Côte d’Ivoire

CI1 LIBERIA BORDER – SAN PEDRO

Echeloned coast with alternate small rocky headlands and creeks or long sandy coves. Change dynamics relate to very localised conditions on each site, surrounded by accentuated hilly landforms.

High density of micro estuarine lagoons, outlets of small coastal rivers.

Human land use density has long remained low towards the coastline and limited around the four agglomerations: Tabou, Grand Bereby, San Pedro and Sassandra. The completion of a full road link, located most often less than 10 km from the coastline, has already induced a post-forest agricultural situation that will be almost generalised in the medium term.

Generally, the habitations and villages remain some distance inland from the beaches.

The potential of attractive landscape sites locally sheltered from the ocean waves is important, but use is limited to local populations with motor vehicles. Tourist development projects have been envisaged (1970s and 80s), but were restricted by lack of international investment.

A high densification of agriculture on the accentuated hilly landform highly unlikely and, in this context, maintaining satellite tracks from the coastal road will always remain costly.

Little tradition of fishing among migrants, more centred on the cash crops of coffee, cacao and staples, therefore not much interest for settlements on the sea front or beach.

In the long term, human land use of the coastline is only to be expected on sites subject to tourist development, with a national and international clientele.

When the time comes, accompaniment will be indispensable for investments to preserve attractive landscape and environmental resources, as well as caution regarding developments on the edge of the beach.

Côte d'Ivoire experienced several surge episodes that caused the destruction of building of infrastructure (2007, 201 and 2014).

				ENVIRONMENT
CI1-a	**105 - CAVALLY ESTUARY - LIBERIA BORDER**			
BASELINE				
Diagnostics	Particular morphology of the estuary: sandy spits extending inwards. Two small villages on each side of the border. Complex of wetlands, woodland and various formations of vegetation. Sector largely cleared on the Côte d'Ivoire side to the edge of the coastline. Very sparsely populated.			
Dynamics	Highly unstable estuary outlet site.			
Stakes	No particular stakes, possible future densification in the event of a growth in activity on the Liberian side and possible development of a harbour town at Harper.			
Actions	Possible set up of transboundary protected area of approximately 10,000 hectares on Cavally estuary.			
Priority level	low	**Monitoring-observation**		Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	low	**Monitoring - Observation**		Watch-keeping for the purpose of anticipation
Protected Area	NO	**Hazards**	Not reported	

				RURAL
CI1-b	**106 - TABOU WEST**			
BASELINE				
Diagnostics	Sparsely populated sector. Large clearings.			
Dynamics	No remarks.			
Priority level	low	**Monitoring-observation**	No recommendation	
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	low	**Monitoring - Observation**	No recommendation	
Protected Area	NO	**Hazards**	Not reported	

				RURAL
CI1-c	**107 - WEST**			
BASELINE				
Diagnostics	Town planned within the framework of the development of oil palms, with attempt at plot division of a satellite town in the east. Fluvial channel parallel to the sea shore, but separated from it by a wide terrace. Rocky spurs stabilising the river mouth. Today there is a good road connection with Abidjan.			
Dynamics	No remarks.			
Stakes	Few stakes in the future, low population density in nearby Liberia, San Pedro, 100 km away, looks more attractive as a centre for services and infrastructure connected towards the exterior.			
Actions	No action identified			
Priority level	low	**Monitoring-observation**	No recommendation	
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Possible impacts of the development of the San Pedro centre on the town of Tabou.			
Priority level	Low	**Monitoring - Observation**	**Watch-keeping for the purpose of anticipation**	
Protected Area	NO	**Hazards**	Not reported	

				ANTICIPATION
CI1-d	**108 - TABOU EAST**			
BASELINE				
Diagnostics	Sector of sandy terraces, sparsely populated, straight coastline. Oil palm plantations on terraces and flattened hills towards the interior.			
Dynamics	Micro-outlets of estuaries and lagoons, typically filled in, but meanders of the river are breaching the narrow lido. Full reconfiguration of the river mouth in the long term if the lido is breached.			
Stakes	Future tourist development?			
Actions	No action identified			
Priority level	Low	**Monitoring-observation**	Watch-keeping for the purpose of anticipation	
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Low	**Monitoring - Observation**	Watch-keeping for the purpose of anticipation	
Protected Area	NO	**Hazards**	Not reported	

				ANTICIPATION
CI1-e	**109 - GRAND BEREBY**			
BASELINE				
Diagnostics	Area largely cleared with small villages on the edge of the coastline, but largely removed from the beach (no danger). Grand Bereby, small town with an attractive, slightly sheltered cove. South of Grand Bereby, seven east-facing, handsome coves with tourist potential			
Dynamics	Unstable beaches (erosion/accretion)			
Stakes	Future tourist development			
Actions	Anticipate development of building a hospitality infrastructure along the line of the beaches.			
Priority level	Low	**Monitoring-observation**		Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Low	**Monitoring - Observation**		Watch-keeping for the purpose of anticipation
Protected Area	NO	**Hazards**	Not reported	

				ENVIRONMENT
CI1-f	**110 - SAN PEDRO WEST**			
BASELINE				
Diagnostics	Numerous coastal lagoons, isolated, sparsely populated area despite proximity of San Pedro.			
Dynamics	No remarks.			
Priority level	Low	**Monitoring-observation**		No recommendation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Low	**Monitoring - Observation**	No recommendation	
Protected Area	NO	**Hazards**	Not reported	

		URBAN AND PORT
CI1-g	**111 - SAN PEDRO URBAN AREA AND WEST PERIPHERY**	
BASELINE		
Diagnostics	New town fully planned in the 1970s during the boom in forestry then in coffee and cacao that are more or less processed locally. Coastal-seafront road. Random, unplanned development of dwellings on the edge of wetlands north of the town, on flood-prone land, as the extension of the lower course of the river does not facilitate drainage and evacuation of spates.	

