Table S1. Summaries of the key findings and policy recommendations from all the studies used in this review

Author	Title	Aim	Location	Methods (data sources/tools)	Findings	Conclusion	Source (reference)
Abdul-Kareem et al. (2022)	Shoreline variability of a bay beach: the case of Apam beach, Ghana	To analyse shoreline change and short-term sediment volume change	Apam beach, Ghana	Remote sensing (UAV flights, Landsat 5,7,8, sentinel 2, ERA-5)	The beach is gradually accreting at a mean rate of + 0.60 m/year. Also, there is a net sediment deposition of + 3725.22 m3 within 5 months, could be attributed to fluvial discharges and the topography of the beach. The Parabolic Bay Shape Equation (PBSE) further characterised this beach as being in the dynamic equilibrium state	To avert this, it is proposed that all future developments on this beach should be thoroughly planned	Estuaries and Coasts (Abdul-Kareem, R., Asare, N.K., Angnuureng, D.B., Brempong, E.K., 2022. Shoreline variability of a Bay Beach: The case of Apam beach, Ghana. Estuaries and Coasts 45, 2373–2386. https://doi.org/10.1007/s12237-022-01110-9)
Appeaning Addo (2013)	Shoreline morphological changes and the human factor. Case study of Accra Ghana	To determine if the rate of human encroachment of coastal lands for development exceed the rate at which the shoreline is moving inland as part of its natural cyclic behaviour.	Accra, Ghana	Remote sensing (Aerial photographs, orthomaps, GIS, DSAS)	The estimated total area of land lost by human encroachment on the coastal land within the period under study is about 242,139.7 m2. However, the rate of land lost to human development is about 8,349.64 m2/ year, which is relatively high. The historic rate of erosion computed for the period under study is about 1.92 m/year.	This study recommends that setback lines should be put in place to protect lands for the shoreline's cyclic activities	Journal of Coastal Conservation (Appeaning Addo, K., 2013. Shoreline morphological changes and the human factor. Case study of Accra Ghana. J Coast Conserv 17, 85–91. https://doi.org/10.1007/s11852-012-0220-5)

Angnuureng et al. (2022)	Satellite, drone and video camera multi-platform monitoring of coastal erosion at an engineered pocket beach: A showcase for coastal management at Elmina Bay, Ghana (West Africa)	To test the feasibility of using multiple sources of remote sensing platforms to assess the dynamics of Elmina Bay beach, Ghana	Elmina, Ghana	Remote sensing (dumpy level and GPS survey, UAV-drone, video camera system, ARCGIS/ArcMap, satellite images-CoastSat, GEE, sentinel, ERA-5)	The results revealed that while a section of the beach in front of the Elmina Castle was adequately protected by the presence of jetties , downdrift of the larger unprotected portion of the beach was out of balance with high erosion rates up to −3 m	The management of the beach with only hard engineering may only be fighting the erosion, but the addition of softer solutions such as beach nourishment to counter erosion would eventually build the beach. The results of these methods could be useful to the management of other pocket beaches all along the coast of Ghana, and the approach will also be important in gauging the	Regional Studies in Marine Science (Angnuureng, D.B., Brempong, K.E., Jayson-Quashigah , P.N., Dada, O.A., Akuoko, S.G.I., Frimpomaa, J., Mattah, P.A., Almar, R., 2022. Satellite, drone and video camera multi-platform monitoring of coastal erosion at an engineered pocket beach: A showcase for coastal management at Elmina Bay, Ghana (West Africa). Regional Studies in Marine Science 53, 102437. https://doi.org/10.1016/j.rsma.2022.102437)

						response of these vulnerable beaches to sea level rise.	
Ndour et al. (2018)	Management strategies for coastal erosion problems in west Africa: Analysis, issues, and constraints drawn from the examples of Senegal and Benin	To analyze the evolution of this coast, in the light of all the anthropogenic pressures in Senegal and Benin	"Langue de Barbarie," sand spit in Saint-Louis Region, Senegal, and Mono River, the "Bouche du Roi," Cotonou, Benin (West Africa)	Remote sensing and GIS (Landsat 4,5,7,8 satellite images, aerial photograph, ArcGIS, ArcMap, DSAS)	In Senegal, the pre-breach period (1984-2003) characterized by sectors alternating between erosion and accretion, and the post-breach period (2003-2016) indicating a generalization of the erosion process, with a noteworthy average rate of −3.72 m/yr affecting the entire spit, strongly destabilized by the artificial breach. In Benin, shoreline evolution is equally affected by human interventions. Following the construction of the Nangbeto Dam on the Mono River, the "Bouche du Roi," outlet of this river, has been characterized by marked instability, with an eastward migration exceeding 700 m/yr. Other human alterations of the coastal system include the installment of major seaports and groins that have resulted in some erosion downdrift near Cotonou	The examples from the study highlight the limits of governance regarding the coast in West Africa, including adaptation strategies developed at regional, national and local levels, which often produce more setbacks than solutions	Ocean & Coastal Management (Ndour, A., Laïbi, R.A., Sadio, M., Degbe, C.G., Diaw, A.T., Oyédé, L.M., Anthony, E.J., Dussouillez, P., Sambou, H., Dieye, E.H.B., 2018. Management strategies for coastal erosion problems in West Africa: analysis, issues, and constraints drawn from the examples of Senegal and Benin. Ocean & Coastal Management 156, 92-106. https://doi.org/10.1016/j.ocecoaman.2017.09.001)

