

2.0 PROJECT LAND USES

2.1 INTRODUCTION

The Chad Export Project – Project Description volume of this Environmental Assessment provides detailed information on the Project and its associated land requirements in Cameroon. This Section describes Project land needs in Cameroon associated with construction and operations of the Project. About 3,500⁴ hectares⁵ (ha) will be required during Project pipeline construction and for fixed facility sites. Most of this land use is associated with temporary pipeline construction. Almost all land will be reclaimed and made available for most pre-construction uses.

The pipeline easement and associated facilities have been sited to avoid populated settlements. However, there is a possibility that some houses and ancillary structures may be impacted by the Project and will need to be relocated within the same village. Because Project land needs in most areas of Cameroon are generally small relative to available lands, it is estimated that no families will be resettled to new villages because of Project land needs.

Based on information gathered during the CLS, future adjustments in location or total land needed for the pipeline route, facility sites, special construction areas, and temporary access roads may be made to avoid populated areas.

2.2 EXISTING LAND USES

The majority of land in the pipeline easement is undeveloped forest, secondary forest and savanna lands. The predominant use is agriculture. It is estimated between 15 to 20 percent of the pipeline land are in active agriculture or active fallow.

The pipeline easement crosses lands of 238 villages in 11 separate Departments in Cameroon. For more detailed information on land uses and cultural characteristics of villages along the route refer to Section 4.2 and Appendix B.

2.3 PROJECT LAND NEEDS

2.3.1 Land Needed for Project Construction and Operations

Land needed for the Project for pipeline construction and fixed facility sites is estimated to be almost 3,500 ha as detailed in Table 2-1. Of this estimated 3,500 ha, only about 125 ha will be needed for permanent facilities during the operations phase of the Project. In addition, a 10 to

⁴ This estimate is based on current information.

⁵ To convert from hectares: to square kilometers (multiply by 0.0100); to square miles (multiply by 0.0039); to acres (multiply by 2.4682).

15 m wide easement along the pipeline route will be retained for maintenance and emergency access; however, farming will be allowed on this easement in most areas with some restrictions.

Project Use (See Tables for Additional Details)	Total Needed During Construction	Disposition After Construction		
		Available for Previous Uses	Available with Restrictions	Permanent Facilities
Pipeline (Table 2-2)	3200	1849	1350	1
Pump Stations and Pressure Reduction Station (Table 2-3)	87	0	0	87
Storage Yards and Staging Areas (Table 2-4)	184	174	0	10
Other Land Needs for Infrastructure <ul style="list-style-type: none"> • Telecommunications sites (2 ha) • Land for road easement (17 ha) 	19	0	0	19
TOTAL	3490	2023	1350	117

For purposes of this Plan, permanent land use is considered any Project use of land for more than 12 consecutive months with the exception of land uses discussed in Section 2.3.3.

2.3.2 Cameroon Transportation System

Starting at Kribi, the pipeline easement will cross the Departments of Océan, Nyong-et-So'o, Mefou-et-Akono, Mfoundi, Lékié, Mefou-et-Afamba, Haute-Sanaga, Lom-et-Djérem, Mbéré, Vina, and Mayo Rey to the Cameroon border with Chad (Figure 1-1).

A 30 m wide Land Easement for construction of the pipeline will be needed from the Republic of Cameroon. In areas of difficult construction, such as those areas with steep slopes, and road and railroad crossings, the width of the Land Easement may be expanded to 50 m depending upon the terrain. At river crossings, the Land Easement will be extended to 60 m. The pipeline itself will be buried between 1.0 to 1.5 m below surface. In rocky areas, the final depth would be 0.5 m.

Construction activities at any given location along the pipeline should last approximately three months. This period corresponds to the time required to clear the land; excavate the trench; lay, weld, inspect, and test the pipe; and backfill the trench. Once construction is complete in one area, the construction crew will move to the next construction location.

⁶ The figures are subject to change. The final figures will be jointly established by COTCO and the Cameroonian Party.

The land will be reclaimed to allow prior users of traditionally used land to resume their former activities. The only areas to be retained solely for the Project will amount to about one hectare needed for the valve stations and the onshore-offshore tie-in.

Following completion of pipeline construction, COTCO will submit new coordinates to the Republic of Cameroon for the permanent system easement. This easement is about 10 to 15 m in width.

