

ウガンダ共和国
カンパラ首都庁

ウガンダ共和国
カンパラ市交通流管理能力向上
プロジェクト
事業完了報告書
和文サマリー

2022 年 1 月

独立行政法人
国際協力機構（JICA）

株式会社 オリエンタルコンサルタンツグローバル

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1 業務の背景

ウガンダ共和国（以後「ウ」国とする。）は、2002 年の 2,423 万人から 2014 年には 3,486 万人へと急激に人口が増加し、過去 20 年間で最も人口が増加したアフリカ諸国の一つとなっている。都市部の人口増加率は 5.1%と推定され、全国平均の 3.3%を大きく上回り、2035 年には人口の約 30%が首都カンパラに集中すると想定されている。

「ウ」国の経済的・政治的中心であるカンパラ都市圏（大カンパラ都市圏：GKMA）は、「ウ」国全産業の 80%が集中し、GDP の 50%を生み出している。このカンパラへの人と物の集中が都市のスプロール化を呼び、これに対応するインフラを含む公共サービスの拡充が急務となっている。

カンパラ市の道路網は総延長 1,218km で、道路密度は 6.44km/km²である。これは都市道路整備の基準値である 4.3km/km² を超えており、ネットワークの延長に不足はないが、道路網の舗装率は 38%に過ぎず、また 52%の舗装道路の路面状態が劣悪であることから、道路は効率の悪い交通手段に陥っている。また加速度的に増加する交通量により、ネットワーク容量は不足傾向にあり、幹線道路の渋滞は常態化している。

近年、この交通渋滞は日に日に悪化しており、社会・経済活動に深刻な悪影響を及ぼしている。特に主要交差点では、容量の不足に加えて、交通警察の不適切なマニュアル・コントロールにより、ピーク時には 1km 以上にも及ぶ渋滞が発生する。これらの改善は、首都行政を担当するカンパラ首都庁（以後「KCCA」とする）にとって、可及的速やかな対応が求められる重要課題である。

KCCA は世界銀行の資金援助を受けて、市内交差点の幾何構造の改良、信号化を含む事業を実施中である。しかしながらこうした事業には、将来の交通管理システムを見据えた工学的なレビューが必要である。

こうした背景から KCCA は、渋滞解消を含む効率的な交差点運用、また将来の交通管理システムの計画などに対応する、技術者の交通管理能力向上の必要性を認識し、国際協力機構（JICA）に対し技術協力プロジェクトを要請した。

JICA はこの要請を受け入れ専門家チームの派遣し、KCCA の交通管理能力向上を支援した。

本報告書は、プロジェクトの活動記録、及び成果を報告するものである。

1.1 プロジェクトの概要

(1) プロジェクト名

カンパラ市交通流管理能力向上プロジェクト

(2) 上位目標

カンパラ市内主要道路の交通流が円滑になる。

(3) プロジェクト目標

KCCA のカンパラ市内道路における交通流管理能力が強化される。

(4) 期待される成果

[成果 1] KCCA による都市交通管理政策が強化される。

[成果 2] 交差点改良設計能力が強化される。

[成果 3] 交差点における交通信号設置・維持管理能力が強化される。

[成果 4] 交通ルール遵守にかかる意識啓発プログラムの実施能力が強化される。

[成果 5] 交差点を中心とする交通流管理能力が強化される。

[成果 6] KCCA にモデラート制御運用スキルが備わる。

(5) 活動の概要

[成果 1] 関連

1-1 KCCA の現状の交通管理政策及び組織をレビューし、改善案を提案する。

1-2 カンパラ市の都市交通状況をレビューする。

1-3 各国の都市交通管理政策動向をレビューする。

1-4 短期的な改良対象となる交差点が記載されている緊急活動計画(IAP)を作成する。

1-5 都市交通管理計画 (UTMP) を作成する。

1-6 KCCA 職員を対象とする都市交通管理政策セミナーを実施する。

[成果 2] 関連

2-1 IAP の中から選ばれたサンプル交差点の幾何構造及び交通量の現況調査、解析を行う。

2-2 UTMG の交差点改良に係る章をドラフトする。

2-3 上記を基に研修計画を提案し、OJT を含む研修を実施する。

[成果 3] 関連

3-1 各国の交通信号管制システムをレビューする。

3-2 信号機の仕様及び制御方式に関する基本方針をレビューし、標準仕様書を作成する。

3-3 UTMG の信号機設置に係る章をドラフトする。

3-4 UTMG の信号機維持管理に係る章をドラフトする。

3-5 カンパラ市内信号機維持管理計画を作成する。

3-6 上記を基に研修計画を提案し、OJT を含む研修を実施する。

[成果 4] 関連

- 4-1 道路ユーザーの交通ルール遵守状況及び理解度を調査する。
- 4-2 交通安全に関する意識向上を目的としたキャンペーンを計画し、実施する。
- 4-3 UTMG の意識啓発に係る章をドラフトする。
- 4-4 交通管理、誘導技術に関するセミナーを交通整理員に対して実施する。

[成果 5] 関連

- 5-1 パイロット・プロジェクトサイトを IAP の内容に沿って選択する。
- 5-2 成果 2. 3. 4 を基に、広報活動を含むパイロット・プロジェクトを計画する。
- 5-3 パイロット・プロジェクトを設計し、実施する。
- 5-4 UTMG を最終化する。

[成果 6] 関連

- 6-1 モデラート制御に必要な定数設定に OJT として参加する。
- 6-2 パイロット・プロジェクトでモデラート制御を行う。
- 6-3 モデラートのオペレーションマニュアルを作成する。
- 6-4 モデラート制御下の交通流をモニターする。

(6) 対象地域

カンパラ市

(7) 関係官庁・機関

カンパラ首都庁(KCCA: Kampala Capital City Authority)

1.2 業務の目的

「カンパラ市交通流管理能力向上プロジェクト」に関し、当該プロジェクトに係る R/D に基づき業務（活動）を実施することにより、期待される成果を発現し、プロジェクト目標を達成する。

Project Design Matrix

Version 1
Dated: 14th Dec.2016

Model Site:

Project Title: The Project for Capacity Enhancement of KCCA in Management of Traffic Flow in Kampala City
Implementing Agency: Kampala Capital City Authority
Project Site: Kampala

Narrative Summary		Objectively Variable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal Traffic flow of the main roads in Kampala City becomes smooth	- Junction control delay - Questionnaire, Interviews					
	- The capacity of traffic volume throughput on the roads covered by the Immediate Action Plan (IAP) is improved - The consciousness such as traffic manner and recognition rate regarding urban traffic issues are raised					
Project Purpose The capacity of traffic flow management on the roads in Kampala City by KCCA is enhanced	- Junction control delay - Examination, Interviews, Questionnaire - The number of media coverage - Journey time along the Pilot Project Network					
	- The growth of traffic is not boosted drastically - Activities based on IAP are implemented					
Outputs 1. The urban traffic management policy by KCCA is strengthened	- LAP, UTMP - Examination, Questionnaire					
	The draft of UTMG, Training reports, Examination					
3. The capacity for installation and maintenance of traffic signals at junction is enhanced	The draft of UTMG, Training reports, Examination, Maintenance records					
	- Policy on the road sector in Uganda is remained - Budgets for the Project are secured by KCCA					
4. The capacity for raising consciousness programme concerning observance of traffic rules is enhanced	- The number of media coverage - The draft of UTMG, Seminar records					
5. The capacity for traffic flow management mainly on junctions is enhanced	- Pilot project(s) reports - The guidelines for traffic management					
6. Skill of traffic control using “MODERATO SYSTEM” is built on KCCA	- Achievement check by examination in the Training in Japan - Operation manual for MODERATO System					
	Procurement of MODERATO (Phase 2) is successfully concluded according to the project timeframe					
Activities	Input					
	The Japanese Side					
1.1 Current policy and framework of KCCA are reviewed and suggested	The Ugandan Side					
	1. Experts 1) Team Leader/Urban Transport Policy 2) Deputy Team Leader/Urban Transport Policy 3) Urban Road Network Planner 4) Intersection Design Engineer 5) Traffic Light System Planner 6) Traffic Light Operation Engineer 7) Technical Training & Monitoring Planner 8) Traffic Data Base Engineer/Public Relation Traffic Survey Engineer					
1.2 Conditions of urban traffic in Kampala City are reviewed	1. Counterpart Personnel 1) Project Director 2) Project Manager 3) Project Coordinator 4) Counterparts					
1.3 Trends of urban traffic management policy in overseas are reviewed	2. Office spaces in KCCA building					
1.4 IAP listing the junctions to be targeted short term is prepared	3. Detailed design and installation work of pilot projects					
1.5 UTMP is prepared	4. Operation cost for equipment provided by Japanese side					
1.6 Seminars for urban traffic management policy for KCCA staff are conducted						
2.1 Physical structure and current traffic condition of the junctions sampled from IAP are surveyed and analyzed						
2.2 Chapter related to Junction of UTMG is drafted						
2.3 Based on the draft above, training plan is proposed and training including OJT is conducted						
3.1 Traffic signal controlling system in overseas is reviewed.						
3.2 Basic policy for the traffic signal specification and the controlling system is reviewed and a draft of their standards is formulated						
3.3 Chapter related to traffic light installation of UTMG is drafted						
3.4 Chapter related to traffic light maintenance of UTMG is drafted						
3.5 Maintenance plan of traffic signals in Kampala City is prepared						
3.6 Based on the draft above, training plan is proposed and training including OJT is conducted						
4.1 Condition of observing traffic rules and its understanding by road users are confirmed						
4.2 Campaigns for raising consciousness for traffic behaviours are planned and commenced						
4.3 Chapter related to raising consciousness of UTMG is drafted						
4.4 Seminars for traffic management and guidance skills are conducted for traffic regulator						
5.1 Pilot project(s) is/are selected from the junction(s) in align with IAP						
5.2 Based on the activities regarding Outputs 2, 3 and 4, the pilot project(s) including public relation programme are planned						
5.3 The pilot project(s) is/are designed and implemented by KCCA with technical supports of JICA experts						
5.4 The UTMG is finalized						
6.1 Parameter designing of the MODERATO System is attended by KCCA as OJT						
6.2 Pilot operation of the MODERATO System for the pilot junction is participated by KCCA						
6.3 Operation manual for the MODERATO System is prepared						
6.4 Monitoring of traffic flow along the pilot project network is conducted						

PLAN OF OPERATION

[illegible]

1-6

2 [成果 1] 「KCCA による都市交通管理政策が強化される」に係る活動

2.1 交通管理政策のレビュー

カンパラ市、特に KCCA が主体となって進めている都市交通事情改善に係る施策をレビューした。

カンパラの都市交通の課題は、信頼できる公共交通が未整備であること、またネットワークにルールを遵守しないモードが多数あり、安定的で信頼度の高い道路交通サービスが提供できていないことである。

通勤鉄道はモーダルシフトの施策であり、市民はこの整備により効率がよく安全で信頼性の高い交通モードを利用することが可能となる。この通勤鉄道により、従来から渋滞の原因となっていたバイクタクシー（ボダボダ）及びタクシー（ワゴンタクシー：マタツ）の需要が抑えられ、道路ネットワークに余裕ができ交通流の改善が期待される。

