

## Uneven Development in Meghalaya: A Block-Wise Study of Socio-Economic Indicators in Ri-bhoi District

N. Uttam Singh, N. Laitonjam\*, Abhishek Thakur, P.M. Sharma, M. Bishonath Singh, Wanbiang Dkhar, Eric Rani, A. Roy, Anjoo Yumnam, Pampi Paul, C. Gowda H.R., Kamni P. Biam, B.P. Singh and S.B. Singh

Division of Technology Assessment and Capacity Building, ICAR-Research Complex for North Eastern Hill Region, Umiam, Meghalaya (793 103), India



### Corresponding Author

N. Laitonjam

✉: nivelaitonjam@gmail.com

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### Abstract

This study inspects the socio-economic indicators among the four blocks which includes Umsning, Bhoirymbong, Jirang and Umling of Ri-bhoi district, Meghalaya. Adaptive capacity and sensitivity of each block was determined using indicators including health, education, nutrition and basic amenities to identify gaps in different developmental parameters. Umsning was determined as the highest developed block in domains including SHG participation, irrigation, education and immunization. However, Jirang ranked under “very high vulnerability” category with lowest performance across different sectors. To reduce disparities among blocks some targeted policy intervention has been recommended which includes educational infrastructure, improved healthcare facilities, women empowerment and irrigation facilities. With the data recorded under the different blocks, the result obtained upon proper analysis suggests that there is an urgent need for specific developmental strategies to improve the overall growth and resilience within the district.

**Keywords:** Adaptive capacity, Sensitivity, Socio-economic profile, Vulnerability index

### Introduction

Ri-bhoi district lies between 91.20'30" to 90.17'00" E longitude and 25.40' to 26.20' N latitude in the state of Meghalaya. To the north it is surrounded by Kamrup district (Assam), to the east by Karbi-Anglong district (Assam). To the south and west it is surrounded by East Khasi hills and West Khasi hills district of Meghalaya. The district connects Shillong the capital city of Meghalaya to Guwahati via National Highway 40. The district has a geographical area of 2,448 sq. km and its administrative function is divided into four blocks *i.e.*, Bhoirymbong, Umling, Umsning and Jirang. These four blocks comprise of 579 villages distributed accordingly, Bhoirymbong (112), Umling (202), Umsning (160) and Jirang (105). The total population of the district is 2,58,380, according to 2011 census. Along with the rest of the districts of Meghalaya, Ri-bhoi also receive abundant rainfall annually with an average of 2,935 mm. The landscape

is covered by forest area of 869.07 sq. km, a net sown area of 222.59 sq. km and gross cropped area of 251.69 sq. km. The soil present is primarily red loamy, laterite and alluvial. The major crops include rice (94.04 sq. km in kharif and 1.98 sq. km in rabi), maize (15.18 sq. km), oilseeds (1.52 sq. km in kharif and 1.48 sq. km in rabi), millets (0.13 sq. km) and pulse (0.28 sq. km). The district has a least irrigation infrastructure with only 22.98 hectares under surface water irrigation and no ground water irrigation reported (Gol, 2013).

### Methodology

Spatial secondary data for the year 2020 were sourced from the Ministry of Rural Development, Government of India. This article is an extension of the previous study titled “Mapping Climate Vulnerability in Meghalaya: A Three-Tiered Analysis at District, Block and Village Levels” (Singh *et al.*, 2025). The present study examines the socio-economic profile of the blocks in Ri-bhoi district, Meghalaya.

### Article History

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The analysis uses sensitivity and adaptive capacity indicators previously applied in the assessment of block-level vulnerability in Meghalaya.

### Health, Nutrition and Early Childhood Care

This section highlights child health and development services among the various selected villages (Bhoirymbong, Jirang, Umling and Umsning) under Ri-bhoi district. The data show a considerable prevalence of anaemia in categories such as pregnant women, adolescent girls, underweight children, child immunization and registration of children in Anganwadi centres. Among each village, the prevalence data is rank accordingly from the highest prevalence to the lowest prevalence. Umsning (30.08%), Bhoirymbong (27.72%) and Jirang (16.78%) are the prevalence data of anaemia among pregnant women and in this contrast the village with the highest data record shows a serious mental health challenges; whereas, the lowest data record indicate that the maternal nutrition is relatively superior. Furthermore, among adolescent girls the prevalence data are as follows Bhoirymbong (35.03%), Umsning (22%) and Jirang (10.86%), similarly in the incidence of underweight girls the data coverage is Umsning (41.21%), Umling (34.18%) and Bhoirymbong (7.58%). In terms of child immunization, the highest data coverage is recorded at Umsning (34.32%)

and lowest at Bhoirymbong (26.91%). Finally, when it comes to the registration of children in Anganwadi centres, the highest data was again recorded at Umsning (34.38%) and it clearly shows that the village has a strong outreach in early childhood care services; likewise, the lowest data was recorded at Jirang (12.04%) indicating that the village has limited coverage of child services.

