Construction Sector Transparency Initiative

Ethiopia

# AGGREGATION, ANALYSIS AND SYNTHESIS

of Disclosure and Assurance Reports of construction projects covered by CoST-Ethiopia

# STUDY REPORT


**Addis Ababa, Ethiopia | November 2016**

Construction Sector Transparency Initiative - Ethiopia

# AGGREGATION, ANALYSIS AND SYNTHESIS OF DISCLOSURE AND ASSURANCE REPORT OF CONSTRUCTION PROJECTS COVERED BY CoST – ETHIOPIA

# STUDY REPORT

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**Addis Ababa, Ethiopia | November 2016**

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AT | Assurance Team |
| CoST | Construction Sector Transparency Initiative |
| DB | Design-Build |
| DBB | Design-Bid-Build |
| ECPMI | Ethiopian Construction Project Management Institute |
| EIA | Environmental Impact Assessment |
| ERA | Ethiopian Roads Authority |
| ETB | Ethiopian Birr |
| ICB | International Competitive Bidding |
| ICP | Initial Contract Price |
| IDS | Infrastructure Data Standard |
| MOE | Ministry of Education |
| MPI | Material Project Information |
| MoWR/MoWIE | Ministry of Water Resources / Water Irrigation and Energy |
| OB - ICB | Open Bidding under International Competitive Bidding Procedure |
| OB - NCB | Open Bidding under National Competitive Bidding Procedure |
| NCB | National Competitive Bidding |
| PE | Procuring Entity |
| PM | Project Management |
| RB - ICB | Restricted Bidding under International Competitive Bidding Procedure |
| RB - NCB | Restricted Bidding under National Competitive Bidding Procedure |
| RIB | Restricted International Bidding |
| RFP | Request for Proposals |
| RFP - ICB | Request for Proposal under International Competitive Bidding Procedure |
| RFP - NCB | Request for Proposal under National Competitive Bidding Procedure |
| RNB | Restricted National Bidding |
| SCI | Service Contract I – Design Consultancy Service Contract |
| SCII | Service Contract II – Construction Supervision Consultancy Service Contract |
| SSS | Single Source Selection |
| ST | Study Team |
| TOR | Terms of Reference |
| TPC | Total Project Cost |
| TSB - ICB | Two stage Bidding under International Competitive Bidding Procedure |
| TSB - NCB | Two stage Bidding under National Competitive Bidding Procedure |
| USD | United States Dollar |
| WB-CO | World Bank Country Office |
| WC | Works contract |
| WWCE | Water Works Construction Enterprise |

# EXECUTIVE SUMMARY

The Construction Sector Transparency Initiative (CoST) is a country centered initiative to improve the value for money spent on public infrastructures by increasing transparency in the delivery of Government financed construction projects.

Disclosure of Material Project Information (MPI) or Infrastructure Data Standard (IDS) by its latest name is one of the three essentials of CoST. Assurance of the disclosed information and demand for accountability based on the disclosed information are the other basics of the Initiative.

In its course, CoST-Ethiopia has disclosed 52 construction projects from building, road, and water subsectors. All the projects covered by the disclosure have their own specific Assurance Reports of which findings are short of providing better and comprehensive representation unless aggregated and interpreted. Hence, this report is prepared to document the process and the result of the study conducted to aggregate, analyze and synthesize the findings of the Assurance Reports in light of the key variables such as completeness of project studies, tender process, construction cost overrun, construction time overrun, causes for concern, and other relevant issues that the Assurance Reports have revealed.

The study has aggregated, analyzed and synthesized the important project information of ten (10) building, ten (10) water and thirty two (32) road subsector projects covered by the disclosure and assurance process of CoST – Ethiopia. The total initial contract prices of the study projects amounts to Ethiopian Birr 36,475,343,121 (USD 3,268,239,130.51). As indicated in this report, the building, water and road subsector projects account for 19, 19 and 62 percent of the total volume of the sample size respectively.

The study has considered solely the availability of Feasibility and Environmental Impact Assessment (EIA) studies to assess the completeness of project studies. In this regard, both the design and construction of ninety (90) percent of the building subsector projects are carried out in the absence of feasibility and environmental impact assessment studies. Contrary to this, almost all water and road subsector projects are implemented having conducted feasibility and environmental studies that form parts of project identification studies.

Design-Bid-Build (DBB) accounts for ninety (90) percent the strategy adopted in the delivery of building subsector projects and the implementation of 78 percent of the DBB projects has involved separate contracts for SCI and SCII. Similarly, the study reveals that DBB is the only strategy adopted in the delivery of water subsector projects while 60 percent of the sample projects applied combined consultancy service contracts. Unlike and building and water subsectors, 17 percent of road subsector projects were delivered on Design-Build (DB) arrangement while 76 percent of DBB projects involved separate contracts for SCI and SCII.

Building subsector has outsourced more than 75 percent of design and supervision contracts to a single consultant while it procured the majority of Works contracts through open bidding using National Competitive Bidding procedure. Request for Proposal and open bidding methods were applied widely in road subsector to procure Design, Supervision, and Works contracts, respectively. Seventy (70) percent of design, 87.5 percent of supervision and 87.5 percent of Works contracts in water subsector are directly awarded to respective firms thus showing that the subsector adopted single source procurement as a preferred mode of procurement in the water

subsector. The other contracts were procured through open bidding using ICB procedure as a mandatory requirement of the financer, the World Bank.

Though many factors are deemed to be considered, the lack of data has compelled the study team to evaluate the scope of competition observed in the procurement of service and Works contracts by comparing the number of bidders who submitted their bids to the total number of applicants. In line to this, the study shows that the majority of design and supervision contracts in building and road subsectors are procured in bidding environment characterized as "No Competition" and "Fair Competition", respectively. The scope of competition that prevailed in the procurement the respective Works contracts happened to be "fair" and "low". In general, water subsectors exhibited relatively a much lower level of Competition.

The comparison of procurement related information availed in the Assurance Reports against the requirements prescribed in the procurement regulation show that:

- all subsector contracts are signed after the expected timeframe;
- all subsector design contracts allotted sufficient bid preparation period. Adequate time was given for all projects of ICB contracts and for 75 percent of the projects of NCB contracts;
- the Procuring Entities have conducted the evaluation of the majority of design bids within the expected timeframe;
- road subsector have provided sufficient bid preparation period for most of supervision contracts; and
- building and road subsectors have given sufficient bid preparation periods for their NCB Works contracts.

For design consultancy service contract, the average time for procurement and design period is respectively 245 and 311 days and for Works contract, the average time for procurement and completion period is respectively 307 and 990 days. If projects are successively implemented in this manner, the total implementation period of construction projects could be 1787 calendar days (nearly five years) without considering delays in design service and construction works. The study also reveals that building, water and road subsectors have allotted 22.8, 27.0 and 21.13 percent of the total implementation (design and construction) time for design services, respectively.

On the basis of the data obtained from the Assurance Reports, the aggregate cost overrun at the time of disclosure of both pilot and full-fledged projects at industry level is 17.09 percent while water, building and road subsectors exhibit 65.18, 6.81 and 3.18 percent, respectively. These cost overrun figures, however, do not represent the current conditions of the subsectors and the industry. At the time of preparation of the Assurance Reports, considerable number of projects did not attain a status of substantial completion, thus were at early stage to render final-phase time and cost related information. In alignment with another similar study, the cost overrun data have, therefore, been updated (by taking recent data from projects covered in both studies) to result in average figures of 106.50, 175.79, 16.43 and 42.10 percent, at industry, water, building, and road subsector levels, respectively.

Ninety two (92) percent of the reasons for cost overrun in the building subsector are attributed to design change, incomplete designs and change in quantity while design change takes the lead share in road subsector. In the water subsector; design, scope and quantity changes account for 78

percent of cost overrun. The aggregation at industry level shows that design change is the major reason of cost overrun (35 percent) while force majeure accounts the least share (only 1 percent).

The Assurance Reports have also revealed that the Procuring Entities have paid around 12 percent of the aggregate project cost as payments for price escalation.

In similar way to the cost overrun, the Study Team has aggregated two sets of time overrun data: findings in the Assurance Reports and updated time overrun figures. In terms of the former, the average time overrun witnessed at industry level is 101 percent with respective contributions of water, road and building subsectors amounting 151, 48, and 105 percent. The updated summary of time overrun shows that the industry level time overrun is 134.20 percent while that of building, road, and water subsectors turn out to be 160.70, 99.50, and 144.60 percent respectively.

Design change and change in quantity account for 42 percent of the reasons for the time overrun observed in building subsector. In the road subsector, 44 percent of the reasons for time overrun are attributed to design change and force majeure (including inclement weather condition). Incomplete design (20 percent), scope change, change in quantity (17 percent each), and design change (16 percent) are the major reasons for delay in project completion of water subsector projects.

Project delay, procurement problems and cost overrun are the major causes for concern that the Assurance Reports pointed out about the building subsector. In the road sector, procurement issues, project delays, contract administration issues and cost overrun are quoted as major causes for concern. In the water subsector, procurement regulation and capacity building issues, contract administration practices, time and cost overrun are all reported to be the causes for concern.

The aggregation at industry level shows that procurement problems, project delays, cost overrun, and contract administration problems are the major causes for concern.

# I. INTRODUCTION

## 1. Background

The Construction Sector Transparency Initiative (CoST) is a country centered initiative to improve the value for money spent on public infrastructures by increasing transparency in the delivery of Government financed construction projects. The Program builds on experience from a successful three year (2008-2010) pilot programs in eight countries (Ethiopia, Malawi, Philippines, Tanzania, United Kingdom, Vietnam, Zambia, and Guatemala) with sponsorship of the UK Department for International Development (DFID) and the World Bank (WB).

CoST - Ethiopia, a founding member of the international CoST Programme, has been working to improve the value for money spent on Ethiopian public infrastructure by increasing transparency in the delivery of Government financed construction projects. The overall activities of the initiative have been directed by a National Multi-Stakeholder Group Executive Committee (NMSG-EC), comprising representatives of the government, construction industry and civil society. Moreover, CoST Ethiopia procured the services of senior experts on independent consultancy service basis to verify the accuracy and interpret raw data disclosures more intelligible to the public so as to make informed judgments about the cost, time and procurement compliance of the projects concerned.

Disclosure of Material Project Information (MPI), or Infrastructure Data Standard (IDS) by its latest name, is one of the three essentials of CoST. Assurance of the disclosed information and demand for accountability based on the disclosed information are the other basics of the Initiative. To meet these objectives, CoST Ethiopia, in consultation with the respective Procuring Entities, has disclosed the Material Project Information with the associated Causes of Concern to the public through its website covering utmost all stages of the construction project cycles of 52 (25 and 27 construction projects during the pilot and full-fledged programs, respectively) high value public construction projects from the building, water, and road subsectors.

All the projects covered by the disclosure have their own specific Assurance Reports of which findings are short of providing better and comprehensive representation unless aggregated and interpreted. Hence, this report is prepared to document the process and the result of the study conducted to aggregate, analyze and synthesize the findings of the Assurance Reports.

## 2. Objectives of the Study

The main objectives of the study are to extract, aggregate, analyze and synthesize the important project information of the 52 projects covered by the disclosure and assurance process of CoST – Ethiopia.

It is believed that the study findings are helpful to:

a) Enable Procuring Entities, Government, and other stakeholders get better and more complete picture of the performance of sub-sectors and the construction industry, and
b) Serve the purpose of quantitative data source for further analytical works.

## 3. Scope of the Study

The Scope of the study includes the extraction, aggregation, analyzing and synthesizing of the project information of the 52 projects covered by the disclosure and assurance process of CoST - Ethiopia in understandable way by employing appropriate statistical methods or parameters in light of the key variables summarized in Table 1.

**Table 1: Key variables for the study**

| # | Key Variables | Components |
|---|---|---|
| 1 | Completeness of Project Identification Phase | ▪ Availability of Feasibility Study Documents<br>▪ Availability of Environmental Impact Assessment (EIA) Study Documents |
| 2 | Tender Process | ▪ Project Delivery Strategy<br>▪ Mode of Procurement<br>▪ Scope of competition<br>▪ Procurement Efficiency and Bid Floating Period Sufficiency<br>▪ Procurement Length and Project Implementation Periods |
| 3 | Construction Cost | ▪ Project cost<br>▪ Minimum, Maximum, and Average cost overruns at sector and industry levels<br>▪ Price escalation at sector and industry levels<br>▪ Reasons for cost overrun |
| 4 | Construction Time | ▪ Completion time<br>▪ Time overrun (Minimum, Maximum, and Average at sector and industry levels)<br>▪ Reasons for time overrun |
| 5 | Issues of Concern | ▪ Causes for concern at project, sector, and industry level<br>▪ Root causes on the observed problems at project, sector, and industry level<br>▪ Proposed solutions to the problems |
| 6 | Assessment of Project Development Contracts | ▪ Cost and time overrun in design consultancy service contract<br>▪ Cost ratio - Consultancy services to Works<br>▪ Time taken for procurement process (services and Works) |

**NB:** At the time of disclosure, considerable number of projects covered by CoST did not attain a status of substantial completion, thus were at early stage to render final-phase time and cost related information. The coincidence of this study with the timing of another relevant study (*Construction Contracts Expectations and Actual Performances - Gaps Identification and Analysis, by the World Bank Ethiopian Country Office Governance Global Practice in close collaboration with Ethiopian Construction Project Management Institute*), however, has created a favourable ground to update (get indicative recent information) by looking into projects that are common to (covered in) both studies. For the World Bank study, high value projects from the three subsectors with degree of completion close to 80 percent were picked.