Orupabo (2004)	Coastline migration in Nigeria	To estimate shoreline dynamics in coastal Nigeria	Victoria Bar Beach, Awoye-Molume, Escravos and Forcados, Nigeria	Remote sensing (Aerial photograph)	Results showed that the current rate of areal shoreline retreat at the eroding Victoria Island Bar Beach is put at 7.3m2/annum, while shoreline retreat is on average 1.7m/ annum.	The need to establish a relevant infrastructure to collect, compute and manage metocean data along the country's coastline. This would create the needed database and enhance coastal resource planning, management and development within a sustainable framework.	Hydro International (Orupabo, S., 2004. Coastline migration in Nigeria. Hydro International 8(3), 54-57)
Almar et al. (2015)	Response of the Bight of Benin (Gulf of Guinea, West Africa) coastline to anthropogenic and	To address this important knowledge gap by providing a general overview of coastal evolution in the Bight of Benin and the physical	The Bight of Benin-sandy coast between Ghana	Remote sensing (Landsat imagery 5,7,8, ERA-Interim dataset, ERA-40, WaveWatch III spectral wave model,GCMs)	Result shows that the contribution to the gross annual longshore transport from swell wave-driven longshore currents is an order of magnitude larger than the local wind wave-driven longshore currents. Also, the longshore sediment drift decay (5%	While this study provides a sound basis for understanding the wave-driven longshore sediment	Continental Shelf Research (Almar, R., Kestenare, E., Reyns, J., Jouanno, J., Anthony, E.J., Laibi, R., Hemer, M., Du Penhoat, Y., Ranasinghe, R., 2015. Response of the Bight of Benin (Gulf of Guinea, West Africa) coastline to anthropogenic

	natural forcing, Part1: Wave climate variability and impacts on the longshore sediment transport	processes that control this evolution	and Nigeria (West Africa)		over 1979–2012) is found to be linked with a decrease in the intensity of westerly winds associated with their southward shift, in addition to a strengthening of the trade winds, which reduces the eastward sediment transport potential	transport regime along the coastline of the Bight of Benin, the robust quantification and prediction of long-term coastline evolution due to all relevant forcing phenomena, as required for effective adaptation and risk reduction, necessitates a thorough consideration of all key physical processes and the different spatio-temporal scales at which the forcing and response mechanisms operate	and natural forcing, Part1: Wave climate variability and impacts on the longshore sediment transport. Continental Shelf Research 110, 48-59. https://doi.org/10.1016/j.csr.2015.09.020)

Sadio et al. (2022)	Multi-decadal dynamics of the Saloum River delta mouth in climate change context	To analyze the multi-decadal dynamics of the Saloum River delta shoreline based on a remote sensing and Geographic Information Systems (GIS) approach	Saloum River mouth between Diakhanor and Sangomar, Senegal	Remote sensing and GIS (DSAS, ArcGIS/ArcMap, aerial photograph, Corona satellite photograph, Landsat satellite images)	Using remote sensing and GIS techniques, the results revealed mean annual erosion rate of −3.55 m of the spit shoreline from 1954 to 1987. In 1987 the spit was breached by storm in its most eroded sector (- 4.59 m/year). This breach widened significantly to attain 5.25 km in 2018 and has now become the Saloum River mouth. The breach has resulted in exacerbated erosion of adjacent shorelines, especially at the down-drift coast, where the retreat attains a peak of −20.16 m/year, the average erosion rate remaining at −3.56 m/year for the entire coast	Shoreline erosion due to sea level rise by 2050 and 2100 will increase, with potential socio-economic impacts; hence the need to think right now about the adaptation options to implement.	Journal of African Earth Sciences (Sadio, M., Sakho, I., Seujip, M.S., Gueye, A., Diouf, M.B., Deloffre, J., 2022. Multi-decadal dynamics of the Saloum River delta mouth in climate change context. Journal of African Earth Sciences, 187, 104451. https://doi.org/10.1016/j.jafrearsci.2022.104451)
Appeaning Addo et al. (2020)	Assessment of the dynamics of the Volta river estuary shorelines in Ghana	To assess shoreline changing trends along the Volta river estuary in Ghana as well as the marine coastline using satellite imageries, orthophotos and topographic maps spanning a period of 120 years	Volta river estuary, Ghana	Remote sensing and GIS (Landsat satellite images, orthophoto, topographic maps, DSAS, ArcGIS/ArcMap,	The results show that the eastern and western shoreline of the estuary are eroding at an average rate of about 1.94 m/year and 0.58 m/year respectively. The coastlines on the marine side (eastern and western) are eroding at an average rate of about 2.19 m/yr and 0.62 m/yr respectively. Relatively high rates of erosion observed on the eastern	Effective management approach, such as developing disaster risk reduction strategy, should be adopted to increase the resilience of the communities	Geoenvironmental Disasters (Appeaning Addo, K., Brempong, E.K., Jayson-Quashigah, P.N., 2020. Assessment of the dynamics of the Volta river estuary shorelines in Ghana. Geoenvironmental Disasters 7, 19. https://doi.org/10.1186/s40677-020-00151-1)

		(1895, 1990, 2000, 2005 and 2015)			estuarine shoreline as well as the coastline could be explained by the reduced sediment supply by the Volta River due to the damming of the Volta River in Akosombo and the sea defence structures constructed to manage erosion problems	along the estuarine shoreline and increase their adaptive capacity to climate change hazards and disasters.	
Danladi et al. (2017)	Vulnerability of the Nigerian coast: An insight into sea level rise owing to climate change and anthropogenic activities	To report the coastline changes and possible future threats related to sea level rise owing to global warming and human activities in the coastal region of Nigeria	Coastal regions-Lekki, Nigeria	Remote sensing and GIS (ASTER GDEM, Google Earth images, ArcGIS/ArcMap, CorelDraw)	The results of the google earth images revealed remarkable erosion along both Lekki and Lekki Phase I, with the destruction of a lagoon in Lekki Phase I. Based on the result of the DEM map and geology, elevations of 0.2m,2.5 m and 5.10 m asl were interpreted as highly risky, moderately risky and risky respectively	The need for continuous surveillance of the entire coastal areas, environmentally friendly coastal defences (e.g., dune barriers and sand replenishment) should be preferred when constructing coastal defences, elimination of possible risks must be made through	Journal of African Earth Sciences (Danladi, I.B., Kore, B.M., Gül, M., 2017. Vulnerability of the Nigerian coast: An insight into sea level rise owing to climate change and anthropogenic activities. Journal of African Earth Sciences 134, 493–503. http://dx.doi.org/10.1016/j.jafrearsci.2017.07.019)