Dynamics	This sector is part of a system of mixed, echeloned coastlines typical of the west of Côte d'Ivoire. The entry channel to the port is protected against siltation by two piers preceded upstream of the drift by structures transversal to the coast (experimental groyne and rock-fill serving as dykes to stop the sand). This infrastructure has disrupted sediment transport, causing instability of the beaches between the port and the mouth of the San Pedro (reflective profile, scalloped bars). The general trend in the sector is towards erosion (between 0.3 and 1 m per year) with however, episodes of accretion west of the Port.		
Stakes	Role and place of San Pedro harbour in the country's economy. Airport area in the event of future tourist development. Feasibility and sustainability of intended works to extend the harbour area (a container park in particular) depending on the coastal dynamics observed.		
Actions	Improve drainage and management of rainwater. Relocate precarious settlements located in flood-prone area. Sector scheme for the entire urban coastline. In-depth studies prior to the extension of the port.		
Priority level	High	**Monitoring-observation**	**Intense and regular**

DEVELOPMENTS SINCE 2010			
Evolution of stakes	San Pedro is experiencing a relatively important growth thanks mainly to increased boat and goods traffic favoured by transhipment. San Pedro's port extension project: the port area should be extended from 5 to 23 ha. Offshore oil exploration. Establishment of new hotels.		
Characterization of port infrastructures	The Port of San Pedro is located in the South-western part of the country in a natural bay protected by two piers. It is run by Port Autonome de San Pedro, a State-owned company. It is the world first cocoa bean-exporting port. It is the country's second ports in terms of tonnage (3.5 million tonnes in 2012). It also includes a fishing facility covering a total area of 18 727 m² (http://www.sanpedro-portci.com/site/)		
Priority level	**Very high**	**Monitoring - Observation**	**Intense and regular**
Protected Area	NO	**Hazards**	The shoreline's length has considerably diminished. This reduction was estimated at between 1 and 1.5 m/year during the 2008-2012 period. On the beach of the Balmer Rock, the shoreline diminished by 0.5 to 1.5m. This reduction is partly man-caused (port developments, sand extraction on the beach of the Digboué lagoon west of the port's channel).

San Pedro's port area

2009

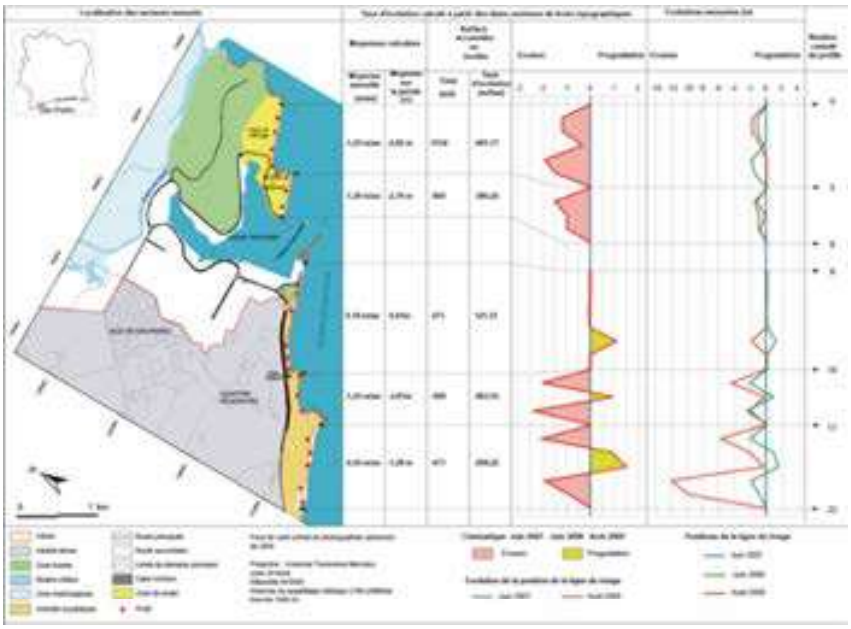
2015

Evolution of the San Pedro's port and related infrastructure between 2009 (above) and 2015 (below) Google Earth)
The San Pedro's port has not known major works since SDLAO but ever-increasing earthmovings/clearings are a sign of the port's dynamism.

Road break eat of San Pedro's sand quarry on the Digboué lagoon's beach (209).

Intensive sand extraction on the Digboué lagoon's beach (2008)

Site of the San Pedro's port coastal perimeter
(Source: SDLAO, case study report on Côte d'Ivoire)



Evolution rate of the shoreline of the San Pedro's port coastal perimeter between June 2007 and August 2009 (Source: SDLAO, case study report on Côte d'Ivoire).

CI2 EAST SAN PEDRO - SASSANDRA - FRESCO

				ENVIRONMENT
CI2-a	**112 - EAST SAN PEDRO**			
BASELINE				
Diagnostics	The west boundary is the San Pedro, the bed of which was shifted to develop the estuary into a harbour. Isolated, uninhabited coastline not accessible by road.			
Dynamics	To be analysed in each local situation.			
Priority level	Low	**Monitoring-observation**		No recommendation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Low	**Monitoring - Observation**		No recommendation
Protected Area	YES	**Hazards**	Not reported	

Monogaga's reserved forest Monogag's reserved forest: WDPA ID 29640	CI2-a
The Monogaga's coastal area has a «reserved forest» status.	

		ENVIRONMENT & TOURISM
CI2-b	**113 - RIGHT BANK OF SASSANDRA**	
BASELINE		
Diagnostics	Forest reserve severely deteriorated and cleared in proximity to the coastal road and almost completely on the eastern third towards Sassandra. Uncleared patches remain, however, in particular, in the western part of the forest reserve and on the edge of the coastline. A few sites with tourist potential already slightly developed (Monogaga cove). Two small lagoons closed off by a micro barrier are of interest. In the absence of a drastic reduction in the clearing of the forest reserve, which is quite unrealistic given the current context, certain forms of protection could be considered at the level of the littoral strip (a band 1 km wide) with a status to be examined. Sassandra is a historical town, tourist centre in the same category as Grand Bassam. Hilly landscaped site, sheltered in places towards the eastern part. Pier, small harbour shelter with possible impact on the urban beach. Fishing centre. Interior estuarine site, potential for facilities for yachting if there is a passage into the estuary. Sassandra West hills close to the coastline, with a road serving all the plantations. On the coastline, numerous sites of beaches, coves and creeks with tourist potential. Sassandra and the vicinity have been the subject of tourist development studies.
Dynamics	Each local situation to be analysed. High rate of erosion nonetheless noted on the Monogaga site, threatening residential and tourist buildings (often substandard).
Stakes	Preservation of the forestry environment and of the landscape and seaside resort appeal of beach sites with a view to developing high value added tourism.

Actions	Sector scheme and anticipation of the development of hotel facilities on the most sought after sites (Monogaga for example).		
Priority level	Medium	**Monitoring-observation**	Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010			
Evolution of stakes	Not reported		
Priority level	Medium	**Monitoring - Observation**	Watch-keeping for the purpose of anticipation
Protected Area	NO	**Hazards**	Not reported

			ENVIRONMENT
CI2-c	**114 - SASSANDRA LEFT BANK - DAGBEBO**		
BASELINE			
Diagnostics	Site with tourist and landscape potential at the level of Dagbego. Headland oriented eastward and permanent lagoon. Wetland complex on the right bank and island. Site of potential value for biodiversity.		
Dynamics	Numerous fragile and unstable sites at the mouths of small estuaries (spits and lidos). To be analysed in each local situation.		
Stakes	Conservation of a system of wetlands and a potential for tourism and landscape exploration.		
Actions	No action recommended		
Priority level	Low	**Monitoring-observation**	Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010			
Evolution of stakes	Not reported		
Priority level	Low	**Monitoring - Observation**	Watch-keeping for the purpose of anticipation
Protected Area	YES	**Hazards**	Not reported

Sassandra Complex - Dagbego Ramsar Site WII / Ramsar site: WII ID: 1CI002 – 1581 / WDPA ID : 902796	CI2-c
The Sassandra Complex - Dagbego Ramsar site was designated as a Wetland of International Importance/ Ramsar site on 18 November 2005 (10 551 ha), its delimitations are not availabel in the WDPA.	

