Data Envelopment Analysis of Civic Action Programme in North East India

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Abstract

Civic Action Programme (CAP) is a Central Sector Scheme which is meant for welfare of border population including people residing in North East (NE) region. The study uses Data Envelopment Analysis (DEA) in order to measure the efficiency of four Central Armed Police Forces (CAPFs) implementing CAP in NE Region from the financial year 2015-16 to 2019-20. The empirical findings reveal that the CAPFs conducts programme at 71.21% of overall technical efficiency score i.e. output could be increased up to 28.79% without changing the input. Total programmes have more than doubled in the last five years, from 411 during 2015-16 to 842 during 2019-20. The scheme is inclusive in terms of participation of women, SC, ST, OBC and rural coverage. Strength of the programme are: only programme that bridges the gap between civilians and armed forces; promotes humanitarian approach; works in difficult terrain; promotes peace and harmony; receives overwhelming support from civilians; reduces feeling of alienation of inhabitants of border population; and counters false propaganda of anti-peace elements. In addition, the Ministry of Home Affairs may consider to strengthen the scheme further by additional allocation of financial resources coupled with improved outreach, giving more autonomy to ground level CAPFs for selection of programmes, widening the ambit of the programme and including civilians' training for recruitment as part of CAP.

Keywords: Civic Action Programme, Central Armed Police Force, Insurgency, Data Envelopment Analysis, CCR Output-oriented Model, Technical Efficiency.

JEL Classification: C61, C67, D57, D61, J18.

1. Introduction

The Civic Action Programme (CAP) was introduced in the year 2003-04 under the aegis of the Ministry of Home Affairs, Government of India. It is a Central Sector Scheme which is meant for welfare of border population including people residing in North East region. It also aims at upliftment of the border population and transforms the perception of people towards peace and normalcy situations in borderland areas. This programme is implemented by the Development Block/ Office Stations and Border Out-Posts (BOP) of each force. Forces are empowered to decide the priority village/areas within those districts. This programme caters to meet the special developmental needs of the border population who unwantedly and circumstantially become the victim of insurgency by militant activities and India Insurgent Group. Following is the overview of Northeast region:

Table 1: Overview of Northeast Region

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

Source: Census of India

To take the local people of Northeast (NE) region in confidence and boost the image of armed forces, the Home affairs ministry has deployed Army and Central Armed Police Forces (CAPFs) such as Assam Rifles, Border Security Force (BSF), Central Reserve Police Force (CRPF), Indo-Tibetan Border Police (ITBP) and Sahastra Seema Bal (SSB) to conduct CAP. The programmes help in mitigating the hardships by undertaking various welfare/developmental activities such as (i) Repair of community buildings, schools, hospitals, health centers, community halls etc., (ii) Conducting health/medical/dental/veterinary camps to include the provision of medical equipment and stores, (iii) Human Resource Development for border population which includes vocational training, education excursion tours for the students to places of national interest, organized career counseling, training and coaching etc., (iv) Introduction of small projects for improvement and care of livestock, beekeeping, fisheries, agriculture techniques, orchards, forestry carpet and/or handloom weaving, hosiery etc., (v) Improvement of roads/tracks, (vi) Sanitation and hygiene through awareness programmes, extension services and social education, (vii) Drinking water, basic precautions and system of storage, (viii) Development of sources of non-conventional energy, (ix) Development of handicraft and cottage industries, (xi) Assistance at the time of natural calamities, (xii) Distributing water harvesting structures, (xiii) Providing Sports facilities, (xiv) Distribution of transistor, (xv) Pre-recruitment training. Thus, the Civic Action Programme through all these civic action activities has enhanced the sense of security and does welfare among the border populace including people in North East region.

Out of the CAPFs AR, BSF, ITBP and SSB are the 'Border Guarding Forces' while the CRPF is deployed to assist the Civil Administration under the State Governments/ UT Administrations in matters relating to maintenance of Public Order, Internal Security and Counter Insurgency. The CISF provides security and protection to vital installations of national/strategic importance. In addition, National Security Guard (NSG) is a commando force under the Ministry trained for special operations like counter terrorism and anti-hijacking.

Roles and Responsibilities of the above Forces are as under[1]:—

Force	Roles and Responsibilities
AR	Border Guarding (Myanmar Border), Counter Insurgency in North Eastern States
BSF	Border Guarding (Bangladesh and Pakistan Borders), Counter Insurgency, Law and Order
ITBP	Border Guarding (China Border), Security of Important Installations, Counter Insurgency, Law and Order
SSB	Border Guarding (Nepal and Bhutan Borders), Counter Insurgency, Law & Order
CISF	Public Sector Security, Core Sector Security, Law and Order, Counter Insurgency

CRPF	Law & Order, Counter Insurgency
RAF	RAF mandated for maintaining communal harmony in the country
CoBRA	CoBRA mandated for Anti Naxal Operations in LWE affected States
NSG	Anti-Hijacking, Special Operations, Counter terrorism