## 4. Description of CoST Projects

The study has aggregated, analyzed and synthesized the findings of the Assurance Reports of 52 construction projects. As shown in Table 2, building, water and road subsectors account for nearly 19, 19 and 62 percent of the sample size respectively.

**Table 2: Number of CoST projects by disclosure phase and subsector**

| Phase/Program | No. of Projects by subsector | | | |
|---|---|---|---|---|
| | Building | Water | Road | Total |
| Pilot | 5 | 5 | 15 | 25 |
| Full-fledged | 5 | 5 | 17 | 27 |
| **Total** | **10** | **10** | **32** | **52** |

The total initial contract prices of the study projects amount to Ethiopian Birr 36,475,343,121 (USD 3,268,239,130.51). In terms of cost, building, road and water subsector projects make up 5.7, 71.7 and 22.7 percent of the total volume of projects, respectively.

**Table 3: CoST projects by total initial contract prices**

| Subsector | Amount (ETB) | Amount (USD) |
|---|---|---|
| Building | 2,061,405,198.89 | 158,474,490.35 |
| Road | 26,139,895,416.02 | 2,261,682,329.33 |
| Water | 8,274,042,506.69 | 848,082,310.83 |
| **Industry Level** | **36,475,343,121.60** | **3,268,239,130.51** |

## 5. Study Process

Figure 1depicts the linear representation of the study process adopted to extract, aggregate, analyze and synthesize the findings of the Assurance Reports.

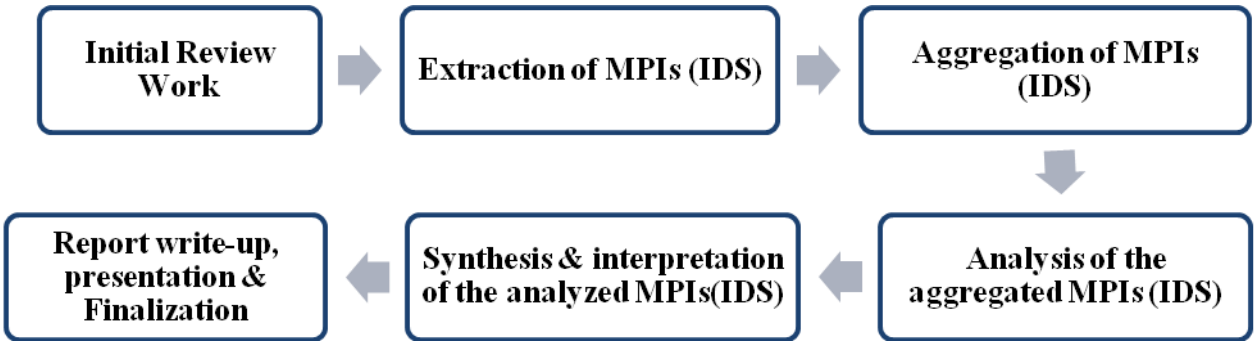


**Figure 1: Linear representation of the study process**

# II. EXTRACTION, AGGREGATION, AND ANALYSIS

## 1. Completeness of Project Studies

The completeness of project studies is evaluated while considering solely the availability of Feasibility and Environmental Impact Assessment (EIA) studies that form parts of project identification studies. Having examined the Assurance Reports of the projects in light of the availability of these studies in the disclosure of the project information, the study team has compiled and summarized the extent of completeness of the project studies.

As shown in Figure 2, only one building subsector project conducted feasibility and environmental impact assessment studies. Contrary to this, almost all water and road subsector projects are implemented having conducted feasibility and environmental studies.

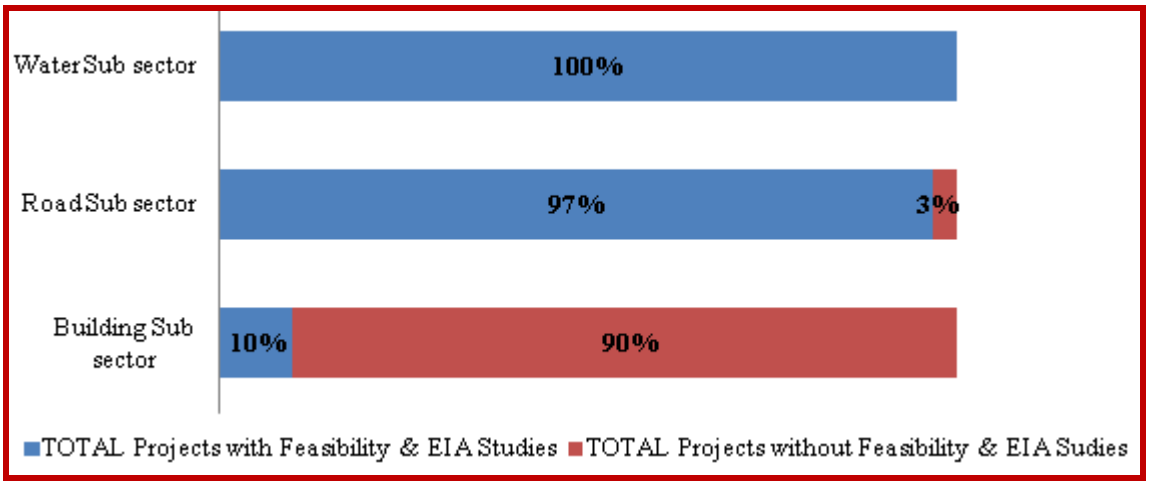


**Figure 2: Completeness of project studies in terms of Project Identification Studies**

## 2. Tender Process

The findings of Assurance Reports in relation to the procurement of services and Works contracts at subsector and industry levels are extracted, analyzed and synthesized in light of the following parameters under separate subheadings:

- Delivery Strategy,
- Mode of Procurement,
- Level of Competition,
- Procurement Efficiency and Sufficiency of Bid Floating Period, and
- Procurement Length and Project Implementation Periods.

The procurement information is summarized for Design Consultancy Service Contract, hereinafter called “Design Contract or Service Contract I, SCI”, Supervision and Contract Administration Consultancy Service Contract, hereinafter called “Supervision Contract or Service Contract II, SCII”, and Works contract (WC) separately.

### 2.1 Delivery Strategy

Design - Bid - Build (DBB) accounts for ninety (90) percent the strategy adopted in the delivery of building subsector projects. The implementation of 78 percent of the DBB projects has involved separate contracts for SCI and SCII. A Project Management and Implementation Service Contract was utilized in the implementation of one of the building subsector projects.

Unlike and building and water subsectors, 17 percent of road subsector projects were delivered on Design-Build (DB) arrangement while 76 percent of DBB projects involved separate contracts for SCI and SCII.

The study revealed that DBB is the only strategy adopted in the delivery of water subsector projects while 60 percent of the sample projects applied combined consultancy service contracts.

Figure 3 summarizes the strategy adopted in the delivery of CoST Projects.

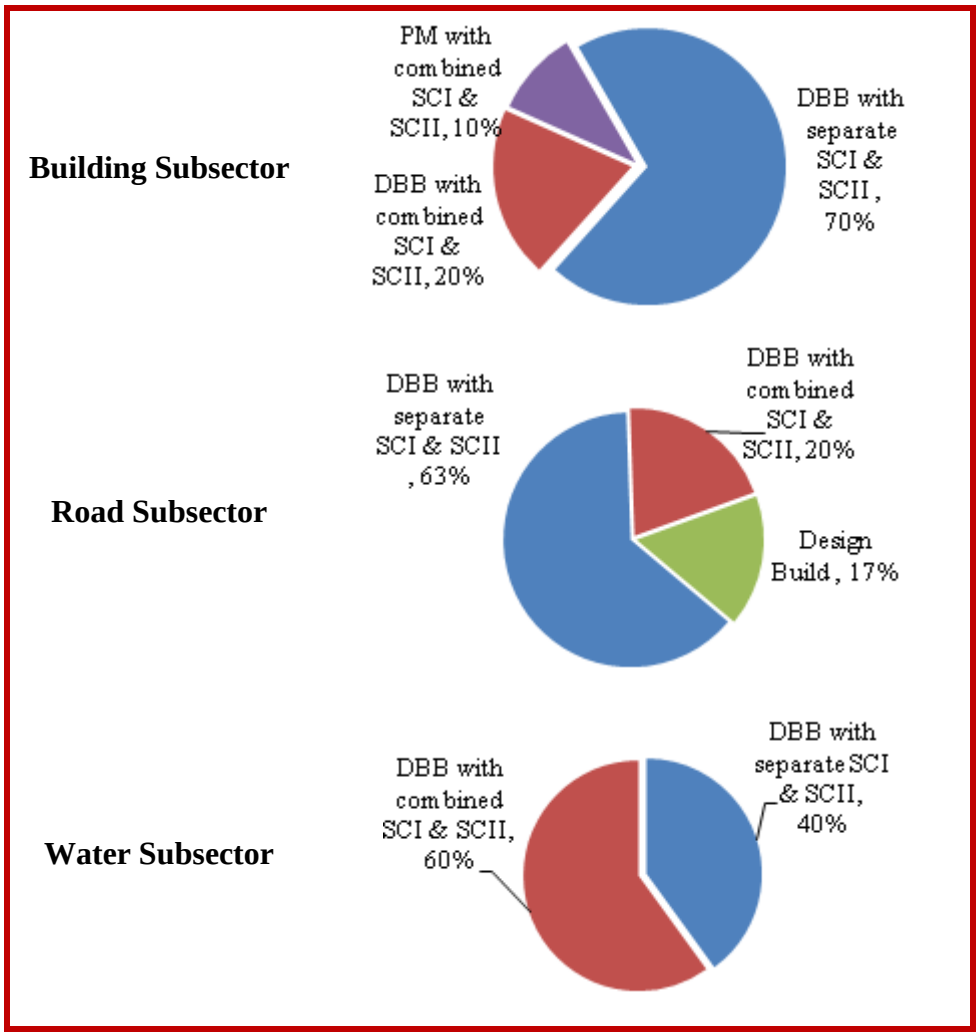


**Figure 3: Project delivery strategy by subsector**

In summary, the study revealed that the majority of projects at industry level were procured through DBB either with separate or combined consultancy service contract and some trends of DB and PM contracts were also observed in the road and building subsectors respectively.

### 2.2 Mode of Procurement

From Figure 4, it can be seen that more than 75 percent of building subsector design and supervision contracts are outsourced to a single consultant while the majority of Works contracts are procured through open bidding using National Competitive Bidding procedure.

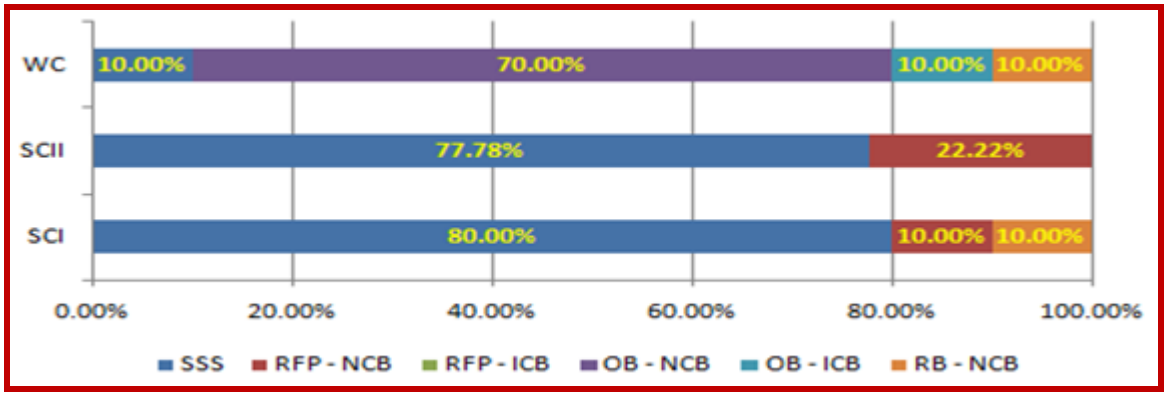


**Figure 4: Mode of procurement and bidding methods (Services & Works contracts) - building subsector**

Road subsector widely applied Request for Proposal and open bidding as a method to procure Design and Supervision, and Works contracts, respectively.

