Briefing Memorandum:

The Djibouti-Ethiopia Railway

ICA Meeting:

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1. Summary

The Djibouti-Ethiopia Railway (Chemin de Fer Djibouti-Ethiopien, or CDE) Project consists of a 25-year railway operating concession for the 780 km railway running from Djibouti to Addis Ababa through Dire Dawa. The railway, constructed at the beginning of the 20th Century, has deteriorated due to lack of maintenance, poor management, and a lack of commercial focus. Consequently, the Addis-Assab road has become the primary trade transportation route for traffic from Ethiopia to the Port of Djibouti. The objective of the concession is to create a reliable, safe, economical and sustainable transportation corridor that acts as a competitive alternative to road transportation in providing access to the Red Sea port.

In 2007, Hifab International completed a pre-feasibility study of the rehabilitation of the railway line under three development scenarios in support of the concession process. Hifab has recommended replacing approximately 53 percent of the track route, as well as modifying sections of the line for gradient and turning radius. The European Union has committed funds towards completing some of the additional necessary rehabilitation, including replacing bridges and low rail weight sections of the line.

2. The Project

2.1 Description

The Djibouti-Ethiopia Railway is the only rail line connecting landlocked Ethiopia with Djibouti, and is the most direct link from the Red Sea to Addis Ababa. In 1998, following the end to Ethiopia's conflict with Eritrea, Ethiopia designated Djibouti Port as its major cargo gate. Since then, freight traffic via Djibouti has more than quadrupled.[1] Both governments, which have jointly owned CDE since 1981, are cooperating in an effort to enhance their cross-border transportation capacity.

The metric-gauge line stretches 780 km, of which 681 are located within Ethiopia and approximately 99 km are in Djibouti. The Project's service area covers 30 percent of Ethiopia's cultivated lands, as well 30 and 70 percent of the populations of Ethiopia and Djibouti, respectively. Additionally, the Ethiopian industrial centres of Dire Dawa, Awash, Metehara, Modjo, Debre Zeit, Akaki, and Addis Ababa are located along the line. Consequently, the railway has the potential to become an important transportation link and export/import route for Ethiopia's industry.

2.2 Social and Environmental Impact

Connecting Ethiopia's industrial centres and large portions of both countries' populations, the project is expected to contribute to poverty reduction by improving market access and transport conditions. Port and transit services, including road and rail links, are major sources of income and employment for Djibouti: approximately 10,000 jobs are in transport-related activities, and transportation is one of the primary activities of Djibouti's services sector, which accounts for 70 percent of GDP. Improving the competitiveness of the railway will also support the operations of the port.

An Environmental Impact Assessment is to be carried out jointly by CDE and the selected concessionaire.[2]

2.3 Technical Features

The railway runs from Djibouti at sea level to Addis Ababa, with an elevation of 2,800 metres above sea level. According to the results of the rehabilitation pre-feasibility study, sections of the railway are laid at steep gradients and have curvatures that require modification in order to use upgraded locomotives at full capacity.

The railway is divided into two sections, each with a gauge of one meter and comprising rails ranging from a low 20 kg/m to 36 kg/m, as outlined below. The 20 kg/m rails are able to carry traffic with only a maximum axle load of 12 tons, compared to 14 tons for 30 kg/m rails and 17 tons for 36 kg/m rails.

	Type of Rail (kg/m)	Track length
Line A: Djibouti – Dire Dawa	20 kg/m 25 kg/m 30 kg/m 36 kg/m	94.6 km 9.7 km 175.6 km 28.5 km
Total		**308.4 km**
Line B: Dire Dawa – Addis Ababa	20 kg/m 25 kg/m 30 kg/m 36 kg/m	0 km 404.1 km 45.0 km 23.2 km
Total		**472.3 km**

3. Economic Rationale

3.1 Unique Features of the Djibouti-Ethiopia Rail

As the only railway connecting the Ethiopian capital of Addis Ababa to Djibouti Port, the railway has the potential of becoming a key import/export route. Djibouti is strategically located on the Red Sea's international shipping routes and is well placed in relation to the East African hinterland, with the potential of becoming a regional transport hub.[3] The pre-feasibility study consultants estimate that, with the required number of railway stock, more efficient services, and an aggressive marketing policy, railway traffic could increase

dramatically: by the sixth year of operations, traffic could increase from its present level of 250,000 tons per year to 1,500,000 tons per year or more.