COTCO will maintain a permanent 10 to 15 m wide system easement over the pipeline for long-term maintenance and operation of the Cameroon Transportation System. This system easement is expected to be approximately half the size of the original Land Easement or about 1,350 ha. During operations, this 10 to 15 m wide strip of land will be made available for most pre-construction uses, but with the restriction that the use not interfere with the normal functioning and maintenance of the pipeline. Some restrictions are necessary, since the pipeline must be periodically inspected and the easement must be kept clear of large bushes and trees. Cultivation of crops will be permitted provided digging and plowing do not exceed 60 cm in depth. Construction of houses, animal sheds, and other structures will not be allowed.

It is estimated Project land needed for construction and operation of the pipeline will be:

Table 2-2. Summary of Estimated⁷ Pipeline Land Needs (Ha)				
Project Use/Facility	Total Needed During Construction	Disposition After Construction		
		<i>Available for Previous Uses</i>	<i>Available with Restrictions</i>	<i>Permanent Facilities</i>
Pipeline including valve station	2700	1349	1350	1
Incremental ROW for special construction, brush storage, access roads.	500	500	0	0
<i>Pipeline Subtotal</i>	<i>3200</i>	<i>1849</i>	<i>1350</i>	<i>1</i>

2.3.3 Pump Stations and the Pressure Reduction Station

Two pump stations⁸ and a pressure reduction station will be constructed in Cameroon (Figure 1-1) and will be operated for the life-of-the-Project.

⁷ Ibid.

⁸ Pump station #1 is located in the Oil Field Development Area in the Republic of Chad.

Table 2-3. Summary of Estimated Permanent Land Needs at Pump Stations and the Pressure Reduction Station (Ha)				
Project Use/Facilities	Total Needed During Construction	Disposition After Construction		
		<i>Available for Previous Uses</i>	<i>Available with Restrictions</i>	<i>Permanent Facilities</i>
Dompta Pump Station #2	39	0	0	39
Bélabo Pump Station #3	39	0	0	39
Pressure Reduction Station	9	0	0	9
Stations Subtotal	87	0	0	87

Each pump station will require about 18 months to construct and include a:

- Pump Station (about 20 ha)
- Landfill (about 4 ha)
- Airfield (15 ha)

The construction of the Pressure Reduction Station near Kribi will require about 14 months. The site is about 9.0 ha in size and includes the station (5 ha) and an engineered landfill (4 ha).

2.3.4 Storage Yards and Staging Areas

In addition to land needed for the pump stations and pressure reduction station, eleven storage yards will be required during Project construction. Facilities that may be associated with these storage yards include:

- Pipeline contractor's camp areas,
- Pipe storage areas,
- Logistics' uses such as areas for holding trucks, temporary construction living, and offices, and
- Pump Stations camp and storage areas.
- Air strip (Meidougou only)

Each yard will be constructed over a six-month period.

Improvements on all but three of these sites (the truck stop at the border, the logistics center at the Ngaoundal storage yard, and the Ngoumou storage yard) will be dismantled.

Project Use/Facility (Listed in order of South to North)	Total Needed During Construction	Disposition After Construction		
		Available for Previous Uses	Available with Restrictions	Permanent Facilities
Kribi	8	8	0	0
Bipindi (Staging Area)	5	5	0	0
Lolodorf	17	17	0	0
Ngoumou	16	12	0	4
Batchenga	10	10	0	0
Nanga Eboko	22	22	0	0
Bélabo	27	27	0	0
Mararaba (Staging Area)	5	5	0	0
Meidougou	39	39	0	0
Ngaoundal	19	19	0	4
Dompta Storage Yard	14	14	0	0
Border truck parking area	2	0	0	2
Storage Areas Subtotal	168	158	0	10

The storage yards in the Douala Port are about nine ha and were previously acquired, not adding to the total Project footprint.

2.3.5 Other Land Needs

Other land needs include:

- Telecommunications sites
- Access roads to telecommunications sites
- Access roads to storage yards
- New or improved railroad sidings

This is in addition to land needed for storage yards, the two pump stations, and the pressure reduction station.

2.3.5.1 Telecommunications Sites

About 24 communications sites will be used, of which 15 are new sites needed by the Project outside of the storage areas or pipeline Land Easement (see Table 2-5). These will be used for the life of the Project. About 2.0 ha of land is needed for all sites.

⁹ The figures are subject to change. The final figures will be jointly established by COTCO and the Cameroonian Party.