更に市内にボダボダ・フリーゾーン（ボダボダ通行規制区域）を設定することにより、市中心部からボダボダを排除でき、渋滞改善の他歩行者交通の安全性が向上する。

カンパラ市中心部には工業地帯があり、大型車の発生集中点となっている。一方道路ネットワークは一部を除き狭幅員の道路から構成されており、大型車の通行により道路容量は大幅に奪われ、渋滞の原因となる。この為 KCCA は大型車通行の時間制限を早くから導入している。

道路ネットワークは2つに分かれており（スケジュール 1 及び 2）、それぞれに通行規制が施されている。

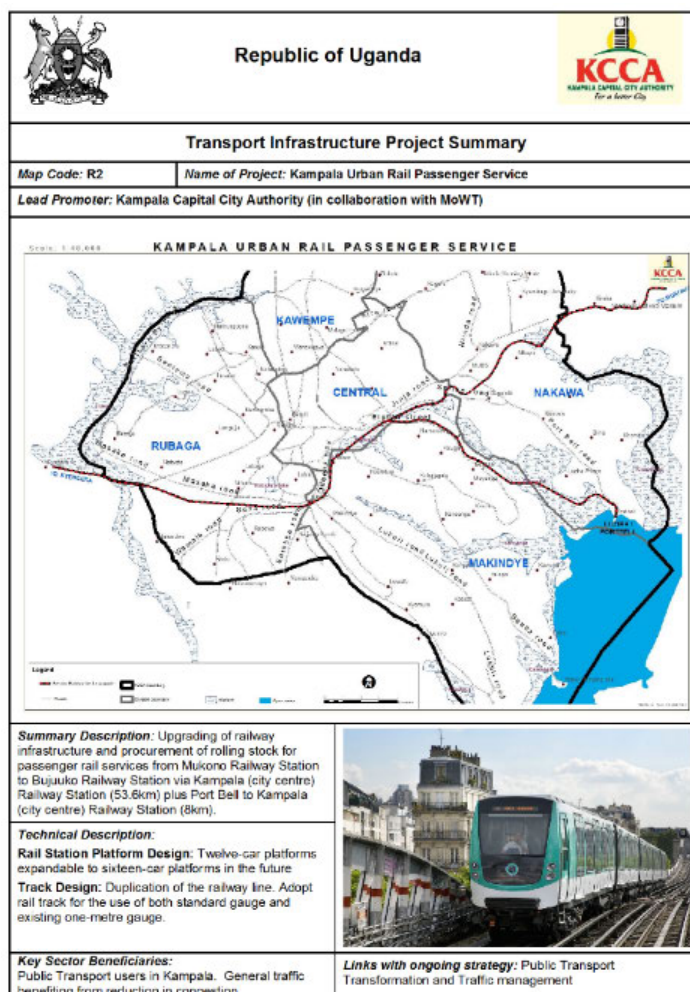


図 2.1 都市鉄道計画

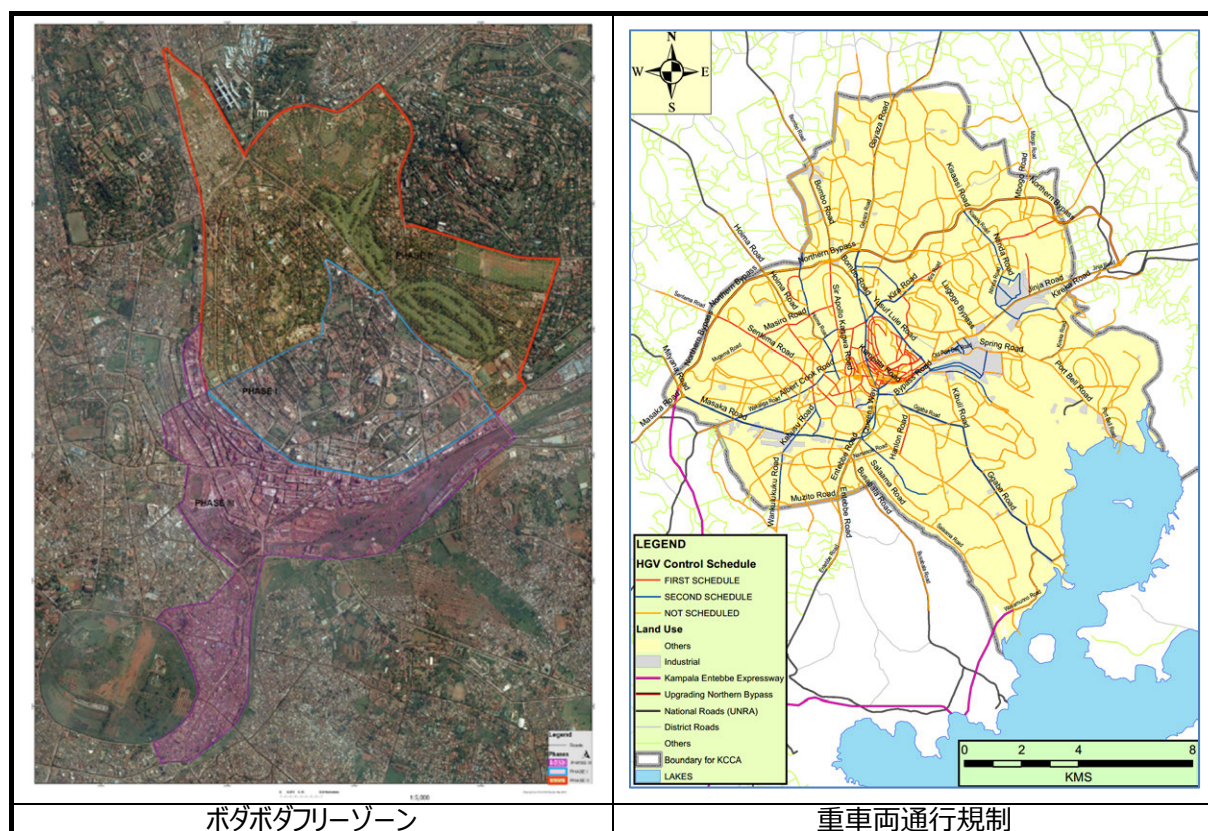


図 2.2 通行規制施策

2.2 カンパラ市の都市交通状況のレビュー

カンパラでは道路が唯一の交通モードである。現地調査の結果、都市内交通の変動に規則性はなく、ピークの予測が困難であることを確認した。

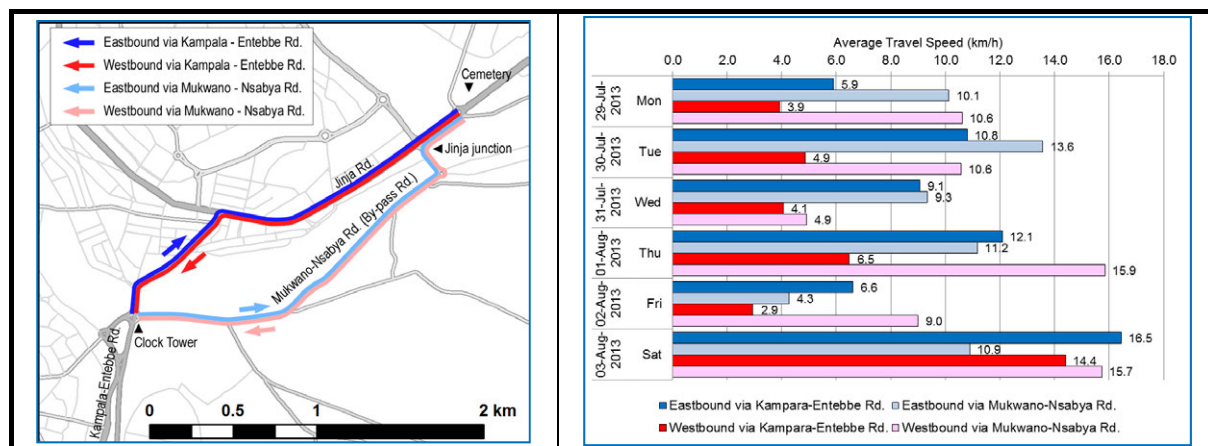


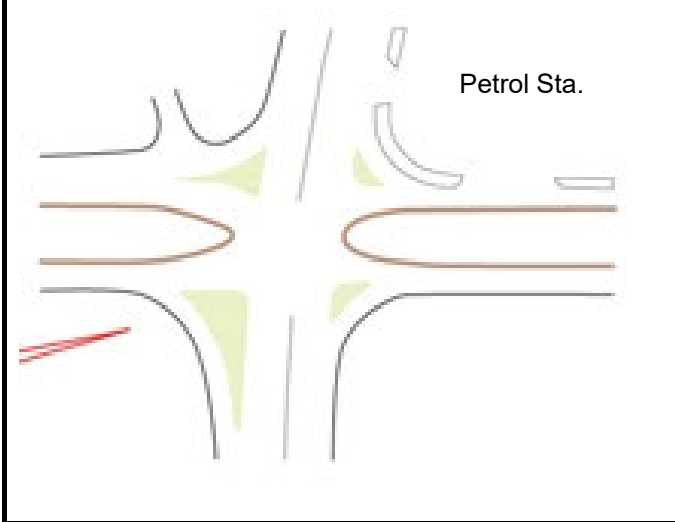
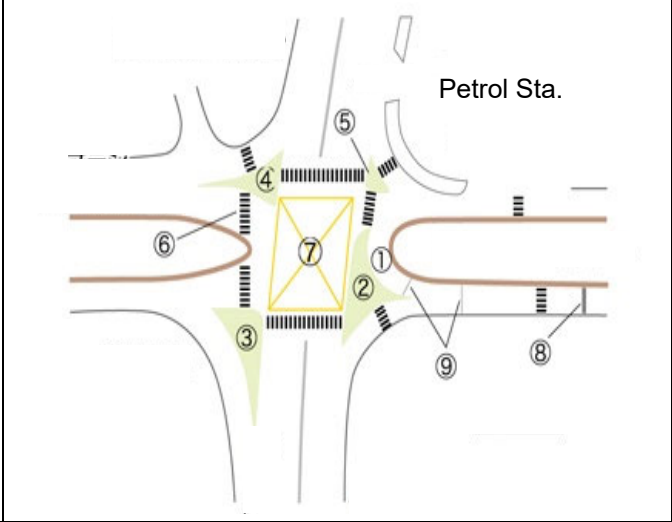
図 2.3 旅行速度曜日変動

2.3 各国の交通管理政策のレビュー

需要抑制や安全管理に係るタンザニア、インドネシアの他、日本、シンガポール、ミャンマー、

米国の施策を紹介し、またその内容をレビューした。

表 2.1 インドネシア、タンザニアの交通管理例

Junction and Signal Improvement 	Manpang, Jakarta (Indonesia) 
Improvement Principals 1 Relocation of U-turn lane to avoid conflict with North-South through traffic, 2 Revision of traffic island to ban through traffic from East side, 3-5 Cut traffic island to increase the number of left-turn lane, 6 Installation of pedestrian crossing, 7 Makings to avoid vehicles to stop at middle of the junction 8 Bump to reduce speed approaching the junction 9 Signs to prohibit tall vehicles	
Raised Traffic Lane Divider 	Dar es Salaam (Tanzania) 
Improvement Principal Raised traffic lane divider is more sustainable than road lane marking Divider regulate more traffic flow accoring to lane than by lane marking	
Provision of Traffic Information System	Jakarta (Indonesia)