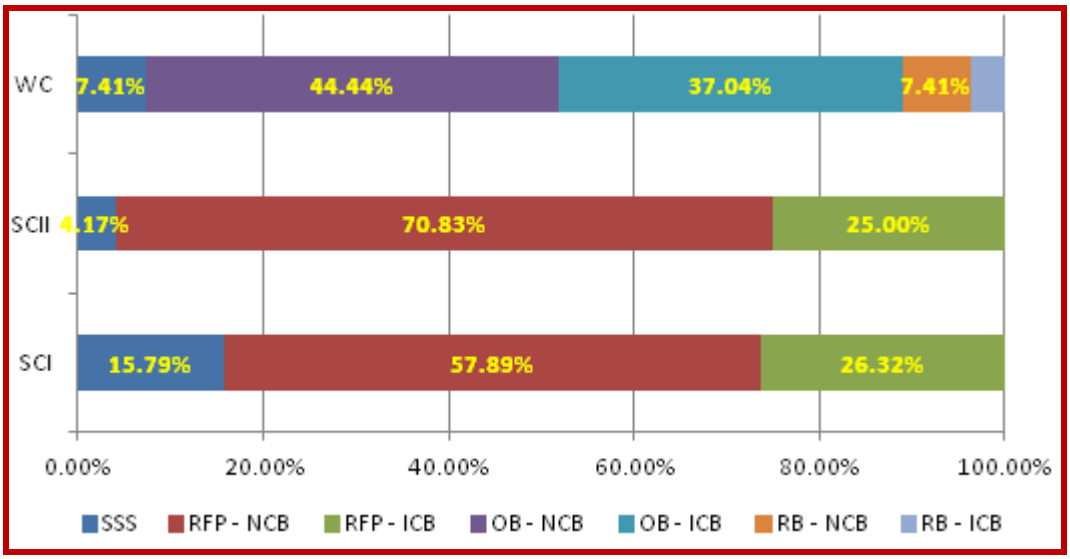


**Figure 5: Mode of procurement and bidding methods (Services & Works contracts) - road subsector**

Seventy (70) percent of design, 87.5 percent of supervision and 87.5 percent of Works contracts in the water subsector are directly awarded to the Government firms showing that the subsector adopted single source procurement as a preferred mode of procurement. The other contracts were procured through open bidding using ICB procedure as a mandatory requirement of the financer, the World Bank.

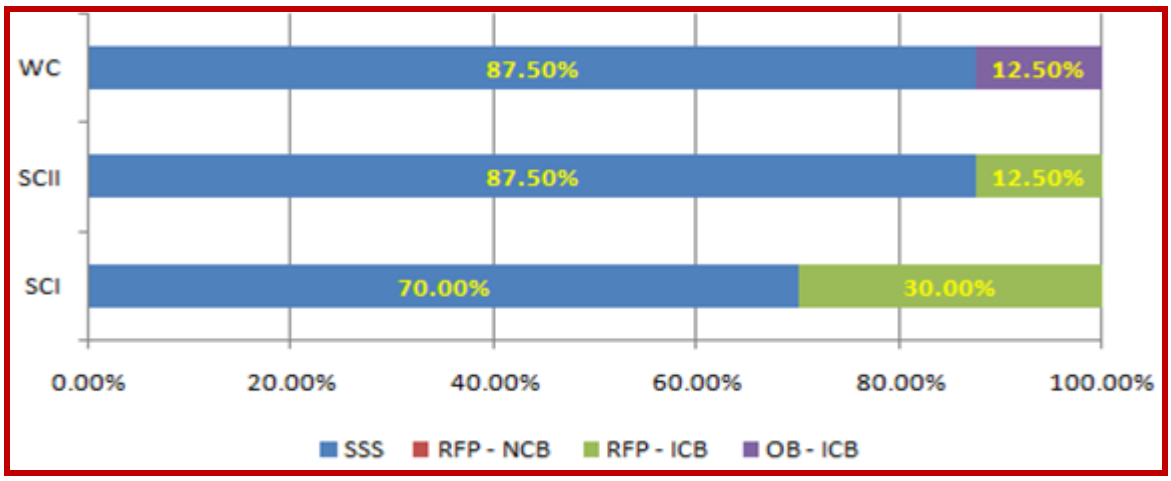


**Figure 6: Mode of procurement and bidding methods (Services & Works contracts) - water subsector**

Also at industry level, the mode of procurement for the majority of design consultancy service contracts was single source procurement followed by open bidding under national and international competitive bidding procedures.

### 2.3 Level of Competition

Though many factors such as floating period, time allotted for bidders to prepare and submit bid documents, technical specification/content of bidding document, price of bidding documents, language of bid proceedings and transparency in invitation to bid notice can be used as additional criteria; owing to lack of data, the level of competition in the procurement of service and Works contracts at project level is evaluated on the basis of the following formula:

$$Level\ of\ Competition\ (LoC) = \frac{Number\ of\ bidders\ submitting\ their\ bids/proposals}{Total\ number\ of\ applicants}$$

Where:

- $LoC = 0$ represents "*No Competition*",
- $0 < LoC < 0.50$ represents "*Low Competition*", and
- $LoC \geq 0.50$ represents "*Fair Competition*".

Having computed the LoC values at project level, averages of project level values are used to evaluate the scope of competitions at subsectors (building, road and water) and industry levels.

The computation and aggregation of LoC values for projects sampled from building subsector (Figure 7) indicate that the level of competition in the majority of design and supervision contracts is characterized as "No Competition" while 70 percent of the Works contracts were procured through a "fair" level of competition.

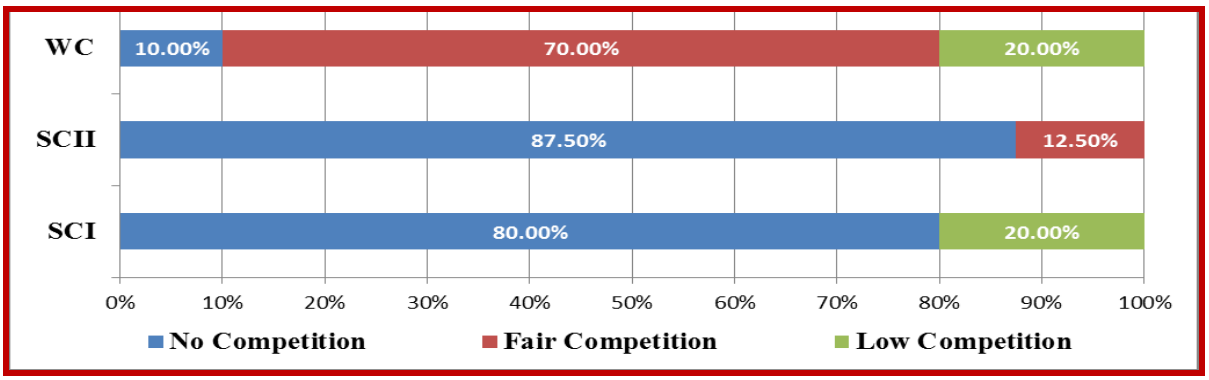


**Figure 7: Level of competition in the procurement process - building sector**

As shown in Figure 8, the level of competition in the majority of design and supervision contracts of road subsector is characterized as "Fair" while 76 percent of Works contracts were procured through "Low" level of competition.

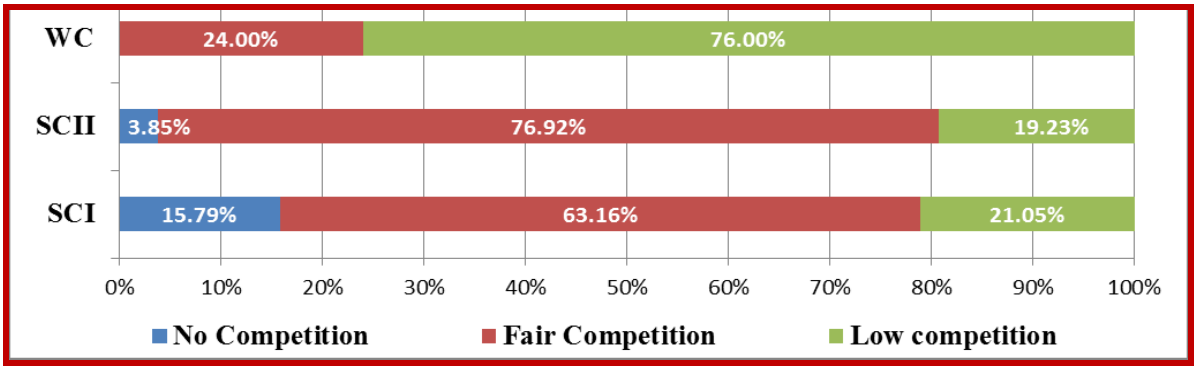


**Figure 8: Level of competition in the procurement process - road subsector**

As far as water subsector is concerned, only 11 percent of the design contracts and 12.5 percent of the Works contracts are regarded as fair competition indicating a much lower level of competition.

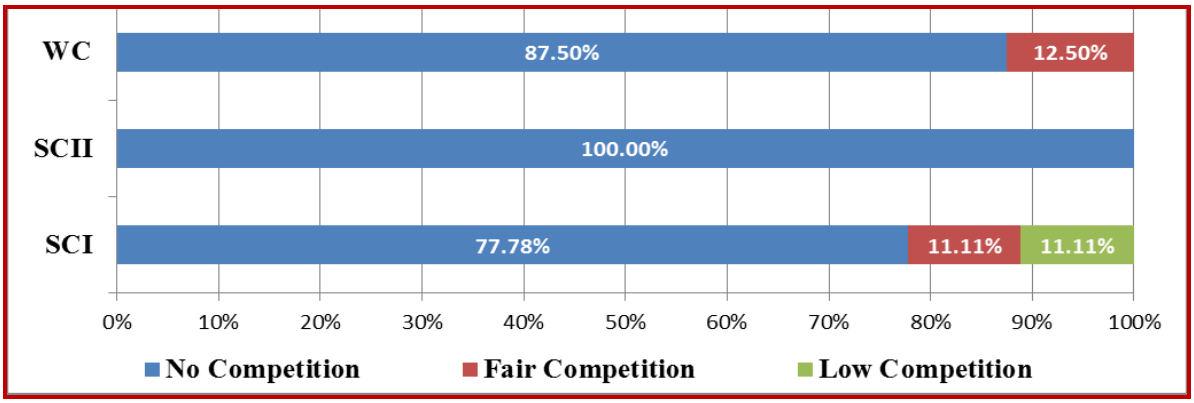


**Figure 9: Level of competition in the procurement process - water subsector**

### 2.4 Procurement Efficiency and Sufficiency of Bid Floating Period

The bid preparation (floating) period, bid evaluation period, duration between contract award and signing have also been summarized for the design, supervision, and Works contracts under the building, road, and water subsector projects. The results have then been compared with the requirements prescribed in the procurement regulation where:

a) Sufficiency of bid preparation (floating) period is evaluated by comparing against the minimum bid floating periods of 30 and 45 days for national and international competitive bidding procedures, respectively.
b) Efficiency of the Procuring Entities' in bid evaluation is assessed by comparing against the bid validity period, i.e. 60 and 90 days for national and international competitive bidding procedures, respectively.
c) Time taken between contract award and contract signing has been compared against the procurement rule that states contracts have to be signed between 7 to 15 days of the contract award date.

Summaries of the analysis results are tabulated in Annexes 1, 2 and 3 for design, supervision and Works contracts, respectively.

In light of the information availed in the Assurance Reports, the study shows that:

a) For design contracts at industry level,
    - Sufficient bid preparation period was given for all projects of ICB contracts and for 75 percent of the projects of NCB contracts.
    - There is a delay of contract signing with duration ranging between 28 and 91 days
    - The efficiency of bid evaluation is 80 percent indicating that Procuring Entities bid evaluation period is less than 90 days for the majority of design contracts.

b) Supervision contract (road subsector only)
    - Nearly 75 percent of the projects provided sufficient bid preparation period for NCB and ICB contracts.
    - The efficiency of bid evaluation and contract signing activities is 56 and 42 percent for NCB and ICB contracts respectively.
    - There is a delay of contract signing with duration ranging between 7 and 248 days

c) Works contract
    - Sufficient bid information is obtained in the road sector, only some information was obtained in the building sector, and no information was obtained in the water sector as the procurement strategy applied for most of the projects in this sector is direct procurement.
    - It is found that all of the projects under the ICB and 93 percent of the projects under NCB procedures have got sufficient bid preparation periods and the efficiency of bid evaluation and contract signing processes is 73 and 20 percent respectively.
    - There is a delay of contract signing with duration ranging between 8 and 207 days.

