Construction Sector Transparency Initiative (CoST) Ethiopia

Assurance Process
On
Tendaho Dam and Irrigation Project

Final Report

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5. Mr. Zewdu Getachew (Head of Contract Administration, WWCE)

Acronyms

CJCIETC	China Jiangxi corporation for International economic technical corporation
CoST	Construction Sector Transparency Initiative
DFID	Department for International Development
EIA	Environmental Impact Assessment
FDRE	Federal Democratic Republic of Ethiopia
FEACC	Federal Ethics and Anti-Corruption Commission
FIDIC	International Federation of Consulting Engineers
MoFED	Ministry of Finance and Economy Development
MoWR	Ministry of Water Resources
NMSG	National Multi-Stakeholders Group
PE	Procuring Entity
PPA	Public Procurement Agency
WAPCOS	Water and Power Consultancy Service
WWCE	Water Works Construction Enterprise
WWDSE	Water Works Design and Supervision Enterprise

1 Executive Summary

1.1 The Tendaho Dam and Irrigation project is found in Afar region 650 km. from Addis Ababa to Samara road. It is financed by the Government of Ethiopia for the construction of Dam and 60,000ha irrigation system construction to produce sugar cane. The project is expected to benefit nearly 35,000 families living in the basin from irrigated pasture development and animal feed from sugar by products. During the implementation process a number of job opportunities have been created.

1.2 The dam also contributes to protect human settlement and existing farms at downstream from frequent floods. The area has comparatively well developed road and railway infrastructure very closes to port.

1.3 Contracts with consultants and contractors including the form of agreement and the general conditions of contract are based on the standard contract documents provided by the International Federation of Consulting Engineers (FIDIC). However, the procurement process didn't comply with the policy directives issued by MoFED and the Public Procurement Agency. The Ministry of Water Resources manage the overall execution of the project partly in accordance with the requirements of these contracts.

1.4 The consultant (WWDSE) for the design and the contractor (WWCE) for Dam and Irrigation system construction had been appointed without inviting other firms. The appointment was authorized by the Ministry of Water resources and issued on 3 August 2004. The initial contract price for detail design and for supervision amounts ETB 24,327,057.00 and ETB 8,852,474.00 respectively. Also the initial contract price for the construction works was ETB 840,254,274.00.

1.5 The MoWR initiated the implementation phase before the detail design was completed. Though the Ministry of Water Resources has the required technical capacity to manage the implementation of the programme, the work was delayed in completion due to the procedural failure to supervise and monitor the construction progress. Such discrepancies could have been avoided if the detail design had been completed before the implementation process took place.

1.6 The project construction and detail design works were carried out in parallel. The contracted components of the project are dam body, cofferdam, Intake tower, Diversion tunnel, Spillway, Approach channel, Tailrace channel, Crossings and Irrigation system construction. During

project execution, a number of changes have been made due to unforeseen circumstances in the activities which caused variations in project cost and work schedule

1.7 The variations order due to additional works and change in BOQ has been increased by 208 % and construction time has increased by 400% from the original work schedule. Consequently the project is subjected to cost and time overrun. So far the project performance is 95% of the dam and the appurtenance structures and 58% of the irrigation system construction have been completed.

1.8 The client has not fully discharged its obligation in managing the contractual issues as per the binding conditions of contract. This was due to the institutional links between the client and the firms involved in the implementation of the project were taken as partners. For this reason a notable delay has been recorded.

1.9 To ensure the quality of work the supervising consultant has deployed its skilled manpower and equipment the nature of the job may require. From the records it could be learnt that material and quality inspection certifying statements have been made properly where needed. No matter what, it is beyond the scope of this study to provide a sound testimony on how well this quality assurance task has been done.

2 Introduction

2.1 Back ground

2.1.1 Public sector infrastructure projects make a major contribution to the economic growth and poverty reduction of a nation. However, mismanagement and corruption during the planning and implementation of construction projects can undermine the expected social and economic benefits.