CAP is generally carried out in districts situated on the international border and inaccessible areas of the NE region which are affected by militancy or Naxalism. The CAP is implemented by the Army, Assam Rifle, BSF, CRPF, ITBP and SSB in all the eight states of North East Region, namely, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

Objectives of the Study

The objectives of the evaluation study are:

1. To examine the structure and efficiency of the Civic Action Programme in North Eastern region,

2. To find out the extent to which the CAP has benefitted different layers of end users,

3. To assess the performance of service of CAP,

4. To identify the key bottlenecks and challenges faced during the implementation of CAP in North Eastern region,

Programmes Implemented by the Armed Forces in NE Region[2]

Under Civic Action Programme, the Armed Forces take up welfare and development projects. The Ministry of Home Affairs spend crores over the years, the forces are trying to improve the standard of living of border population and win their trust, hearts and minds. The focus of Programme is to generate awareness, providing education, women and youth empowerment, infrastructural development and health and veterinary care. Education and national heritage tours outside North East are undertaken to signify the rich heritage and progress of India for the students, youth and opinion makers. In order to fulfil other basic needs like water storage facilities, electrification, providing of toilets in far flung areas the armed forces analyse the areas based upon the suggestions from people in implementing villages. The projects are planned based on a participative model involving the local people, their elected representatives and civil administration. Some of the activities carried as part of Civic Action Programme are namely, Medical Civic Action (MCA), Veterinary Civic Action (VCA), educational and excursion tours, women empowerment, youth empowerment, sports etc. The overall performance of the CAP in the last 5 years is shown in the following table:-

Table 2: Overall Performance of CAP

Year	Implementing Agency	Assam Rifles	CRPF	ITBP	SSB	Total
2015-16	Budgeted Expenditure (Rs. in lakh)	350 (52.24)	150 (22.39)	100 (14.93)	70 (10.45)	670 (100)
	Actual expenditure (Rs. in lakh)	349.14 (52.47)	150 (22.54)	96.29 (14.47)	70 (10.52)	665.43 (100)
	Number of People Benefited	31444 (18.8)	87538 (52.33)	21959 (13.13)	26340 (15.75)	167281 (100)
	Number of Programmes conducted	115 (27.98)	170 (29.26)	96 (23.36)	200 (48.66)	581 (100)
2016-17	Budgeted Expenditure (Rs. in lakh)	350 (52.24)	150 (22.39)	100 (14.93)	70 (10.45)	670 (100)
	Actual expenditure (Rs. in lakh)	348.00 (54.08)	150 (23.31)	75.44 (11.72)	70 (10.88)	643.44 (100)
	Number of People Benefited	32233 (19.67)	66357 (40.49)	17496 (10.67)	47816 (29.17)	163902 (100)
	Number of Programmes conducted	159 (35.33)	173 (27.77)	63 (14)	228 (50.67)	623 (100)

|					
2017-18	Budgeted Expenditure (Rs. in lakh)	550 (63.22)	150 (17.24)	100 (11.49)	70 (8.05)	870 (100)
	Actual expenditure (Rs. in lakh)	550 (63.3)	150 (17.26)	98.91 (11.38)	70 (8.06)	868.91 (100)
	Number of People Benefited	45520 (28.68)	59275 (37.34)	16685 (10.51)	37252 (23.47)	158732 (100)
	Number of Programmes conducted	98 (21.44)	159 (25.81)	180 (39.39)	179 (39.17)	616 (100)
2018-19	Budgeted Expenditure (Rs. in lakh)	330 (41.25)	250 (31.25)	80 (10)	140 (17.5)	800 (100)
	Actual expenditure (Rs. in lakh)	330 (41.3)	250 (31.29)	78.98 (9.89)	140 (17.52)	798.98 (100)
	Number of People Benefited	46720 (28.55)	64215 (39.24)	16250 (9.93)	36460 (22.28)	163645 (100)
	Number of Programmes conducted	158 (32.71)	187 (27.91)	172 (35.61)	153 (31.68)	670 (100)
2019-20	Budgeted Expenditure (Rs. in lakh)	350 (41.18)	270 (31.76)	80 (9.41)	150 (17.65)	850 (100)
	Actual expenditure (Rs. in lakh)	349.24 (41.13)	270 (31.8)	79.81 (9.4)	150 (17.67)	849.05 (100)
	Number of People Benefited	44180 (18.88)	100129 (42.78)	24939 (10.66)	64785 (27.68)	234033 (100)
	Number of Programmes conducted	171 (20.31)	218 (20.57)	211 (25.06)	460 (54.63)	1060 (100)

Note: Parenthesis contain values in percentage

*Source: Data from all CAPF forces and percentages from authors' calculation*

The combined number of Programmes conducted under the Civic Action Programme, has more than doubled in the last 5 years, from 581 programmes during 2015-16 to 1060 programmes during 2019-20. Total number of programmes conducted during 2015-16 to 2019-20 is 3550. This has significant impact on inhabitants residing in internal border areas.