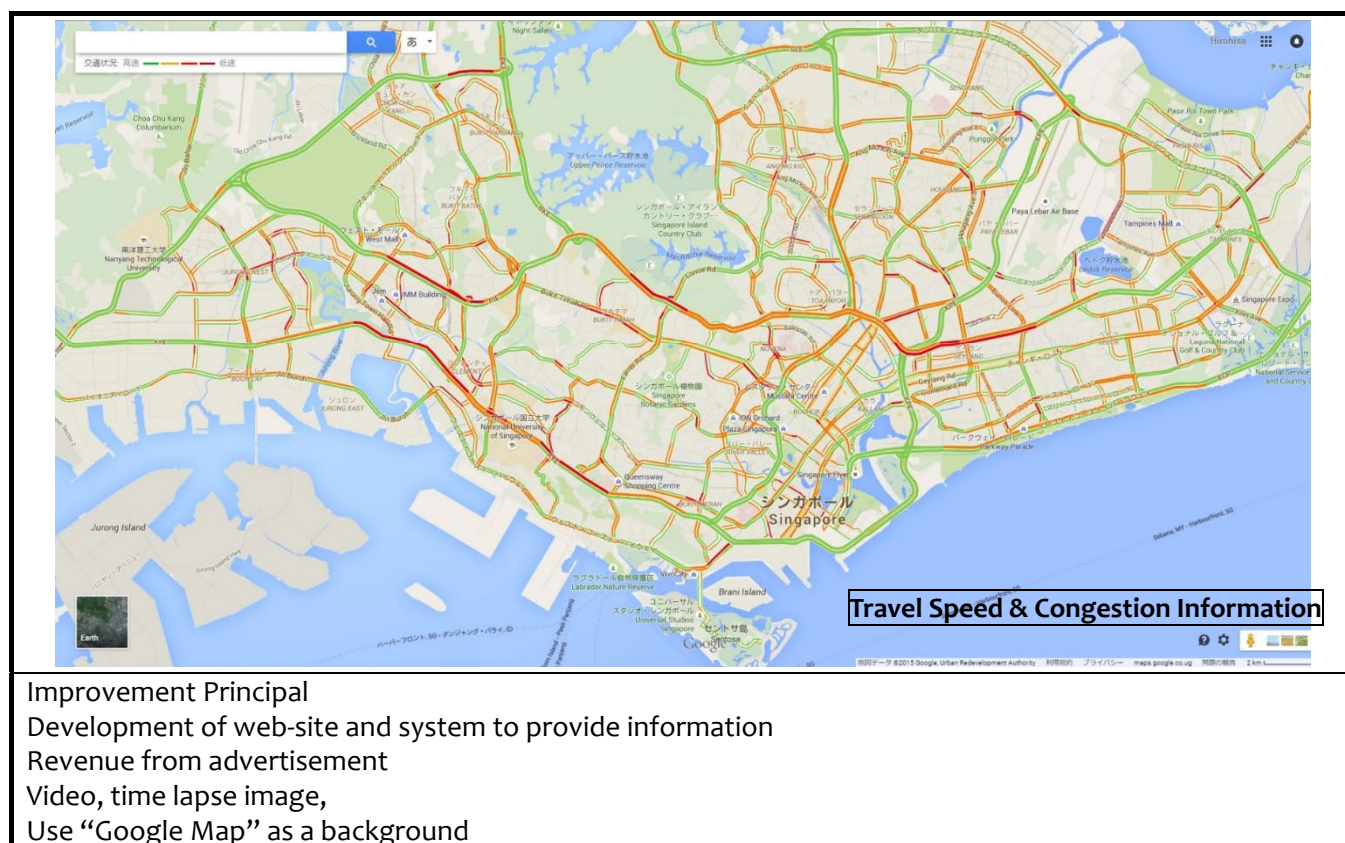


表 2.2 その他交通マネジメント施策例

No.	対策	実施国
時間制限		
a-1	時差出勤、フレックスタイム	日本
課金		
b-1	ロードプライシング、プレート番号による通行制限、バイク、大型車の通行規制	シンガポール、ミャンマー
b-2	高額な自動車税及び通行許可	シンガポール
b-3	最小乗車人数の規制	インドネシア
モーダルシフト		
c-1	パーク＆ライド	インドネシア
c-2	モビリティ・マネジメント	日本
働き方改革		
d-1	在宅勤務	
代替支援プログラム		
e-1	HOVレーン	インドネシア
e-2	ライドシェア	米国

2.4 IAP の作成

これまでの交通管理施策のレビュー及び交通流調査の結果から、市内 4 交差点を対象とする面的交通制御計画、及び CBD 地区の一方通行化計画を含む IAP を作成した。

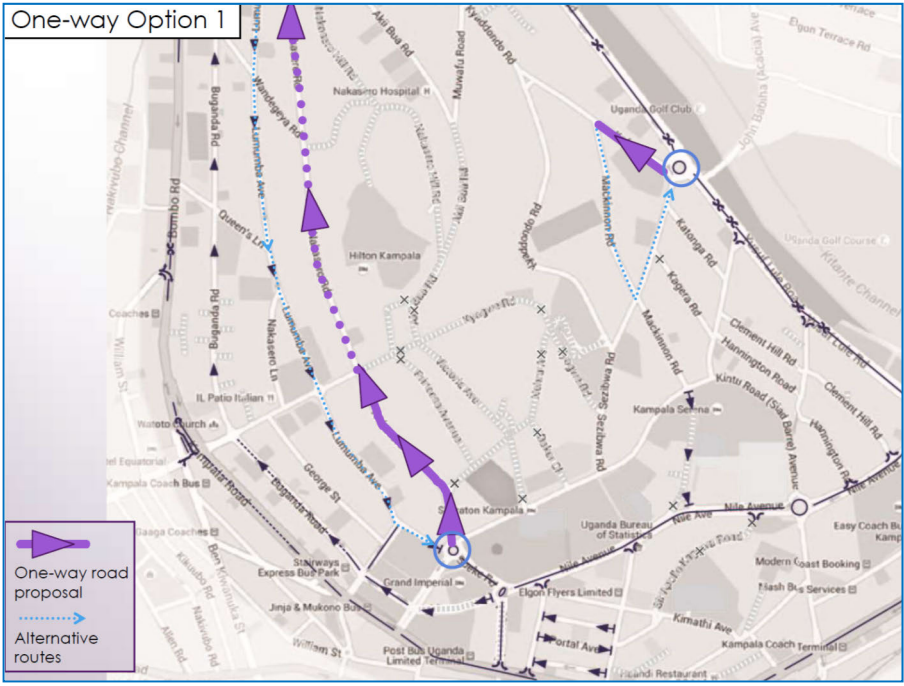
(1) IAP 1 交差点面的制御計画

表 2.3 市内 4 交差点面的交通制御計画の概要(パイロット・プロジェクト)

目的	KCCA は増加する道路交通需要に対応すべく、世銀資金を活用し交差点及び道路改良事業（KIIDP 2）を実施中である。特に交差点改良については従来の定周期式の信号制御ではなく、需要の変動に柔軟に対応する感应式制御を採用しており、将来的には信号をネットワーク化し中央管制センターにより集中制御する計画を持っている。こうした流れを鑑み、技プロの UTMP において中長期の交通管理計画を策定し、271 の信号交差点化を提案、その内 50 交差点を中央管制下に置く計画を立案し、KCCA の合意を得た。またこの交通管理計画では管制方式として、カンバラの複雑なネットワーク形状及び不規則な交通需要変動を考慮し、面的交通制御（Area Traffic Control: ATC）が可能でかつ需要変動に柔軟に対応する我が国の管制システムであるモデラートの採用を提案した。 この提案に対し KCCA はモデラート機能の優位性、カンバラへの適用の妥当性を理解し、導入について前向きな姿勢を示しているが、その運用については若干の懸念を持っている。よって技プロのパイロットプロジェクトによってモデラートの実証実験を行い、システムの有効性の確認及び運用面での課題を整理する。特に運用については技プロ専門家からの直接支援に加え、受注者（管制メーカー）からのインターネットを通じた遠隔支援の活用も視野に入れる。パイロットプロジェクト対象交差点の選定クライテリアを以下の通りとした。 1) 複数の路線を網羅する。 2) 交通需要が高く渋滞が顕著である交差点を含む。 3) 幾何構造の改良が最小限である交差点とする。 4) 既存の改良事業及び計画との重複がない交差点とする。 5) 通信インフラ（光ファイバー）が完備している路線とする。 上記クライテリアを満足する Jinja 道路、Lugogo バイパス、Wampeo 道路、Upper Kololo Terrace 道路の 4 交差点とする。
パイロットプロジェクトの計画地	

(2) IAP 2 CBD 一方通行化計画

表 2.4CBD 地区一方通行化計画の概要

目的	カンバラでは、ラウンドアバウトや無信号交差点でのボトルネック状態が顕著である。ボトルネックの原因調査結果、様々な方向からの交通が交差点に流入し、キャパシティが常に交通量を下回っていることが確認された。 今回の試みは、交通流の方向を管理、制限することで流入量を抑制し、ボトルネックを解消することである。 プロジェクトの目的 - 一方通行の適用性を検証する。 - KCCA 技術者が一方通行化の実践を通じて、交通管理政策の計画、調査、実施、評価の方法論を理解する。 対象地：CBD 地区 Nakasero 道路 Kafu 道路
計画地	 One-way Option 1 Legend: - One-way road proposal (Purple arrow) - Alternative routes (Blue dashed arrow)

2.5 UTMP の作成

2030 年、2040 年（中長期）を目標年次とする、都市交通管理計画（UTMP）を作成した。その概要は以下の通りである。

(1) 対象地域：大カンパラ都市圏（図 2.4 参照）

(2) 計画ビジョン

活気のある都市：交通管理システムが適切に機能し、都市の住民及び観光客が快適に移動できる。

魅力的な都市：カンパラは東アフリカで最も快適な都市の一つに選ばれている。都市の魅力を維持するため、適切な交通管理が必要である。

持続可能な都市：開発プロジェクトの成果を長期的に持続可能なものでなければならない。交通管理計画もまた、持続可能な方法で運営されなければならない。

(3) 活動計画

MP1 道路交通ボトルネックの解消

交差点の面的制御を行い、交通流上のボトルネックを解消する。図 2.5 に示す対象交差点数は 271 とした。整備の緊急性に応じ、フェーズ分けし、第一期として 109 交差点をまた第二期として 162 交差点を選定した。