						thorough research, urbanization plans should be revised, and more coastal settlements must be prevented	
Dada et al. (2016)	Seasonal shoreline behaviours along the arcuate Niger Delta coast: Complex interaction between fluvial and marine processes	- To determine the characteristics and variability of the oceanographic (waves and sediment transports) variables along the arcuate (Central) section of the Niger Delta coast - To understand the details of the relationship between oceanographic (waves and sediment transports) and hydrometeorological (precipitation and river flow) variables - To determine how these variables influence the seasonal	Niger Delta, Nigeria	Remote sensing, photo interpretation (Landsat images, ERA-Interim)	Results show that the delta coast is characterized by predominant summer erosion and maximum winter accretion. Between 2010 and 2012, erosion dominated over accretion and a total of 9.1 km2 deltaic land was lost to coastline erosion at an annual average erosion rate of 4.55 ± 1.21 km2/yr	The effect of fluvial sediment reduction to the delta coast due to capital dredging of the Lower Niger River channels between 2009 and 2012, and periodic fluctuations in the nearshore hydrodynamics processes caused the observed annual shoreline erosion that	Continental Shelf Research (Dada, O.A., Li, G., Qiao, L., Ding, D., Ma, Y., Xu, J., 2016. Seasonal shoreline behaviours along the arcuate Niger Delta coast: Complex interaction between fluvial and marine processes. Continental Shelf Research 122, 51-67. http://dx.doi.org/10.1016/j.csr.2016.03.002)

		shoreline behaviours along the Niger Delta coast				eventually forced the deltaic coastline toward a state of landward migration during the study period	
Adeaga et al. (2021)	Assessment of shoreline change along the coast of Lagos, Nigeria	To assess shoreline changes along the Lagos coastline, with a focus on locations downdrift of the east mole via the Victoria Islands-Ibeju-Lekki-Epe corridor	Eti-Osa Local Government Area of Victoria Island-entire Lagos, Nigeria	Remote sensing and GIS (Google Earth images, QGIS, AMBUR-R programming)	The results revealed that over the 20-year period, the Lagos shoreline cumulatively records a mean rate of change of + 0.93 m/year, mean erosion rate of − 1.94 m/year, and mean accretion rate of + 4.84 m/year. In Victoria Island a mean erosion rate of − 5.2 m/year and a mean accretion rate of 81.99 m/year	An appropriate land use and land cover management plan needs to be adopted along the Lagos shoreline region, especially for Victoria Island	Remote Sensing in Earth Systems Sciences (Adeaga, O., Folorunsho, R., Foli, B.A.K., Akinbaloye, O., 2021. Assessment of shoreline change along the coast of Lagos, Nigeria. Remote Sens Earth Syst Sci 4, 186–198. https://doi.org/10.1007/s41976-021-00059-w)
Oloyede et al. (2022)	Coastal vulnerability assessment: A case study of the Nigerian coastline	To quantify and classify the vulnerability of the Nigerian coastline to these threats using the analytical hierarchical approach	Entire coastline of Nigeria	GIS (DSAS)	The shoreline change rate with the study period ranged <−2.0 to 1.0 m/year	The information from this study will assist coastal planners in identifying vulnerable segments in the coastal	*Sustainability* (Oloyede, M.O., Williams, A.B., Ode, G.O., Benson, N.U., 2022. Coastal vulnerability assessment: A case study of the Nigerian coastline. Sustainability 14, 2097. https://doi.org/10.3390/su14042097)

						Nigeria and subsequently aid decisions that would mitigate the predicted impacts in the region	
Anthony et al. (2019)	Response of the Bight of Benin (Gulf of Guinea, West Africa) coastline to anthropogenic and natural forcing, Part 2: Sources and patterns of sediment supply, sediment cells, and recent shoreline change	To analyze shoreline mobility and coastal area change over the period 1990–2015	The Bight of Benin-Between Ghana and Nigeria (West Africa)	Remote sensing and GIS (Landsat images 4-8, ArcGIS/ArcMap, DSAS,	The result shows a mixture of natural and artificial sediment cells increasingly dominated by shoreline stretches subject to erosion, endangering parts of the rapidly expanding port cities of Lomé (Togo), Cotonou (Benin) and Lagos (Nigeria), coastal roads and infrastructure, and numerous villages. Post-2000, the entire bight shoreline has undergone a significant decrease in accretion, which is here attributed to an overall diminution of sand supply via the longshore transport system	The continued operation of the three ports and of existing river dams, and sea-level rise, will lead to sustained shoreline erosion along the Bight of Benin in the coming decades	Continental Shelf Research (Anthony, E.J., Almar, R., Besset, M., Reyns, J., Laibi, R., Ranasinghe, R., Abessolo Ondo, G., Vacchi, M., 2019. Response of the Bight of Benin (Gulf of Guinea, West Africa) coastline to anthropogenic and natural forcing, Part 2: Sources and patterns of sediment supply, sediment cells, and recent shoreline change. Continental Shelf Research, 173, 93-103. https://doi.org/10.1016/j.csr.2018.12.006)
Jonah et al. (2016)	Shoreline change	To use Geographic Information System (GIS)	Elmina, Cape	Remote sensing and GIS (topographic	The result shows that in all the three epochs considered, there	The study has provided	Regional Studies in Marine Science (Jonah, F.E., Boateng, I.,