The Addis Assab road (via Dikhil and Galafi, with a connection to the Djibouti port), has, however, superseded the CDE as the primary transportation provider between Djibouti and Ethiopia.[4] Freight traffic on the railway has declined from 450,000 tons per year in 1975 to 215,000 tons per year, with passenger traffic likewise dropping from 1.4 million passengers per year to 650,000 passengers per year.[5] At the same time, there has been a sharp increase in transit traffic since the designation of Djibouti as Ethiopia's gate port, most recently spurred by increased demand resulting from the private concession of Djibouti's port and airport.[6]

Although the operating cost per ton kilometre and the total distance (780 km by train versus 918 km by road) to be travelled are lower by train than by truck, the railway represents only 5 percent of total traffic.[7] This is partly due to both a lack of locomotives for the rail and competition from road transportation. Rehabilitation and concession of the railway is expected to provide a competitive alternative to road transportation, reducing transport time and improving reliability of service.

An analysis of road and rail costs performed by Hifab has determined that, in consideration of distance and physical characteristics of the existing road, and under the assumption that 80 percent of trucks return empty from Addis Ababa to Djibouti, the economic costs of transportation by truck is US$ 42.8 per ton. In comparison, the railway would, in all three rehabilitation scenarios, have a competitive advantage over road transportation in terms of cost of transportation, with costs ranging from a low of US$ 15.3 to a high of US$ 35.6 per ton.

3.2 Prospects for Economic Growth

Economic growth in Djibouti is expected to increase in the coming years, reaching 4.8 percent in 2007 and 5.7 percent in 2008. Although Ethiopia's growth is expected to slow somewhat, the economy continues to expand at a rapid pace, with real GDP growth forecasted at 10.5 percent in 2007 and 9.6 percent in 2008.[8]

In June 2000, Dubai Ports International (DPI) began operating in Djibouti under a 20-year concession for the Djibouti Port. In July 2001, the contract was extended to Djibouti Airport. The resulting performance improvements have contributed to an increase in transit traffic between Ethiopia and Djibouti and have been important contributors to Djibouti's improving economic performance.[9] These projects have also demonstrated the ability of private operators to increase the competitiveness of existing infrastructure.

3.3 Economic Rate of Return

Using the pre-feasibility study results comparing the Scenarios (Scenario 1 – minimal rehabilitation, Scenario 2 – medium rehabilitation, Scenario 3 – full rehabilitation, outlined in further detail below) with each other and with an

all-truck transportation scenario, Hifab concluded that Scenario 2 shows the greatest promise in terms of economic rate of return. The results remained robust even under sensitivity analysis, including upward revision of investment costs and downward revision of road costs.

The strong performance of Scenario 2 is based on the use of more powerful locomotives able to carry larger loads at faster speeds. As a result, fewer locomotives and wagons are required to carry the same volumes, offsetting higher infrastructure rehabilitation costs with lower rolling stock costs.

4. Economic & Financial Feasibility Analysis[10]

4.1 Financial Feasibility Analysis

The pre-feasibility study on the rehabilitation of the Djibouti-Ethiopia Railway line does not include a full financial feasibility analysis. Hifab International has made no estimate of the financial IRR. Revenues of the project are not available.

4.2 Capital Costs

Under the pre-feasibility study of the Djibouti-Ethiopian Railway rehabilitation, three scenarios were examined:

Scenario 1 – Maintaining the present layout, using type BB locomotives, and with construction of additional crossings, capacity can be increased from 850,000 tons per year to 1.5 million tons per year. The total infrastructure investment over the life of the project under this scenario would be US$ 68.6 million.