The above table presents the budget allocation and expenditure distribution over the past five years (from year 2015-16 to year 2019-20). Highest budget allocation was done in year 2017-18 i.e. Rs 870 lakhs wherein 63.33% was allocated to Assam Rifles. In the past five years, Assam Rifles has been the major implementing agencies for the scheme which has received more than 40% of the total budget in each year. However, the maximum number of people benefited (2,34,033 people) was in the year 2019-20 wherein 1060 programmes was conducted. In the recent years (from the year 2018-19) the share of CRPF has increased to 31% out of the total budget estimates as well as the actual, however its outreach and the number of people benefitted do not commensurate with the budget increase of 81% (from the year 2017-18 to 2018-19). SSB has been quite active in conducting the programmes. It has conducted maximum number of programs (1220 programmes) vis-à-vis other implementing agencies, over the last five years.
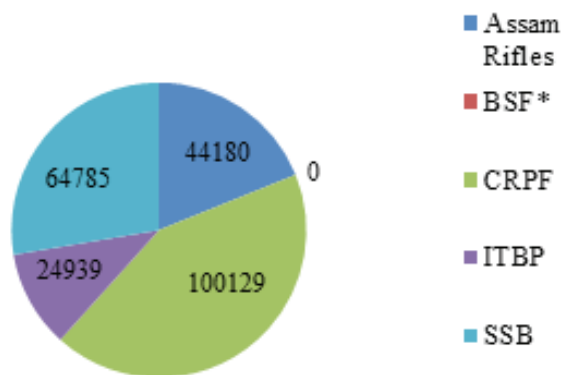
Number of People Benefited (2015-16)
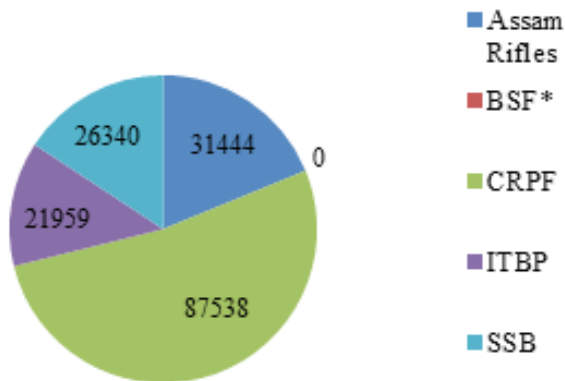
Number of Programmes conducted (2015-16)
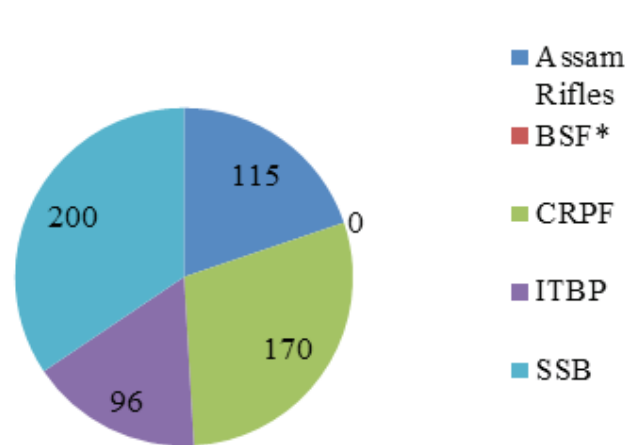
Number of People Benefited (2019-20)

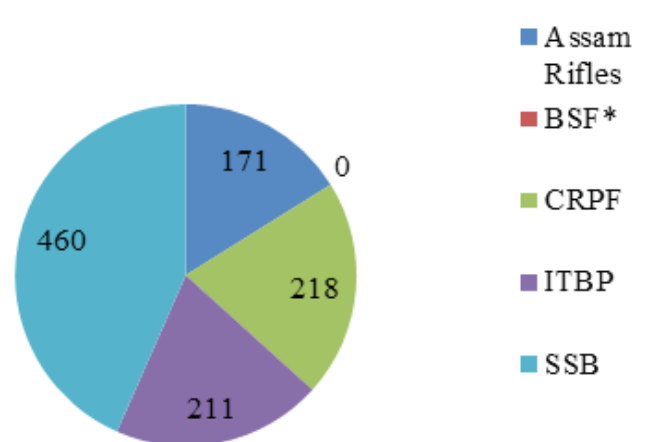
Number of Programmes conducted (2015-16)

Figure 1: Details of Beneficiaries of CAP

The pie chart above shows the comparison between the people benefitted in year 2015-16 and people benefitted in year 2019-20. In the year 2015-16, maximum number of people benefitted was 52.33% through CRPF initiatives; however it reduced to 42.78 percent in the year 2019-20. Whereas, the outreach of SSB has increased from 26340 beneficiaries in the year 2015-16 to 64785 beneficiaries in the year 2019-20.