	analysis using end point rate and net shoreline movement statistics: An application to Elmina, Cape Coast and Moree section of Ghana's coast	tools to identify coastline changes that has occurred in the Elmina, Cape Coast and Moree area from 1974 to 2012	Coast and Moree, Ghana	maps, orthophotograph, satellite image, DSAS)	were a general erosion trend in the shoreline changes	valuable and comprehensive baseline information on the state of the coastline in the Elmina, Cape Coast and Moree area which can serve as a guide for coastal engineers, coastal managers and policy makers in Ghana to manage the risk	Osman, A., Shimba, M.J., Mensah, E.A., Adu-Boahen, K., Chuku, E.O., Effah, E., 2016. Shoreline change analysis using end point rate and net shoreline movement statistics: An application to Elmina, Cape Coast and Moree section of Ghana's coast. Regional Studies in Marine Science 7, 19-31. http://dx.doi.org/10.1016/j.rsma.2016.05.003)
Koulibaly and Ayoade (2021)	The Application of GIS and Remote Sensing in a Spatiotemporal Analysis of Coastline Retreat in Rufisque, Senegal	To analyze the phenomenon of shoreline retreat in the locality of Rufisque from 1978 to 2018 mainly using geospatial data and field visits.	Rufisque, Senegal	Remote sensing, GIS, and Field visit (Landsat images 3,5,7,8, ArcGIS/ArcMap, DSAS)	The results showed that Rufisque is subject to serious rates of erosion reaching −19.48 m/year from 1978–1988, close to −8 m/year from 1988–1998, −5.88 m/year from 1998–2008 and −6.67 m/year from 2008–2018. Beside that coastal erosion, it has been noticed that the coastline also experienced in some of its parts cases of accretion reaching 4.94	More efforts should be concentrated in terms of coastal protection facilities along these localities. Also, community dimension must be included in	Geomatics and Environmental Engineering (Koulibaly, C.T., Ayoade, J.O., 2021. The application of GIS and remote sensing in a spatiotemporal analysis of coastline retreat in Rufisque, Senegal. Geomatics And Environmental Engineering 15(3). https://doi.org/10.7494/geom.2021.15.3.55)

					m/year for 1988–1998, 7.29 m/year from 1998–2008 and 7.68 m/year during the period 2008–2018	both local and national plan regarding adaptation to sea level rise and its resulting impacts such as coastal erosion	
Sadio et al. (2017)	Shoreline changes on the wave-influenced Senegal River Delta, West Africa: The roles of natural processes and human interventions	To estimate longshore sediment transport rates along the spit	Senegal River delta-Langue de Barbarie, St. Louis, Senegal	Remote sensing (Aerial photograph, Corona image, Landsat, SPOT images, ERA-40, ERA-Interim)	The results revealed that wave erosion of the residual spit led to rapid exceptional widening of the mouth to ~5 km that has not been compensated by updrift spit elongation	Understanding the mechanisms and processes behind these changes is important in planning of future shoreline management and decision-making regarding the articulations between coastal protection offered by the wave-built spit and flooding of the lower delta	*Water* (Sadio, M., Anthony, E., Diaw, A., Dussouillez, P., Fleury, J., Kane, A., Almar, R., Kestenare, E., 2017. Shoreline changes on the wave-influenced Senegal River delta, West Africa: The roles of natural processes and human interventions. Water, 9(5), 357. http://dx.doi.org/10.3390/w9050357)

						plain of the Senegal River	
Osanyintuyi et al. (2022)	Nearly five decades of changing shoreline mobility along the densely developed Lagos barrier-lagoon coast of Nigeria: A remote sensing approach	To study the shoreline evolution of Lagos Lagoon Barrier coast, Nigeria from 1973 to 2019	Lagos Lagoon Barrier coast, Nigeria	Remote sensing and GIS (Landsat images1-5,7, ArcGIS/ArcMap, DSAS)	Results show that the section of marginal Lagos experienced erosion with the averaging rate of −1.73 m/year and accreting at the rate of +0.57 m/year. Eko Atlantic city eroded at the rate of −3.59 m/yr, and accreting at the rate of +4.46 m/yr from 1973 to 2008, with a serious erosion rate of −11.79 m/yr from 1986 to 1999 The Lekki peninsula experienced advancement up to +92.16 m/yr and a retreat of up to −6.50 m/yr	The current coastal management policies and plans in Lagos State need to be reconsidered and revised to ensure the sustainable use of the coastal zone	Journal of African Earth Sciences (Osanyintuyi, A.J., Wang, Y., Mokhtar, N.A.H., 2022. Nearly five decades of changing shoreline mobility along the densely developed Lagos barrier-lagoon coast of Nigeria: A remote sensing approach. Journal of African Earth Sciences 194, 104628. https://doi.org/10.1016/j.jafrearsci.2022.104628)
Guerrera et al. (2021)	Shoreline changes and coastal erosion: The case study of the coast of Togo (Bight of Benin, West Africa margin)	-To frame and better describe erosional processes that affect most of coasts of Togo and neighboring areas - To identify the main causes of coastal geomorphological modification, distinguishing natural factors	Coast of Togo	Remote sensing, field observation (Landsat images	Results shows that the main problem is the marked erosion of large coastal sectors with maximum retreat rates of the order of 5 m/year	The need for Togo to develop urgent actions to mitigate the problem, finding effective solutions to be included in the 2018–2022	*Geosciences* (Guerrera, F., Martín-Martín, M., Tramontana, M., Nimon, B., Essotina Kpémoua, K., 2021. Shoreline Changes and Coastal Erosion: The Case Study of the Coast of Togo (Bight of Benin, West Africa Margin). Geosciences, 11(2), 40. http://dx.doi.org/10.3390/geosciences11020040)

		- To evaluate the major causes of erosion on the basis of resulting effects - to suggest technical evaluations and to favor the planning of a permanent technical-scientific staff addressed to stem the loss of territory, and to reduce economic and social damages				National Development Plan	
Jonah (2015)	Managing coastal erosion hotspots along the Elmina, Cape Coast and Moree area of Ghana	To present an analysis of the historic trends in coastline changes along the Elmina, Cape Coast and Moree area of Ghana	Elmina, Cape Coast and Moree, Ghana	GIS, field survey (orthophoto, ArcGIS/ArcMap, DSAS, GPS tracking survey)	Results show that the Elmina, Cape Coast and Moree area had been eroding at a rate of 1.22 m/year ± 0.16 m from 1974 to 2012. It was identified that the widespread practice of beach sand mining in the area has significantly contributed to the erosion of several sections of the coastline	The need for the adoption of a proactive and coordinated coastline management plan for Ghana's coast similar to that of the United Kingdom shoreline management plans because of the numerous known advantages	Ocean & Coastal Management (Jonah, F.E., 2015. Managing coastal erosion hotspots along the Elmina, Cape Coast and Moree area of Ghana. Ocean & Coastal Management 109, 9-16.https://doi.org/10.1016/j.ocecoaman.2015.02.007)