This investment is broken down as follows: US$ 1.2 million for additional crossings, US$ 5 million for implementation of a modern telecommunications system, US$ 3.6 million for minor rehabilitation, and US$ 58.8 million for the purchase of 108 locomotives and 1,667 wagons over 25 years.

Scenario 2 – In order to upgrade to CC locomotives and allow them to operate at full capacity, 200 km of 25 kg/m rail needs to be replaced with 40 kg/m rail and layout modifications will be required. Total capacity could be increased to 2.2 million tons per year. The infrastructure investment over the life of the project under this scenario totals US$ 158.8 million.

The above investment is broken down as follows: US$ 1.2 million for additional crossings, US$ 5 million for implementation of a modern telecommunications system, US$ 3.6 million for minor rehabilitation, US$ 50 million for the rehabilitation of 200 km of lines, and US$ 99 million for the purchase of 63 locomotives and 1,012 wagons over 25 years.

Scenario 3 – Replacing all rails of 25 kg/m and 30 kg/m (totalling 635 km of tracks) with 36 or 40 kg/m rails would allow the lines to run at full capacity, which would be raised to 3 million tons per year. Total investment costs over the life of the project under Scenario 3 are US$ 267.8 million.

This investment is broken down as follows: US$ 1.2 million for additional crossings, US$ 5 million for implementation of a modern telecommunications system, US$ 3.6 million for minor rehabilitation, US$ 162 million for the rehabilitation of 620 km of lines, and US$ 96 million to purchase 54 locomotives and 1,042 wagons over 25 years.

4.3 Operating Costs

In conducting the rail operating cost analysis, Hifab employed the following assumptions:

	Scenario 1	Scenario 2	Scenario 3
Import share of import traffic	90%	90%	90%
Average distance by rail	695 km	695 km	695 km
Average net tons per train	350 tons	525 tons	700 tons
Average load factor per wagon	25 tons	30 tons	40 tons
Average load transport per wagon per year	900 tons	2,190 tons	2,900 tons
Average run of locomotive per year	100,000 km	100,000 km	120,000 km
Locomotives per train	2	1.2	1.2
Staff number on year 1	1,000	1,000	1,000
Fuel consumption per locomotive km	3 litres/km	3.65 litres/km	4 litres/km

Specifically, the more extensive rehabilitation performed under Scenarios 2 and 3 will allow for the use of more powerful trains carrying larger loads at higher speeds, will also require higher fuel consumption.

On the basis of these assumptions, Hifab estimates that the cost of transport by rail per ton would be as follows:

US$	Year 1	Year 5	Year 10	Year 15	Year 20	Year 25
Scenario 1	35.6	29.6	28.9	28.9	28.9	28.9
Scenario 2	30.2	19.6	19.9	20.9	20.5	20.4
Scenario 3	26.4	15.3	15.8	16.9	16.4	16.2

4.4 Rate of Return

In 2004, CDE user costs per ton were US$ 55, and were being driven down due to competition from roads, which averaged US$ 30 per ton. [11] Current pricing varies between imports and exports, as well as by commodity types, and ranges from US$ 22.5 per ton for exports from Addis Ababa to Djibouti to US$ 47 per ton for spare parts. [12]

An indicative calculation of internal rate of return for Scenario 2 using Hifab cost and traffic assumptions and assuming equity financing yields the following results:

Price per ton	$55.00	$50.00	$45.00	$40.00	$35.00	$30.00	$25.00	$20.00
IRR	56%	45%	35%	27%	20%	12%	4%	N/A

5. Development Status

5.1 PPP Legislation

The legal basis for the concession has already been established. In 1998, the Ethiopian Government legislated an amendment to the 1981 Agreement with Djibouti, facilitating the introduction of private-sector participation in management of the CDE. The government of the Republic of Djibouti has also legislated its corresponding amendment to the Agreement.