### Agricultural Development

The introduction of high adoption of micro-irrigation techniques such as drip irrigation and sprinkler system was introduced among the blocks and the water efficient agricultural practices shows a significant progress in Umsning (58.83%) and Umling (38.34%) blocks whereas Jirang (12.04%) demonstrated the lowest adoption of these irrigation techniques therefore, this block requires a significant scope for development. The beneficiaries of Pradhan Mantri Fasal Bima Yojana (PMFBY) show similar trend where Umsning (36.13%) leads in comparison to Jirang (14.87%), showing a greater awareness or effective outreach of crop insurance schemes (Table 1). The beneficiaries of Pradhan Mantri Fasal Bima Yojana (PMFBY) show similar trend where Umsning (36.13%) leads in comparison to Jirang (14.87%), showing a greater awareness or effective outreach of crop insurance schemes (Table 1).

Table 1: Comparative socio-economic profile of blocks in Ri-bhoi district, Meghalaya (in %)

Blocks	Sensitivity Indicators			
	Anemic Pregnant Women	Anemic Adolescent Girls	Underweight Children	Households without Sanitary Latrines
Bhoirangbang	27.72	35.03	7.58	28.57
Jirang	16.78	10.86	17.03	13.80
Umling	25.42	32.11	34.18	24.30
Umsning	30.08	22.00	41.21	33.33
Total	100.00	100.00	100.00	100.00

Table 1: Continue...

Blocks	Adaptive Capacity Indicators							
	Children Immunized	Registered Anganwadi Children	Drip/Sprinkler Irrigation	Beneficiaries of PMFBY	Self-Help Groups	Graduate and Postgraduate in Village	Households with Piped Water	Domestic Electricity
Bhoirang-bang	26.91	28.91	20.53	36.99	26.46	32.36	20.75	18.99
Jirang	13.73	12.69	2.04	15.12	14.87	4.98	11.84	10.07
Umling	25.03	23.58	18.60	34.26	29.57	32.57	44.82	39.35
Umsning	34.32	34.83	58.83	13.63	29.11	30.09	22.59	31.58
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

### Women Empowerment and Education

In Umsning (29.11%) and Umling (29.57%) participation was recorded highest in terms of Self-Help Groups (SHGs) indicates unity in community playing vital role in women empowerment economically in these blocks. However, lowest participation in SHGs was observed in Jirang with 14.87% emphasizing future development in this locality. The

graduates and post graduates in the villages was observed highest in Umsning (33.69%) and Umling (32.57%), showing better educational attainment. In contrast, Jirang has very low attainment in education in village areas with only 4.98% indicating a significant deficient in educational attainment that may need some specific and better interventions for betterment of the area and the people.

### Basic Amenities

From the study, it was observed that Umling has the highest access percentage to piped water around 44.82% household were connected. The lowest is Jirang which has only around 18.44% household connected to piped water. Looking at domestic power supply Umling (39.35%) and Umsning (29.54%) have more accessed comparing to other blocks, where in the lowest accessed is Bhoirymbong (18.99%). With regard to sanitation Umsning has the highest number of households without sanitary latrines at 33.33%, which shows that it has the highest significant sanitation deficits, while Jirang is comparatively better with a lower rate of 13.00%. Comparing the four blocks in Ri-bhoi district, Umling block emerge as the best performing block in various developmental parameters-highest immunization, Anganwadi registration, irrigation, insurance, PMFBY beneficiaries, SHG participation, education levels and piped water coverage. The lowest performance block is Jirang, consistently on health, sanitation, irrigation, insurances, SHG coverage, education and basic amenities which is why the block has the highest vulnerability among the other block (also ranked very high vulnerability category among the blocks in Meghalaya) (Figure 1). Mixed results were shown by Umling block-good irrigation coverage, SHG presence, education levels and amenities, but high rates of under nutrition and anaemia among pregnant women. Bhoirymbong block performed very low in underweight prevalence and better in sanitation (compared to Umsning), but still struggles with high anaemia rates. The block level analysis for vulnerability index showed that Jirang (VI=4.104) has the highest vulnerability followed by Umsning (VI=3.550), Umling (VI=3.229) and Bhoirymbong (VI=3.219). The blocks are categorized from very high to high VI among the blocks in Meghalaya (Singh *et al.*, 2025). The vulnerability analysis corresponds closely with the socio-economic patterns observed across the blocks. Jirang having very high vulnerability is driven by systemic deficits across health, education, agriculture, women's empowerment and basic amenities. The block has the least adaptive capacity. Even though Umsning, Umling and Bhoirymbong have exhibited strengths in some sector, they remain vulnerable and face critical challenges especially in health and nutrition sector. This connection underscores the necessity for focused, multi-faceted interventions customized to the unique challenges of each block to reduce overall vulnerability.