Figure 2: Number of Programmes Conducted by CAPF

The pie chart above shows the comparison of number of programmes conducted in 2015-16 and number of programmes conducted in 2019-20. Over the last five years, all the implementing agencies have significantly increased the number of programs conducted. Agencies like ITBP and SSB have doubled their number of programmes in the last five years.
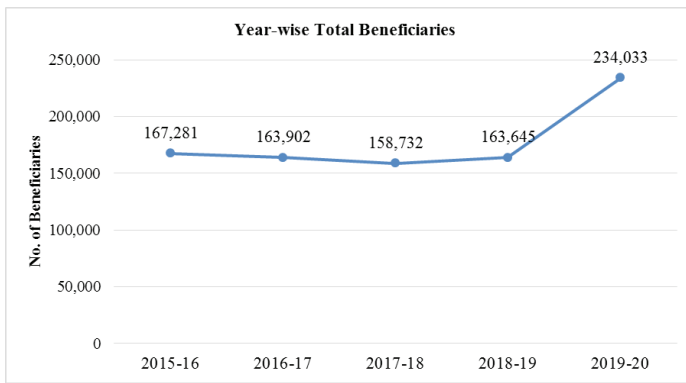
Figure 6: Trend of Number of Beneficiaries

The highest number of beneficiaries were recorded in the year 2019-20 (2.34 lakhs), followed by the year 2015-16 (1.67 lakhs). The fiscal years 2016-17 and 2018-19 recorded almost the same number of beneficiaries (1.64 lakhs) and least number of beneficiaries was observed for the year 2017-18 (1.59 lakhs). The following graph shows the number of beneficiaries for each implementing agency:
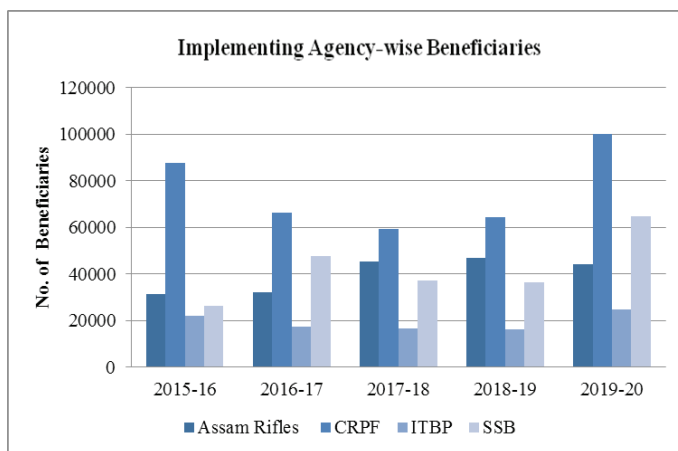

Figure 7: Implementing agency-wise Beneficiaries

CRPF is able to generate highest number of beneficiaries from the programmes and ITBP has the lowest number of beneficiaries each year.

Efficiency of Central Armed Police Forces (CAPFs): A Brief Review of Literature

The United States Army Reserve (USAR) published a literature on a guide to military civic action on October 14th 1969. The idea was developed by the 300th Civil Affairs Group after serving as unit during Berlin crisis in 1961. There exists no literature for efficiency of civic action programme conducted by different armed forces in India but in 'Winning the Peace: The Strategic Implications of Military Civic Action' laid out twelve criteria for successful military civic action, De Pauw and Luz, 1990 show that most criteria were violated in the

U.S. application of military civic action in South Vietnam. They then show how the failure led to a repudiation of military civic action in strategic planning. There are two kinds of approaches to measure the efficient frontier:-

i. Parametric Approach assumes fixed number of parameters to build the model. Some of the frontier approaches to measure efficiency are Stochastic Frontier Analysis, Thick Frontier Approach and Distribution Free Approach.

ii. Non-Parametric Approach assumes that the data distribution cannot be defined in terms of such a finite set of parameters. Data Envelopment Analysis (DEA) and Free Disposal Hull (FDH) are some of the non-parametric approaches to measure efficiency of the producer.

The focus in this paper is on frontier efficiency, or how close the armed forces, implementing the civic action programme in North East Region, are to a *best-practice frontier*. Among all the frontier techniques mentioned, DEA is the most widely used approach for measuring relative efficiency due to its in-built advantage over others. Although, there exists an extensive literature on banking efficiency for developed countries but there exists no frontier analysis of armed forces conducting civic action programme.