Gomes et al. (2019)	Drivers of island beach evolution: insights from an island-scale study at Boa Vista (Cabo Verde)	To investigate the evolution of the low-lying sandy coast of Boa Vista	Boa Vista, Cabo Verde	Remote sensing and GIS (Aerial photograph, orthophoto map, ArcGIS/ArcMap)	Results indicate that between 1968 and 2010 the coast was relatively stable, although some spatial variability was recognized.	The findings of the study have relevant management implications, as island development should avoid any interference with sedimentary dynamics that can disrupt the fragile sedimentary balance	Earth Surface Processes and Landforms (Gomes, C., Silva, A.N., Taborda, R., Santos, F., Rebelo, L., Medina, A., 2019. Drivers of island beach evolution: insights from an island-scale study at Boa Vista (Cabo Verde). Earth Surf. Process. Landforms 44, 2810– 2822. https://doi.org/10.1002/esp.4709)|
Boye and Fiadonu (2020)	Lithological effects on rocky coastline stability	To assess the impact of waves on the compressive/ tensile strength of the rocks and further investigated the lithological properties of coastal material that influence shoreline change along the heterogeneous rock coast of the western region of Ghana	Coastal towns in the Western region of Ghana	GIS and Field survey (topographic maps, geological map, orthophotos, ArcGIS/ArcMap, DSAS, GPS survey)	Results showed shoreline accretion at few sites, whereas other parts of the rocky shoreline are eroding at varying degrees	The need for coastal management to formulate policies regarding the type of material to use for sea defence projects	Heliyon (Boye, C.B., Fiadonu, E.B., 2020. Lithological effects on rocky coastline stability. Heliyon 6(3), e03539. https://doi.org/10.1016/j.heliyon.2020.e03539)

Awnage et al. (2018)	Liberia's coastal erosion vulnerability and LULC change analysis: Post-civil war and Ebola epidemic	To examine temporal changes in land use/land cover (LULC), coastline changes, and coastal vulnerability to erosion and their effects on Liberia over a period of 29 years	The coast of Liberia	Remote sensing, GIS, and field survey (Landsat images, Sentinel-2 data, GPS survey)	The results f indicate more erosion during the period 1998–2002	Improved Sentinel data will be helpful for capturing the effects of human activities and other factors including climate change on coastal vulnerability due to erosion	Applied Geography (Awange, J.L., Saleem, A., Konneh, S.S., Goncalves, R.M., Kiema, J.B. K., Hu, K.X., 2018. Liberia's coastal erosion vulnerability and LULC change analysis: Post-civil war and Ebola epidemic. Applied geography 101, 56-67. https://doi.org/10.1016/j.apgeog.2018.10.007)
Komolafe et al. (2022)	Spatio-temporal analysis of shoreline positional change of Ondo State coastline using remote sensing and GIS: A case study of Ilaje coastline at Ondo State in Nigeria	To integrate remote sensing, GIS, and statistical methods to monitor and quantify spatio-temporal shoreline dynamics along Ilaje Local Government, Ondo State, Nigeria over 31 years	Ilaje-Ondo State, Nigeria	Remote sensing and GIS (Landsat images, ArcGIS/ArcMap, DSAS,)	Results revealed that about 40 km of the coastline was found to be accreting with an average of + 1.08 m/year followed by 35.4 km of coastal erosion with an average of − 1.40 m/year and 4.6 km of the coast more or less appears stable. The overall shoreline changes fall within high accretion (> + 1 to ≤ + 2) to high erosion (< − 1 to ≥ - 2) of shoreline classification	The study offers a baseline information on shoreline dynamism in the coastline areas of Ilaje Ondo State which will serve as a veritable data for the sustainable control of coastal erosion in the study area and other shoreline with	Earth Systems and Environment (Komolafe, A.A., Apalara, P.A., Ibitoye, M.O., Adebola, A.O., Olorunfemi, I.E., Diallo, I., 2022. Spatio-temporal analysis of shoreline positional change of Ondo State coastline using remote sensing and GIS: A case study of Ilaje coastline at Ondo State in Nigeria. Earth Systems and Environment 6(1), 281-293. https://doi.org/10.1007/s41748-021-00270-1)

						similar characteristics	
Thior et al. (2019)	Coastline dynamics of the northern Lower Casamance (Senegal) and southern Gambia littoral from 1968 to 2017	To analyze the coastline evolution in Lower Casamance and southern Gambia based on a diachronic survey (1968–2017)	Northern Lower Casamance-Senegal and southern beaches in Gambia (West Africa)	Remote sensing and GIS (Landsat images, aerial photograph, Google Earth images, ArcGIS/ArcMap, DSAS)	The results revealed accretion over the entire area between 1968 and 1986 while greater erosion was observed between 1986 and 2004	The mobility indexes (EPR and LRR) show some variable dynamics of the coastline, featured by two trends: the first one, under accretion in the 1968–1986 period and the other one, globally erosive during 1986–2017 period	Journal of African Earth Sciences (Thior, M., Sané, T., Sy, O., Cissokho, D., Ba, B.D., Descroix, L., 2019. Coastline dynamics of the northern Lower Casamance (Senegal) and southern Gambia littoral from 1968 to 2017. Journal of African Earth Sciences, 160, 103611. https://doi.org/10.1016/j.jafrearsci.2019.103611)
Saleem and Awange (2019)	Coastline shift analysis in data deficient regions: Exploiting the high spatiotemporal resolution	-To assess the suitability of the new freely available high spatio-temporal Sentinel-2 products to monitor coastline shift -To assess the possibility of filling the missing	Liberia and Somalia *Note Somalia is an East African	Remote sensing (Landsat images, Sentinel-2, Google Earth Pro)	Results indicate 23% (on average) improvement gained by using Sentinel-2 compared to the traditional Landsat 30m resolution data (i.e., 32% for Liberia and 14% for Somalia)	There exist potential of using Sentinel-2 data source for coastline shift analysis monitoring study, particular for	Catena (Saleem, A., Awange, J.L., 2019. Coastline shift analysis in data deficient regions: Exploiting the high spatio-temporal resolution Sentinel-2 products. Catena, 179, 6-19. https://doi.org/10.1016/j.catena.2019.03.023)