			ENVIRONMENT
CI2-d	**115 - DAGBEBO - FRESCO**		
BASELINE			
Diagnostics	Coastline with little agricultural activity, but a land clearing face is advancing towards the coastline. Numerous small lagoons at outlets of small coastal rivers closed off by narrow sand barriers.		

Dynamics	Numerous fragile and unstable sites at the mouths of small estuaries (spits and lidos). To be analysed in each local situation.		
Stakes	Conservation of a system of wetlands and a potential for tourism and landscape exploration.		
Actions	No action recommended apart from efforts to conserve sites and natural ecosystems.		
Priority level	Low	**Monitoring-observation**	Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010			
Evolution of stakes	Not reported		
Priority level	Low	**Monitoring - Observation**	Watch-keeping for the purpose of anticipation
Protected Area	YES	**Hazards**	Not reported

Dassieko's reserved forest Dassieko RF: WDPA ID 300966	CI2-d
The Dassieko's coastal area has a «reserved forest» status.	

CI3 FRESCO - ASSAGNY

Area of land completely cleared to plant coconut groves, scattered relicts of natural vegetation more or less interspersed. Of botanical value and for the biodiversity of the forest vegetation on sandy terraces to be confirmed.

			ENVIRONMENT
CI3-a	**116 - FRESCO**		
BASELINE			
Diagnostics	Lagoon complex of the South of Fresco. Very narrow littoral rim approximately 20 km long adjacent to lagoon complex, littoral channels, interconnected wetlands as far as the large Tadio lagoon. Ramsar site on the Fresco wetland. The Fresco lagoon is the only one in Côte d'Ivoire to shelter the two types of mangroves found in the country (lagoon and estuarine). The Fresco site is the articulation between the rocky, echeloned coasts in the west and the straight sandy coasts in the east.		
Dynamics	Numerous fragile and unstable sites at the mouths of small estuaries (spits and lidos). To be analysed in each local situation. At the level of the Fresco site, the barrier is undergoing erosion, announcing the situation of most of the sandy coastal areas towards the east. Episodic closures of the passes isolating the lagoons with risks of organic pollution.		
Stakes	Rich and diverse in terms of biodiversity related to wetlands complex, lagoons (varied milieus related to the hydrological system, flora and fauna of interest). Low human land used including on the coastline.		
Actions	No action recommended apart from efforts to conserve sites and natural ecosystems.		
Priority level	Low	**Monitoring-observation**	Watch-keeping for the purpose of anticipation

DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Low	**Monitoring - Observation**	Watch-keeping for the purpose of anticipation	
Protected Area	YES	**Hazards**	Not reported	

Fresco Ramsar Site WII / Ramsar site: WII ID: 1CI003 – 1582 / WDPA ID : 902797	CI3-a
The Fresco Ramsar site was designed as a wetland of international importance / Ramsir site on 18 October 2005 (15 507 ha).	

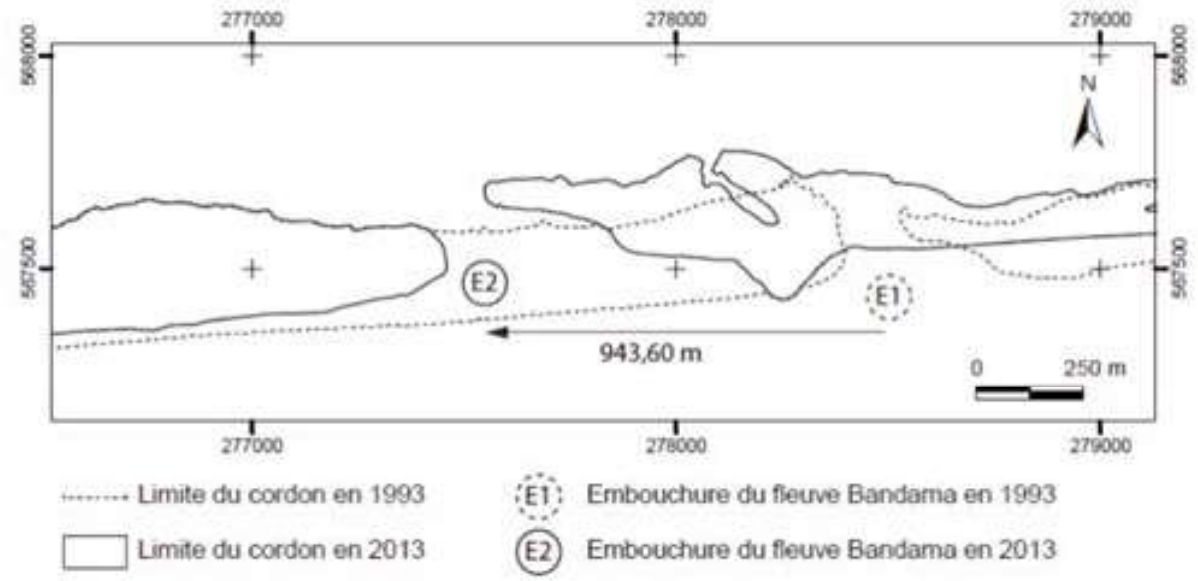
Port-Gautier's Reserved Forest Port Gautier's RF : WDPA ID 300965	CI3-a
The Port-Gautier's coastal area has a «reserved forest» status.	

			ENVIRONMENT
CI3-b	**117 - WEST GRAND LAHOU**		
BASELINE			
Diagnostics	Complex and dynamic estuarine area, reconfiguration of littoral rims in progress in relation to the deficit in sediment supply caused by the dam over the Bandama.		
Dynamics	Straight, apparently stable coastline.		
Stakes	Conservation of coastal forest relicts.		
Actions	Flora reconnaissance of the coastal forest relicts to be associated with Assagny conservation unit.		
Priority level	Low	**Monitoring-observation**	Watch-keeping for the purpose of anticipation

DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	**Medium**	**Monitoring - Observation**	Watch-keeping for the purpose of anticipation	
Protected Area	NO	**Hazards**	Cloness of the Grand Lahou's area and impacts of the Bandama dam, though the sector is located upstream of the longshore drift.	