Methodological Framework

Model and Definition

DEA is referred as a linear programming method that converts over numerous incommensurable data sources and yields of every Decision Making Unit (DMU) into a scalar proportion of operational efficiency, comparative with its contending DMUs. DEA distinguishes 'peer' DMUs for an individual DMU and afterward gauges the effectiveness of the DMU by contrasting its exhibition and that of the best practice DMUs. Note that the thought here of best practice is not abstract and potentially unreachable idea, however the DMU(s) performing best among its (their) peers, which is appointed an efficiency score of one. These units establish the references "standards" and "envelop" different units and, in this manner, structure the *efficient frontier*. DEA includes tackling a linear programming issue for every DMU. The answer for the linear programming issue comprises of data about the peers of the DMU and the efficiency of the DMU comparative with its peer gathering.

Technical efficiency (TE) of DEA is viewed at two levels. First, Input-oriented TE focuses on utilizing optimum number of outputs to deliver best output. The other kind of TE is Output-oriented that considers the possible expansion in outputs for a given set of input quantities. A DMU is technically inefficient if production occurs

within the interior of the production set. In this paper CCR output oriented model is used. The CCR model, named and introduced by Charnes, Cooper, and Rhodes in 1978, measures the relative efficiency of an entity often referred to as a DMU (Leung et al. 2016). The CCR model assumes constants returns to scale (CRS) so that all observed production combinations can be scaled up or down relatively (Cullinane et al. 2004).

Charnes, Cooper, and Rhodes (1978) extended Farrell's (1957) idea linking the estimation of technical efficiency and production frontiers. The CCR model generalized the single-output/input ratio measure of efficiency for a single DMU in terms of a fractional linear-programming formulation transforming the multiple output/input characterization of each DMU to that of a single "virtual" output and "virtual" input. The relative technical efficiency of any DMU is calculated by forming the ratio of a weighted sum of outputs to that of weighted sum of inputs, where the weights (multipliers) for both outputs and inputs are to be selected in a manner that calculates the Pareto efficiency measure of each DMU subject to the constraint that no DMU can have a relative efficiency score greater than unity.

CCR Model

Given the data, efficiency of each variable is measured and hence need n optimizations, one for each DMU_J to be evaluated. Let the DMU_j to be evaluated on any trial be designated as DMUo where o ranges over 1, 2, ..., n. We solve the following fractional programming problem to obtain values for the input "weights" (v_i) (i = 1,...,m) and the output "weights" (u_r) (r = 1,...,s) as variables.

$$\text{Max} \quad \theta = \frac{\sum_{r=1}^{s} u_r . y_{ro}}{\sum_{i=1}^{m} v_i . X_{io}} \qquad \text{.......(1)}$$

$$\frac{\sum_{r=1}^{s} u_r . y_{rj}}{\sum_{i=1}^{m} v_i . X_{ij}} \leq 1 \text{ , j=1,2,...,n} \qquad \text{........(2)}$$

$$\text{And } u\_r, v\_i \geq 0 \qquad \text{........ (3)}$$

The constraints mean that the ratio of "virtual output" vs. "virtual input" should not exceed 1 for every DMU. The objective is to obtain weights (v_i) and (u_r) that maximize the ratio of DMUo, the DMU being evaluated. By virtue of the constraints, the optimal objective value is at most 1. The optimal value of max in (1) is independent of the units in which the inputs and outputs are measured provided these units are the same for every DMU.

CCR Efficiency

1. DMUo is CCR-efficient if and there exists at least one optimal {v*,u*}, with v* > 0 and u* > 0.

2. Otherwise, DMUo is CCR-inefficient.
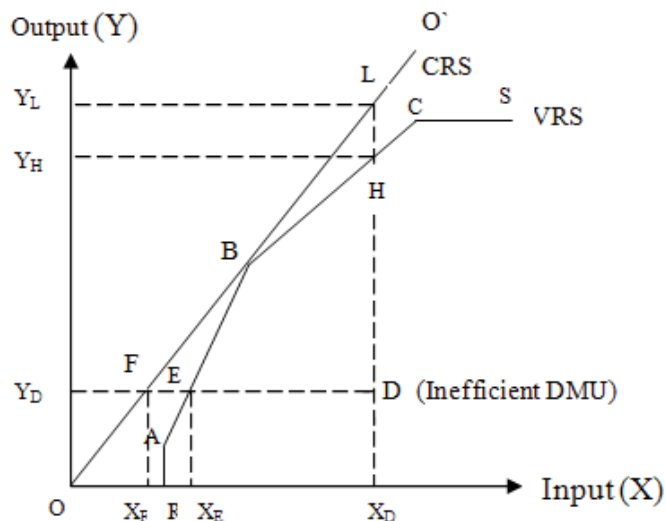
Graph 1 represents the two kinds of efficient frontiers:

i. CRS (Constant Returns to Scale), shown by line OO`;

ii. VRS (Variable Returns to Scale), shown by RABCS.