2.1.2 The Construction Sector Transparency Initiative (CoST) is a multi-stakeholders initiative designed to increase transparency and accountability in the construction sector. It is funded by the Department for International Development (DFID) of the UK and the World Bank and is currently being piloted in seven countries; i.e. in Ethiopia, Malawi, the Philippines, Tanzania, the United Kingdom (UK), Vietnam, and Zambia.

2.1.3 The aim of the CoST initiative is to enhance the accountability of procuring bodies and construction companies for the cost and quality of public sector construction projects. It achieves this aim through the public disclosure of key project information at all stages of the construction project cycle, with specific focus on the period from the award of the main contract for construction until the final build (implementation phase).

2.1.4 It is, however, recognized that the disclosure of this information on its own may not be sufficient to achieve greater accountability. This is because some of the information is likely to be complex and not easily intelligible to the general public. An independent Assurance Team (AT) is therefore appointed by the National Multi Stakeholder Group (NMSG) who will be responsible for assessing the adequacy and reliability of disclosed project information, highlighting any causes of concern that the information reveals.

2.1.5 A number of projects from building, water, and road sectors have been identified by the NMSG of CoST-Ethiopia following the base line study. This assurance process report is prepared for Tendaho Dam and Irrigation Project.

2.2 Objectives of the pilot study

2.2.1 The assurance team has been appointed to carry out the following tasks:

- Collect the project information
- Verify the accuracy and completeness of the information
- Report on the extent and accuracy of the information which has been released
- Analyse the information and make informed judgements about the cost and quality of the project and generate report on the findings.

2.3 Scope of the assignment

2.3.1 Liaising with the client/procuring entity to obtain all the relevant project information.

2.3.2 Verifying project information from the main contract award to final completion by referring to other sources (e.g. the records of the consultant, contractor, and other members of the project team) Noting any significant changes (administrative or legal) in obtaining the information, and the resources required (time, cost).

2.3.3 Comparing the initial contract price, time and specification with the final project price, time and specification and with the official explanation for the differences, noting the resources required for the task.

2.3.4 Undertaking a more detailed study of the contract documentation (variation orders, claims, application of price fluctuation clauses etc.) in order to assess whether the extensions of time and increases in cost were justified, noting the resources required for the task.

2.3.5 Considering whether the information disclosed is adequate to assess what further information might be required to assess whether the client has actually 'got what she/he has paid for' Testing way to present the information to a multi-stakeholder audience by making a presentation (written and oral) to the National Multi Stakeholder Group (NMSG).

2.3.6 Prepare a report for the NMSG and the International Secretariat, containing detailed account of the work undertaken, conclusions, and recommendations.

2.4 Work carried out on the pilot study project.

2.4.1 Following the induction week and the orientation given by the CoST Ethiopia, we went directly to the Ministry of Water Resources and explained the objectives and procedures for this pilot study & our specific assignment we were assigned for. To avoid confusion on the subject matter and the mission of the initiative, we have been clarifying to all individuals involved in the project management who were responsible in providing the data we required.

2.4.2 The standard list of material project information to be disclosed on the target projects that was initially prepared by the International Secretariat has been adapted into a schedule so to suit this contract.

Also a guideline for data verification and analysis provided by the office of CoST Ethiopia has been taken as tools.

2.4.3 The Ministry of Water Resources provided the documents as per the checklist we had given them. To quickly collect the data and because the source documents were not available readily we had to review the information right where they were stored.

2.4.4 While collecting and reviewing the information we have been discussing with the Project Coordinator of the project so to be clear with certain cases, to verify the accuracy and completeness of information, and to obtain further understanding on how the project was managed.

2.4.5 After identifying the information required the schedule of material project information is completed see (Annex 1).