			URBAN & TOURISM
CI3-c	**118 - GRAND LAHOU, RIGHT BANK AND BANDAMA ESTUARY**		
BASELINE			
Diagnostics	Initially situated on the rim near the mouth of the Bandama, the town was relocated 18 km inland. The reason given to justify this relocation is erosion of building land. Tourist vocation weakened by the generalised instability observed at Lahou Beach. Some evidence of forest vegetation covering twenty or thirty hectares must absolutely be preserved.		
Dynamics	Dynamic area (average recession rate at the level of the Lighthouse: 1.7m per year). The sandy rim of Grand-Lahou is divided into two parts: To the west, the village of Kpanda and to the east, the town centre. The sandy rim is 365 m wide at the level of the village of Kpanda and 210 m wide in proximity to the river mouth. Impact of the sediment deficit related to Kossou dam built in the 1970s on the Bandama to be confirmed. The morphological variations of Grand-Lahou beach are cyclical, marked by the seasons, with periods of erosion and accretion corresponding to periods of high and low energy ocean waves. The erosion of the littoral rim destroyed the town's lighthouse. Over the period 1985-1990 erosion of approximately 2.5 m per year was observed. The lighthouse in the background was destroyed by erosion and was moved in 1989. The large quantity of sand transported from the west by the coastal drift current and the reduction in the flow of the Bandama contribute to the seasonal siltation of the lagoon passess.[7]		
Stakes	Value of the biodiversity of the Bandama delta wetlands complex. Threatened stability of all urban and tourist installations situated on the sand spit of the river mouth. Deterioration and deforestation of mangroves, increasing the instability of the lagoon shores. Tendency towards episodic closure of the river mouth affecting fishing activities.		
Actions	Inform occupants of the sandy spit in the estuary. Possible development programme to be examined in a highly dynamic context where impacts must be anticipated and properly assessed.		
Priority level	**Very high**	**Monitoring-observation**	**Intense and regular**
DEVELOPMENTS SINCE 2010			
Evolution of stakes	Project on creation of an oceanographic centre north of the lagoons. Oil exploration, project on creation of a fishing port and a school.		
Coastal protection	Project on stabilization of the Bandama river's mouth		
Priority level	**Very high**	**Monitoring - Observation**	**Intense and regular**
Protected Area	NO	**Hazards**	Retreat of the shoreline by 19 to 23 m between 2008 and 2015, representing a 2 to 3 m/year recess rate. Migration towards the Tagba lagoon's channel, causing a lateral erosion of the Lahou-kpanda offshore bar on about 600 m between 2011 and 2012; The cumulative distance since 1993 is 1.5 km.

7 Koffi.P. 2001.- Quelques aspects de l'érosion actuelle de l'unité littorale de Côte d'Ivoire (Golfe de Guinée). 8p.



Migration towards the western part of the Tagba lagoon between 1993 and 2013 (source HAUHOUOT C., 2014)

The coastline forms a narrow shoestring sand isolating the Tagba lagoon from the Atlantic Ocean. The Lagoon and the ocean are connected by a narrow channel that also serves as a marine outlet for the Bandama river. This confluency has for a long time made the site attractive during the country's recent history. It was a privileged place for trade exchanges between Europeans and local populations, under the French colonial domination. Serving as the river's mouth, the shoestring sands are exposed to marine and river forces, the contrasts of which make the site erosion-prone.

The Tagba lagoon's channel in Grand Lahou (MINESUDD, 2011)

Destruction of the shoestring sands and the Lahou-kpanda habitat (Source: Hauhouot and Pourinet 2015)

				ENVIRONMENT
CI3-d	**119 - LEFT BANK OF BANDAMA**			
BASELINE				
Diagnostics	Very narrow, sparsely populated rim bordered by channels and wetlands, complex terraces with gouged channels. Coconut groves bordered in the north by Assagny canal, south border of National Park.			
Dynamics	Erosion. Impact of the sediment deficit related to the Bandama dam to be confirmed.			
Stakes	Value of the biodiversity of the Bandama delta wetlands complex.			
Actions	Apply provisions for management and development of Assagny National Park.			
Priority level	Medium	**Monitoring-observation**		No recommendation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Oil exploration, project on creation of a fishing port and a school. Project on creation of an oceanographic centre north of the lagoons.			
Coastal protection	Studies have been initiated to identify solutions for the sustainable management of the shoreline.			
Priority level	Medium	**Monitoring - Observation**	**Watch-keeping for the purpose of anticipation**	
Protected Area	**YES**	**Hazards**	Retreat of the shoreline by 13 m between 2008 and 2014, representing a 2.5 m/year recess rate. West-ward migration of the Bandama river's mouth, causing much damage, especially in buildings.	

Azagny National Park (IUCN Category II) National Park WDPA ID 7522 **Azagny Ramsar Site** WII / Ramsar site: WII ID: 1CI001 – 790 / WDPA ID : non-existent	CI3-d
The Azigny national Park was created by decree n°81/218 of 2 April 1981 on the creation of the Azigny National Park as well as a protective peripheral area. The Azigny National Park Ramsar site was designed as a wetland of international importance / Ramsir site on 27 February 1996 (19 400 ha).	

CI4 RURAL SECTOR ASSAGNY – JACQUEVILLE - ABIDJAN WEST

Straight, rather homogenous coastline, with generalised extension of large coconut groves on sandy terrace. Planned villages served by road or track on sand parallel to the coast. Positioned inland and not at risk from the sea.

Despite the proximity of Abidjan and the ferry connection that crosses the lagoon, very little evidence of seaside homes other than the huts associated with the plantations. The attractive coastline is rather the Ebrié lagoon, which has numerous residences along the edge of the lagoon, and boating facilities.

				RURAL
CI4-a	**120 - ASSAGNY - JACQUEVILLE**			
BASELINE				
Diagnostics	End of the hard-surfaced road, but improved track on sand some way back from the beach. Same scheme as for the following sectors: villages with planned grids amidst the plantations. Assagny canal, very narrow lagoonal channels on the edge of the beach.			
Dynamics	Straight shoreline, very slight, practically imperceptible undulations (period: approximately 10 to 15 km).			
Stakes	No particular stakes, rural coconut groves, except for a few exceptions, localised some distance from the beach			
Actions	No recommendations.			
Priority level	Medium	**Monitoring-observation**	No recommendation	
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Medium	**Monitoring - Observation**	No recommendation	
Protected Area	NO	**Hazards**	Not reported	

				ANTICIPATION
CI4-b	**121 - JACQUEVILLE**			
BASELINE				
Diagnostics	Small centre town surrounding an improved lagoon. Like all the planned villages in the sector, the initial grid allows for a natural strip of coconut trees on the edge of the beach. Locally, the buildings are nonetheless beginning to move closer to the beach. Hard-surfaced road connection to Abidjan.			
Dynamics	Straight shoreline, very slight, practically imperceptible undulations (period: approximately 10 to 15 km).			
Stakes	Stakes essentially related to human land use on the edge of the lagoon, but also to vigilance regarding the advancement of building between the coastal track and the beach.			
Actions	No action recommended			
Priority level	Low	**Monitoring-observation**		Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Development of 4 offshore oil fields (Foxtrot), Marlin and Manta platform. Construction of a dry support bridge.			
Priority level	**Medium**	**Monitoring - Observation**		**Regular**
Protected Area	NO	**Hazards**	Accretion of the beach. The extension of the shoreline between 2012 and 2015 is estimated at 0.8m.	