5.2 Tendering Status

In August 2004, a short list of six companies was compiled in response to the CDE's invitation for expressions of interest. Two financial offers were received in March 2006, and the South African firm, COMAZAR, was selected as the preferred bidder. Failing to meet the deadline to submit a revised financial proposal in mid-June 2007, COMAZAR's status of preferred bidder was withdrawn, and the CDE has begun discussions with the Kuwaiti firm, Al-ghanim and Sons Group.[13]

German Railways is currently conducting a fact-finding mission with the Kuwaiti group, and will present its report at the end of November, 2007. The government continues to be open to other potential concessionaires, although the window of opportunity is short, as an exclusive agreement with Al-ghanim may be completed by January, 2008.[14]

5.3 European Union Grant Support

CDE has already begun the rehabilitation of those sections of the line using 20 kg/m rails, supported by a €40 million grant from the European Union.[15] The grant will also fund the rehabilitation of an additional 200 km of track equipped with 25 kg/m, and will also fund structural work consisting of the strengthening of 40 bridges and replacement of 9 bridges.[16] However, given the extent of necessary refurbishments, additional funding from other sources will be required to complete the rehabilitation of the railway.

5.4 CDE Retrenchment

As a condition for concessioning, the CDE has implemented a retrenchment plan, which was launched in March 2006. Jointly financed by the governments of Ethiopia and Djibouti, the plan reduced non-core activities staff by approximately 800 people (700 in Ethiopia and 100 in Djibouti).[17] Staffing for the railroad will total approximately 1,500 employees at the start of the concession.[18]

6. Project Contacts[19]

6.1 Chemin de Fer Djibout-Ethiopien (CDE)

PO Box 1051, Addis Ababa
Ethiopia
Tel: +251 1 517250
Fax: +251 1 513997

PO Box 2116
Djibouti
Tel: +253 350280
Fax: +253 351256

6.2 Ethiopia Ministry of Transport and Communications

PO Box 1238
Addis Ababa
Ethiopia
Tel: +251 1 516166
Fax: +251 1 158045

6.3 Djibouti Ministry of Transport, Telecommunications and Tourism

Centre Administratif
Djibouti
Fax: +253 351257

7. Risk Factors & Mitigation Measures

7.1 Road Transport Competition

Road transportation currently accounts for 95 percent of traffic between Ethiopia and Djibouti. Roads were upgraded in response to Ethiopia's decision to use the Port of Djibouti as its gate port, and have received international funding for improvements. Competition from roads could therefore be a risk to the rail's profitability.

As outlined above, transportation costs under a rehabilitated rail would be lower than truck transport, giving the railway a competitive cost advantage. In addition, because of the volume of road traffic, the roads continue to face problems of road maintenance. A sensitivity analysis performed under the feasibility study indicates that, even a 20 percent decrease in road costs would not reduce the railroad's economic rate of return for the Scenario 2 rehabilitation option, indicating that the benefits of the railroad would remain even when facing stronger road competition.[20]

7.2 Cross-Border Issues

The CDE is jointly owned by the governments of Ethiopia and Djibouti, and depends on traffic from both countries for its profitability. As a result, it is

subject to legal, regulatory, and political risks. Additionally, the performance of the railway is sensitive to the economic performance of both countries, as one of its functions is to act as an import/export corridor. Due to the strong dependence of both Ethiopia and Djibouti on imports, changes in the level of food aid and cost of imports could result in volatility of volumes to be transported.

Mitigating these risks, Djibouti and Ethiopia have signed a series of bilateral agreements regarding transit transport services. These agreements guarantee Ethiopia's access to the sea, outline management of the railway (as well as a minimum volume guarantee by Ethiopia), specify rates as freely negotiated between shipper and carrier, and deal with Customs arrangements for the port of Djibouti.[21]

7.3 Labour costs and Productivity Issues

A Country Economic Memorandum prepared by the World Bank states that high labour costs and low productivity are a central issue in Djibouti's infrastructure sector.[22] Overstaffing, high wages and benefits, and lack of skills are problems faced in all infrastructure sectors, including the railway.