### 2.5 Procurement Length and Project Implementation Periods

Procurement length and project implementation periods together with comparison of design period to construction completion period are also part of the themes under this Aggregation Study. With the assumption that projects could be implemented successively after engineering design and contract document preparation is completed, the following figures (Figures 10 to 12)[1] indicate construction project implementation durations adding design contract procurement duration, design period, Works contract procurement duration, and construction completion periods at sector and industry level.

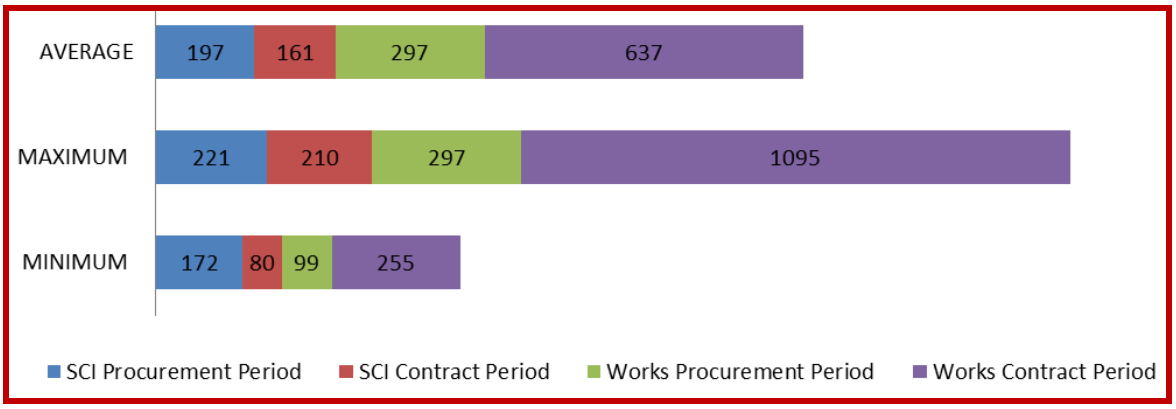


**Figure 10: Project implementation durations (days) - building subsector**

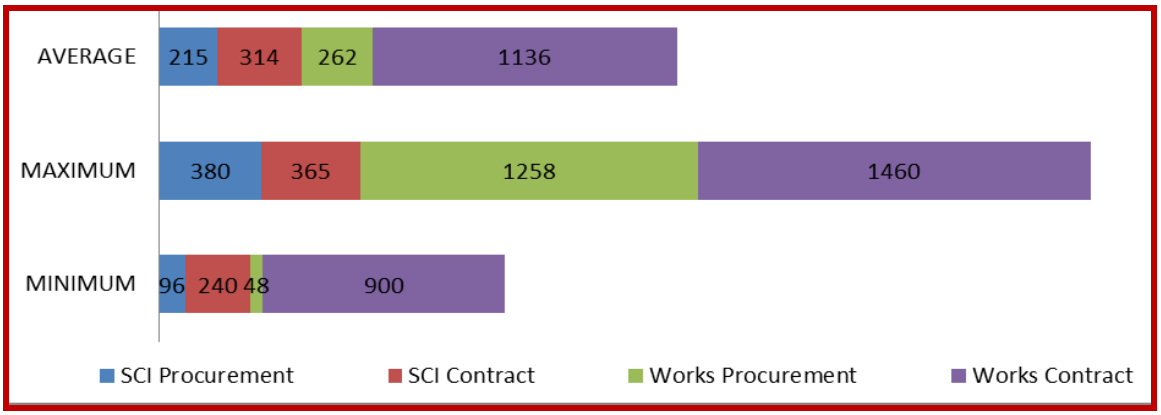


**Figure 11: Project implementation durations (days) - road subsector**

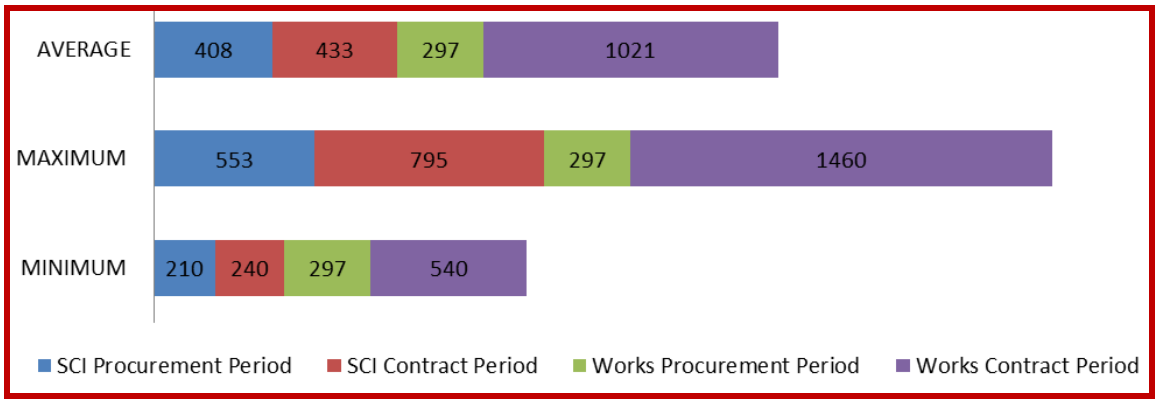


**Figure 12: Project implementation durations (days) - water subsector**

[1] The minimum, average, and maximum periods are derived from the selected projects (not a single project)

For design consultancy service contract, the average time for procurement duration and design period is respectively 245 and 311 days and for Works contract, the average time for procurement duration and completion period is respectively 307 and 990 days. If projects are successively implemented in this manner, the total implementation period of construction projects could be 1853 calendar days (nearly five years) without considering delays in design service and construction Works.

With this approach, the minimum and maximum time period a construction project could be implemented is respectively 479 and 4,066 days. Figure 14 provides a comparison of selected project implementation periods with the minimum, maximum, and average time period from the building, road, and water sector projects. The majority of projects indicated in this Figure have more time period that the average total implementation period summarized in this study.

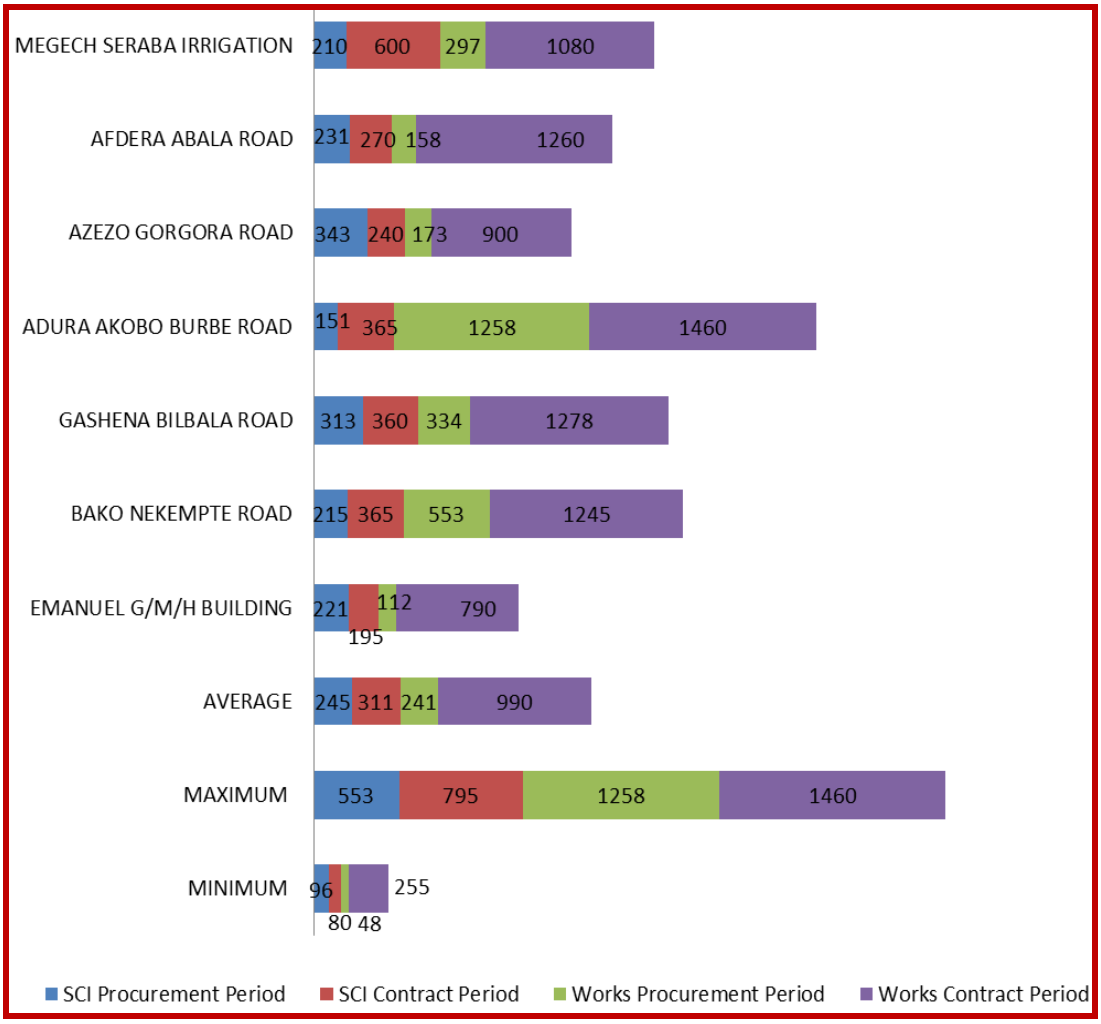


**Figure 13: Project implementation durations (days) at industry level**

Annex 4 summarizes the minimum, maximum, and average procurement length of design consultancy service, supervision consultancy service, and Works contracts for the three subsectors.

In the building subsector, the procurement length for Works contracts is less than the procurement length of both service contracts with a maximum procurement period of 221 days to recruit a consultant with combined design and supervision contracts. In the road subsector; a shorter procurement length is observed to recruit design consultant and the procurement length

for supervision and Works contracts runs from a minimum of 48 days to a maximum of 1,258 days.

Even though the available data for water subsector projects is too small to make concluding remarks owing to the widely applied direct procurement strategy, the procurement length of both services and Works contract consumed more time than the other subsectors ranging from 210 to 553 days.

In an effort to analyze the sufficiency of time allotted for design Works, the design period is compared to the total implementation (design and construction) time. As shown in Figure 14, the average design period is nearly 24 percent of the total implementation period at industry level which is slightly higher than that of the building and road subsectors.

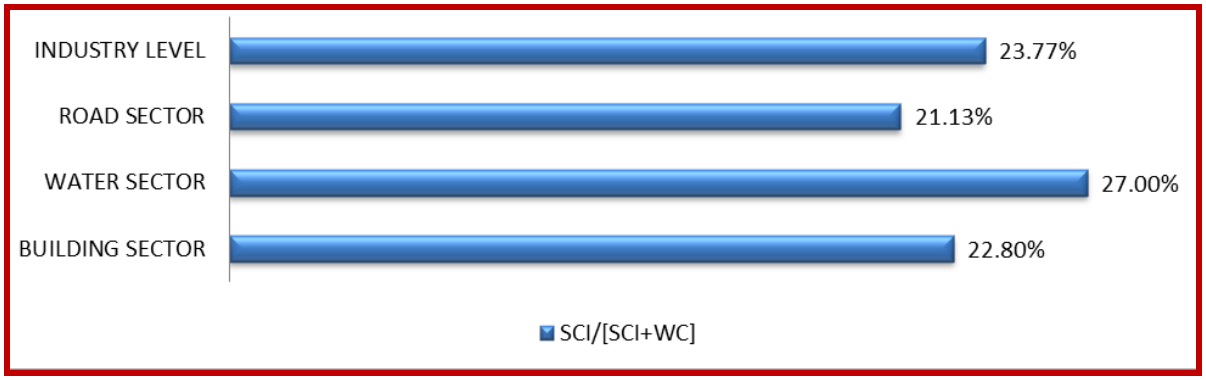


**Figure 14: Design period and total implementation period ratio**

# 3. Construction Cost

## 3.1 Cost Overrun

During the pilot and full-fledged program of CoST-Ethiopia, considerable number of projects covered by the Assurance Reports did not attain a status of substantial completion, thus were at early stage to render final-phase time and cost related information. To this respect, the Study Team has aggregated two sets of cost overrun data: findings in the Assurance Reports and updated cost overrun figures.