2.4.6 A detailed schedule of the variation orders disclosed, with a description of their effect on time, cost and quality is included in Annex 4

2.5 Tendaho Project Description

2.5.1 The Tendaho Dam and Irrigation project is a water resources development program planned to increase agricultural productivity, with further focus on sugar cane production on 60,000 ha. It is anticipated that the sugar production rate will double the Metehara sugar factory for domestic and foreign market trade. The project is involved in the construction of a dam height of 53m, crest length 412m, reservoir area of close to 17,000 ha and water reservoir capacity of 1.86 billion meter cube. The components of the structures are saddle dam, spillway, intake tower, diversion tunnel, approach channel and canals to develop the irrigable land.

2.5.2 The Government MoWR had initiated a large scale irrigation development in the Awash basin to get economic and social benefit from the project. Subsequently, the MoWR appointed WWCE to construct the dam and irrigation system structures and WWDSE to Design and supervise the work at a contract price amounting ETB 840,254,274.70 and ETB 24,327,057.00 respectively.

2.5.3 In general, the management of the project was facilitated by the Ministry of Water Resources Project Coordination Unit.

2.5.4 The feasibility study work was conducted in 1987 by former Soviet Union Companyy Ltd. Then After in August 2004 WWDSE in association with WAPCOS India was appointed to carry out a detailed design work of the project. Subsequently WWDSE was appointed to supervise the construction project independently while the detail design was under way. WWCE has been appointed on the same year and date to carry out the construction work in parallel.

3 Verification and analyses of the document.

3.1 Ministry of Water Resources tender awarding Procedures.

3.1.1 It is found important to outline the Ministry's procedures for awarding and managing contracts in order to understand the proceedings and the documents disclosed.

3.1.2 The procedures for awarding and managing contracts set out by the Ministry of Finance and Economy Development is applicable to all public sectors.

3.1.3 The MoWR used to select a project for implementation based on merits and submit the proposal with further justification to the Ministry of Finance and Economy so that a budget might be approved for the execution of the intended development programme.

3.1.4 Once the development programme is approved, the MoWR is required to prepare its annual action plan and the corresponding budget for the annual target.

3.1.5 Following approval of the overall execution of the programme, The Ministry of Water Resources is used to select potential consultants and contractors based on the appropriate method of procurement as set out by MoFED.

3.1.6 As defined by the policy directives, the approved methods of procurement that the public bodies can use include open tendering, two-stage tendering, request for proposals, restricted tendering, request for quotations, and single source procurement.

3.1.7 It is Government policy that public bodies undertake procurement of all items by open tendering unless there is a specific and good reason to use another method of procurement. Where there is a specific and good reason to use a method of procurement other than open tendering, public bodies should use the most appropriate method of procurement stated above

3.1.8 Since a single source procurement method was applied by MoWR to appoint contractor and consultant involved in study, supervision and construction of Tendaho Dam and Irrigation Project, It is found vital to refer under which conditions that the procuring entity has the right to select such method. As stipulated in the policy directives by PPA, public bodies may engage in single source procurement when one of the conditions stated under paragraph 4.11 of Tender Guide for public bodies is fulfilled

3.1.9 The following documents were disclosed by PE for verification and analyses.

- Contract awarding letter
- Contract document
- Design report
- MoFED Directives for procurements.
- Correspondences.

- Payment certificates
- Variation orders.

3.2 Project Identification

3.2.1 The following documents have been disclosed by PE for project identification.

- Feasibility study
- Final design report
- Correspondences.

3.2.2 The feasibility study was conducted by US- based Sir McDonald and partners in the past Derg regime Government, in the late1980's and the detail design was made by the public Enterprise, Water Works Design and Supervision.

3.2.3 The study made by WWDSE in association with Water and Power Consultancy service (WAPCS)shows that the development programme was expected to create positive economic, social and environmental impacts. The total annual sugar production was estimated to be 840,000 tons. When the project is completed, the Metehara sugar factory will double the production rate and then can have 1.3 million quintals of sugar per year.

3.2.4 The socio economic study conducted by the consultant WWDSE in association with WAPCS (India) in Jan 2005 shows that the Tendaho project economic internal rate of return (EIRR) was 21.32% and the net present value (NPV) by then was ETB 5.1 billion.