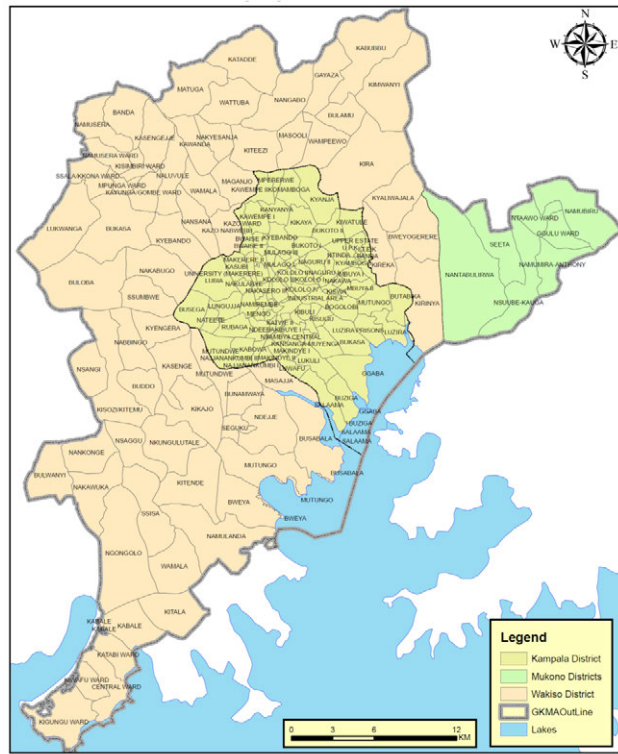


図 2.4 UTMP 対象地域

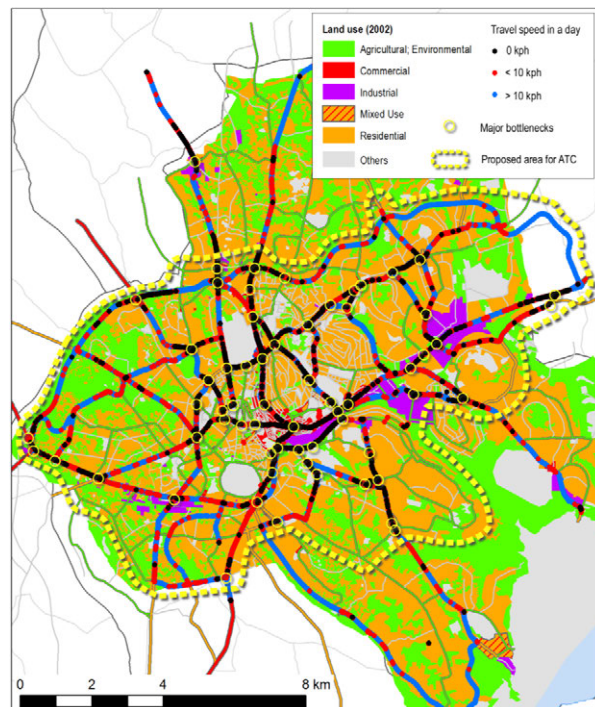


図 2.5 面的制御対象交差点(271)

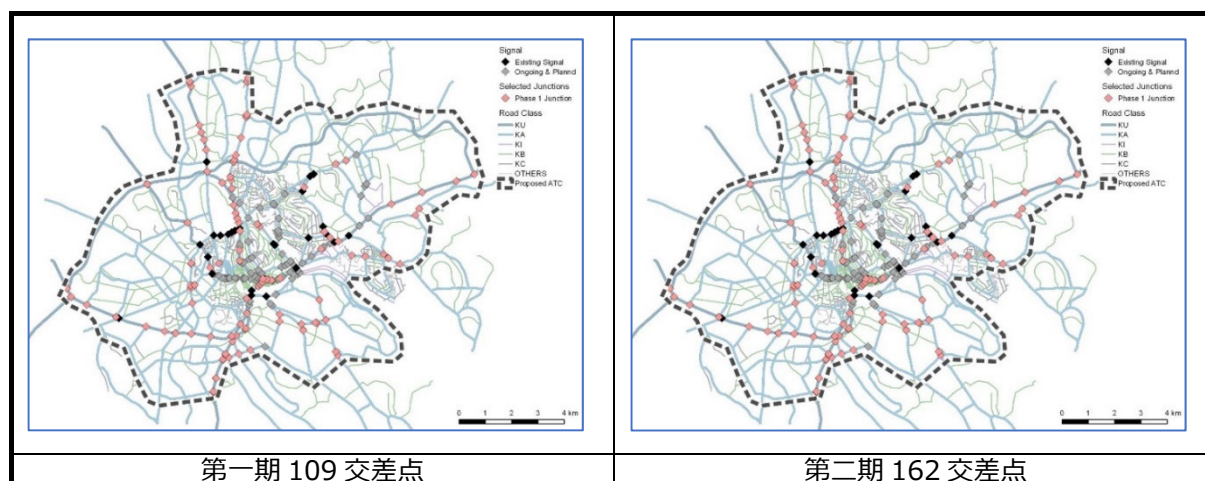


図 2.6 交差点改良整備計画

また上記交差点を制御する中央管制拠点（管制センター）を整備する。この拠点はモデラート・システムで運用する。

MP2 ITS 交通管理

ITS を活用した交通管理を実践する。

MP3 需要管理計画

- ・ ロード・プライシング
- ・ フレックスタイム制
- ・ パーク&ライド
- ・ ライドシェア
- ・ NMT インフラ整備

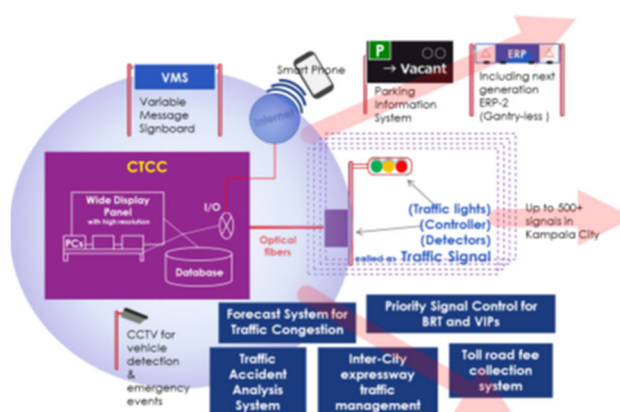


図 2.7 管制センター整備イメージ

MP4 交通規制強化

- ・ 信号無視、重量制限、違法駐車等への罰則罰金制度
- ・ 一方通行化
- ・ TIA: Traffic Impact Analysis の強化（義務化）

MP5 交通安全計画

- ・ 交通安全キャンペーンの実施
- ・ メディアキャンペーンの実施
- ・ 渋滞マップの整備

MP6 財務計画

- ・ 道路特別会計の設立
- ・ その他維持管理資金の為の財源の確保

2.6 都市交通管理政策セミナーの実施

2015 年 6 月 15 日に都市交通管理政策セミナーを実施した。セミナーではカンパラにおける交通管理の課題提起、また適用可能な他国の交通マネジメント施策例を紹介した。

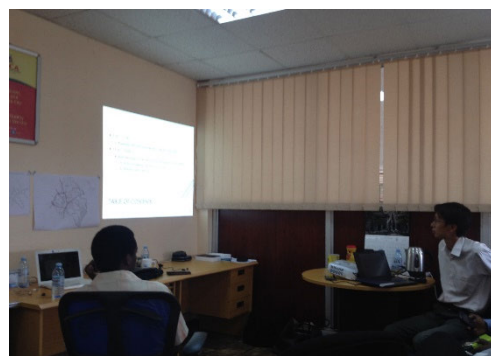


写真 2.1 都市交通管理セミナー



図 2.8 都市交通管理セミナープレゼンテーションスライド(抜粋)

表 2.5 都市交通管理セミナー参加者リスト

発表者		KCCA	
氏名	職位	氏名	職位
川口 裕久	JICA 専門家 /都市道路計画	Eng. Jacob Byamukama	Manager, Directorate of Engineering and Technical Services
		Eng. Joel Wasswa,	Transport & Traffic Management Engineer
		Mr. Adam Ssengooba	Transport Planning & Traffic Management officer
		Ms. Fortunate Biira	Transport Planning & Traffic Management officer
		Mr. Leonard Mwesigwa	Transport Planning & Traffic Management officer

3 [成果 2] 「交差点改良設計能力が強化される」に係る活動

3.1 パイロット交差点調査（英文本文では 6 章で記述）

対象交差点の交通量調査及び現況交通流調査結果から、幾何構造の改善及び通行規制を提案した。

表 3.1 パイロット交差点交通量調査結果（従前、従後）

Number of Vehicle (PCU/hour)

	AM Peak			PM Peak		
	2016	2019	% Change	2016	2019	% Change
Jct1	1,901	2,590	27%	2,068	2,374	13%
Jct2	2,348	3,197	27%	2,817	2,934	4%
Jct3	2,777	2,768	0%	2,589	2,876	10%
Jct4	5,764	6,046	5%	4,393	5,054	13%
	12,790	14,601	12%	11,867	13,238	10%

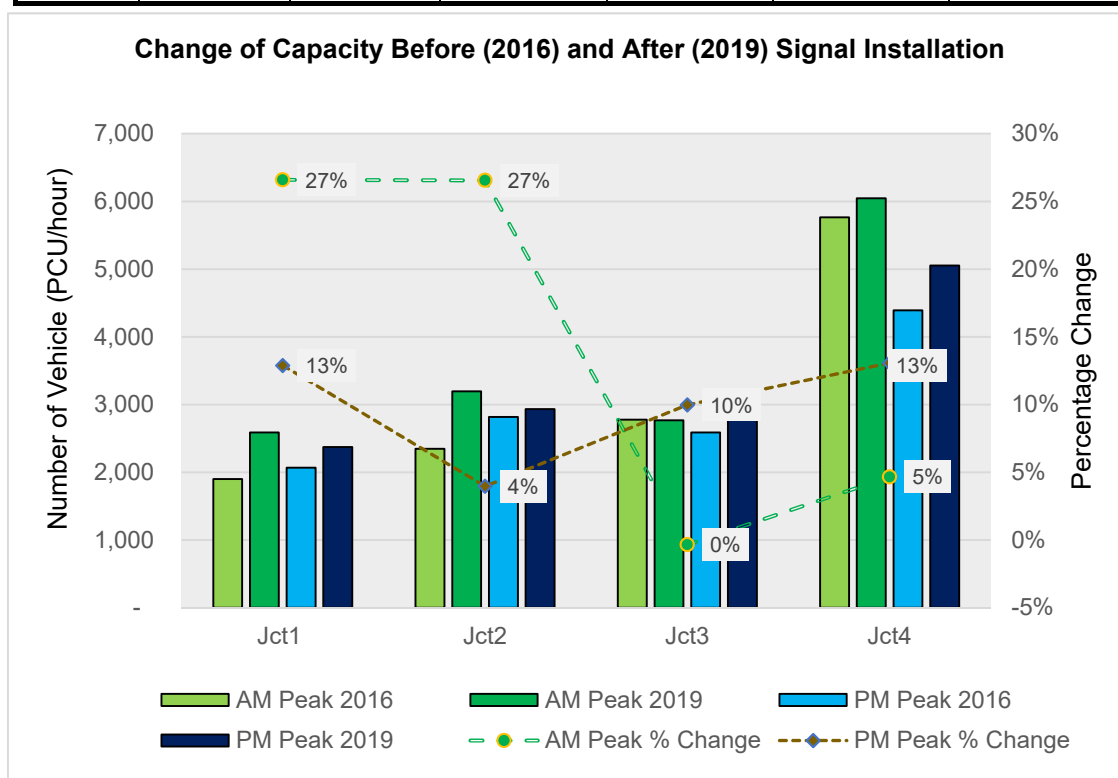


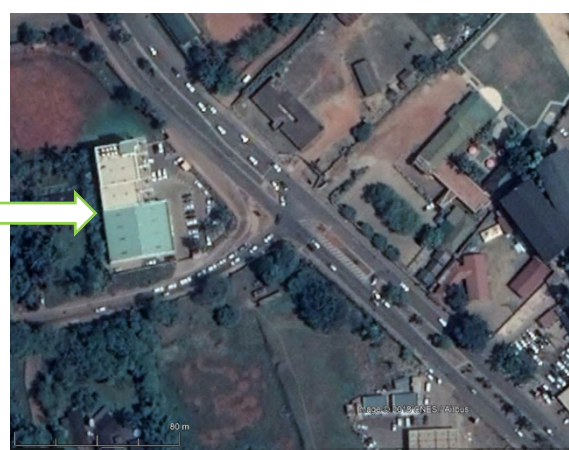
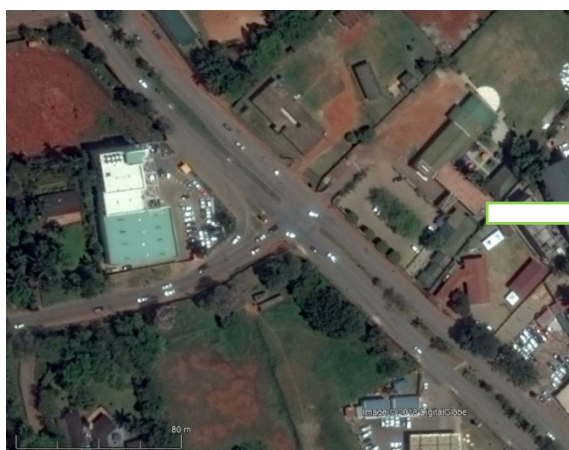
図 3.1 パイロット交差点容量の算出（従前、従後）