Addressing this concern, the CDE has undergone a retrenchment plan, reducing the size of its non-core workforce. Additionally, it is expected that private management will contribute to productivity improvements, as occurred after the port and airport were transferred to private management.

8. Next Steps

Following the failure to come to an agreement with COMAZAR, the CDE will need to reengage with the private sector and identify a new concessionaire. This process has begun, but, to date, has not led to an agreement. Additionally, an Environmental Impact Assessment is still needed for the Project. The private-sector concessionaire and the governments of Ethiopia and Djibouti will jointly complete this study.

[1] http://www.ethioembassy.org.uk/articles/articles/focus%20electronic-00/Wuhib%20Muluneh%20-%201.htm
[2] European Commission Project Summary, «CDE Policy Support Project,» FED/ROR/10844, 11/10/2007
[3] World Bank Social and Economic Development Group Middle East and North Africa Region, «Republic of Djibouti Country Economic Memorandum - Unlocking Djibouti's Growth Potential: The Road Ahead (In Three Volumes) Volume I: Summary Report,» Report No. 33115-DJ, August 10, 2006
[4] http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2003/03/22/000094946_03032004092668/Rendered/PDF/multi0page.pdf
[5] European Commission Project Summary, «Djibouti Ethiopian Railway Line – Minimum Safety Works,» FED/REG/12737, 11/10/2007
[6] World Bank Social and Economic Development Group Middle East and North Africa Region, «Republic of Djibouti Country Economic Memorandum - Unlocking Djibouti's Growth Potential: The Road Ahead (In Three Volumes) Volume I: Summary Report,» Report No. 33115-DJ, August 10, 2006
[7] Hifab International, «Rehabilitation of the Railway Line Pre Feasibility Study,» 2007
[8] IMF Figures
[9] http://archive.gulfnews.com/articles/06/04/01/10029826.html
[10] Based on «Rehabilitation of the Railway Line Pre Feasibility Study»
[11] ADE S.A., «Evaluation of the EC interventions in the transport sector in third countries: Final Report – Voume 2 – Annexes 1-4,» May 2004
[12] http://www.worldbank.org/transport/learning/presentations/Ports/hartmann2_WB%20Transport%20Forum%202005%20Eastern%20Africa%20Corridors.ppt
[13] Addis Fortune, «Ethiopia; Govt Discusses Railway Djibouti-Ethiopia Railway With Kuwaiti Company,» July 23, 2007
[14] Phone Conversation, Mr. Soloman, Head of Railway Planning, November 13, 2007
[15] Hifab International, «Rehabilitation of the Railway Line Pre Feasibility Study,» 2007
[16] European Commission Project Summary, «CDE Policy Support Project,» FED/ROR/10844, 11/10/2007
[17] Ibid.
[18] World Bank Social and Economic Development Group Middle East and North Africa Region, «Republic of Djibouti Country Economic Memorandum - Unlocking Djibouti's Growth Potential: The Road Ahead (In Three Volumes) Volume II: Main Reort,» Report No. 33115-DJ, August 10, 2006
[19] http://www.railway-technology.com
[20] Hifab International, «Rehabilitation of the Railway Line Pre Feasibility Study,» 2007
[21] http://www.worldbank.org/transport/learning/presentations/Ports/hartmann2_WB%20Transport%20Forum%202005%20Eastern%20Africa%20Corridors.ppt
[22] World Bank Social and Economic Development Group Middle East and North Africa Region, «Republic of Djibouti Country Economic Memorandum - Unlocking Djibouti's Growth Potential: The Road Ahead (In Three Volumes) Volume I: Summary Report,» Report No. 33115-DJ, August 10, 2006