3.3 Consultancy Contract for Detail Design

3.3.1 The following documents have been disclosed by the PE and consultant.

- Contractor agreement.
- Work progress report.
- Project cost and schedule.
- Design reports.
- Correspondence letter.

3.3.2 On 3August 2004, WWDSE was appointed and instructed by the Ministry of Water Resources to carry out the detail design of Tendaho Dam and 60,000 ha Irrigation system development. The agreement was signed in between at a cost of ETB 24,327,057.00 to complete the assignment within eight months.

3.3.3 The agreement signed by both parties have short comings in that it did not incorporate the key personnel job descriptions, minimum qualifications and estimated periods to carry out the services in the project to ensure quality of work as required. Consequently, the client failed to control the professionals and resources deployed during the work progress.

3.3.4 It was known that the consultant submitted his first given assignment in twelve months in August 2005. The remaining final design was submitted in April 2007 after two years of its commencement.

Contract data for detail design work

Contract Name	Tendaho Dam and Irrigation Project
Scope of Service	Detail Design of Dam and ancillary structures and Irrigation system of 60,000 ha
Employer	Ministry of Water Resources
Financier	FDRE
Engineer/ Consultant	Water Works Design and Supervision Enterprise
Contractor	Water Works Construction Enterprise
Original Contract Price	ETB 24,327,057.00
Revised Contract Price	NA
Original Contract Period	8 months
Extension of Time	4 months
Key Dates	Contract signing: 20 August 2004 as shown on the cover page Commencement Date:-- Immediately after signing (Not specific) Original Completion Date:-- March 30, 2005

	Revised Completion Date:-- August 2005
Retention Amount	Not subjected to retention
Amount paid to date	ETB 24,327,057.00

3.4 Contract Administration and Supervision Contracts

3.4.1 The Water Works Design and Supervision Enterprise was instructed by MoWR to continue and materialise the contract administration and supervision works.

3.4.2 The contract agreement was signed between MoWR and the WWDSE on 1st April 2005 while the details design work was undergoing. The initial contract price for supervision and contract administration was ETB 8,852,474.00

3.4.3 Water Works Design and Supervision Enterprise with its associate, WAPCS carried out the detail design work of Tendaho Dam & Irrigation Project. In a similar way as the detail design contract appointment, for supervision also appointed and instructed without any tender invitation.

3.4.4 The documents disclosed by PE is complete, correct and has been cross checked with the documents obtained from the consultant for consistency.

Contract Data for contract Administration and Supervision

Contract Name	Tendaho Dam and Irrigation project
Scope of The work	Contract supervision for Dam and ancillary structures and irrigation system construction
Employer	Ministry of Water Resources
Financier	FDRE
Engineer/Consultant	Water Works Design and Supervision Enterprise
Contractor	Water Works Construction Enterprise
Original Contract	ETB 8,852,474 (amount include VAT)
Revised Contract Price	NA
Original Contract	Not mentioned
Extension of Time Extension_01 Extension_02 Extension_03	 12months (cost incurred ETB12,162,032.00) 12months(cost incurred ETB 13,415,710.50) 12 months(cost incurred ETB 13,415,710.50)

Extension_04	6 months(cost incurred ETB 6,715,356.00)
Key Dates	Contract signing:1st April 2005 Revised Completion Date: 1st Jan10 as continued.
Retention Amount	Not subject to retention
Amount paid to date	ETB 45,708,809.00

3.5 Main works contract

3.5.1 The documents provided by the contractor Enterprise for disclosure are the following.

- Contract agreement.
- Correspondence letters.
- Variation orders.
- Payment certificate.

3.5.2 The Ministry of Water resource had appointed in similar way as the design consultancy directly appointed and authorized in the letter dated 3August 2004.

3.5.3 To bring the direct award process, the proposal of technical and financial offer was submitted to the construction enterprise to respond the requirements.

3.5.4 The contractor was invited for negotiation based on the project specification and Bill of quantities entered as mentioned in the proposal.