Junction 1 Wampeo



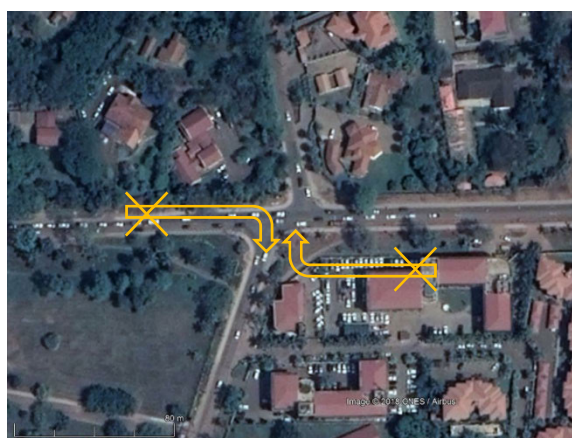
Junction 2 Naguru



Junction 3 Katikati



Junction 4 Game (Jinja Road)
図 3.2 対象交差点幾何構造の改善



Right turn from both direction of Upper Kololo is banned (Jct 1)



U-turn from both direction of Lugogo Bypass is banned (Jct 2)



U-turn at the junction is banned as a U-turn lane is installed before the junction (green circle) (Jct 3)

図 3.3 新通行規制の施行

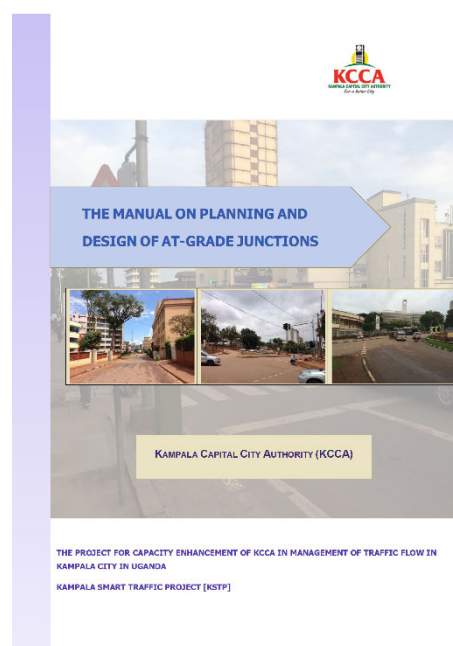
3.2 交差点改良設計マニュアルの作成

「ウ」国の既存設計基準の内容をレビューし、交差点設計のマニュアルは整備されていないことを確認した。また交通状況調査の結果から、日本基準の適用性が高いことを確認し、日本基準をベースとした交差点改良マニュアル（UTMG にファイル）を作成した。

交差点設計マニュアルの構成、目次は以下の通りである。

Table of Contents

Chapter 1	Overview
1.1	Significance of Junction Planning
1.2	Integration of Geometric Design and Operation at Junctions
1.3	Special Consideration for Junction Design
1.4	Intersecting Points
1.5	Type/size of at-grade Junction
Chapter 2	Design Principle
2.1	Basics
2.2	Principle of Planning Phase
2.3	Principle of Design Phase
2.4	Procedure for Planning and Designing
Chapter 3	Accidents at At-grade Junctions and Countermeasures
3.1	Overview of Accidents at At-grade Junctions
3.2	Safety Measures
3.3	Procedures to Identify Safety Issues
Chapter 4	Capacity Analysis of a Signalized Junction
4.1	Procedure for Reviewing the Traffic Capacity of a Signalized Junction
4.2	Output
4.3	Calculation of Saturation Flow Rate
4.4	Example of Calculation of Traffic Capacity of a Signalized Junction
Chapter 5	Geometric Design of Junction
5.1	Alignment
5.2	Cross Section
5.3	Geometric Design



3.3 交差点改良設計 OJT の実施

2020 年 6 月 23 日にラウンドアバウトまた鋭角交差点をサンプルし、交差点改良設計の OJT を実施した。



図 3.4 Kibuye 交差点改良計画



写真 3.1 交差点改良設計 OJT

表 3.2 交差点改良設計 OJT 参加者リスト

Lecturer		KCCA	
Name	Position	Name	Position
松本 公紀	JICA 専門家 /交差点改良計画	Eng. Jacob Byamukama	Manager, Directorate of Engineering and Technical Services
浅田 薫永	JICA 専門家 /副総括／都市交通政策 (2)	Eng. Joel Wasswa,	Transport & Traffic Management Engineer
		Mr. Adam Ssengooba	Transport Planning & Traffic Management officer
		Ms. Fortunate Biira	Transport Planning & Traffic Management officer
		Mr. Leonard Mwesigwa	Transport Planning & Traffic Management officer

4 [成果 3] 「交差点における交通信号設置・維持管理能力が強化される」に係る活動

4.1 各国の交通信号システムのレビュー

既存の信号システムから SCOOT（英）とモデラート（日）を選択し、比較を行った。

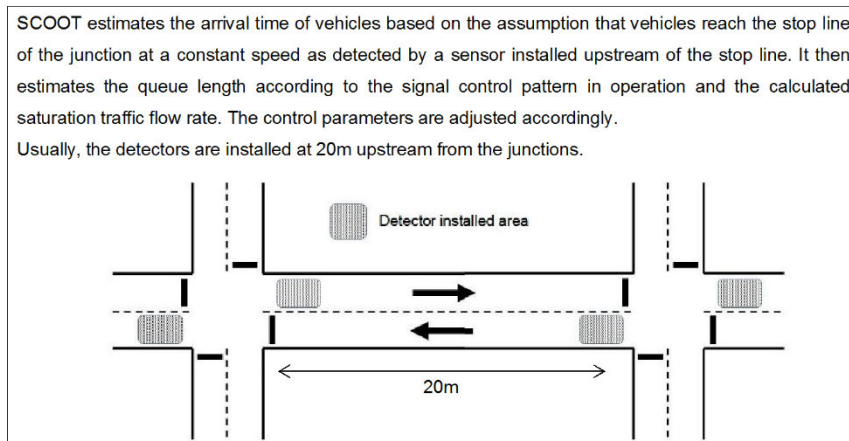


図 4.1 SCOOT 制御コンセプト

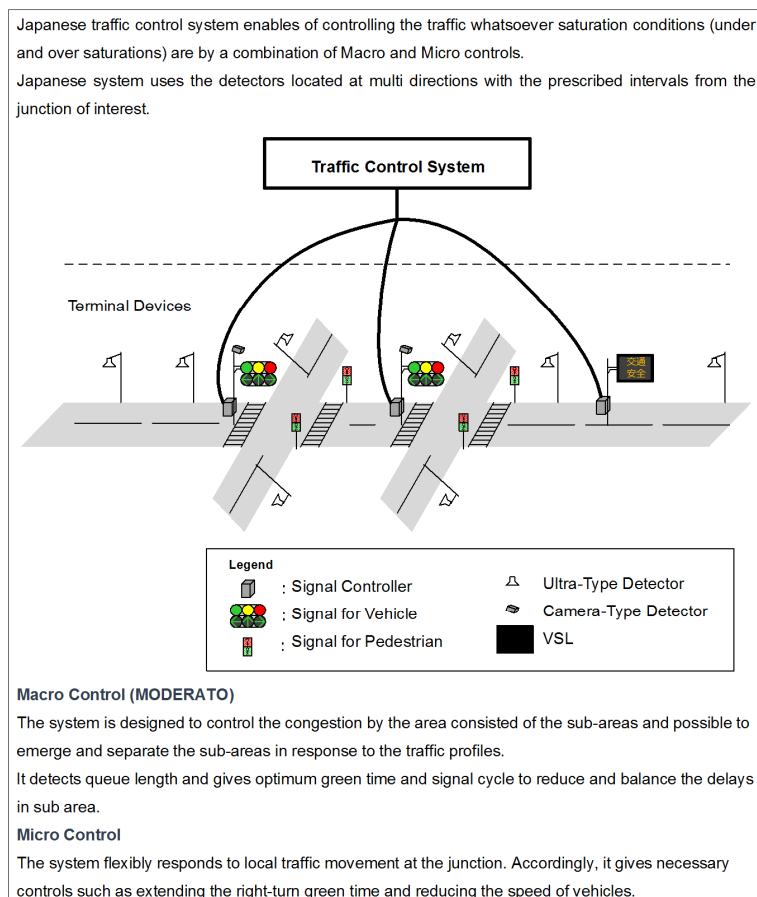


図 4.2 モデラート制御コンセプト

表 4.1SCOOT/モデラート制御方法の比較

Aspects	モデラート(JP)	SCOOT(UK)
Detector Positions	At each leg of the critical junction At 150m 300m, 500m and 1000m upstream of the junction (stop line) for Macro Control At 30-40m, 150-200m upstream for Micro Control	At each leg of the junction At 20m upstream of the junction (stop line)
Control Target Indexes		
Macro	Saturation rate (number of vehicles in queuing considered) Queue Length Trip (Journey) Time	Delay (by detecting queue by stopping vehicle group) Congestion (yes or no) Effective green time rate (Traffic/Green Time, Saturation Flow Rate)
Saturation Flow Rate	Semi-automatic computation	Programmed
Sub-Area	Available to emerging and separating	Programmed
Cycle Length		
Review Timing	Every 5 min. or 2.5 min	Every 5 min or 2.5 min
Variation Range	Maximum $\pm 12.5\%$ of Cycle Length	$\pm C$ sec (-8,0,+8)
Adjustment Approach	Selection of the programmed patterns according to sum of saturation rates at each leg or queue lengths Optimization of the control coordination among junctions when under saturation/ Maximization of traffic flow volume when over saturation	Making maximum 90% of effective green time rate at each leg for the heaviest loaded junction in sub-area Shortening of cycle length till the shortest time when under saturation/Extending cycle length till the longest time when over saturation
Control Target	Available	Available
Double Cycle		
Split		
Review Timing	Every 5 min	Every phase
Variation Range	By 1% of split (automatic computation)	$\pm G$ sec (-4,0,+4)
Adjustment Approach	Balancing splits by saturation rates at each leg Selection among the programmed split according to the queue length Optimization of trip time or shortening of queue length	Adding G sec to the split where almost effective green time rate is observed (Balancing effective green time rates at each phase i.e. balancing of saturation rates)
Offset		
Review Timing	Every 15 min	Every cycle
Variation Range	Section from 7 programmed times and the offset when congested	$\pm O$ sec (-4,0,+4)
Adjustment Approach	Selection from the programmed times according to traffic shares by inbound and outbound directions and cycle length Selection from the programmed times to each link according the queue lengths Optimization of control coordination between the junctions when under saturation	Incorporating variation of cycle length Selection from the programmed time to each link when congested
Control Target	Realization of intervention in controlling according to the control policy and need	Optimization (minimizing) of delay and stop times
Micro Control	Gap detection control Local responsive control	Local responsive control
Device Unit Prices at Origin Country (USD)	Controller: 15,000 Signal Head: 500 Ultra-Type Detector: 1,000 Image Type Detector: 14,000	Controller: 18,000 Signal Head: 500 Ultra-Type Detector: 800