				ANTICIPATION
CI4-c	**122 - JACQUEVILLE - WEST ABIDJAN**			
BASELINE				
Diagnostics	This sector runs along the Vridi canal, an area adjacent to the lagoon, where urbanisation is in progress. The littoral part is scarcely used, and comprises sandy terraces that are not very fertile where only a few coconut palms are planted. Practically empty sector (land reserve?			
Dynamics	Straight shoreline, very slight, practically imperceptible undulations (period: approximately 10 to 15 km). Slight tendency to accretion west of Vridi pier. Green front of coconut trees on the edge of the beach.			
Stakes	Stakes essentially related to land use on the edge of the lagoon.			
Actions	Anticipation of the development of land use and sector scheme if it becomes denser.			
Priority level	Medium	**Monitoring-observation**		Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Progressive expansion of the habitat on former coconut plantations.			
Priority level	Medium	**Monitoring - Observation**		**Regular**
Protected Area	NO	**Hazards**	The sector is experiencing an accretion in its Eastern part at the Vridi canal	

Banco National Park (IUCN Category II) National Park WDPA ID 7525	CI4-c
The Banco area was classified as forest reserve in 1926 then as a reserved forest in 1929. The Banco national park was created in 1953 by the decree of 31/1053 (3474 ha).	

CI5 RURAL ABIDJAN – PORT BOUET

Continuous urban area, with breaks on each side of the airport, situated directly opposite the Trou sans Fond (deep underwater canyon gouged out of the continental shelf directly below Abidjan).

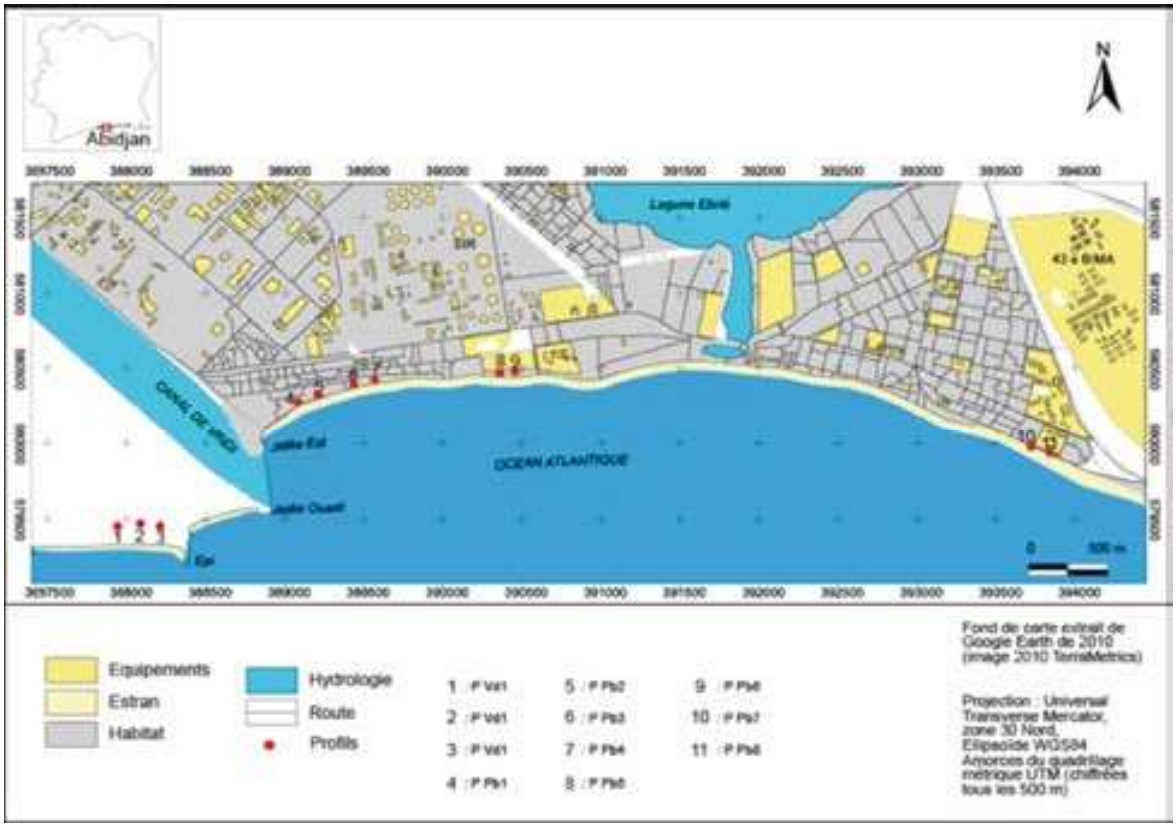
Growth towards the north and east (unplanned habitation east of the airport).

Sandy terrace site, easy to equip.

				URBAN AND PORT
CI5-a	**123 - PORT BOUET**			
BASELINE				
Diagnostics	Structured urban district including habitation and activities related to the port. Added to this are tourist installations (beach edge restaurants) and substandard habitations the most often in proximity to the beach. A protection plan based on a battery of eight 100-metre buoyant breakwaters at 400 to 450-meter intervals was drawn up but never implemented (mainly due to the cost). Works to widen Vridi pass are being considered. Exceptional ocean waves (due to a seismic event) in 2007, then in 2008 seriously affected this sector, with losses of dwellings and a beach recession of more than 15 m (source: national diagnostic study).			
Dynamics	Sector undergoing very active erosion. Impact of Vridi pier and sediment trap of the Trou sans Fond located perpendicular to the sector. Beach still in existence, with highly reflective profile, partly constituted of materials from the initial eroded terrace, large grain size of sand. The drop in removal currents due to the shifting of the water course towards the Vridi canal encouraged this process (case study).			
Stakes	Numerous dwellings and tourism infrastructure seriously threatened and exposed. Local impact of beach walls and "spontaneous" protective structures built by the locals. Stability of the infrastructure of the mouth of the channel giving access to the port.			
Actions	Risk prevention plan and preparation of the population. Ideally, dwellings should be requalified and relocated further from the beach. Control of the proliferation of individual installations for defence and protection. Planning and requalification of the seafront (sector scheme).			
Priority level	**Very high**	**Monitoring-observation**	**Intense and regular**	
DEVELOPMENTS SINCE 2010				
Evolution of stakes	(i) Many building destructions, displacement of populations, (ii) Extension and development of the Abijan's port, (iii) Implementation of a master plan for the town of Abidjan (iii) Private-owned facilities for building-strenghening and anti-erosion purposes.			
Characterization of port installations	The port of Abidjan comprises the Vridi canal that gives access to lagoon waters hosting the different breakwaters and wharves. (http://www.portabidjan.ci/) The operation of the Port of Abidjan and its containers terminal was entrusted to Bolloré Africa Logistics in 2015 for a 15-year period. A refurbishment operation is under way (commission of 8 new RTG container crane on wharf 21). Bolloré Africa Logistics manages the Satirail rail concession (1 260 km network connecting Abidjan, Ouagadougou and Kayes).			
Priority level	**Very high**	**Monitoring - Observation**	**Intense and regular**	
Protected Area	NO	**Hazards**	Major erosion in all the Easter part of the Vridi canal, retreat of the shoreline by 0.5 to 3 m/year. Important retreat during storm tides, especially in August 2011 and May 2014. Potential landslides in the western part of the Trou Sans Fond heads (submarine canyon).	