3.5.5 Finally agreement was signed in August 2004 with the employer fulfilling the requirements to commence the project activities. The initial project cost was ETB 840,254,274.70 to complete within twenty two months.

3.5.6 Amendments and changes on the construction of dam body, intake tower, spill way and approach channel were the factors that caused the construction process too slow.

Main works Contract Data

Contract Name	TendahoDam and Irrigation Project
Scope of Service	Construction on Dam and ancillary structures and irrigation system construction
Employer	Ministry of Water Resources
Financier	FDRE
Engineer/	Water Works Design and Supervision Enterprise
Contractor	Water Works Construction Enterprise
Original Contract	ETB **840,254,274.70**
Revised Contract	ETB 2,570,770,166.50.
Original Contract	22 months
Extension of Time	NA (Project not yet completed)
Key Dates	Contract signing:20 August 2004 Commencement Date: 15 October 2004 Original Completion Date:10 July 2005 Revised Completion Date: NA (still under construction)

Retention Amount	Not stated
Amount paid to date	ETB 1,395,740,615.03 (to July 2010)

3.6 **Variations order**

3.6.1 During the project implementation process a total of 48 variations order have been issued and approved by all the parties involved. The variations order prevailed can be classified as changes in item of quantities included in the BOQ and addition of new works. The total variations order approved for payment amounts ETB 1,755,181,250.03 to July 2010 and this sum accounts 208% of the original contract price.

3.6.2 The variation amount was not limited in the agreement. Because of this, there was no limit in the variation amount exceed.

3.6.3 Once agreed by both parties and approved by the consultant on the variations of works, payment claims are made after execution of the approved works. To avoid the likely dispute related to cost and rates, the client and the contractor used to approve the cost of the works when the variations are issued. Details of variations order are shown in Annex 4

3.7 **Payment certificate**

As of July 2010 a total of 46 payments have been requested and approved amounting ETB 1,395,740,615.03.The summary of the payment certificate is shown in Annex 3

3.8 **Price adjustment**

3.8.1 Adjustment of the contract price of materials including cement, reinforcement bar and fuel was made in accordance with the sub clause 70 (1) of the General Conditions of Contract. Price adjustment for materials during construction progress covering a period of 2007 to July 2010 amounts ETB 78,513,850.08 which is 9% the original contract price.

3.8.2 The price adjustment would have been avoided or minimized if the contractor could achieve the execution of works within the agreed schedule as entered in the agreement. From this, it can be concluded that the price escalation is the immediate impact of delays. The annual price adjustment and the cost distribution in ETB are shown in the following table.

S/	Year	Total

N				
1	2007	2008	2009	78,513,850.08
	20,750,567.87	32,747,597.92	25,015,687.29	

3.9 Quality of Works.

3.9.1 To ensure the quality of work, the contract administration and supervision consultant has deployed its skilled manpower and equipment to the nature of the job that requires. From the records, material and quality inspection certifying statements have been made to ensure the quality of the construction.

3.9.2 When we refer to the quality, we mean approved standard in all aspects of the construction which is beyond the limit of this assignment. However, it would be good to conduct a field work so to give a substantial testimony on the quality of the works performed.

3.10 The documents disclosed in relation to the appointment of the contractors and implementations of the project were accurate, complete and cross checked for the consistency.

4. Sub contracted works

4.1 In the main contract agreement, it was expressed that, the contractor can employ the sub contractor to undertake part of the works notifying in written addendum to the employer expressing the interest of sub contract.

4.2 The WWCE has contracted out to the qualified bidders in the form of open Tender. The sub contracted works include abutment grouting and construction of Intake tower, diversion channel spillway and Awash crossing inverted siphon. Accordingly, the CJIEJC China Corporation was a successful bidder with least bid offer and had been awarded to undertake the work. Summary of the sub contract information is attached in annex 5.

5. Key findings.

5.1 The Tendaho physical and financial plan was not estimated comprising all detailed project components of work to its completion. It was estimated and allocated in every year based on the amount of budget approved by the client for both the consultancy and main contract of works. As result significant variations were revealed and this was accounted for delay of the project.