KCCA はモデラートをカンパラの交通制御システムとすることを既に決めているが、端末機器については、米国の通信プロトコルである「National Transportation Communications for Intelligent Transportation System (ITS) Protocol (NTCIP)」によるシステム・インテグレーションを計画している。既にカンパラに導入済みの英国製また日本製の端末は、このプロトコルに対応している。

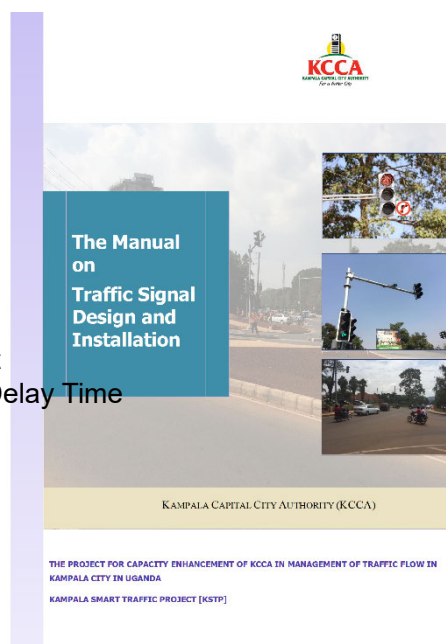
4.2 交通信号計画、設置マニュアルの作成

ウ国に交通信号計画及び設置マニュアルは整備されていない。今後、交差点改良計画が多様な資金で実施されることから、改良計画の質の統一また機器の維持管理性を考慮し、マニュアルを作成した。本マニュアルは、平面交差点に信号機を計画、設計する際に必要な基本事項を網羅している。

本マニュアルの内容は以下の通りである。このマニュアルも UTMG にファイルされる。

Table of Contents

Chapter 1	Role of Traffic Signal
1.1	Introduction
1.2	Objectives for Traffic Signals
1.3	Points to be considered
1.4	Interpretation of Traffic Lights
Chapter 2	Basic Understanding of Traffic Signal
2.1	Signal Phase & Stage
2.2	Signal Parameter
2.3	Lost Time
2.4	Delay Time due to Waiting for Green Light
2.5	Relation between Signal Parameter and Delay Time
2.6	Demand Flow Rate
2.7	Saturation Flow Rate
2.8	Capacity
2.9	Flow Ratio
2.10	Degree of Saturation
2.11	Traffic Control Method
2.12	Different Types of Traffic Signal
Chapter 3	Method of Signal Junction Design & Capacity Analysis
3.1	Traffic Data
3.2	How to Decide Signal Phases and Stages
3.3	Examples of Different Types of Stage Diagram
3.4	Capacity Analysis of a Signalized Junction
3.5	Example of Calculation of Traffic Capacity of a Signalized Junction
Chapter 4	Evaluating Performance of Signalized Junction
4.1	Delay Time Analysis of Traffic Signal
4.2	Queue Length at the Junction
4.3	Number of Stops before Crossing the Junction
4.4	Volume of Cleared Traffic
Chapter 5	Consideration for Traffic Signal Installation
5.1	Signal Light
5.2	Signal Pole
5.3	Wiring
5.4	Signal Controller
5.5	Push Button



5.6	Vehicle Detectors
Chapter 6	Various Devices and Materials of Traffic Signals
6.1	Pole
6.2	Wiring
6.3	Backup Power
Chapter 7	Process of Traffic Signal Installation
7.1	Traffic Signal Installation
7.2	Consultation before the Work
7.3	Preparation before the Work
7.4	The Work

4.3 信号機維持管理計画の策定

今後の信号交差点の整備計画を考慮すると、KCCA 直営で維持管理作業を行うことは想定されず、外部委託を前提とした管理計画が必要となる。我が国の信号維持管理も同様に外部委託しており、我が国の管理事例及び「ウ」国の環境、ニーズを考慮し、管理計画を策定した。

制御機

No.	Inspection Items	Objective	Frequency
	Voltage and electricity flow measurement	To measure input power-supply voltage and electricity flow (including electricity leak). To measure the voltage output from the controller. To measure the voltage used in the controller.	Every 6 months
	Grounding resistance measurement	To measure the grounding resistance of the earth cable and check it is under 100 Ω.	Every 6 months
	Time of controller	To check that the display time is the same as the proposed timings of KCCA and correct it if necessary.	Every 6 months
	Performance of controller	To check for any abnormalities in controller's performance to ensure proper performance.	Every 6 months
	Individual connection	To check connection of cables, connectors and terminals.	Every 6 months
	Performance check of the display and switches	To check proper performance of display and each switch.	Every 6 months
	Cleaning of the body and external appearance	To check installation condition of main body of the device for damage, rust, corrosion and water leaks. Inside and outside of the body will be cleaned by blowers.	Every 1 months

信号灯器

No.	Inspection Items	Objective	Frequency
-----	------------------	-----------	-----------

	External appearance	To check visually the angle of lantern boxes, arms and mounting hardware and installation condition for damage, deformation, corrosion and rust.	Every 3 months
	Lighting quality	To check it lights up red, yellow and green properly.	Every 3 months

感知機

No.	Inspection Items	Objective	Frequency
	Power-supply voltage	To measure power-supply voltage.	Every 6 months
	Grounding resistance measure	To measure the grounding resistance of earth cable and check it is under 100 Ω	Every 6 months
	Individual connection	To check connection of cables, connectors and terminals.	Every 6 months
	Detection performance check	To check detection area when vehicles pass with a visual check using a computer.	Every 6 months
	Cleaning of the body and external appearance	To check installation condition of main body of the device for damage, rust, corrosion and water leaks. Inside and outside of the body will be cleaned by brushes.	Every 6 months

押しボタン

No.	Inspection Items	Objective	Frequency
	Individual connection	To check connection of cables, connectors and terminals.	Every 6 months
	Performance	To check proper performance by operating the switch.	Every 6 months
	Cleaning of the body and external appearance	To check installation condition of main body of the device and damage, rust, corrosion and water leak. To check for visual defects (such as blurred letters).	Every 6 months

信号柱（車両用）

No.	Inspection Items	Objective	Frequency
	External appearance	To check for cracks and deformation, surface processing, rust condition and abnormality of the base and the main body of pole. If there is a poster, it shall be removed.	Every 6 months
	Terminal box	To check for damage, deformation, rust or corrosion on	Every 6 months

		the body and mounting hardware.	months
	Arm	To check for loose connection, cracks, damage, deformation, surface processing and rust condition of arm and mounting hardware.	Every 6 months

信号柱（歩行者用）

No.	Inspection Items	Objective	Frequency
	External appearance	To check for cracks and deformation, surface processing, rust condition and abnormality of the base and the main body of posts. If there is a poster, it shall be removed.	Every 6 months
	Lighting quality	To check it lights up red and green properly. Are you referring to intensity or correspondence errors?	

ハンドホール

No.	Inspection Items	Objective	Frequency
	External appearance	To check there is no cracks, damage, stagger in the lid or lid frame.	Every 1 months
	Inside	To check for damage on the cap frame and box by opening the hand hole / manhole.	Every 6 months

UPS

No.	Inspection Items	Objective	Frequency
	Voltage measurement	To measure input voltage and output voltage.	Every 6 months
	Monitor lamp	To check the display and check for errors or notices as indicated in the instruction manual.	Every 3 months
	Performance	To ensure proper performance by turning off the input power.	Every 3 months
	Body cleaning	To clean the body, inlet of air etc.	Every 3 months

変圧器

No.	Inspection Items	Objective	Frequency
	Voltage measurement	To measure input voltage and output voltage.	Every 6 months
	Overheating	To check for overheating or burning by visual and	Every

		touching	3months
	Internal appearance / external appearance	To clean the body	Every 6 months

整流器

No.	Inspection Items	Objective	Frequency
	Voltage measurement	To measure input voltage and output voltage.	Every 6 months
	Overheating	To check for overheating or burning by visual and touching	Every 6 months
	External appearance	To clean the body	Every 6 months

自動発電機

No.	Inspection Items	Objective	Frequency
	Power generation parts	To check voltage and frequency of electric generation. To check for abnormal noise or vibration when the engine is on.	Every 6 months
	Controller	To measure generate detection voltage and charge voltage. To check whether the manual start and stop condition is good and its performance when the signal controller is active and automatic control is correct.	Every 6 months
	Engine	To check start condition of the engine and check for irregular spin. To check the dust condition of the drive belt. If necessary, to replace air filter, fuel filter, oil filter and oil.	Every 3months
	Cleaning of the body and external appearance	To check installation condition of the main body for damage, rust or corrosion. To clean the body inside and outside.	Every 6 months
	Battery	To check the installation date of the battery and measure battery voltage. (does this refer to monitoring number of discharge cycles?) To replace batteries those will complete their working life before the next inspection.	Every 3 months
	Wiring / pipework	To check loose connection, terminal and screw.	Every 6 months

コントロールハウス

No.	Inspection Items	Objective	Frequency
	External appearance	To check for damage or cracks in the roof, external wall, door, window, and controller box. To check the performance of the light. To check it has been locked up.	Every 6 months
	Internal Appearance	To check for moisture intrusions and pests.	
	Internal function	To ensure the proper performance of distribution board, light and wiring. To check there is no unnecessary items inside.	Every 6 months