	Sentinel-2 products	Sentinel-2 gaps with Landsat 8 panchromatic band (15 m) products -To undertake a comparative analysis between Sentinel-2 (10 m), Landsat panchromatic (15 m), and Landsat multispectral (30 m)	country, but was used in this study for comparison			data deficient countries such as Liberia and Somalia with limited remote sensing resources capability	
Balle et al. (2021)	Analyses of short- and long-term shoreline trends of the Southwest Benin Coast	To determine the shoreline change trends in the study area over approximately a 10-year period from 1988 to 2018	Benin	Remote sensing, GIS, and field survey (SPOT, Sentinel-2, ArcGIS/ArcMap, DSAS, GPS survey)	Results indicate that from 1988 to 2001, a high net shoreline accretion occurred, representing 80.39% of the entire study area at an average rate of 3.46 m/y. Also, from 2001 to 2012, the Grand-Popo shoreline was affected by erosion representing approximately 85.17% of the study area at an average erosion rate of –4.54 m/y. Net shoreline accretion corresponding to 76.08% of the entire study coast at an average rate of 7.98 m/y also occurred between 2001 and 2012	Shoreline change information plays a vital role in understanding future shoreline evolution trends and in formulating coastal management policies	Journal of Coastal Research (Balle, G.R.A., Ahouansou, D.M.M., Sintondji, L.C.O., Agbossou, E.K., 2021. Analyses of short-and long-term shoreline trends of the southwest Benin coast. Journal of Coastal Research 37(2), 316-325)
Brempong et al. (2021)	Short-term seasonal		Dzita, Ghana	Remote sensing and GIS (UAV, ArcGIS)	Results show that shoreline changes indicated the	There is the need for the	Interpretation (Brempong, E.K., Angnuureng, D.B.,

	changes of the Dzita beach of Ghana using geographic information system and photogrammetry				dominance of erosion during the first and third phases (May 2018–December 2018 and June 2019–December 2019, respectively) at a rate of −7.23 ± 0.23 and −4.85 ± 0.23 m/yr, whereas the second phase (January 2019–June 2019) showed accretion of +8.44 ± 0.23 m/yr	implementation of soft engineering measures such as beach nourishment to protect the shoreline and strict prevention of nearshore sand and gravel mining	Appeaning Addo, K., Jayson-Quashigah, P.-N., 2021. Short-term seasonal changes of the Dzita beach of Ghana using geographic information system and photogrammetry. Interpretation 9, SH87-SH97. https://doi.org/10.1190/INT-2021-0027.1)
Bergsma et al. (2020)	Sand-spit evolution and inlet dynamics derived from space-borne optical imagery: Is the Senegal river inlet closing?	To showcase the use of satellite imagery to assess the morphological change of the St. Louis inlet position over more than 3 decades	St. Louis, Senegal	Remote sensing (satellite images)	The results showed that the southerly sand-spit migration rates varied from 475 m/yr to 590 m/yr after the breach	The inlet will close again around 2050 and 2055 due to migration rate	Journal of Coastal Research (Bergsma, E.W.J., Sadio, M., Sakho, I., Almar, R., Garlan, T., Gosselin, M., Gauduin, H., 2020. Sand-spit evolution and inlet dynamics derived from space-borne optical imagery: Is the Senegal-river inlet closing?. Journal of Coastal Research 95(sp1), 372-376. https://doi.org/10.2112/SI95-072.1)
Appeaning Addo (2018)	Assessing ocean wave dynamics, potential	To assess wave dynamics and sediment transport along the coast of Accra in Ghana	Accra, Ghana	Remote sensing and GIS (Wave data, ArcMap)	Results revealed that the potential sediment transport rate was between 4.1 x105 m3/yr and 4.1 x105 m3/yr, while coastal erosion	Sediment transport intensity and nearshore	Journal of Coastal Research (Appeaning Addo, K., 2018. Assessing ocean wave dynamics, potential sediment

	sediment transport, and coastal erosion along Accra Coast in Ghana	and compared the results with coastal erosion trend			rate was 1.13 m/yr. Potential sediment transport rate increases from west to east. Coastal erosion is relatively high along the eastern and western coasts of Accra, while the central coast is relatively stable	bathymetry interaction in part explain the rate of erosion observed along the Accra coast in Ghana	transport, and coastal erosion along Accra coast in Ghana. Journal of Coastal Research 81(sp1), 86-91. https://doi.org/10.2112/SI81-011.1)
Yang et al. (2021)	Shoreline changes and erosion protection effects in Cotonou of Benin in the Gulf of Guinea	To investigate the effectiveness of groynes by exploring changes in length, width and area of shoreline in Cotonou, Benin	Cotonou, Benin	Remote sensing and GIS (Google Earth images, QGIS)	Shoreline in Sector 1 showed accretion by recovering 1.20 km2 of area. In contrast, 3.67 km2 of Sector 2 disappeared due to coastal erosion, although it has groynes	The need to study how to maximize effectiveness of groynes	Korean Journal of Remote Sensing (Yang, C.S., Shin, D.W., Kim, M.J., Choi, W.J., Jeon, H.K., 2021. Shoreline changes and erosion protection effects in Cotonou of Benin in the Gulf of Guinea. Korean Journal of Remote Sensing, 37(4), 803-813. https://doi.org/10.7780/kjrs.2021.37.4.10)
Foli et al. (2022)	Earth observation services in support of West Africa's blue economy: coastal resilience and climate impacts	To provide a review of past and current regional initiatives that address the challenges of the marine and coastal areas of West Africa, especially with respect to issues of shoreline erosion	Guinea, Nigeria, Liberia, Senegal, Guinea Bissau and Ghana	Remote sensing (Sentinel-1)	Results showed that the rate of erosion ranged between 1 and about 30 m/year with an average rate of 10 m/ year (± 0.5 m/year) for the period 2015–2018. However, some local areas recorded about 50 m/year. The countries that recorded the highest rates of erosion were	In the bid to achieve the Blue Economy agenda, dialogue and consultations are essential ingredients in every step of the policy- and	Remote Sensing in Earth Systems Sciences (Foli, B.A.K., Williams, I.K., Boakye, A.A., Azumah, D.M.Y., Agyekum, K.A., Wiafe, G., 2021. Earth observation services in support of West Africa's blue economy: Coastal resilience and climate impacts. Remote Sensing in Earth Systems Sciences, 5, 59–