### *3.1.1 Cost Overrun - Assurance Reports*

On the basis of the data obtained from the Assurance Reports, the weighted average cost overrun of the study projects at the time of disclosure is 17.09 percent while water, building and road subsectors exhibit 65.18, 6.81 and 3.18 percent, respectively.

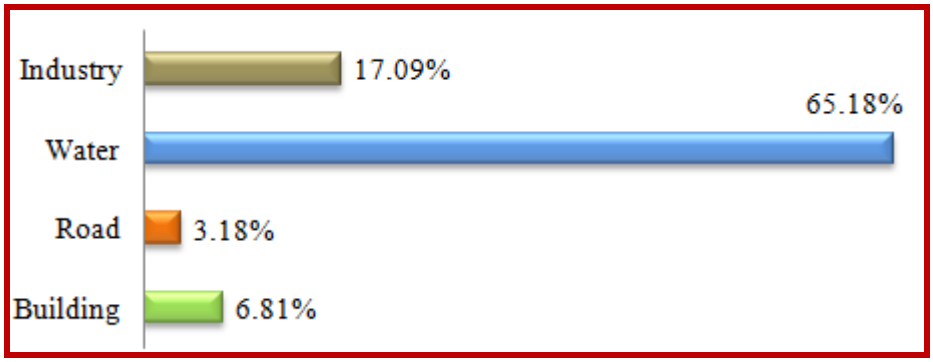


**Figure 15: Cost overrun values aggregated from Assurance Reports**

### *3.1.2 Updated Cost Overrun*

In alignment with the study[2], the cost overrun data, originally indicated in the Assurance Reports, have been updated by looking into projects, that are common to (covered in) both studies, drawn from the three subsectors. Among the fifty two construction projects covered by CoST-Ethiopia, hence, six (6), five (5) and six (6) projects were selected for updating from building, road and water subsectors, respectively.

As depicted in Figure 16, the updated summary of cost overrun shows that there is 76 percent cost overrun at industry level and the average cost overrun figures in the building, road, and water subsectors are 16.43, 42.10 and 175.79 percent, respectively.

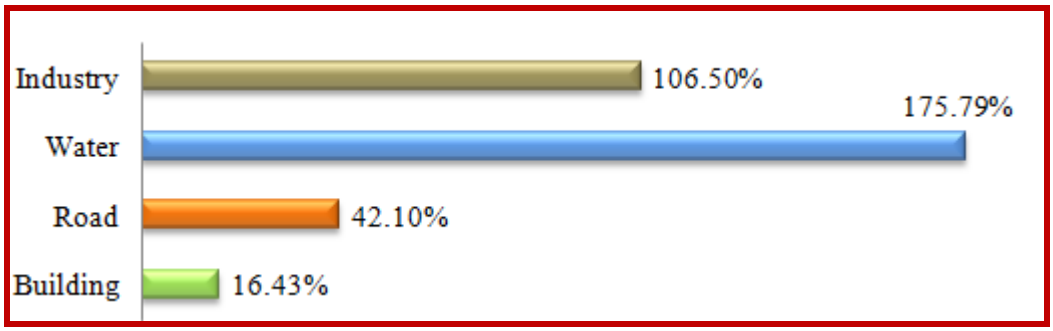


**Figure 16: Updated average cost overrun**

## 3.2 Reasons of Cost Overrun

For the purpose of this analysis, the reasons of cost overrun have been summarized for the three subsectors and aggregated into seven categories.

- Incomplete design
- Design change (though variation)
- Project scope change
- Changes in quantity (up on re-measurement)
- Force majeure (events not caused by contracting parties)
- price hike/inflation
- Other reasons such as construction difficulty, employer's inactions, shortage of materials, etc that increased cost of the project

As can be seen from Figure 17, design change, incomplete designs, and change in quantity are major reasons of cost overrun that share nearly 92 percent of the reasons for cost overrun in the building subsector. In the road subsector, the reasons of cost overrun are evenly distributed among six reasons where incomplete design as a reason of cost overrun was not reported and design change is the major reason of cost overrun.

In the water subsector; design change, scope change, and changes in quantity each share 26 percent as a reason for cost overrun with a total of 78 percent followed by incomplete design. The aggregated summary at industry level shows that design change is the major reason of cost

[2] Construction Contracts expectations and actual performances- Gaps Identification and analysis: Subtask of PKS by the WB Ethiopian CO GGP in close collaboration with ECPMI

overrun (35 percent) and force majeure is the least ranked reason of cost overrun (only 1 percent).

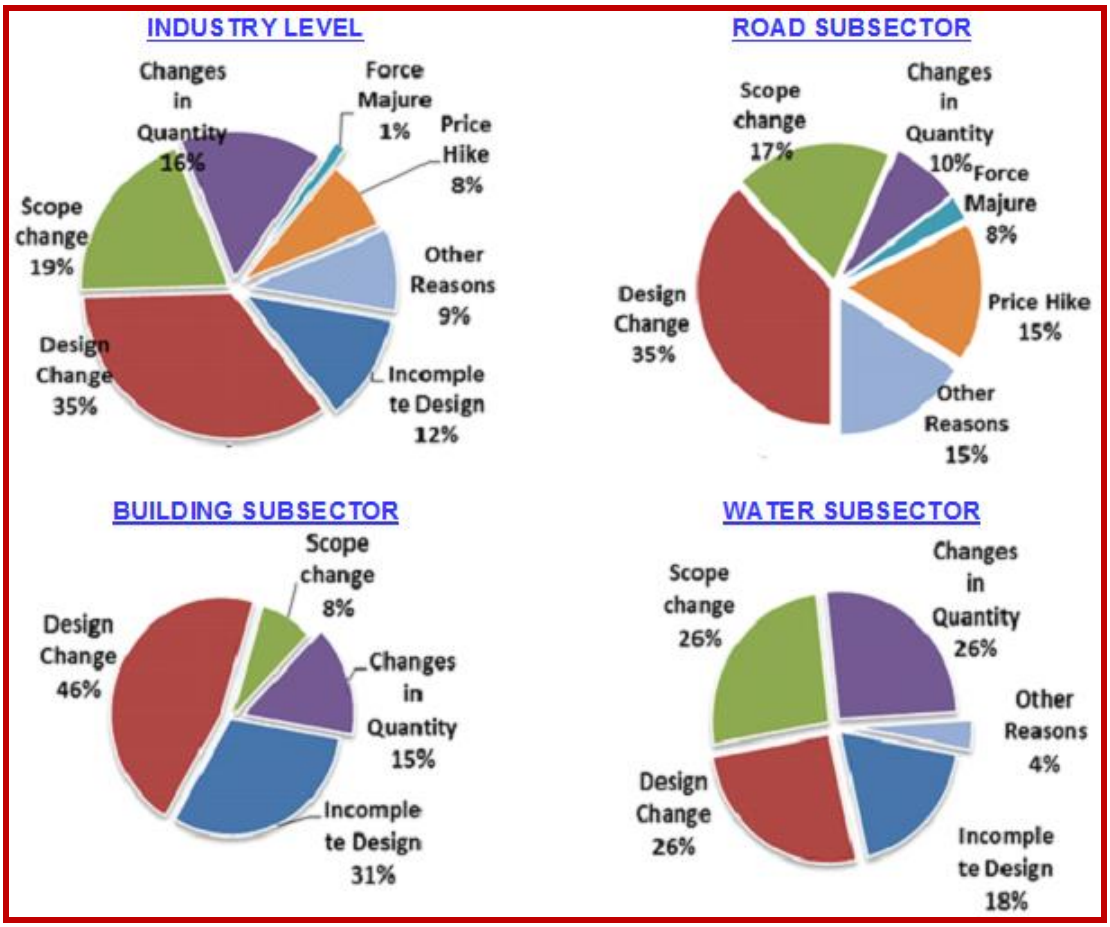


**Figure 17: Reasons of cost overrun**

### 3.3 Price Escalation

For most projects, price escalation payments are paid to the contractor by Procuring Entities pursuant to their respective contract agreement provisions. As shown in Figure 18, around 12 percent of the aggregate project cost has been paid by the Procuring Entities on construction projects. This average figure was summarized from projects at the stage of the construction projects when the pilot and full-fledged Assurance Reports were prepared and amounts to 2.5 billion birr out of the total 21.7 billion birr construction project.

For water and building subsector projects, the coverage of price escalation payments is limited to cement, reinforcement bar, and fuel for which sufficient information was not disclosed by the Procuring Entities and respective project participants. For these reasons, a higher amount of price escalation payment is presumed to have been paid at the time of disclosure.

Price escalation payments made in the building subsector is nearly 6.3 percent of the total project cost as summarized from two out of ten building projects covered by CoST-Ethiopia. Moreover, most building projects with completion period less than 18 months do not provide price escalation payment clauses in their contract agreement.

The price escalation payments in the water and road subsector projects are respectively 9.03 and 12.35 percent of the total initial project costs considering price escalation payments disclosed by the Procuring Entities.

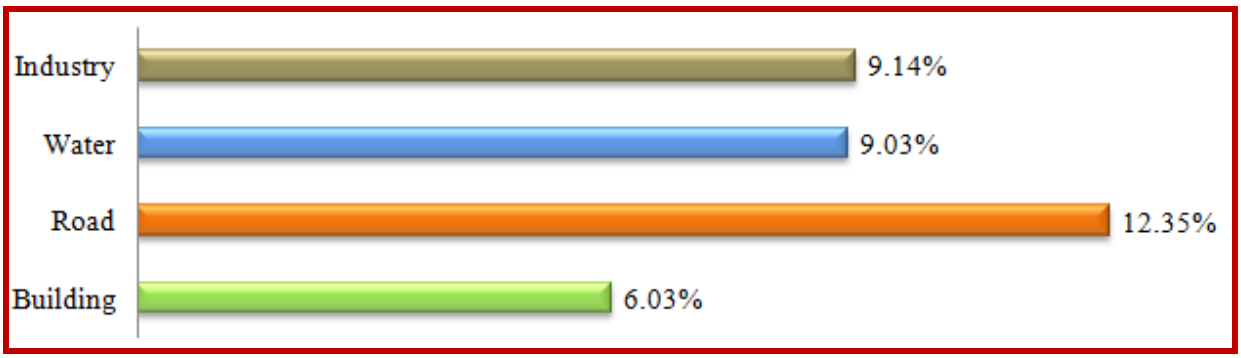


**Figure 18: Average price escalation payment as compared to their respective total project cost by sector**

It has to be noted that as the project progresses and when completion dates are extended for these projects, price escalation payments may rise than indicated in this study. Hence, the summarized price escalation payments do not indicate the actual price escalation payments of the projects at the time the projects are completed.

## 4. Project Development Cost Assessment

The costs of design contract (SCI) and the supervision contract (SCII) have been summarized as a percentage of project costs to indicate the practical share of the costs for design and supervision services from the total project cost (TPC) which in this case is assumed as the sum of costs of design, supervision and Works contracts.

Table 4 indicates that at industry level, the average cost share of the design consultancy service contract is 1.23 percent of the construction cost and the supervision consultancy service contract is 3.01 percent of the construction cost. The average share of both service costs is 3.80 percent of the construction cost and the share of these service costs is minimum in the building subsector and maximum in the water subsector.

Similarly, Figure 19 indicates that at industry level, the average cost share of the design consultancy service contract is 1.15 percent of the Total Project Cost (TPC) and the supervision consultancy service contract is 2.68 percent of the TPC. The average share of both service costs is 3.45 percent of the TPC and the share of these service costs is minimum in the building subsector and maximum in the water subsector.