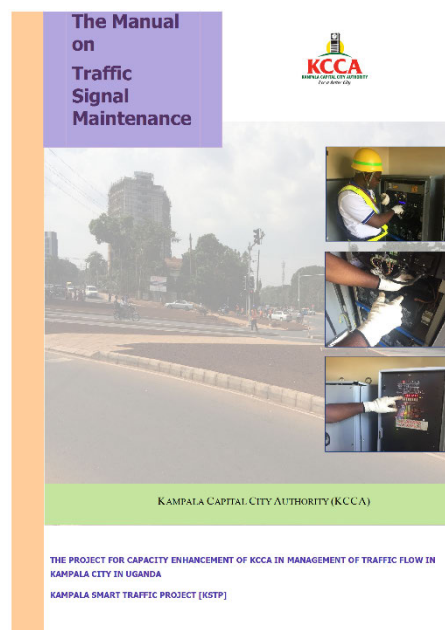
中央管制における制御機はターミナルのインターフェイスであり、また地点制御では交通状況に応じて自ら演算しコントロールする重要な役割を担うことから、信号制御における最も重要かつ常時の稼働が求められる機材である。この為不具合が生じた場合には、迅速な修理また交換が必要であるが、日本製機材は信号制御パターンを道路管理者が自らで設定できるようには設計されておらず、交換する場合は、製造元の工場にてパターンのプログラムをインストールする必要がある。よってスペアを保有していてもすぐに交換はできない。この点 SCOOT は専用ソフトウェアにて、ユーザーが信号パターンをデザインしインストールすることが可能であり、日本製より使い勝手がよい。今後日本製においても SCOOT と同様な使い勝手の良さが必要であり、既に KCCA は日本製メーカーに申し入れを行っている。今後のメーカー対応が制御機のスペアの考え方を左右する。

4.4 信号維持管理マニュアルの作成

管理計画に基づきマニュアルを作成した。マニュアルの内容は以下の通りである。

Table of Contents

1. Introduction
2. Structure of the Manual
3. Current Traffic Signals in Kampala
4. Present Signal Maintenance System of KCCA
 - 4.1 Process of Contractor Selection
 - 4.2 Major Technical Specification of the Contract
 - 4.3 Observation of Present Maintenance System
5. Recommended Maintenance System
 - 5.1 Background
 - 5.2 Different Maintenance System
 - 5.3 KCCA's Role in Maintenance System
 - 5.4 Classification of Maintenance Activities
6. Recommended Periodic Inspection
 - 6.1 Periodic Inspection Work Items
 - 6.2 Inspection Process
 - 6.3 Daily Report
 - 6.4 Inspection Criteria of the Equipment



- 7. Required Maintenance Work
 - 7.1 Maintenance Item
 - 7.2 Implementation Procedure
 - 7.3 Maintenance Process
 - 7.4 Report
- 8. Lantern Check & Cleaning
 - 8.1 Cleaning Items
 - 8.2 Implementation Method
- 9. Maintenance Parts Inventory
 - 9.1 Parts to be Maintained
 - 9.2 Storage of Spare Parts
 - 9.3 Method for Managing Maintenance Components
 - 9.4 Report on Maintenance Parts Inventory
- 10. Maintenance Tender Specification
 - 10.1 Title
 - 10.2 Object of the service
 - 10.3 Contract Term
 - 10.4 General Terms
 - 10.5 Management of Maintenance Material
 - 10.6 Instrument necessary for Implementation of Service
 - 10.7 Implementation of Safety Measures
 - 10.8 Document Submission and Reports
 - 10.9 Payment Receiving Method
 - 10.10 Others
 - 10.11 Dispute
 - 10.12 Contact:
- 11. Appendices
 - Appendix 1 Different Type of Check Sheet
 - Appendix 2 Stock Management Sheet

4.5 信号維持管理研修

第1回目の本邦研修期間中の2016年8月8日、信号維持管理に係るセミナーを実施した。

併せて三重県四日市の信号維持管理現場の視察を行った。



写真 4.1 信号維持管理セミナー



写真 4.2 信号維持管理現場視察

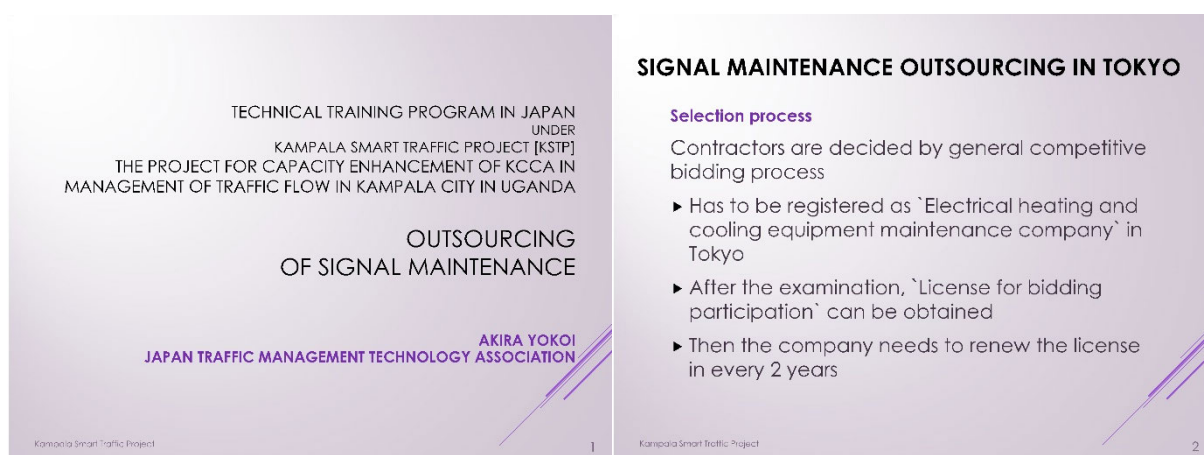


図 4.3 信号維持管理セミナープレゼンテーションスライド(抜粋)

表 4.2 信号維持管理セミナー/現場視察参加者リスト

発表者		KCCA	
氏名	職位	氏名	職位
横井 昭	JICA Expert /交通信号計画(1)	Eng. Andrew Kitaka	Director, Directorate of Engineering and Technical Services
Pallab Debnath	JICA Expert /研修計画/モニタリング	Dr. Steven Kasiima	Assistant Inspector General of Police, Director of Traffic and Road Safety, Uganda Police Force
古市 光明	(株) シンコーワ代表取 締役	Mr. Martin Sekajja	Deputy Director, ICT, Office of the Executive Director
		Eng. Jacob Byamukama	Manager, Directorate of Engineering and Technical Services
		Eng. Beatrice Magumba	Transport and Traffic Engineering Specialist, Directorate of Engineering and Technical Services

4.6 信号維持管理 OJT

カンパラ市内の信号機の稼働状況、及び信号サイクルと交通流の整合の確認を目的とした OJT を実施した。

表 4.3 サイクルの設定

Phase	1	2	3	4	Total
Direction					
Present	86	31	39	26	182
Case 1 (Optimum)	49	21	49	21	140
Case 2 (Long)	70	30	70	30	200
Case 3 (Short)	35	15	35	15	100

表 4.4 サイクル毎の交通量

Name of Legs	Hoima Road (Kasubi)	Namirembe Road	Rubaga Rd	Albert Cook Rd.	Total Out
Hoima Road (Kasubi)	0	388	148	27	563
Namirembe Road	216	0	179	326	722
Rubaga Rd	138	215	0	12	365
Albert Cook Rd.	125	919	14	0	1,058
Total In	478	1,522	342	366	2,708



写真 4.3 信号サイクル調整 OJT

OJT では Case 1:最適サイクル、Case 2::長サイクル、Case 3:短サイクル時の渋滞状況を観察し、実状に即した信号調整技術の移転を行った

5 「成果 4」 「交通ルール遵守にかかる意識啓発プログラムの実施能力が強化される」に係る活動

5.1 交通安全意識調査の実施

車両運転者、歩行者に対し、交通安全意識調査を実施した。調査の結果は以下の通りである。

- ・ 運転者も歩行者も、交通ルールや交通事故の発生箇所、事故の原因について同じように理解している。発生頻度の高い地点（いわゆる「ブラックスポット」）の認識は、第一に急カーブ、これに続き無信号交差点であった。しかしながら、交通警察の事故記録には正確な事故位置が記載されていないため、急カーブでの事故件数は確認できない。一方交通警察が挙げているブラックスポットは主に交差点である。このようにユーザーと交通規制当局の危険箇所の認識は異なる。
- ・ 交通事故の原因としてスピードの出し過ぎや煽り運転が挙げられており、これらの認識はどの車種のドライバーにも共通している。しかしながらボダボダ運転者は Taxi が問題であると認識しているが、他の車種のドライバーや歩行者はボダボダが問題であるとしている。
- ・ 交通安全の改善策としては、取締りに加えて、信号交差点の増設、道路幾何構造や舗装状態の改善などが挙げられている。



写真 5.1 交通安全意識調査

5.2 交通安全キャンペーンの実施

2021 年 10 月 20 日より交通安全キャンペーンを実施した。コロナ禍という状況を考慮し、交差点における現場イベントは最小限とし、ソーシャルメディアを活用したキャンペーンとした。

キャンペーンに先立ち、キャンペーンに使用する交通安全啓蒙アニメーションのコンテストを実施した。

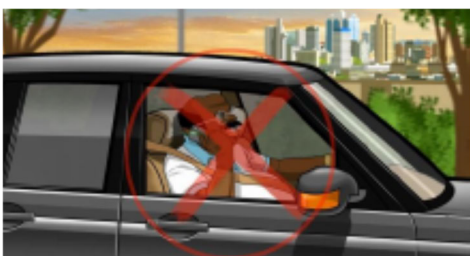


図 5.2 コンテスト最優秀作品

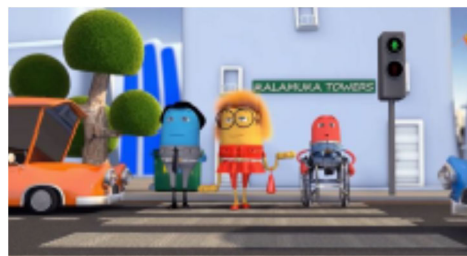


図 5.1 コンテスト優秀作品



図 5.3 アニメーション公募ポスター

これまでの交通安全ビデオは、事故現場などのグロテスクな映像で視聴者の恐怖心を煽るもの、または学童を対象とした教育的な内容のものが多かった。しかしながら今回の優秀、最優秀作とも、世代を超えて楽しめる、コミカルでありながらメッセージ性の高いものとなった。

キャンペーンのオープニングイベントは、パイロットプロジェクトサイトである Lugogo 交差点で行われた。

オープニングに続き、今後のカンパラ市で導入が予定されている、押しボタンによる横断需要対応信号制御（リコール方式）の説明、体験が行われた。

前述の通り、キャンペーンは KCCA ホームページ上に新設された交通安全ページでのアニメーション公開の他、歩行者に対して市内のブラックスポット情報を提供する「カンパラ・ブラックスポットファイル」を公開した。