5.2 The client had appointed the contractors without justifiable reason deviating from the directives set by the PPA for all the procurements and tender procedures to be followed in single source or direct appointment.

5.3 Due to unforeseen activities and additional works encountered in the project, variations have greatly increased by 208%from the original contractual price. This has caused cost and time overrun in the project.

5.4 The client claims that irrigable land acquisition problem took considerable time to settle with local and regional government. This was one of the causes for delay in the project performance. But, during the assurance team study process no documents was availed to check and verify as a cause for delay.

5.5 The Tendaho being, complex project and large scale irrigation system for multipurpose use can be technological innovative and the creation of job opportunities for youths and exploitation of local community potentials are social innovative aspect of the project.

Annex 1 Material Project Information

Stage of project cycle	List of MPI to be disclosed	Project name: Tendaho Dam and Irrigation project Procurement entity: Ministry of Water Resource
Project identification	Project purpose	- Development of approximately 60,000 ha irrigable land for Production.
	Location	-Afar region 650km from Addis Ababa to Samara road.
	Intended beneficiaries	-Close to 35,000
	Specification	-Dam and its ancillaries and Irrigation system construction.
Project Funding	Tendered price	-ETB 24,327,057 for detail design. -ETB 8,852,079.00 for contract supervision. -ETB 840,254,274.70 for main contract works.
Tender process(project supervision)	Tender procedure	-Direct award (appointment)
	Name of main consultant	-Water Works Design and Supervision Enterprise.
	Tender procedure	- Direct award
Tender process(main contract for works)	Tender procedure	-Direct award
Contract award (project Supervision)	Name of main consultant	-Water Works Design and supervision Enterprise.
	Contract price	-ETB 8,852,079.00
	Contract program	-18 months.

Annex 1 Material Project Information

Stage of project cycle	List of MPI to be disclosed	Project name: Tendaho project Procurement entity: Ministry of Water Resource
Contract award (main contract for works)	Name of main contractor Contract price Contract scope of work	-Water Works Construction Enterprise ETB 840,254,274.70 -The dam and Irrigation systems as instructed by the engineer. Technical and mechanical specification(for civil works and for gates respectively)
	Contract Program	-Initially agreement was signed for 22 months(Oct2004—Jul 2006) Each year extension was approved by the client and Continued to July 2010 delayed by 400%
Contract execution(project supervision)	Change to contract price, program, scope with reason	-Contract price increased from ETB 8,825,474 to ETB 45,708,812as Construction work extended to July 2010.
Contract execution(Main contract for works)	Individual changes to the contract which affect the price with reason	-During execution dam body and irrigation system work variations order of 48 amounts ETB 1,730,521,891.80 and omission for works price amount ETB 118,798,524.00
	Individual changes to the contract which affect the program with reasons.	-Additional works instructed by the engineer has extended the programme from two years to six years to Jul 2010.
	Payment certificates	-46 payment certificate was issued at a different time and was settled ETB 1,3395,740,615.03 to Jul 2910

Annex 2: Material Project Information and "causes for concern"

Stage in Project Cycle	List of disclosures	Possible Causes for concern
Project Identification	Project Purpose Location Intended Feasibility study	The feasibility study was not reviewed once again before the detail design work and implementation process have taken place.
Project funding	Financing Budget Engineering	The availability of funding for the project is not clear and every year a budget is requested from Government treasury
Tender process (Project design)	Tender procedure	Apparent deviations from procurement policy directives and not explained why a single or direct award procurement method was taken as a choice.
Tender process (Project supervision)	Tender procedure	Apparent deviations from procurement policy directives and not explained why a single or direct award procurement method was taken as a choice.
Tender process (Main contract for works)	Tender procedure	Apparent deviations from procurement policy directives and not explained why a single source or direct Procurement method was taken as a choice.
Contract award (Project design)	Contract name Contract scope of Contract program Contract price	No engineering estimate was established against which the contract price was to be evaluated
Contract award	Contract name	The contract program was not clearly defined &