2010 *2015*

Evolution of the port of Abidjan and related infrastructures between 2010 and 2015 (Source: Google Earth)
The Port of Abidjan has been subject to many expansion works through earthmoving on the lagoon's area since 2010.



Site of the Vridi-Port Bouet Abidjan-Côte d'Ivoire coastal perimeter (Source: SDLAO, case study report on Côte d'Ivoire)

Mouth of the Vridi canal (source MINESUDD, 2011)

Breakwater lines facing a protective wall in front of Coco Beach. Port-Bouet, Abidjan (October 2003). Source: SDLAO's detailed case study report, Côte d'Ivoire).

Destruction of upper-beach installations East of these installations of the mouth of the port's channel access (MOLOA)

				URBAN
CI5-b	**124 - PORT BOUET EAST**			
BASELINE				
Diagnostics	Dense habitation on a narrow coastal strip bounded by the main road (dual carriageway from the airport). Density increases from the airport. Only green footprint is the break in urbanisation constituted by the airport. Totally privatised area little organised access to the beach. The progression of the sea contributes to the weakness of the constructions in the immediate vicinity of the beach. Sand extractions in several points.			
Dynamics	Sector undergoing progradation or stable in places. The oscillations due to the effects of the storm in 2007 and the consecutive reconstitution of the beach in the years that followed should not conceal the very unstable nature the sector.			
Stakes	Progressive privatisation of the beach. Continued densification of urbanisation north of the coastal road, as the plots to the south on the edge of the beach are already used. Future densification by division into concessions should be considered. Urban sprawl with the corresponding costs of equipment, roads, etc. Management of urban effluent.			
Actions	Risk prevention plan and preparation of the population in the event of surges. On the whole eastern part of the sector, requalification and relocation of habitations further back from the road. Planning and requalification of the seafront (sector scheme).			
Priority level	**Very high**		**Monitoring-observation**	**Intense and regular**
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Many cases of building destruction, displacement of populations. Potential threats on one portion of the airport's strip and on the coastal road, Construction of the Abidjan-Grand Bassam highway (2013-2014)			
Priority level	**Very high**	**Monitoring - Observation**		**Intense and regular**
Protected Area	NO	**Hazards**	Retreat of the shoreline by 0.5 to 3 m/year; This retreat with exacerbates (by 6 to 8 m) by the storm tides of August 2011 and late May 2014.	

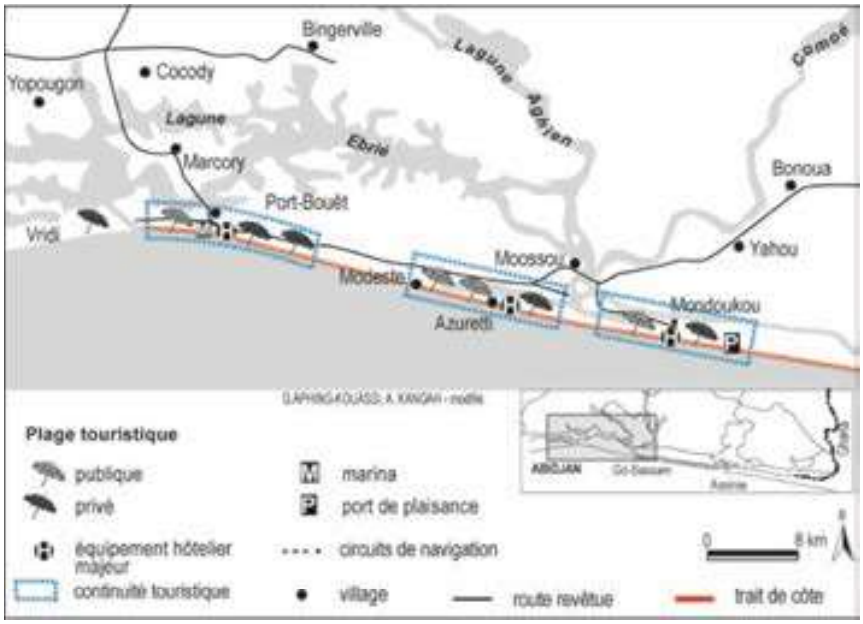
Future cut scene of the shoreline along the Airport-Anani highway (source Koffi et al., 2014)

CI6 PERIURBAN AREA EAST ABIDJAN – GRAND BASSAM

				URBAN
CI6-a	**125 - ABIDJAN EAST PERIURBAN AREA**			
BASELINE				
Diagnostics	Vast terrace with no channels or lagoons. Coastal road inland (300m). "Rurban" residential strip along the beach, surveyed and continuous with coconut plantations. Vast "projects" to create plots for building inland from the beach. Progressive densification of habitation approaching Abidjan.			
Dynamics	Sector undergoing active erosion.			
Stakes	Progressive privatisation of the beach. Continued densification of urbanisation north of the coastal road, as the plots to the south on the edge of the beach are already used. Future densification by division into concessions should be considered. Urban sprawl with the corresponding costs of equipment, roads, etc. Management of urban effluent.			
Actions	Urban organisation and structuring of the districts divided into building plots (centre district?), equipment. Inform the populations and residents on the edge of the beach.			
Priority level	High	**Monitoring-observation**	**Intense and regular**	
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Construction of the Abidjan-Grand Bassam international highway (2013-2014), a section of the Abidjan-Lagos corridor. Renovation and enlargement of the former Abidjan-Grand Bassam road			
Priority level	High	**Monitoring - Observation**	**Intense and regular**	
Protected Area	NO	**Hazards**	Moderate sensitivity of the shoreline with retreating, stable of expanding sectors (km 26 beach). Significant impacts of the storm tides of August 2011 and May 2014, Marine submersion of lidos	