**Table 4: Summary of consultancy service cost and project cost ratio**

| | Service Cost to Project Cost | | | Service Cost to Total Project Cost | | |
|---|---|---|---|---|---|---|
| | **SCI/WC** | **SCII/WC** | **[SCI+SCII] / WC** | **SCI / [SCI+SCII+WC]** | **SCII / [SCI+SCII+WC]** | **[SCI+SCII] / [SCI+SCII+WC]** |
| No of Projects with sufficient data | 30 | 35 | 42 | 30 | 35 | 42 |
| Building Sector | 0.40% | 1.73% | 2.52% | 0.39% | 1.65% | 2.40% |
| Water Sector | 2.03% | 7.35% | 8.90% | 1.69% | 6.05% | 7.56% |
| Road Sector | 1.21% | 1.97% | 2.67% | 1.14% | 1.88% | 2.54% |
| Industry Level | **1.23%** | **3.01%** | **3.80%** | **1.15%** | **2.67%** | **3.45%** |
| **SCI – DESIGN CONTRACT; SCII – SUPERVISION CONTRACT; WC – WORKS CONTRACT** | | | | | | |

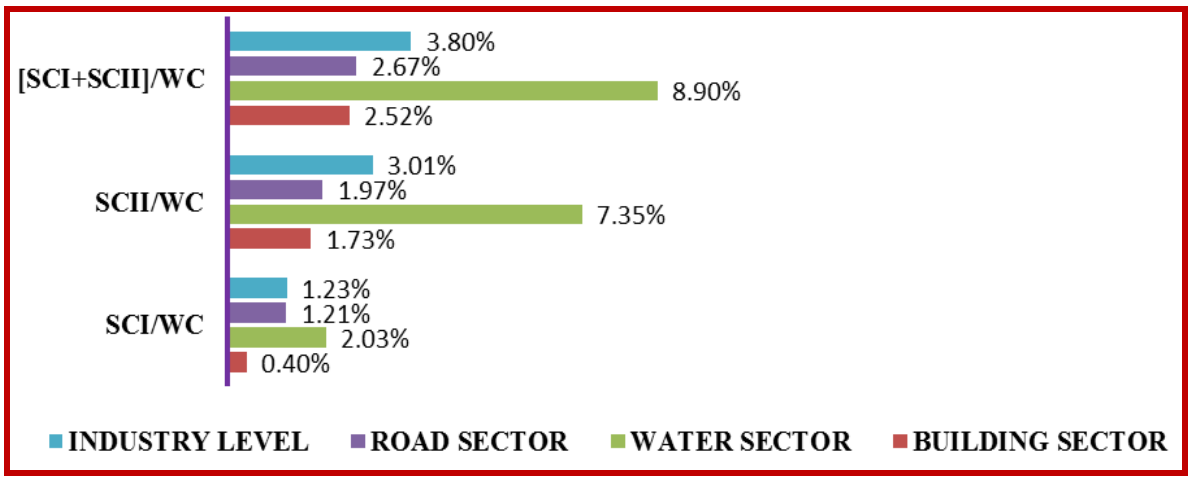


**Figure 19: Services, Works, and project cost ratios**

# 5. Construction Time

## 5.1 Time Overrun

Similar to the cost overrun, the Study Team has aggregated two sets of time overrun data: findings in the Assurance Reports and updated time overrun figures.

### *5.1.1 Time Overrun - Assurance Reports*

The aggregation of the data obtained from the Assurance Reports have revealed that weighted average time overrun of the study projects at the time of disclosure is 101.00 percent while water, building and road subsectors exhibit 151.00, 105.00 and 48.00 percent, respectively.

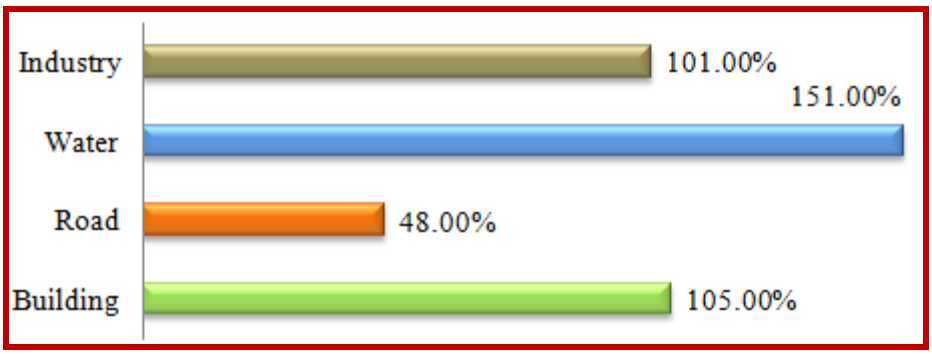


**Figure 20: Weighted average time overrun (Assurance Reports)**

### *5.1.2 Updated Time Overrun*

As shown in Figure 21, the updated summary of time overrun shows that the industry level time overrun is 134.20 percent and the time overrun values for the building, road, and water subsectors are 160.70 percent, 99.50 percent, and 144.60 percent respectively.

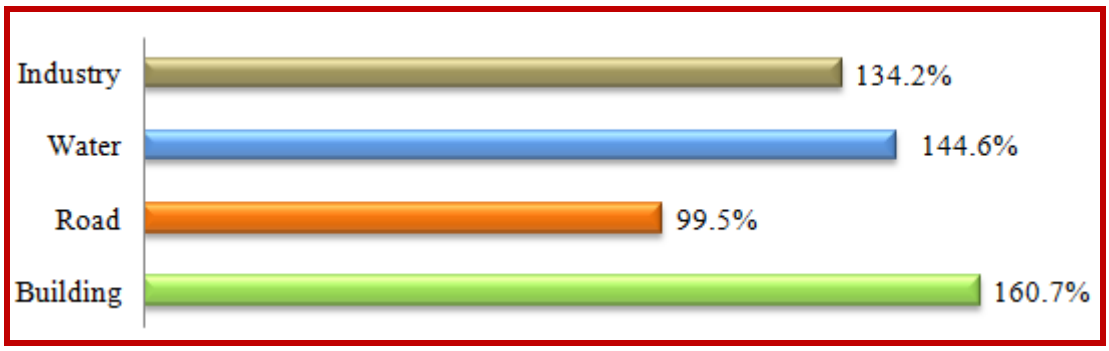


**Figure 21: Updated average time overrun**

### 5.2 Reasons for Time Overrun

Similar to the reasons for cost overrun, the reasons of time overrun have been summarized for the three subsectors and aggregated into seven categories.

- Incomplete design
- Design changes
- Scope change
- Changes in quantity
- Force majeure and adverse weather conditions
- Poor completion time estimation
- Other reasons such as contractor's low capacity, Employer's inactions, shortage of materials, and construction difficulty.

In the building subsector; design change and change in quantity being reasons of time overrun with 25 and 17 percent shares respectively, the reasons of time overrun in this subsector, with 42 percent share, include other reasons such as land acquisition issues, energy crisis, power and water supply, shortage of finance and budget planning, unavailability of foreign currency, scarcity of construction materials on local market, poor provision of equipment and skilled manpower, etc.

In the road subsector, design change and force majeure (including inclement weather condition) each share 22 percent of the reason of time overrun while other reasons such as contractors' low capacity, land acquisition related problems (Employer's contractual obligation), etc constitute the major reasons of time overrun with 26 percent share.

In the water subsector; incomplete design (20 percent), scope change and change in quantity (17 percent each), and design change (16 percent) are reasons of time overrun that delay project completion. The other reasons of time overrun in this subsector with 20 percent share is a combination of other reasons related to the capacity and efficiency of project participants such as Contractor, Consultant, and Employer.

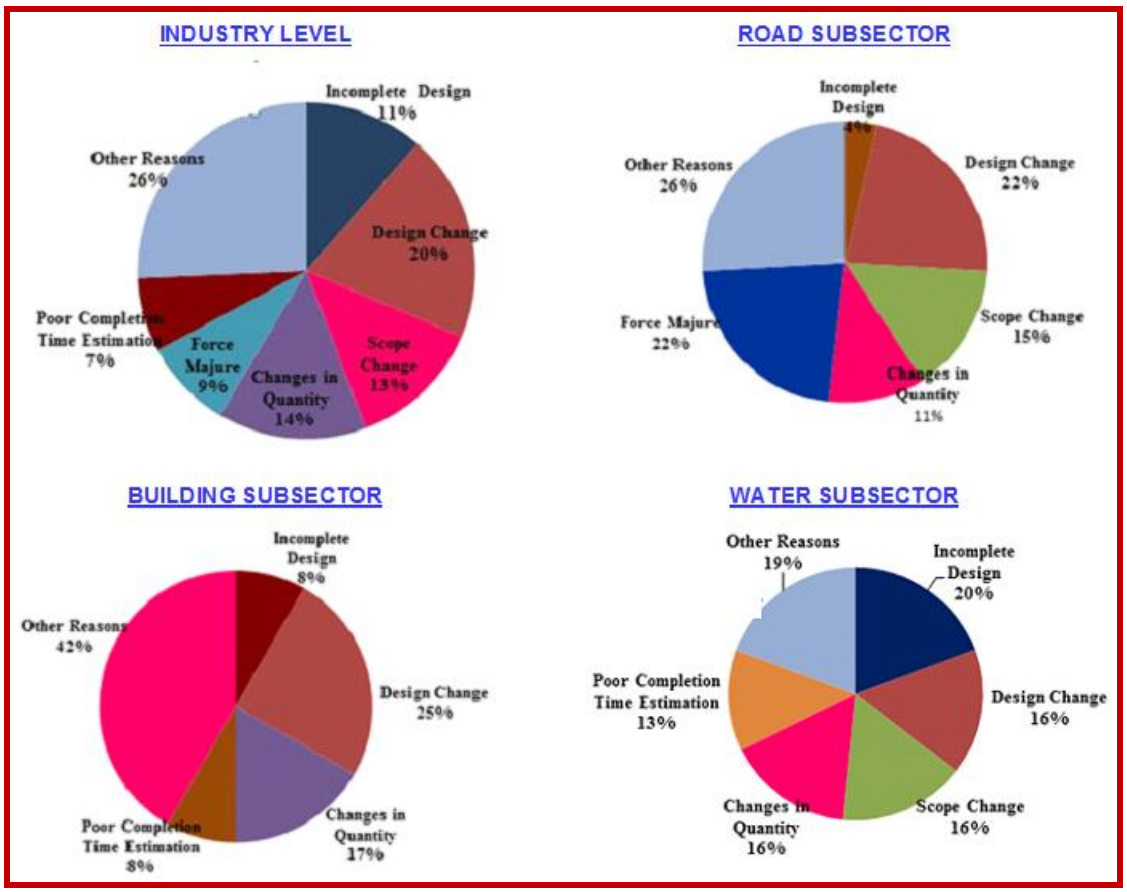


**Figure 22: Reasons for time overrun**

## 6. Causes for Concern

The causes for concern that was provided in the Assurance Reports have been grouped into seven categories in a similar way to the reasons of cost and time overrun. The categories of causes for concern that call for intervention in each of the projects are aggregated into:

- Cost overrun;
- Time overrun;
- Project identification issues;
- Procurement issues;
- Contract administration issues;
- Capacity building issues; and
- Procurement regulation issues.

The categories listed above were grouped according to the causes for concern provided in the Assurance Reports and analysis was made based on the frequency of the causes for concern provided for each of the projects covered by CoST-Ethiopia.

Figure 23 illustrates that, project delay is the major causes for concern followed by procurement problems and cost overrun in the building subsector. A project identification issue is the least causes for concern in this subsector even if feasibility and environmental impact assessment studies were not conducted for the majority of projects in the subsector.

In the road subsector, procurement issues are the major causes for concern with 33 percent share followed by project delays (21.4 percent), contract administration issues (17.1 percent), and cost overrun (15.7 percent).

In the water subsector, different causes for concern were obtained from the analysis where procurement regulation and capacity building issues, contract administration practices, time and cost overrun are all reported to be the causes for concern in the subsector.

The aggregate summary of the causes for concern at industry level shows that procurement problems, project delays, cost overrun, and contract administration problems are the major causes for concern.