(Project supervision)	Contract scope of	no details showing the deployment of Consultant's
	Contract program	Personnel required at each major stage of work
	Contract price	
Contract award	Contract name	
(Main contract for	Contract scope of	Deviations from procurement policy directives.
works)	Contract program	No schedule was established against periods of
	Contract price	No actual engineering estimate to compare with executed.
Contract execution	Changes to contract	
(Project design)	price, program,	
	scope with reason	
Contract execution	Changes to contract	
(Project	price, program,	
supervision)	scope with reason	
Contract execution	Individual changes	Price increases are not adequately justified by internal
(Main contract for	Contract which	factors outlined in the released documentation
works)	the price with	
	Individual changes	Neither a formal time extension request is proposed nor
	Contract which	approval was issued. In no document the extension of time
	the program and	is justified
	reasons for those	

Annex 3 Payment Certificate 48 Summarized

S/N	Description	Contracted amount	Omission	Addition	Net contract	Total to date
A	Preparatory works & temporary facilities	5,680,000	-	-	5,680,000	4,466,943.48
1	Dam body	30,245,000	-	17,729,738.14	61,132,605.66	58,476,498.50
2	Coffer dam	2,850,000	-	17,009,041	29,653,633.23	39,698,367.25
3	Out let /diversion tunnel for dam Joint venture/	47,140,959.00	47,140,959.00	51,698,041.40	39,698,367,25	39,698,367,25
3.1	Dam grouting/diversion tunnel for joint venture/	-	-	77,007,513.78	68,779,627,.79	69,926,632.91
3.2	Intake tower /diversion tunnel for joint venture/	-	-	37,682,122.34	40,178,679.76	40,178,679.76
4	Spillway	5,279,650.00	-	115,874,762.62	204,299,677.41	270,639,276.83
5	Approach channel excavation	1,434,500.00	-	100,162,.30	2,958,295.64	2,958,295.64
6	Tail race channel excavation	780,250.00	-	49,467.84	2,139,590.21	2,139,594.00

7	Service road	2,682,500.00	-	-	2,682,500	--
8	Hydraulic station	45,111,860.00	45,111,860.00	-	-	-
9	Grouting	21,759,000.00	21,759,000.00	-	-	-
10	By pass channel	4,786,705.00	21,786,705.00			
11	Irrigation scheme	672,503,850.70	-	917,136,801.42	1,582,940,742.81	987,541,949.86
12	Detour road	-	-	930,000.00	1,240,000.00	1,240,000.00
13	Additional work instructed by engineer	-	-	1,000,000.00	1,000,000.00	500,000.00
14	Det Bahri bridge & other works	-	-	1,084,015.42	1,084,015.42	1,084,015.42
15	Additional work instructed by engineer	-	-	2,636,678.84	2,636,678.84	2,636,678.84
16	Dupti det bahri bridge	12,456,535.57	-	-	-	-
	Sub total	**852,710,810.27**	**118,798,524.00**	**1,239,939.65**	**2,046,104,418.02**	**1,395,740,615.03** exclusive of tax

Anne4 information related to project changes (variation orders)

No	Date of issue of	Reason for variation	Work required to implement the	Effect on cost	Effect on programme /	Effect on quality

	variation order		variation		time	
1	-----	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	21,365,567.89	The schedule was changed	No information stated,but will be checked at site visit
2	10 Mar 06	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	-477,975.58	"	"
3	16 Mar 06	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	4,960,392.65	"	"
4	12 May06	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	2,836,659.60	"	"
5	7/10/06	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	16,647,015.95	"	"
6	13 Jul 06	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	500,000.00	"	"
7	---	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	8,893,563.40	"	"
8	-----	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	26,912,992.27	"	"
9	--------	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	4,113,702.23	"	"
10	7/10/06	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	11,961,933.14	"	"
11	---	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	13,553,019.39	"	"
12	----	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	11,819,180.84	"	"
13	----	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	745,311,305.42	"	"
14	6 Jul 07	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	25,748,917.82	"	"
15	------	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	25,470,000.00	"	"