			URBAN & TOURISM
CI6-b	**126 - GRAND BASSAM WEST COAST**		
BASELINE			
Diagnostics	Habitation on very narrow rim-lido. Strong tendency to build, including in at risk areas. In the western party, widening of the terrace. Coastal road near the beach (60 to 200 m).		
Dynamics	Sector undergoing active erosion. Sector was subject to damage and flooding during storm surges associated with ocean swell.		
Stakes	Strong tendency to build on the edge of the beach (linear sprawl of coconut groves), development of residential buildings close to urban Abidjan. Progressive privatisation of the beach.		
Actions	Reconquer land ownership control, supervision and limitation of the development of building. Inform the populations and residents on the edge of the beach. Reconquer land ownership control, supervision and limitation of the development of building.		
Priority level	**Very high**	**Monitoring-observation**	**Intense and regular**
DEVELOPMENTS SINCE 2010			
Evolution of stakes	Construction of the Abidjan-Grand Bassam international highway (2013-2014), a section of the Abidjan-Lagos corridor. Renovation and enlargement of the former Abidjan-Grand Bassam road		
Priority level	**Very high**	**Monitoring - Observation**	**Intense and regular**
Protected Area	YES	**Hazards**	Moderate sensitivity of the shoreline with retreating, stable of expanding sectors (km 26 beach). Significant impacts of the storm tides of August 2011 and May 2014. Marine submersion of lidos

Erosion on the beach of Mondoukou in Grand Bassam (source: MOLOA country branch of Côte d'Ivoire)

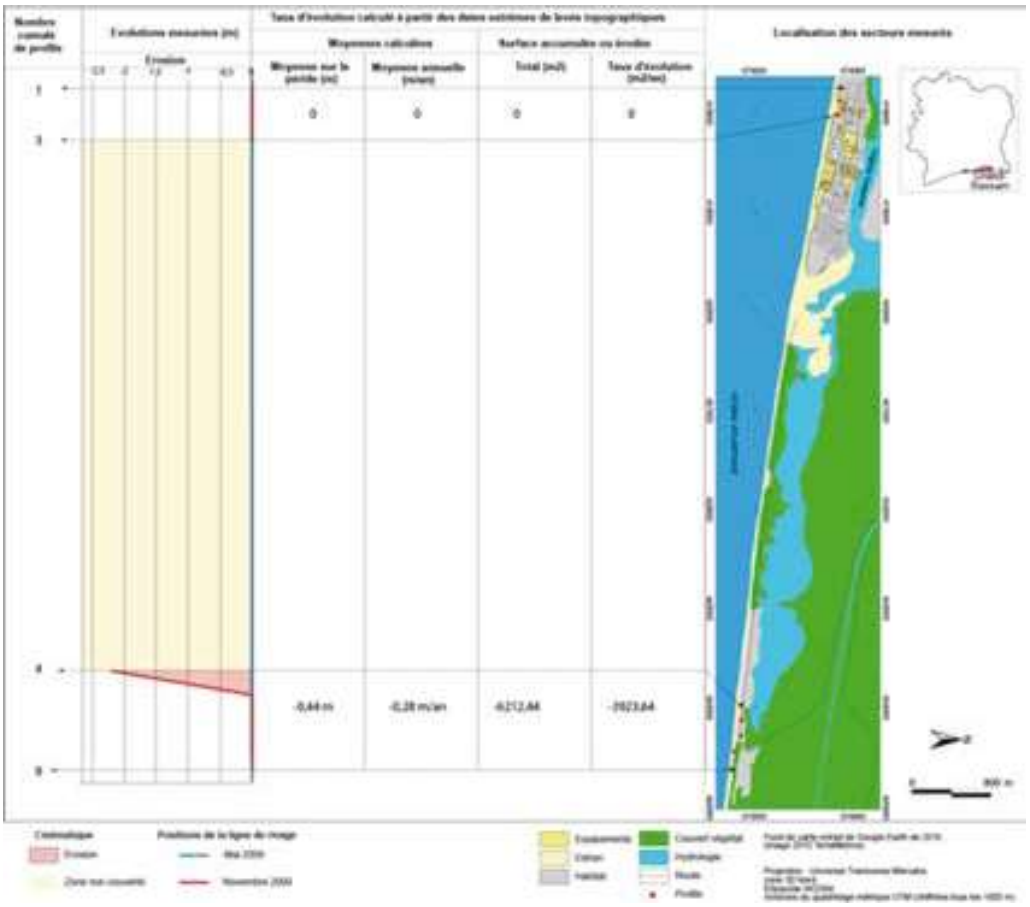


Tourist facilities on the Abidjan-Grand-Bassam road (source: Aphing-Kouassi, 2008)

				URBAN
CI6-c	**127 - GRAND BASSAM**			
BASELINE				
Diagnostics	Historical town on a narrow terrace adjacent to a lagoon, almost insular position, area suitable for urbanisation on the site is practically saturated, hence growth spreading north and east. Road link to Abidjan.			
Dynamics	Precarious stability. Risk of a combination of continental flooding and storm surge.			
Stakes	High risks for all the dwellings on the edge of the beach (residential, tourism, old habitations and precarious dwellings spreading east along the very narrow rim-lido and on the low-lying land on the shore of the lagoon).			
Actions	Detailed flood-submersion risk prevention plan. Inform the population and residents on the edge of the beach. Resorption and relocation of precarious dwellings on the edge of the beach.			
Priority level	High	**Monitoring-observation**		**Intensive and regular**
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Project to reopen the mouth of the Comoe River ; Project to rehabilitate the historic town of Grand Bassam. The historic city of Grand Bassam was designated in 2012 as a UNESCO World Heritage for cultural criteria (iii) and (iv).			
Priority level	High	**Monitoring – Observation**		**Intensive and regular**
Protected area	YES	**Hazards**	Sedimentary filling of the mouth of the Comoe, organic pollution of the lagoon of the mouth; Moderate retreat of the coastline and frequent marine submersion. Regression of the coastline of 8m i.e. 1m/year between 2008 and 2015. Exacerbation of the retreat by storm surges (2011 and 2014).	

Grand Bassam Ramsar Site ZHII / Ramsar site : ZHII ID : 1CI004 – 1583 / WDPA ID : 902798	CI6-b CI6-c CI6-d
Grand Bassam Ramsar Site was designated as a Wetland of International Importance/Ramsar Site on Tuesday, October 18, 2005 (40,210 ha).	