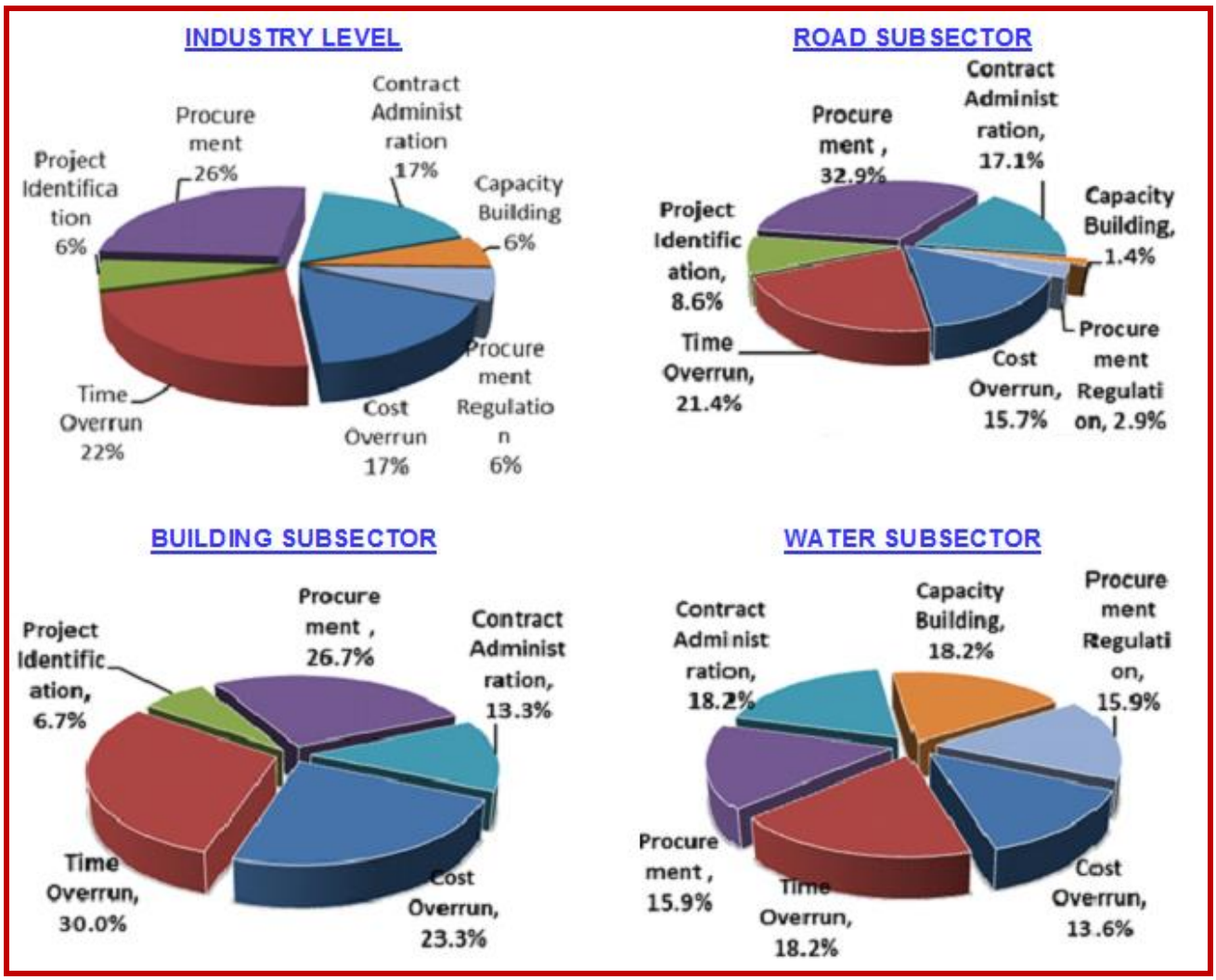


**Figure 23: Summarized causes for concern**

# III. KEY FINDINGS

The study has aggregated, analyzed and synthesized the important project information of ten (10) building, ten (10) water and thirty two (32) road subsector projects covered by the disclosure and assurance process of CoST – Ethiopia. The total initial contract prices of the study projects amounts to Ethiopian Birr 36,475,343,121 (USD 3,268,239,130.51). As indicated in this report, the building, water and road subsector projects account for 19, 19 and 62 percent of the total volume of the sample size respectively.

In an effort to get better and more comprehensive picture of the performance of subsectors and the construction industry, this section thus summarizes the key study findings in light of major variables: completeness of project studies; efficiency of procurement; level of competition; amount of and reasons for cost and time overruns; and issues and causes of concerns at subsector and industry levels.

## 1. Completeness of Project Studies

The study has considered solely the availability of Feasibility and Environmental Impact Assessment (EIA) studies to assess the completeness of project studies. In this regard, both the design and construction of ninety (90) percent of the building subsector projects are carried out in the absence of feasibility and environmental impact assessment studies. Contrary to this, almost all water and road subsector projects are implemented having conducted feasibility and environmental studies that form parts of project identification studies.

## 2. Tender Process

### *a) Delivery Strategy*

Design - Bid - Build (DBB) accounts for ninety (90) percent the strategy adopted in the delivery of building subsector projects and the implementation of 78 percent of the DBB projects has involved separate contracts for SCI and SCII. Similarly, the study reveals that DBB is the only strategy adopted in the delivery of water subsector projects while 60 percent of the sample projects applied combined consultancy service contracts. Unlike and building and water subsectors, 17 percent of road subsector projects were delivered on Design-Build (DB) arrangement while 76 percent of DBB projects involved separate contracts for SCI and SCII.

### *b) Mode of Procurement*

Building subsector has outsourced more than 75 percent of design and supervision contracts to a single consultant while it procured the majority of Works contracts through open bidding using National Competitive Bidding procedure. Request for Proposal and open bidding methods were applied widely in road subsector to procure Design and Supervision, and Works contracts respectively.

Seventy (70) percent of design, 87.5 percent of supervision and 87.5 percent of Works contracts in water subsector are directly awarded to respective firms thus showing that the subsector adopted single source procurement as a preferred mode of procurement in the water subsector.

The other contracts were procured through open bidding using ICB procedure as a mandatory requirement of the financer, the World Bank.

### *c) Level of Competition*

Though many factors are deemed to be considered, the lack of data has compelled the study team to evaluate the scope of competition observed in the procurement of service and Works contracts by comparing the number of bidders who submitted their bids to the total number of applicants. In line to this, the study shows that the majority of design and supervision contracts in building and road subsectors are procured in bidding environment characterized as "No Competition" and "Fair Competition", respectively. The scope of competition that prevailed in the procurement the respective Works contracts happened to be "fair" and "low". In general, water subsectors exhibited relatively a much lower level of competition.

### *d) Procurement Efficiency and Sufficiency of Bid Floating Period*

The comparison of procurement related information availed in the Assurance Reports against the requirements prescribed in the procurement regulation show that:

- all subsector contracts are signed after the expected timeframe;
- all subsector design contracts allotted sufficient bid preparation period. Adequate time was given for all projects of ICB contracts and for 75 percent of the projects of NCB contracts;
- the Procuring Entities have conducted the evaluation of the majority of design bids within the expected timeframe;
- road subsector have provided sufficient bid preparation period for most of supervision contracts; and
- building and road subsectors have given sufficient bid preparation periods for their NCB Works contracts.

### *e) Procurement Length and Project Implementation Periods*

For design consultancy service contract, the average time for procurement and design period is respectively 245 and 311 days and for Works contract, the average time for procurement and completion period is respectively 307 and 990 days. If projects are successively implemented in this manner, the total implementation period of construction projects could be 1787 calendar days (nearly five years) without considering delays in design service and construction works.

The study also reveals that building, water and road subsectors have allotted 22.8, 27.0 and 21.13 percent of the total implementation (design and construction) time for design services, respectively.

## 3. Construction Cost Overrun

On the basis of the data obtained from the Assurance Reports, the aggregate cost overrun at the time of disclosure of both pilot and full-fledged projects at industry level is 17.09 percent while water, building and road subsectors exhibit 65.18, 6.81 and 3.18 percent, respectively. These cost overrun figures, however, do not represent the current conditions of the subsectors and the industry. At the time of preparation of the Assurance Reports, considerable number of projects did not attain a status of substantial completion, thus were at early stage to render final-phase

time and cost related information. In alignment with another similar study, the cost overrun data have, therefore, been updated (by taking recent data from projects covered in both studies) to result in average figures of 106.50, 16.43, 42.10 and 175.79 percent, at industry, building subsector, road subsector, and water subsector levels respectively.

Ninety two (92) percent of the reasons for cost overrun in the building subsector are attributed to design change, incomplete designs and change in quantity while design change takes the lead share in road subsector. In the water subsector; design, scope and quantity changes account for 78 percent of cost overrun. The aggregation at industry level shows that design change is the major reason of cost overrun (35 percent) while force majeure accounts the least share (only 1 percent).

The Assurance Reports have also revealed that the Procuring Entities have settled around 12 percent of the aggregate project cost as payments for price escalation.

## 4. Construction Time Overrun

Similar to the cost overrun, the Study Team has aggregated two sets of time overrun data: findings in the Assurance Reports and updated time overrun figures. In terms of the former, the average time overrun witnessed as industry level is 101 percent with respective contributions of water, road and building subsectors amounting 151.00, 48.00 and 105.00 percents. The updated summary of time overrun shows that the industry level time overrun is 134.20 percent while that of building, road, and water subsectors turn out to be 160.70 percent, 99.50 percent, and 144.60 percent respectively.

Design change and change in quantity account for 42 percent of the reasons for the time overrun observed in building subsector. In the road subsector, 44 percent of the reasons for time overrun are attributed to design change and force majeure (including inclement weather condition). Incomplete design (20 percent), scope change, change in quantity (17 percent each), and design change (16 percent) are the major reasons for delay in project completion of water subsector projects.

## 5. Causes for Concern

Project delay, procurement problems and cost overrun are the major causes for concern that the Assurance Reports pointed out about the building subsector. In the road sector, procurement issues, project delays, contract administration issues and cost overrun are quoted as major causes for concern. In the water subsector, different causes for concern were obtained from the analysis where procurement regulation and capacity building issues, contract administration practices, time and cost overrun are the frequently stated ones.

The aggregation at industry level shows that procurement problems, project delays, cost overrun, and contract administration problems are the major causes for concern.

# ANNEXES

**Annex 1: Procurement efficiency for design contract [SCI]; in days**

| Criteria for Comparison | Bid Preparation / Floating Period | | Bid Evaluation Period | Contract Signing Period | Combined Bid Evaluation & Contract Signing |
|---|---|---|---|---|---|
| | Min=30 NCB | Min=45 ICB | Max = 90 | Max = 15 | Max = 105 |
| **Industry Level** | | | | | |
| No. of Projects with sufficient data | 12 | 5 | 10 | 4 | 4 |
| No. of Projects fulfilling the Criteria | 9 | 5 | 8 | 0 | 0 |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **75.00** | **100.00** | **80.00** | **0.00** | **0.00** |
| **Building Sector** | | | | | |
| No. of Projects with sufficient data | 1 | - | 1 | - | - |
| No. of Projects fulfilling the Criteria | 0 | - | 0 | - | - |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **0.00** | **-** | **0.00** | **-** | **-** |
| **Road Sector** | | | | | |
| No. of Projects with sufficient data | 11 | 3 | 9 | 4 | 2 |
| No. of Projects fulfilling the Criteria | 9 | 3 | 8 | 0 | 0 |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **81.82** | **100.00** | **88.89** | **0.00** | **0.00** |
| **Water Sector** | | | | | |
| No. of Projects with sufficient data | - | 2 | - | - | 2 |
| No. of Projects fulfilling the Criteria | - | 2 | -- | - | 0 |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **-** | **100.00** | **-** | **-** | **0.00** |

**Annex 2: Procurement efficiency for supervision contract [SCII]; in days**

| Criteria for Comparison | Bid Preparation / Floating Period | | Bid Evaluation Period | Contract Signing Period | Combined Bid Evaluation & Contract Signing |
|---|---|---|---|---|---|
| | Min = 30 NCB | Min=45 ICB | Max = 90 | Max = 15 | Max = 105 |
| **Road Sector** | | | | | |
| No. of Projects with sufficient data | 19 | 4 | 9 | 12 | 1 |
| No. of Projects fulfilling the Criteria | 14 | 3 | 5 | 5 | 0 |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **73.68** | **75.00** | **55.56** | **41.67** | **0.00** |

**Annex 3: Procurement efficiency for Works contract [WC]; in days**

| Criteria for Comparison | Bid Preparation / Floating Period | | Bid Evaluation Period | Contract Signing Period | Combined Bid Evaluation & Contract Signing |
|---|---|---|---|---|---|
| | Min=30 NCB | Min=45 ICB | Max=90 | Max=15 | Max=105 |
| **Industry Level** | | | | | |
| No. of Projects with sufficient data | 15 | 9 | 22 | 15 | - |
| No. of Projects fulfilling the Criteria | 14 | 9 | 16 | 3 | - |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **93.33** | **100.00** | **72.73** | **20.00** | **-** |
| **Building Sector** | | | | | |
| No. of Projects with sufficient data | 2 | 1 | 3 | - | - |
| No. of Projects fulfilling the Criteria | 2 | 1 | 1 | - | - |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **100.00** | **100.00** | **33.33** | **-** | **-** |
| **Road Sector** | | | | | |
| No. of Projects with sufficient data | 13 | 8 | 19 | 15 | - |
| No. of Projects fulfilling the Criteria | 12 | 8 | 15 | 3 | - |
| Sufficiency of Floating Period / Efficiency of Evaluation (%) | **92.31** | **100.00** | **78.95** | **20.00** | **-** |