### Policy Implications

A number of targeted and comprehensive development strategies are proposed, based on the socio-economic indicators observed in the block of Ri-bhoi District. The blocks viz., Umsning and Umling, where high levels of anaemia among pregnant women, adolescent girls and under nutrition are prevalent, location specific and need based intervention are required to address these issues. Keeping these points in view strengthening primary healthcare services and popularizing nutrition supplementation programs will play a vital role. A comprehensive development strategy is essential for Jirang which constantly exhibit lower performance across health, education, irrigation and basic amenities. To achieve

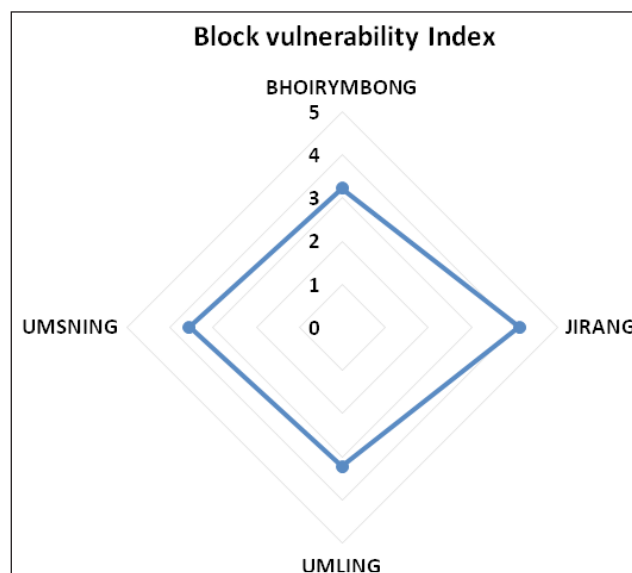


Figure 1: Block level vulnerability index in Ri-bhoi district, Meghalaya

balanced development, efforts should be given to easy access to healthcare, improved educational infrastructure, popularizing micro-irrigation and encouraging formation of Self-help groups. In Umsning and Umling, the improvement of sanitations will be very crucial, as a substantial number of households lack sanitary latrines. A substantial improvement in public health sector can be achieved through investments in awareness campaigns and construction of household latrines. For elevating quality of life and support other development initiatives across all blocks, intensifying access to basic amenities such as piped water supply and domestic electricity should be treated as cross-cutting priorities. In blocks like Jirang and Bhoirymbong, where coverage by PMFBY scheme and promotion of micro-irrigation facilities remains low, boosting agricultural resilience, strengthening outreach and adoption of crop insurance under such schemes can be particularly beneficial in these blocks. Lastly, supporting women's empowerment through the reinforcement and consolidating of Self-Help Groups, especially in Jirang, can support women's economic and social inclusion, resulting to more equitable and sustainable growth across the district.

### Conclusion

Based on the present study, Jirang was found to be the most vulnerable. The factors contributing to its vulnerability are poor health, education and basic services. The study shows clear disparities among the blocks of Ri-bhoi district in respect to development. Dedicated effort in respect to above mentioned factor is necessary to diminish this gap. Communities can be strengthened by enhancing basic amenities and bolstering self-help organizations. A well-thought-out, data-driven strategy tailored to individual blocks will open the door to sustainable and equitable growth throughout the district.

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### References

Anonymous, 2013. *Ground Water Information Booklet: Ri-bhoi District, Meghalaya*. Central Ground Water Board, Ministry of Water Resources, Government of India. p. 15.

Singh, N.U., Laitonjam, N., Sharma, P.M., Dkhar, W., Singh, B.P., Singh, S.B., Roy, A., Rangappa, K., Chakraborty, D., Yumnam, A., Paul, P., Biam, K.P., Gowda, H.R.C., Mishra, V.K., 2025. Mapping climate vulnerability in Meghalaya: A three-tiered analysis at district, block and village levels. *International Journal of Agricultural Extension and Social Development* 8(3), 346-353. DOI: <https://doi.org/10.33545/26180723.2025.v8.i3e.1721>.