For VRS *efficient frontier*, the inefficient DMU D is defined as OX_E/OX_D for input-orientation (input X is minimised while holding output Y constant). For output maximization, the efficiency for DMU D is defined as OY_D/OY_H. Now, for CRS *efficient frontier*, input-oriented technical efficiency of DMU D is given as OX_F/OX_D and output-oriented technical efficiency is defined as OY_D/OY_L. As the slope for CRS is 1, then $OX_F/OX_D = OY_D/OY_L$, as orientation does not change the efficiency score. The graphical representation can be shown as linear programming model by using actual data on input-output variables. Charnes et al., 1994, proposed different models in their literature. The essential area of each model is to determine the *best practice* or the *efficient frontier* of the DMUs.

Data

To objectively assess the effectiveness of Civic Action Programme (CAP) in NE Region scheme, a proper blending of both quantitative and qualitative data drawn from the study areas. Qualitative data were generated from such as Ministry of Home Affairs, CAPF, Department of North East Region, State Government Department, Project Implementing Agencies, and Beneficiaries.

The questionnaire was designed to seek input from all stakeholders, on positive impacts, deficiencies, missing opportunities, scope for improvements, necessity of the continuation of the scheme etc. The questionnaire and interview schedule based information contributed to the quantitative information whereas, focus group discussion and observation based findings got embedded into qualitative information. The stakeholders from CAPFs were interviewed individually or through group meetings to dive deep into the qualitative analysis. Verifiable quantitative data, such as actual expenditure, number of beneficiaries, number of programmes etc. are gathered for the years 2015 to 2020. This prevails for input and output variables selected for computing various efficiency scores for individual CAPFs. The evidence-based information was collected through visiting the sites.

Input and Output Variables for Computing Efficiency Scores

The most important part of the study is to select the relevant input and output variables to calculate the efficiency of the CAPFs which are implementing the programmes in NE Region. There exists no literature which states that what should constitute the inputs and outputs of the programme implementer. In this paper production approach (also called as service provision) is adopted, which was pioneered by Benston (1965) for treating banks as the provider of services to customers. Similarly, the programme implementers (here CAPFs) are providing services to the people of Northeast by conducting programmes. In order to select input and output variables, the production approach is more useful for computing the efficiency scores for individual armed forces. Therefore, the selected output variables are i) number of programmes conducted (collected from each implementer), and ii) number of people benefitted from the programmes conducted (collected from each implementer). The input used for computing efficiency score is the actual expenditure done by the programme implementer.

Table 3: Input-Output Variables of CAPFs

CAPFs	(O) Number of People Benefited	(O) Number of Programmes conducted	(I) Actual expenditure (Rs. in lakh)
Assam Rifles	200097	701	1926.39
CRPF	377514	907	970.00
ITBP	97329	722	429.43
SSB	212653	1220	500.00

Notes: Data for 2015-2020
Source: Data from respective CAPF HQ in Delhi through questionnaire

Results

The output-oriented efficiency scores are obtained by applying CCR model. The output-orientation focuses on maximizing outputs for the given input. Table 3 shows the overall technical efficiency scores of four CAPFs from 2015 to 2020. There is a large gap between the highest efficient, i.e. SSB (100%) and the lowest efficient, i.e. Assam Rifles (24.42%). The average efficiency score comes out to be 0.7121 for four CAPFs (other descriptive statistics is shown in Table 4). It implies that an average CAPF, if uses input on the efficient frontier instead of its current location, would produce 71.21 percent of the outputs currently being produced. The implication of this finding is that the technical inefficiency comes out to be 28.79%. It is suggested that the number of programmes conducted and the beneficiaries from programmes can be improved by 28.79% even at the same level of actual spending by the CAPFs. But the improvement in output varies from force to force. Alternatively, CAPFs have the scope of producing 1.4 times (i.e. 1/0.7121) as much as outputs from the same level of inputs.

Table 4: Overall Technical Efficiency of the Armed Forces

No.	Rank	CAPF	OTE Score	OTIE (%)
1	4	Assam Rifles	0.2442	75.58
2	2	CRPF	0.9151	8.49
3	3	ITBP	0.6891	31.09
4	1	SSB	1	0

Notes: OTE= Overall technical efficiency; OTIE(%)=Overall technical inefficiency = (1-OTE)×100,

Source: Authors' calculations

A CAPF is considered to be most efficient among others if it gets a score of 1 but if the score is less than 1 then it is relatively inefficient. Among the four CAPFs, 1 is technically efficient and other three are considered to be technically inefficient. The efficient CAPF, i.e. SSB, forms the *efficient frontier* for inefficient CAPFs. These inefficient forces can improve the efficiency by increasing their output by conducting more number of programmes through which there are more beneficiaries. Also, they can focus on the nature of programmes conducted like rather than distributing electronic items in areas where electricity is an issue, armed forces can focus on repairing transformers. The range of scores of inefficient forces is 0.2442 for Assam Rifles to 0.9151 for CRPF. This implies

that Assam Rifles and CRPF can improve their efficiency by 75.58% and 8.49% without changing the input, i.e. expenditure but improving the outputs.