Table 2-5. Telecommunications Sites

Telecommunications Sites (From S to N)		Department	Zone	New Site/ Outside Easement?	Ha Needed	New Access Road?
1	Douala Telcom Site	Littoral	[1]	Existing		
2	Kribi Telcom Site	Océan	1			
3	Bidou Ridge Telcom Site	Océan	1	Yes	0.40	Yes
4	Bipindi Telcom Site	Océan	1	Yes	0.25	Yes
5	Lolodorf PTT Tower Telcom Site	Océan	1			
6	Mvengue Telcom Site	Océan	1	Yes	0.25	Yes
7	Ngoumou Telcom Site	Mefou-et-Akono	2			
8	South Yaounde Pass Telcom Site	Mefou-et-Akono	2	Yes	0.25	Yes
9	North Yaoundé Pass Telcom Site	Lékié	2	Yes	0.04	Yes
10	Mt. Sousounou Telcom Site	Haute-Sanaga	3	Yes	0.04	Yes
11	Mt. Megang Telcom Site	Haute-Sanaga	3	Yes	0.04	Yes
12	Mt. Bomkene** Telcom Site	Lom-et-Djérem	3	Yes	0.04	Yes
13	Bélabo Telcom Site	Lom-et-Djérem	3			
14	Goyoum Telcom Site	Lom-et-Djérem	3			
15	Mouyai** Telcom Site	Lom-et-Djérem	3	Yes	0.04	
16	Mbele** Telcom Site	Lom-et-Djérem	3	Yes	0.04	
17	Pigberi** Telcom Site	Lom-et-Djérem	3	Yes	0.04	
18	Kongolo** Telcom Site	Lom-et-Djérem	3	Yes	0.04	
19	Ngoundal Telcom Site	Djérem	4			Yes
20	Megainga Telcom Site	Mbéré	4			
21	Gbal** Telcom Site	Mbéré	4	Yes	0.04	
22	Mt. Gaolougou Telcom Site	Mayo Rey	5	Yes	0.04	
23	Dompta Outstation Telcom Site	Mayo Rey	5	Yes	0.04	Yes
24	Dompta PS No. 2 Telcom Site	Mayo Rey	5			
				15	1.59	10

** Estimated land need is 0.04 ha

2.3.5.2 Telecommunications Sites Access Roads

Ten of the telecommunications sites will require new access roads. The actual routes of these roads have yet to be determined but it is estimated they will have a 4 m wide easement and will be about 15 km in length. New roads will be built at locations listed in Table 2-6.

2.3.5.3 Storage Yards Access Roads

Seven new access roads totaling about 3,000 m in length will be built. It is estimated each road will have about a 20 m wide easement. Each road will be about 7 m in width. New access roads will be built at locations listed in Table 1-3.

2.3.5.4 New Railroad Sidings

Four new railroad sidings will be built and have a total estimated length of 3,000 m. The estimated width of the easement within the storage yards will be ten m. New railroad sidings will be built at locations listed in Table 1-3.

2.4 LAND TO BE USED FOR IMPROVEMENT OF PUBLIC ROADS

Roads in northern Cameroon will be upgraded to permit cargo transportation from the railhead at Ngaoundal to the Mbéré River bridge at the Cameroon - Chad border. The 300-km road (survey length 298.3 km) from Mbéré to Meidougou will be upgraded and widened to 7 m.¹⁰ The road easement will vary in width depending on the nature of terrain and adjacent land use, but is estimated to average 20 m.

Land needed for upgrade of the public road system is either already Public Property or will be converted to Public Property if new road easements are needed.

New roads to be built include:

- Access to Mbéré bridge 5.2 km
- Mbaï-Mboum bypass 2.8 km
- Mbang-Rey bypass 0.5 km
- **Total Length 8.5 km**

¹⁰ This Public Property includes:

- National and provincial motorways, and a 40 meter wide easement on each side of the road centerline; the easement width measured from the external edge of the sidewalk is reduced to 10 and 5 meters in agglomerations and inside towns, respectively.
- Departmental roads and an easement of 25 meters on each side of the road centerline; the easement width measured from the external edge of the sidewalk is reduced to 10 and 5 meters in agglomerations and inside towns, respectively.
- Rail roads and a 35-meter easement on each side of the centerline.

The official easement associated with this national road is 100 m, but actual clearance averages about 8 m. Additional land required for upgrading this road may be estimated as follows:

Project Use	Total Needed During Construction		Permanent Improvement to Public Road System <i>Area (ha)</i>
	<i>Length (km)</i>	<i>Width (m)</i>	
New Sections	8.5	20	17
Existing road	290	12	348

A 135 km long road from Ngaoundal to Meidougou is a currently 6 m wide paved road, requiring no upgrade, but some repairs. On both sides, vegetation will have to be cleared along 5 m strips. Thus, additional land required will be 135 km x 10 m or a total of about 135 ha.