			(West Africa)		Guinea, Nigeria, Liberia, Senegal, Guinea Bissau and Ghana	decision-making process	70. https://doi.org/10.1007/s41976-021-00058-x.)
Appeaning Addo (2011)	Changing morphology of Ghana's Accra coast	To review the geomorphic state of the Accra coast in Ghana, also analysis how the climatic and human induced factors influence the observed changes	Accra, Ghana	Remote sensing, GIS, and Field survey (topographic map, wave data, site visits)	Results show that human activities such as dam construction over the Densu River, engineering interventions to check the spread of erosion and sand mining has created sediment deficit which has exacerbated coastal erosion in Accra	Anthropogenic factors are estimated to account for 70-90% of coastal erosion problems in Accra	Journal of Coastal Conservation (Appeaning Addo, K., 2011. Changing morphology of Ghana's Accra coast. J Coast Conserv 15, 433–443 (2011). https://doi.org/10.1007/s11852-010-0134-z)
Jayson-Quashigah et al. (2013)	Medium resolution satellite imagery as a tool for monitoring shoreline change. Case study of the Eastern coast of Ghana	To investigate the potential of medium resolution satellite imagery for mapping shoreline positions and for estimating historic rate of change	Volta estuary to Blekusu east of Keta, Ghana	GIS (Landsat images, ASTER data, ArcGIS/ArcMap, DSAS)	Results show that the Keta shoreline is a highly dynamic feature with average rate of erosion estimated to be about 2m/year ±0.44m	This study confirms the 'knock-on effects' of ad hoc coastal hard protection along the coast of Ghana and supports the call for shoreline management planning	Journal of Coastal Research (Jayson-Quashigah, P-N., Appeaning Addo, K., Kufogbe, S.K., 2013. Shoreline monitoring using medium resolution satellite imagery, a case study of the eastern coast of Ghana. *In: Conley, D.C., Masselink, G., Russell, P.E. and O'Hare, T.J. (eds.), Proceedings 12th International Coastal Symposium (Plymouth, England).* Journal of Coastal Research 65, 511-516. http://dx.doi.org/10.2112/SI65-087.1)

Nairn et al. (1998)	Coastal erosion at Keta lagoon, Ghana-Large scale solution to a large scale problem	To present a brief summary of some of the key aspects of the Keta Sea Defence Project	Keta, Ghana	Model- COSMOS and GENESIS numerical modeling	This undeveloped area will erode to make up the remaining 60,000 m3/yr deficit between the transport through the project area and the potential rate downdrift of the sea defence system	An extensive monitoring program through the four year construction period will assess the waves, shoreline change, scour and stability of structures in addition to environmental conditions as part of the environmental impact assessment requirements	Coastal Engineering Proceedings (Nairn, R., MacIntosh, K., Hayes, M., Nai, G., Anthonio, S., Valley, W., 1998. Coastal erosion at Keta Lagoon, Ghana - LARGE Scale solution to a large scale problem. Coastal Engineering Proceedings, 1(26). https://doi.org/10.9753/icce.v26.%p)
Kusimi and Dika (2012)	Sea erosion at Ada Foah: assessment of impacts and proposed mitigation measures	To determine the impact of the sea erosion on the people of Ada Foah and also the extent of shoreline recession from an existing 1926 ground survey sheet to date	Ada Foah, Ghana	Remote sensing, GIS, and survey (Landsat images, ArcGIS/ArcMap, DSAS)	Results of shoreline change analysis indicate that, the Ada Foah shoreline has been receding since 1926 to date with a mean change in shoreline of 280.49 m and an average annual rate of 3.46 m/year	To protect the coastline from the battering sea, a sea defence project, comprising sand nourishment and the construction of	Natural Hazards (Kusimi, J.M., Dika, J.L., 2012. Sea erosion at Ada Foah: assessment of impacts and proposed mitigation measures. Nat Hazards 64, 983–997. https://doi.org/10.1007/s11069-012-0216-3)

						groynes, is being undertaken	
Fashae and Onafeso (2011)	Impact of climate change on sea level rise in Lagos, Nigeria	To examine the historical trend in storm tide along the coastal stretch of Lago	Lagos, Nigeria	Remote sensing and GIS (Landsat images, ArcView 3.3 and ArcGIS 9.2)	Results show that by 2009 the extent had reduced to about 0.89 km2, thereby indicating the total loss of a 0.75 km2 of beach land	The current infrastructural developments around the low-lying barrier beach of Lagos should be reversed and the human population concentration in the area be reduced	International Journal of Remote Sensing (Fashae, O.A., Onafeso, O.D., 2011. Impact of climate change on sea level rise in Lagos, Nigeria. International Journal of Remote Sensing, 32(24), 9811-9819. http://dx.doi.org/10.1080/01431161.2011.581709)
Evadzi et al. (2017)	Quantifying and predicting the contribution of sea-level rise to shoreline change in Ghana: Information for coastal adaptation strategies	To quantify the sea level rise contribution to historical shoreline change using sea-level trend estimates from satellite observations	Ghana	Remote sensing and GIS (Landsat images, orthophotos, DEM data, aerial photograph, ArcGIS, DSAS)	Results revealed that average sea level has risen by about 5.3 cm over the last 21 years and accounts for only 31% of the observed annual coastal erosion rate (about 2 m/y) in Ghana. SLR will also contribute to 31% of shoreline retreat in the future, by the year 2025, about 6.6, 4.7, and 5.8 m of coastland in Ghana with lowest slope range (0–0.4%) are projected to be inundated	The need for further research into the anthropogenic and other factors that contribute about 69% of the annual erosion rate in Ghana to help	Journal of Coastal Research (Evadzi, P.I.K., Zorita, E., Hünicke, B., 2017. Quantifying and predicting the contribution of sea-level rise to shoreline change in Ghana: Information for coastal adaptation strategies. Journal of Coastal Research 33(6), 1283-1291. https://doi.org/10.2112/JCOASTRES-D-16-00119.1)