Annex 4 information related to project changes (variation orders)

No	Date of issue of variation order	Reason for variation	Work required to implement the variation	Effect on cost	Effect on programme / time	Effect on quality
16	------	New quantities& additional varied from the	The Dam & Irrigation structures work	3,299,167.38	The schedule was changed	No information stated, but will be checked at

		BOQ				site visit
17	-------	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	10,760,034.21	"	"
18	--------	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	16,028,957.54	"	"
19	26 Feb 08	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	10,844,180.32	"	"
20	" "	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	3,797,115.11	"	"
21	" "	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	3,110,101.21	"	"
22	" "	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	19,841.694.05	"	"
23	1 April 08	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	8,858,423.71	"	"
24	" "	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	13,180,265.26	"	"
25	" "	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	7,187,146.91	"	"
26	10 Jun 08	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	500,000.00	"	"
27	" "	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	3,703,461.25	"	"
28	" "	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	2,783,571.12	"	"
29	3 Jun 08	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	12,574,906.19	"	"
30	3Jun 08	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	22,243,088.20	"	"

Annex 4 information related to project changes (variation orders)

No	Date of issue of variation order	Reason for variation	Work required to implement the variation	Effect on cost	Effect on programme / time	Effect on quality
31	16 Sep 08	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	31,545,991.83	The schedule was changed	No information stated,but will be checked at site visit
32	25 Nov 08	New quantities&	The Dam & Irrigation	23,781,068.19	"	"

		additional varied from the BOQ	structures work			
33	------	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	8,973,362.92	"	"
34	12 Feb 09	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	33,208,591.67	"	"
35	3Mar 09	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	17,093,221.72	"	"
36	15 May 09	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	31,930,915.04	"	"
37	----	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	38,228,889.45	"	"
38	23/9/09	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	29,771,388.63	"	"
39	6 Sep 09	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	34,694,063.21	"	"
40	16/9/09	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	22,588,073.63	"	"
41	25 Jan 10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	21,915,665.22	"	"
42	1 Mar 10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	66,940,235.28	"	"
43	1 Mar 10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	92,808,883.12	"	"
44	7 April10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	13,607,455.24	"	"
45	23 April 10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	36,695,279.68	"	"

Annex4 Required verification information related to project changes (variation orders)

No	Date of issue of variation order	Reason for variation	Work required to implement the variation	Effect on cost	Effect on programme / time	Effect on quality
46	19 May 10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	154,568,004.24	The schedule was changed	No information stated,but will be checked at site visit

47	7 Jun 10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	22,070,819.71	"	
48	20 Jul 10	New quantities& additional varied from the BOQ	The Dam & Irrigation structures work	24,659,358.23	"	"
	Total variation to now ETB			**1,755,181,250.03**	**Schedule extended to this date & not completed.**	
	Main contract of the project ETB			**840,254,274.70**		
	Variation in %			**208 %**		

Annex 5 Sub contract work in Tendaho project.

Main contractor: --- WWCE

Sub contractor: ---CJCIETC China

Project: ----------Tendaho

Funding organization: ---FDRE Government

S/n	Contracted work	Main contract amount in	Sub contract amount in Birr	Settled cost to now in Birr	Contract duration	Remark

		Birr				
1	Grouting	-	43,687,376.67	69,000,000.00	180 days	Continued to now
2	Intake Tower	-	29,364,000.00	40,000,000.00	10 months	completed
3	Spill way	5,279,650.00	16,700,000.00	270,000,000.00	6 months	,,
4	Diversion tunnel	47,140,959.00	47,466,047.00	54,000,000.00	8months	,,
5	Awash cross	-	12,300,000.00	20,000,000.00	8 months	,,
	Total	52,420,609.00	149,517,423.70	453,000,000.00		

The executed work is 200% greater than the sub contract price.