

HIGHEST MEAN WIND SPEED (100M) 9.27 m/s <i>Tsafe LGA - East Zamfara</i>	HIGHEST MEAN POWER DENSITY (100M) 735 W/m² <i>Tsafe LGA - East Zamfara</i>	HIGHEST MEAN WIND SPEED (10M) 9.14 m/s <i>Bungudu LGA - South Zamfara</i>	HIGHEST MEAN POWER DENSITY (10M) 809 W/m² <i>Bungudu LGA - South Zamfara</i>	LGAS ABOVE 6 M/S @ 100M 14 / 14 <i>All LGAs meet the commercial threshold</i>
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Wind Resource by LGA

Mean Wind Speed & Power Density - 10m and 100m Hub Heights

LGA	Region	WS @10m (m/s)	PD @10m (W/m²)	WS @100m (m/s)	PD @100m (W/m²)
Tsafe	East	8.49	708	9.27	735
Bungudu	South	9.14	809	9.00	610
Gusau	East	7.88	501	8.81	585
Maradun	West	7.53	565	8.12	508
Maru	South	6.84	327	8.17	467
Kaura Namoda	East	5.82	240	7.80	437
Birnin Magaji	East	7.04	322	7.77	360
Talata Mafara	West	5.27	157	7.28	326
Zurmi	North	4.89	140	7.19	341
Shinkafi	North	3.97	60	6.94	271
Anka	South	5.20	154	6.85	251
Bakura	West	4.06	60	6.88	253
Bukkuyum	West	4.23	79	6.65	239
Gummi	West	3.71	52	6.38	216

Source: Global Wind Atlas 4.0 (globalwindatlas.info)

Regional Wind Profile

Average Wind Speed & Power Density by Geographic Zone

East Zamfara

Rank: 1st

Tsafe, Gusau, Birnin Magaji, Kaura Namoda

WS @10m	7.31 m/s	WS @100m	8.41 m/s
PD @10m	443 W/m²	PD @100m	529 W/m²

South Zamfara

Rank: 2nd

Bungudu, Maru, Anka

WS @10m	7.06 m/s	WS @100m	8.01 m/s
PD @10m	430 W/m²	PD @100m	443 W/m²

West Zamfara

Rank: 3rd

Maradun, Talata Mafara, Bakura, Bukku., Gummi

WS @10m	4.96 m/s	WS @100m	7.06 m/s
PD @10m	183 W/m²	PD @100m	308 W/m²

North Zamfara

Rank: 4th

Shinkafi, Zurmi

WS @10m	4.43 m/s	WS @100m	7.07 m/s
PD @10m	100 W/m²	PD @100m	306 W/m²

Key Findings

East Zamfara Leads at 100m

Tsafe (9.27 m/s, 735 W/m²) and Gusau (8.81 m/s, 585 W/m²) are the top performers at commercial hub height.

South Zamfara Leads at 10m

Bungudu records the highest near-surface speed (9.14 m/s) and power density (809 W/m²) in the state.

All 14 LGAs Are Viable

Every LGA exceeds 6.3 m/s at 100m, meeting the commercial wind development threshold.

Strong Wind Shear State-wide

Average wind speed rises from 6.07 m/s at 10m to 7.73 m/s at 100m -- a key argument for taller turbines.

Recommended Next Steps

1

Deploy weather stations in Tsafe, Bungudu & Gusau (security-dependent) to ground-truth GWA4 data -- mirroring NWECC's active Plateau State Weather Station Deployment programme.

2

Conduct a security access assessment before any field deployment. High-risk localities will be deferred regardless of wind resource quality.

3

Pilot Hybrid Wind Energy Project Development.

4

Capacity Building and Stakeholder Engagement and Coordination

Data: Global Wind Atlas 4.0 | globalwindatlas.info | Prepared by NWECC Research & Operations Unit | June 2025