoining the international border likewise for Tawang, Arunachal Pradesh then there will be a considerable amount of tourists movement at India-China border as well, like we have at Wagha, India-Pakistan border, Punjab. And recently many celebrities from Indian film and television industry, politics and other parts also visited Tawang, Arunachal Pradesh but still there's no dedicated helicopter for connecting such cities, which are adjoining with international borders in North East Region.

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