Table 5: Descriptive statistics of overall technical efficiency scores for Armed Forces

| Statistics	All CAPF	Efficient CAPF	Inefficient CAPF
N	4	1	3
ATE	0.7121	1	0.6161
Max	1	1	0.9151
Min	0.2442	1	0.2442
SD	0.3384	0	0.3413
ATIE	0.2879	0	0.3838
Interval	(0.3737;1.0505)	(1;1)	(0.2748;0.9574)

Note: N= Count; ATE= Average Technical Efficiency; ATIE= Average Technical Inefficiency; SD= Standard Deviation; Interval= (AOTE-SD; AOTE+SD)

Source: Authors' calculation

Areas for Efficiency Improvement: Slacks and Projection Analysis

In DEA the slacks are obtained only for those DMUs which are inefficient. The slacks provide vital information regarding the areas which a CAPF needs to improve otherwise the resources will go unutilised. Weights are generated for the input-output variables of each DMU when we run DEA. The basic difference between weights and slacks is that weights are given on actual data and shows the concentration of a DMU on the variable, whereas slacks show the potential of a DMU which still can be exploited. The representation of slacks for an *efficient frontier* is shown as follows:
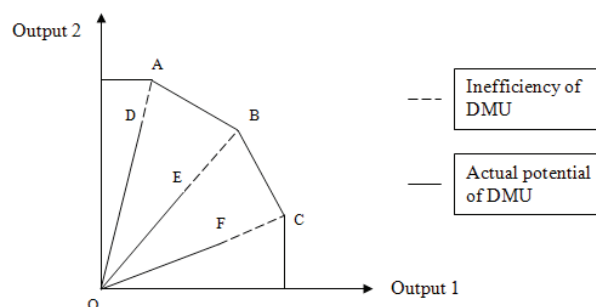
The graph above shows the *efficient frontier* ABC, where OD gives the output obtained by DMU_1 and DA represents the technical inefficiency of DMU_1. Similarly, for DMU_2 and DMU_3, the utilised capacities is shown by OE and OF, respectively. Further, EB and FC shows the technical inefficiency of DMU_2 and DMU_3 respectively. The inefficient DMUs can reach the *efficient frontier* by increasing the output to the level of slacks.

Table 6: Weights and Slacks for CAPFs

Rank	CAPF	Weights			Slack		
		Actual expenditure (Rs. in lakh)	Number of People Benefited	Number of Programmes conducted	Actual expenditure (Rs. in lakh)	Number of People Benefited	Number of Programmes conducted
4	Assam Rifles	4.0945479	1	0	0	0	1830.122 (61.67)
2	CRPF	1.0927987	1	0	0	0	1375.632 (34.06)
3	ITBP	1.4512593	0	1	0	41389.541 (57.47)	0
1	SSB	1	1	0	0	0	0

Notes: Parenthesis contain values in percentage

Source: Authors' calculation

Table 6 shows the weights and slacks for each CAPF. SSB is ranked at the top among all the CAPFs, so efficiency of other forces are calculated relative to the efficiency of SSB. Assam Rifles, CRPF and SSB have given their 100 percent focus on obtaining number of beneficiaries, whereas, ITBP focused entirely on conducting the programmes. Now, the slacks are obtained only for those DMUs which are inefficient. So, Assam Rifles which is putting its entire capacity in getting the beneficiaries should also focus on conducting the programmes and increase it by 61.67% (1830) and CRPF

should also increase it by 34.06% (1376). In the last five years ITBP has entirely focused on conducting more number of programmes from the budget they received, which is lowest among all the forces. In order to reach the efficiency level, ITBP should also generate beneficiaries by conducting those programmes which attracts more people from the border districts. The table shows that ITBP can increase the beneficiaries by 57.47% from the current level, in order to reach frontier.

Table 7: Projected Improvement for Input-Output Variables

Rank	CAPF	Actual expenditure (Rs. in lakh)			Number of People Benefited			Number of Programmes conducted		
		Actual Data	Projection	Diff. (%)	Actual Data	Projection	Diff. (%)	Actual Data	Projection	Diff. (%)
4	Assam Rifles	1926.39	1926.39	0	200097	819306.75	309.45	701	4700.40	570.52
2	CRPF	970	970	0	377514	412546.82	9.28	907	2366.80	160.94
3	ITBP	429.43	429.43	0	97329	182639.15	87.65	722	1047.80	45.12
1	SSB	500	500	0	212653	212653	0	1220	1220	0