**Annex 4: Minimum, maximum, and average procurement length by subsector**

| Parameters | SCI | SCII | Works |
|---|---|---|---|
| **Building Subsector** | | | |
| No. of Projects with sufficient data | 2 | 1 | 5 |
| Minimum Procurement Length - Days | 172 | 221 | 99 |
| Maximum Procurement Length - Days | 221 | | 179 |
| Average Procurement Length - Days | 197 | | 124 |
| **Road Subsector** | | | |
| No. of Projects with sufficient data | 15 | 26 | 24 |
| Minimum Procurement Length - Days | 96 | 53 | 48 |
| Maximum Procurement Length - Days | 380 | 1,018 | 1,258 |
| Average Procurement Length - Days | 215 | 304 | 262 |
| **Water Subsector** | | | |
| No. of Projects with sufficient data | 3 | 1 | 1 |
| Minimum Procurement Length - Days | 210 | 484 | 297 |
| Maximum Procurement Length - Days | 553 | | |
| Average Procurement Length - Days | 408 | | |
| **Industry Level** | | | |
| No. of Projects with sufficient data | 20 | 28 | 30 |
| Minimum Procurement Length - Days | 96 | 53 | 48 |
| Maximum Procurement Length - Days | 553 | 1,018 | 1,258 |
| Average Procurement Length - Days | 245 | 307 | 241 |

**Annex 5: Project details**

| # | Project Name | Contract Date | Initial Contract Price [BIRR] | Initial Contract Price [USD] | Initial Construction Time [Days] |
|---|---|---|---|---|---|
| **Building Sector Projects** | | | | | |
| 1 | Implementation Process of 10 Universities - Hossana | 01 May 2010 | 18,401,563.94 | 1,374,173.99 | 270 |
| 2 | Implementation Process of 13 Universities - Axum | 12 Dec 2010 | 81,108,790.00 | 8,345,341.37 | 540 |
| 3 | St. Paulos Millennium Medical College | May10 | 73,705,033.57 | 5,537,984.34 | 820 |
| 4 | Emanuel General Mental Hospital | 09 Jun 2010 | 67,660,053.56 | 5,068,928.20 | 790 |
| 5 | Jimma University Building Projects | 02 Jul 2008 | 309,525,592.83 | 32,405,322.29 | 991 |
| 6 | Jimma University Teaching and Referral Hospital | May 2007 | 236,703,570.23 | 27,521,750.83 | 1095 |
| 7 | Jimma University Laboratory and Workshop | 24 Jan 2011 | 355,925,389.92 | 21,719,984.74 | 730 |
| 8 | Jimma University Classrooms Phase II | May 2012 | 340,932,496.71 | 19,555,273.04 | 300 |
| 9 | Jimma University Research and Conference Hall | 3 May 2010 | 227,919,070.43 | 17,096,922.24 | 560 |
| 10 | Jimma University Dormitory Phase II | 13 Jun 2012 | 349,523,637.70 | 19,848,809.31 | 300 |
| **Road Sector Projects** | | | | | |
| 1 | Tongo Beji Muji, Contract 2 Gidame Mugi | 17Apr 2008 | 372,420,036.56 | 39,505,637.16 | 1080 |
| 2 | Hausewa Abala Irebti | 04 Jul 2008 | 746,341,435.30 | 78,436,262.94 | 1260 |
| 3 | Hubmo Arbaminch Upgrading | 23Nov 2007 | 380,204,197.21 | 42,537,950.01 | 913 |
| 4 | Abala Shaigube Design-Build Road Project | Mar 2010 | 707,955,759.00 | 53,398,382.79 | |
| 5 | Gondar Debark Road Project | Dec 2008 | 690,779,965.26 | 70,871,033.68 | 1260 |
| 6 | Injibara Chagni Pawi Junction | 22 Nov 2012 | 2,283,309,548.60 | 127,008,585.60 | 913 |
| 7 | Dashena Abderafic Mykedra | 26 Nov 2013 | 1,607,687,055.78 | 85,198,042.17 | 1186 |
| 8 | Lumame Debre Markos | 30 Aug 2013 | 1,319,400,000.00 | 392,463,417.40 | 644 |
| 9 | Semera - Ddigsala Road Project | 07 Feb 2008 | 328,215,146.17 | 35,874,428.81 | 1066 |

| # | Project Name | Contract Date | Initial Contract Price [BIRR] | Initial Contract Price [USD] | Initial Construction Time [Days] |
|---|---|---|---|---|---|
| 10 | Gindeber - Gobensa Road Project | 08 Jan 2010 | 755,409,675.00 | 60,475,348.65 | 1260 |
| 11 | Adigoshu - Lugdi Road Project | 10 Apr 2007 | 627,709,145.85 | 73,722,373.11 | 1280 |
| 12 | Gedo - Manabegna [Design Service] | Design stage | | | |
| 13 | Bako - Nekempte Road Project | 29 Jul 2009 | 391,047,637.57 | 34,964,917.52 | 1245 |
| 14 | Butajira Gubre Road Upgrading Project | Nov 2007 | 637,497,172.45 | 71,338,731.5 | 1278 |
| 15 | Aposto-Wondo-Negele; Irba Moda Wadera Road | 24 Dec 2008 | 690,779,965.26 | 6,320,2587.43 | 1080 |
| 16 | GashenaLalibela-Sekota: Gashena Bilbala Road Project | 15 Jan 2014 | 1,442,916,047.83 | 76,139,309.16 | 1278 |
| 17 | Adiremet - Dejena - Dansha Road Project | 23 Dec 2008 | 926,292,277.49 | 95,012,132.02 | 1096 |
| 18 | Dedebit - Adiremet Road Project | 10 Feb 2010 | 801,212,552.61 | 60,720,921.00 | 1095 |
| 19 | Bahir Dar - Zema River Road Project | 02 Sep 2013 | 1,236,755,640.33 | 66,143,739.46 | 1096 |
| 20 | Meha lMeda–Alem Ketema Road Project | 27 Jun 2011 | 802,248,892.71 | 47,417,319.84 | 1096 |
| 21 | Adura Akobo–Adura Burbe Road Project | 16 Mar 2009 | 823,697,031.20 | 74,968,784.69 | 1460 |
| 22 | Buahit - Dilyibza Road Project | 29 Mar 2011 | 947,920,000.00 | 55,662,400.00 | 1096 |
| 23 | Ginir-Imi-Gode Road Project: Ginir-Beredimtu | 22 May 2008 | 541,718,515.05 | 57,263,326.72 | 1080 |
| 24 | Ginir-Imi-Gode Road Project Contract 2: Beredimtu-Imi | Jun08 | 497,108,024.65 | 52,516,940.13 | 1095 |
| 25 | Azezo Gorgora Road Upgrading Project | 23 Jan 2013 | 720,000,000.16 | 39,697,636.35 | 900 |
| 26 | Hawsewa Abala Irebti, Contract I Afdera Abala | 04 Jul 2008 | 746,341,435.30 | 78,436,262.94 | 1260 |
| 27 | Zarema Adiarkai Shire: Zarema Mytsebri | 30 Sep 2011 | 912,631,312.54 | 53,747,427.12 | 1096 |
| 28 | Zarema Adiarkai Shire: Mytsebri Shire | 30 Sep 2011 | 747,452,284.82 | 44,019,569.19 | 1096 |

| # | Project Name | Contract Date | Initial Contract Price [BIRR] | Initial Contract Price [USD] | Initial Construction Time [Days] |
|---|---|---|---|---|---|
| 29 | Combolcha-Bati-Mille: Burka Mille | 21 May 2013 | 1,285,666,666.10 | 69,721,619.64 | 1080 |
| 30 | Agulae Shaigube Berahile (DB) | 03 Aug 2010 | 923,916,753.17 | 68,667,168.57 | 1095 |
| 31 | BerahileDalol (DB) | 03 Aug 2010 | 1,245,261,242.05 | 92,550,073.73 | 1095 |
| 32 | Azezo Gorgora | Sep 2014 | 720,000,000.16 | | 900 |
| **Water Sector Projects** | | | | | |
| 1 | Tendaho Dam & Irrigation Project | 03 Aug 2014 | 840,254,274.00 | 99,944,603.91 | 660 |
| 2 | Ethiopian Nile Irrigation and Drainage Project | Design stage | | | |
| 3 | Lake Tana Surrounding Projects and Ribb Dam | 01 Dec 2007 | 1,336,274,358.08 | 149,409,568.50 | 1460 |
| 4 | Tana Beles Integrated Water Resources Management | Design stage | | | |
| 5 | Kesem dam and Irrigation Project | Aug 2004 | 829,745,725.00 | 100,067,020.20 | 660 |
| 6 | Megech (Seraba) Pump Irrigation and Drainage Project | 06 Jun 2012 | 420,692,188.27 | 24,099,457.98 | 1080 |
| 7 | Gidabo Dam and Irrigation Project | 11 Jan 2010 | 303,386,292.79 | 24,216,658.11 | 720 |
| 8 | Megech Dam Project | Aug 2008 | 2,451,953,329.63 | 254,904,386.10 | 1290 |
| 9 | Ribb Dam Construction Project | 02 Oct 2007 | 1,336,274,358.08 | 149,996,560.40 | 1460 |
| 10 | Arjo Dedessa Dam Construction Project | 31 Jan 2011 | 755,461,980.84 | 45,444,055.63 | 540 |

**Annex 6: Summary of updated cost and time overrun records**

## A. Building Subsector

| # | Project Name | Initial Contract Price [ETB] | Revised Contract Price [ETB] | Cost Overrun [%] | Completion Period [Days] | Time Elapsed [Days] | Time Overrun [%] |
|---|---|---|---|---|---|---|---|
| 1 | Thirteen New Universities - Axum University | 81,108,790.00 | 93,519,474.77 | 15.3 | 540 | 980 | 81.48 |
| 2 | Emanuel General Mental Hospital | 67,660,053.56 | 85,943,780.51 | 27.0 | 790 | 1705 | 115.82 |
| 3 | Jimma University Additional Facilities | 309,525,592.83 | 378,997,541.15 | 22.4 | 1000 | 2828 | 182.80 |
| 4 | Jimma University Teaching and Referral Hospital | 230,785,980.46 | 266,004,564.19 | 15.3 | 1095 | 3181 | 190.50 |
| 5 | Jimma University Laboratory and Workshop | 355,925,389.92 | 404,445,400.64 | 13.6 | 730 | 1990 | 172.60 |
| 6 | Jimma University Classrooms Phase II | 303,113,137.15 | 340,698,607.41 | 12.4 | 300 | 930 | 210.00 |
| | **Weighted Average Cost Overrun** | | | **16.43%** | **Weighted Average Time Overrun** | | **160.7%** |

## B. Road Sector

| # | Project Name | Initial Contract Price [ETB] | Revised Contract Price [ETB] | Cost Overrun [%] | Completion Period [Days] | Time Elapsed [Days] | Time Overrun [%] |
|---|---|---|---|---|---|---|---|
| 1 | Hausewa Abala Irebti | 746,341,435.30 | 1,534,515,474.36 | 105.6 | 1260 | 2171 | 72.3 |
| 2 | Tongo Beji Muji, Contract 2 Gidane Mugi Road | 372,420,036.56 | 447,630,512.74 | 20.2 | 1080 | 2877 | 166.4 |
| 3 | Hubmo Arbaminch Road | 380,204,197.21 | 521,783,421.62 | 37.2 | 913 | 2401 | 163.0 |
| 4 | Agulae Shaigube Berahile DB | 969,916,753.17 | 1,131,594,917.90 | 16.7 | 1095 | 1411 | 28.9 |
| 5 | Adiremet-Dejena-Dansha | 926,292,277.49 | 1,189,047,035.43 | 28.4 | 1096 | 2000 | 82.5 |
| | **Weighted Average Cost Overrun** | | | **42.10%** | **Weighted Average Time Overrun** | | **99.5%** |

## C. Water Subsector

| # | Project Name | Initial Contract Price [ETB] | Revised Contract Price [ETB] | Cost Overrun [%] | Completion Period [Days] | Time Elapsed [Days] | Time Overrun [%] |
|---|---|---|---|---|---|---|---|
| 1 | Tendaho Dam and Irrigation Project | 840,000,000.00 | 3,040,000,000.00 | 261.9% | 1460 | 3650 | 150.00% |
| 2 | Ribb Dam Construction | 1,336,000,000.00 | 4,631,000,000.00 | 246.6% | 1460 | 3165 | 116.78% |
| 3 | Gidabo Irrigation Project | 258,000,000.00 | 707,000,000.00 | 174.0% | 730 | 2343 | 220.96% |
| 4 | Kessem Dam and Irrigation Project | 829,000,000.00 | 1,939,000,000.00 | 133.9% | 1460 | 4289 | 193.77% |
| 5 | Megech (Serba) Pump Irrigation and Drainage project | 890,000,000.00 | 964,000,000.00 | 8.3% | 1095 | 1613 | 47.31% |
| 6 | Arjo Deddesa Dam construction Project | 755,500,000.00 | 2,256,000,000.00 | 198.6% | 548 | 1460 | 166.42% |
| | **Weighted Average Cost Overrun** | | | **175.8%** | **Weighted Average Time Overrun** | | **144.63%** |