			TOURISM
CI6-d	**128 - BASSAM ESTUARY LEFT BANK**		
BASELINE			
Diagnostics	Narrow terrace with coconut groves adjacent to a lagoon served by a permanent road, connected to the Bonoua, Grand Bassam, Abidjan main road. Materials extraction sites. Off-road vehicles drive on the sand of the estuary which is blocked most of the time.		
Dynamics	Erosion observed (Mondoukou). Dynamics of siltation and temporary openings of the estuary. Fragility of the rim – lido at very low elevation. Sensitivity to surges and flooding of the lagoon system.		
Stakes	Tendency towards residential development in coconut groves for wealthy urban population. Annex of Grand Bassam, but coastal habitations at risk.		
Actions	Detailed flood-submersion risk prevention plan. Inform the population and residents on the edge of the beach. Resorption and relocation of precarious dwellings on the edge of the beach.		
Priority level	High	**Monitoring-observation**	**Intensive and regular**
DEVELOPMENTS SINCE 2010			
Evolution of stakes	Not reported		
Priority level	High	**Monitoring – Observation**	**Intensive and regular**
Protected area	YES	**Hazards**	Moderate retreat of the shoreline and frequent marine submersion. Retreat of the shoreline of 2.3m i.e. 0.76m/year between 2011 and 2014. Strong Impacts of August 2011 and May 2014 storm surges.



Rates of shoreline change on the littoral perimeter of Grand-Bassam. Source: case study.

Filling of the mouth of the Comoé in Grand Bassam (source Google Earth)

CI7 SANDY TERRACE AND COCONUT GROVES IN EASTERN COTE D'IVOIRE

				ANTICIPATION
CI7-a	**129 - GRAND BASSAM – ASSINIE**			
BASELINE				
Diagnostics	Wide terrace bordered by the Assinie canal in the north. Vast coconut palm plantations, scattered dwellings (plantation huts), practically no villages. "Sand" track used by traffic including off-road vehicles on the edge of the beach. Connected to the road system by a north branch towards Bonova. The Assinie canal is not very functional today.			
Dynamics	Straight shoreline with a tendency to wide undulations (period approximately 10 km) rather unstable.			
Stakes	Residences conquering the coconut groves, with no strong densification of habitation or population.			
Actions	Implementation of a sector scheme if land use were to become significantly denser.			
Priority level	Low	**Monitoring-observation**		Watch-keeping for the purpose of anticipation
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Low	**Monitoring – Observation**		Watch-keeping for the purpose of anticipation
Protected area	NO	**Hazards**	Moderate retreat of the shoreline and frequent marine submersion. Strong Impacts of August 2011 and May 2014 storm surges.	

				ENVIRONMENT & TOURISM
CI7-b	**130 - ASSINIE AND MOUTH OF THE ABI LAGOON**			
BASELINE				
Diagnostics	Long lido of Assinie isolating a longitudinal lagoon from the shore. Estuary of the lagoon system Abi + river Bia (nearby dam) and river Tano originating in Ghana. Estuarine islands and lagoon-ocean contact. Protected site, biologically valuable. Ehotile islands national park. Centre of tourist activity with installations essentially located on or in proximity to the lido.			
Dynamics	Estuary mouth clearly open and symmetrical, however, naturally fragile and unstable site. Straight shoreline with a tendency to wide undulations (period approximately 15 km) rather unstable. High rate of erosion observed towards Assinie. "Assouindé and Assinie beaches are tourist resort sectors par excellence. Given the narrow rim (sea-lagoon) and its very low coast, the tourist infrastructure is frequently and periodically submerged in this area. Erosion and especially submersions during exceptional storm or equinox tides in this part of the littoral area, have become a cause for concern to the extent that some of the economic operators installed in the area move their facilities and others totally abandon them (VALTUR holiday club and Club Med). This state of affairs has a considerable effect on the principal economic activity (tourism)". Source: case study			
Stakes	Maintain a secure tourism potential. Main mangroves stands on the coast of Côte d'Ivoire. Conservation of protected milieus in the context of the National Park.			
Actions	Detailed flood-submersion risk prevention plan. Inform the population and residents on the edge of the beach. Seek suitable architecture solutions to maintain reception capacities in an at-risk situation. Relocation of the most threatened facilities. Developments are certainly not recommended on this site.			
Priority level	**Very high**	**Monitoring-observation**	**Intensive and regular**	

DEVELOPMENTS SINCE 2010			
Evolution of stakes	Not reported		
Priority level	**Very high**	**Monitoring – Observation**	**Intensive and regular**
Protected area	**YES**	**Hazards**	Moderate retreat of the shoreline and frequent marine submersion. 11m retreat from the shoreline between 2008 and 2012 in Assouindé related to the storm surge of August 2011. Progradation of the foreshore at the west of the mouth of the Aby lagoon.

Reserved forest of Nganda Nganda RF of Nganda Nganda : WDPA ID : 300964 **Nganda Nganda Ramsar Site** WII / Ramsar site : WII ID : 1CI006 – 1585 / WDPA ID : 902800	CI7-b CI7-c
Nganda Nganda Ramsar Site was designated as a Wetland of International Importance/Ramsar Site on October 18, 2005 (27 274 ha) (the Ramsar site map is not included in the WDPA)	

NATIONAL PARK OF EHOTILE ISLANDS (IUCN Cat II) National Park : WDPA ID : 20174 **Ramsar Site of Ehotile Islands** ZHII / Ramsar site : ZHII ID : 1CI004 – 1584 / WDPA ID : 902799 **Proposed World Heritage Site of Ehotile Islands** UNESCO WH ID : 2099	CI7-b CI7-c
The National Park of Ehotile Islands was created by Decree 74/179 of April 25,1974 designating the National Park of Ehotile Islands. The Ramsar Site of Ehotile Islands - Essouman was designated as a Wetland of International Importance/Ramsar Site on October 18, 2005 (27,274 ha) (the Ramsar site map is not included in the WDPA) The national park of Ehotile Islands is included in the indicative list of UNESCO World Heritage sites since 2006, which Côte d'Ivoire intends to propose for classification.	

Assouindé beach (Hauhouot C, 2011)

				ANTICIPATION
CI7-c	**131 – EAST ABI LAGOON**			
BASELINE				
Diagnostics	Terraces partially planted with coconut palms. Sparsely populated area (compared to the adjacent part in Ghana). Isolated sector, except for small track towards Ghana.			
Dynamics	No remarks.			
Stakes	Area included in the Ehotile islands National Park, compatibility of this status with farming activities on terraces and in the National Park.			
Actions	No recommendations			
Priority level	Low	**Monitoring-observation**	Watch-keeping for the purpose of anticipation	
DEVELOPMENTS SINCE 2010				
Evolution of stakes	Not reported			
Priority level	Low	**Monitoring – Observation**	Watch-keeping for the purpose of anticipation	
Protected area	YES	**Hazards**	Strong Impacts of August 2011 and May 2014 storm surges. Shore erosion in Assinie France (Immediate East) between 2011 and 2015 due to the dynamics of the mouth of the Aby lagoon	