Notes: Diff =Difference between actual and projected data

Source: Authors' calculation

Since the model used is output-oriented, the DEA has not shown any change or projected growth required in the input, i.e. actual expenditure. As SSB has the highest efficiency, DEA has shown no projection for it. But in case of Assam Rifles, ranked at the lowest, should have generated 310% (819307 approx) more number of beneficiaries from what it had in the last five years. For number of programmes conducted the projected level is more than 570% (4700), which means that in the last five years the Assam Rifles could have generated more output without changing the expenditure pattern. In case of ITBP, there could have been 45% (1048) more number of programmes and the beneficiaries should have been at least 87.65% (182639) more than what it was for last five years. Since ITBP has the lowest expenditure among all the CAPF but still it could have more beneficiaries. The second best performing armed force is CRPF and it could have conducted programmes by more than 160% (2366) and the number of beneficiaries generated from the programmes conducted could have been higher by at least 9% (412547). These projected values show the potential of the armed forces with respect to the most efficient CAPF.

Conclusion and Suggestions

The North-East India is a particular geographical territory of the nation-state and is rich in natural resources. As far as the social element is concerned, it comprises diverse ethno-linguistic groups; different traditions, beliefs and practises; and it is divided into eight states politically. Special provisions of the Constitution of India apply to each state. The area has been deemed to be economically less established by the national standards of economic measurement. The Civic Action Programme aims to integrate border population in National mainstream by uplifting socio-economic condition of border population through implementations of various programmes and activities. As the scheme in action, there are many roadblocks encountered during implementation.

Vision for the future

Short term goals

Civic Action Programme is one of its kind programme that acts as an engine of trust building between central armed police forces and civilians. Thus it needs to be strengthened with utmost priority. Its outreach and coverage has to be extended to bring in maximum populace of border areas into its ambit. The frequency of programmes organized, also needs to increase to keep the people engaged and connected. To achieve this, more allocation of funds as well as timely disbursement of funds to the implementing agencies is prerequisite for the effective and efficient implementation of the scheme.

Mid-Term goals

The guidelines of the scheme need to be updated, to accommodate the new demands and aspirations of the target beneficiaries. Guidelines have not been updated since the launch of the scheme in 2003. Furthermore, recruitment training programs of armed forces needs to be reintroduced in the border areas along with other vocational training programmes like computer training, tailoring courses, course on carpentry for employment and economic growth.

Long Term

The full potential of Civic Action Program can be harnessed if state of the art infrastructure is available in all parts of the region. The border areas covered under the scheme lacks basic infrastructure which hampers the effectiveness and efficiency of the programmes. Due to which the targeted beneficiaries remains aloof of availing services under the scheme. The geographical uniqueness and harsh terrain make it imperative to extend internet services to boarder areas. This would enable the populace of the region to access the government's digital services like, E-education, telemedicine, Government e-market place (GeM portal) etc. It would not only improve their socio-economic condition but also contribute in national integration.

Other Suggestions are

Mutual Consent: The signing of the agreements is done after the mutual acceptance of the government and the insurgent groups. Therefore, it becomes incumbent to the insurgent groups to adhere to the ground rules and in turn the appropriate checks by the government monitoring committees are carried out.

Role of the Government: In spite of the fact that there have been a number of surrenders and agreements, there is still insurgency in the region. The government authorities prolong the negotiations with the aim to wear out the insurgents and once the battle fatigue sets in, agreements are signed whose provisions are rarely implemented. This gives respite to the state government but alternatively it gives an opportunity to the insurgent leaders to gain power directly or indirectly. It is, thus, the onus of the government to ensure that the agreements are implemented in letter and spirit. The government can adopt measures to wean away the warring groups by exploiting ethnic differences.

Civil Society: There is a need to incorporate civil society or the citizens to become a part of the agreement framework. This will increase the faith of the population in the system.

More Initiatives to be taken: Government and the armed forces must generate initiatives to bring about the awareness of the insurgency and the actions being taken to the children in the schools and the colleges.

Development in the Region: There is a requirement of good governance and capacity building mechanism to bring an end to insurgency which will ensure development in the region.

Modernization of the CAPFs: The modernization of the CAPFs in all respects is the need of the day as the insurgents have the latest technology in terms of arms, communication equipment and are well trained to carry out his assigned task.

Rehabilitation: The government must ensure that the surrendered insurgents get what they are promised to include rehabilitation otherwise they will return to the insurgency mode. There should be a surrender policy in the insurgency ridden states.

Publicity: The Government must publicize the surrenders which will have a positive effect on the confidence of the public, raise the morale of the security forces and instil doubts in the minds of the insurgents.

Utilisation of the Funds: The Government must ensure that there is fair utilization of the essential funds and the same must be audited by the concerned agencies.

Legal Actions: The legal prosecution of the apprehended must be monitored at all levels.

Endnotes

1   Ministry of Home Affairs, Committee on Estimates 2017-2018, 28th Report

2   https://ssb.nic.in/index1.aspx?lid =10474 & lsid =10505 & pid=10503 & lev = 2 & langid=1 & Cid=0

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