					respectively, under the RCP 2.6, 4.5, and 8.5 scenarios	improve adaptation efforts	
Appeaning Addo (2014)	Managing shoreline change under increasing sea level rise in Ghana	To reports on using the Soft Cliff and Platform Erosion (SCAPE) numerical model to simulate future shoreline evolution trend in the central Accra coast in Ghana.	Accra, Ghana	GIS and Model (orthophotos, DSAS, Soft Cliff and Platform Erosion (SCAPE) numerical model)	The results showed that a highly populated community in central Accra will be inundated by 2065, while the Rivera beach resort will be eroded from 2035. A natural fish landing site in Osu (suburb in Accra) will be lost from 2045	Shoreline change management options should be explored to help mitigate the expected impact of the sea-level rise	Coastal Management (Appeaning Addo, K., 2014. Managing shoreline change under increasing sea-level rise in Ghana. Coastal Management 42(6), 555-567. http://dx.doi.org/10.1080/08920753.2014.964820)
Angnuureng et al. (2016)	Video observation of waves and shoreline change on the microtidal James Town beach in Ghana	To present preliminary results of the first efforts in processing video-derived observations of waves and shoreline change in Ghana	James Town, Accra, Ghana	Video camera	During the observation period from September 2013 to July 2014, shorelines retreated more they advanced	Shorelines extracted from video suggest large monthly variability driven by wave seasonality while shoreline change shows a subsequent erosion/accretion cycle	Journal of Coastal Research (Angnuureng, D.B., Almar, R., Appeaning Addo, K., Castelle, B., Senechal, N., Laryea, S.W., Wiafe, G., 2016. Video Observation of waves and shoreline change on the microtidal James Town beach in Ghana. Journal of Coastal Research 75(sp1), 1022-1026. https://doi.org/10.2112/SI75-205.1)
Boateng et al. (2017)	Mapping vulnerability and risk of Ghana's	To examine the relative vulnerability along the entire coast of Ghana	Ghana	GIS (orthophotos)	The results showed that parts of the central coast and the eastern coasts of Ghana were the most vulnerable. It was identified that	The study will facilitate the long-term adaptation	Marine Geodesy (Boateng, I., Wiafe, G., Jayson-Quashigah, P.-N., 2017 Mapping vulnerability and risk of Ghana's

	coastline to sea level rise				about 50% of the 540km shoreline of Ghana is vulnerable	planning and hazard mitigation to inform the management of Ghana's coast	coastline to sea level rise, Marine Geodesy 40(1), 23-39. https://doi.org/10.1080/01490419.2016.1261745)
Jonah et al. (2015)	Assessment of sand and stone mining along the coastline of Cape Coast, Ghana	To identify the various types of coastal sand and stone mining activities, the level at which they are undertaken and covers the trends in coastal erosion along the coast of Cape Coast, Ghana	Cape Coast, Ghana	GIS, field survey (ArcGIS, DSAS, orthophotos, GPS survey)	Results showed that tipper truck-based beach sand mining activities alone account for the loss of about 285,376 m3/year of sand from the littoral zone in the Cape Coast area. Also, the average erosion rate for the Cape Coast area within the seven year period is 0.85 m/year with two areas recording high erosion rates of 4.35 m/year and 4.25 m/year	Sand mining is the main cause of erosion along the coastline of Cape Coast	Annals of GIS (Jonah, F.E., Adjei-Boateng, D., Agbo, N.W., Mensah, E.A., Edziyie, R.E., 2015. Assessment of sand and stone mining along the coastline of Cape Coast, Ghana. Annals of GIS 21(3), 223-231. http://dx.doi.org/10.1080/19475683.2015.1007894)
Appeaning-Addo and Lamptey (2013)	Innovative technique of predicting shoreline change in developing countries: Case of Accra erosion	To develop an innovative technique that combines archival data that may exist in developing nations with modern data to achieve optimum results in shoreline rates of change,	Accra, Ghana	Remote sensing, GIS, and field survey (Aerial photograph, bathymetric map, topographic map, ArcGIS, DSAS, GPS survey	The results revealed that the Accra shoreline has receded at an average rate of 1.13 m/year, which is attributable to several factors	The findings of the study have important implications for formulating reliable and sustainable coastal management strategies in	*Coastal Research Library, vol 1000*. Springer, Dordrecht. (Appeaning-Addo, K., Lamptey, E., 2013. Innovative technique of predicting shoreline change in developing countries: Case of Accra erosion and causal Factors. *In: Finkl, C. (eds) Coastal Hazards. Coastal Research Library, vol 1000*. Springer,

	and causal Factors	while accounting for uncertainties				developing countries	Dordrecht. https://doi.org/10.1007/978-94-007-5234-4_14)
Jonah et al. (2016)	Coastal erosion in Ghana: causes, policies, and management	To analyze shoreline change rates for three neighbouring coastal communities in the Central region of Ghana; Elmina, Cape Coast and Moree	Elmina, Cape Coast and Moree, Ghana	GIS, field survey (topographic map, orthophotos, ArcGIS, DSAS, GPS survey)	The results revealed average shoreline change rates of −1.24 m/year and −0.85 m/year in the medium term and short-term period respectively. It was also established that less consolidated shoreline segments recorded higher erosion rates in both periods while cliffs and rocky segments experienced very little erosion or high stability	The need to adopt proactive approaches to coastal erosion management	Coastal Management (Jonah, F.E., Mensah, E.A., Edziyie, R.E., Agbo, N.W., Adjei-Boateng, D., 2016. Coastal Erosion in Ghana: Causes, policies, and management. Coastal Management 44(2), 116-130. http://dx.doi.org/10.1080/08920753.2016.1135273)