写真 5.2 キャンペーンオープニング



写真 5.3 リコール方式の体験

5.3 フィードバック

ソーシャルメディアに寄せられた、キャンペーンへの市民からの主なフィードバックは以下の通りである。

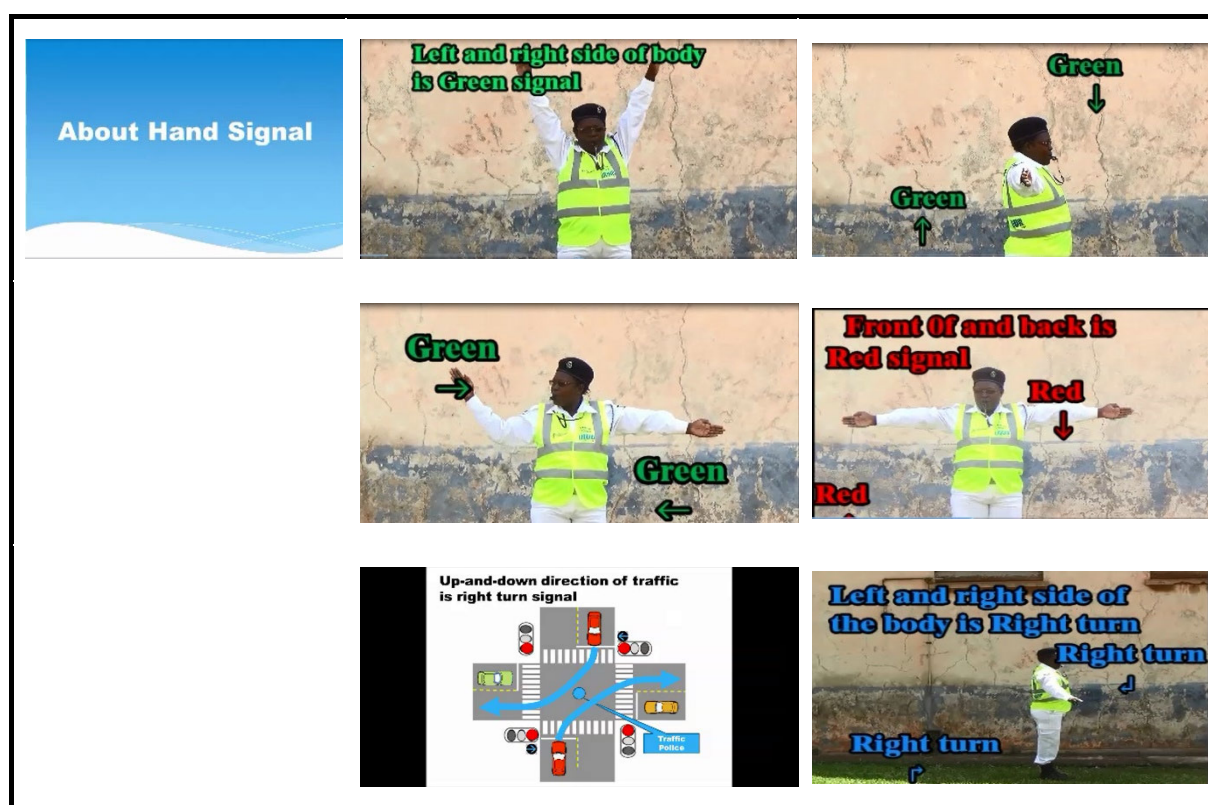
- ・ プッシュボタンなどの交通インフラの利用について、歩行者への啓蒙活動の強化
- ・ ボダボダの通行規制
- ・ 視認性を高めるため、色あせた道路標示やゼブラクロッシングの再塗装
- ・ スピードハンプ設置によるスピード抑制
- ・ 歩行者安全通行のための、歩道上の売店の撤去
- ・ スマート交通管制システムの導入
- ・ 信号機の効率向上
- ・ 運転者の質とスキルを向上、車検の整備、自動車教習所での運転教育の質の向上
- ・ 自転車通行の為に道路スペースの拡張
- ・ 政治家や地域リーダーの交通安全キャンペーンへの参加
- ・ 自動車の排気ガスのないクリーンシティの実現
- ・ ポットホールパッチング等、道路舗装状況の改善

5.4 適正な交通制御、誘導に係る技術移転

交通警察によるマニュアル・コントロールは無信号の交差点だけでなく、信号付き交差点でも一般的に行われており、主交通へ過度に長いスプリットを与える傾向がある。また制御には標準的（固定的）な順序がなく、ある特定方向に長いスプリットが与えられた場合、他の方向の交通に長い渋滞行列ができ、その行列を解消するためにさらに長いスプリットが必要となるという、悪循環が発生している。

上記の課題認識から、KCCA 交通整理員、交通警察に対し、マニュアル・コントロールの標準化を念頭に、偏りのない交通制御を目的とした技術移転を行った。

まずマニュアル・コントロール標準化に係るビデオを作成し、これを用いて交通整理員、交通警察に対し説明を行った。



その後、パイロット交差点でビデオに即した交通制御を行い、また制御時の交通量の計測し、従来のマニュアル・コントロール時の処理交通量との比較を行った。

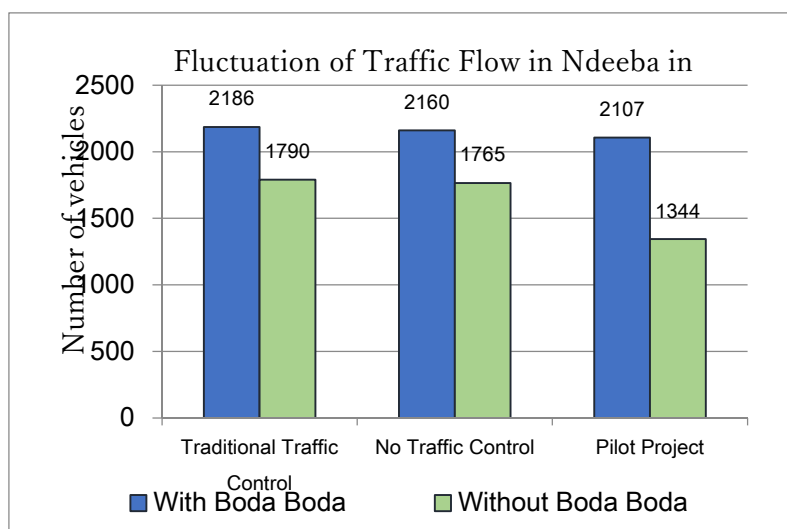


図 5.4 制御方法の違いによる交通量の比較

予測に反して、従来制御による交通量が多かった。この結果に対して分析を行い、以下のように結論付けた。

- ・ 交通制御を担当した交通警察官は、1 サイクルの動きが多いため、すぐに疲れてしまった。
- ・ 全てのプロセスが規則的なジェスチャーの動きのため、「ウ」国の文化、慣習に合わなかった。
- ・ 制止指示から発進指示に移行した際、ドライバーの反応が遅れ、これが交通量に影響を及ぼした。

この活動からの教訓は以下の通りである。

- ・ マニュアル・コントロールを標準化することは困難である。
- ・ 機械的に効率よく交通を処理するためには、交差点の信号化が必須である。

6 「成果 5」 「交差点を中心とする交通流管理能力が強化される」に係る活動

6.1 パイロット・プロジェクトの実施

(1) 実施目的

パイロット交差点へのモデラート・システムの導入を通じて、設置・運用面での課題を整理するとともに、システムの有効性を確認する。この結果を踏まえ、将来のカンパラ市における交通管制方法の標準化の検討を行う。

(2) 事業のフェーズ

事業を2つのフェーズに分割し、それぞれのフェーズで事業効果を検証する。

- ・ フェーズ 1: 無信号→地点制御
- ・ フェーズ 2: 地点制御→面的制御

本章ではフェーズ1における活動、成果を述べる。

(3) 導入機材

以下の機材を導入する。

				
信号灯器 (車両用)	信号灯器 (歩道用)	信号制御機	車両感知器 (単路部)	画像車両感知器 (交差点部)

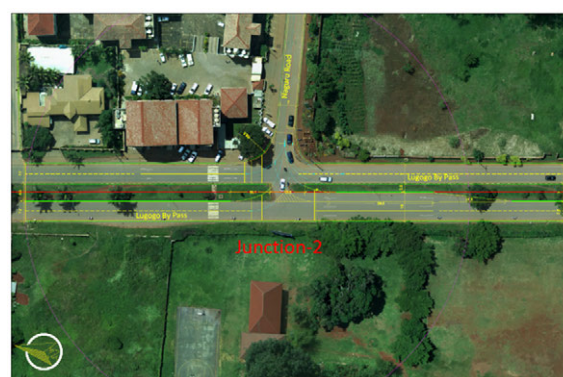
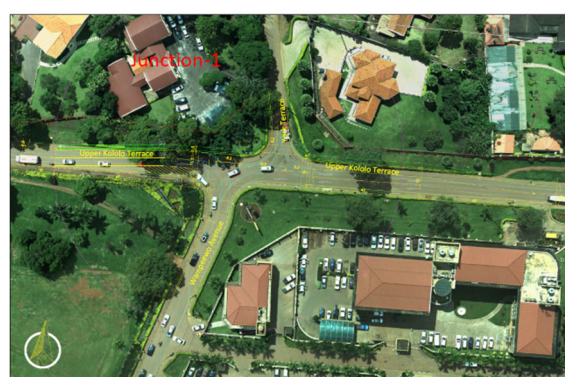
(4) 信号制御設計

「パイロット交差点調査（英文本文では6章で記述）」の通り、対象交差点は幾何構造及び通行規制を見直すことから、改良後の通行方式、また幾何構造を元に、まず暫定信号制御を行う。

信号制御により交差点交通流は変化することから、当面モニタリングを行い、その結果により制御設計を最終化した。

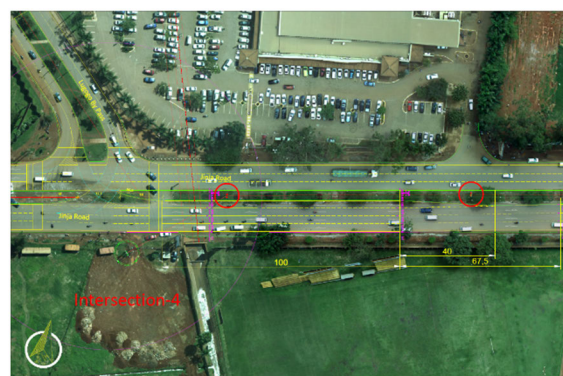
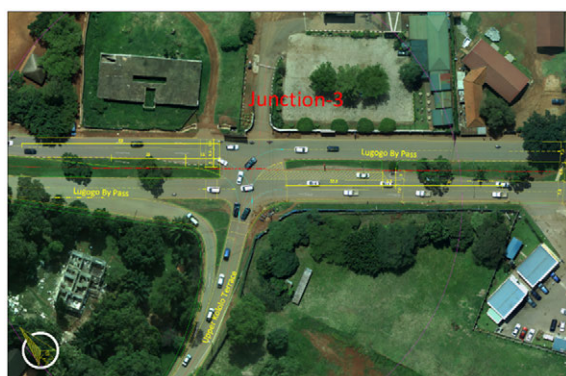


写真 6.1 信号スプリットの修正



When the Pedestrian Push Button is Pushed																									
SSR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Flash
3 1G, 1'G																									Y
3 1A																									Y
3 2G																									R
3 3G																									R
2 a																									
14																									
Phase Diagram	1GS				2GS				3GS				4GS												

When the Pedestrian Push Button is Pushed																									
SSR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Flash
3 1G, 1'G																									Y
3 2G, 2'G																									Y
3 1A, 1'A																									Y
3 3G																									R
2 a																									
14																									
Phase Diagram	1GS				2GS				3GS																



When the Pedestrian Push Button is Pushed																									
SSR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Flash
3 1G, 1'G																									Y
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3 2G																									R
3 3G																									R
2 a																									
14																									
Phase Diagram	1GS				2GS				3GS																

When the Pedestrian Push Button is Pushed																									
SSR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Flash
3 1G, 1'G																									Y
3 2G, 2'G																									Y
3 1A, 1'A																									Y
3 3G, 3'G																									R
2 a																									
14																									
Phase Diagram	1GS				2GS				3GS																

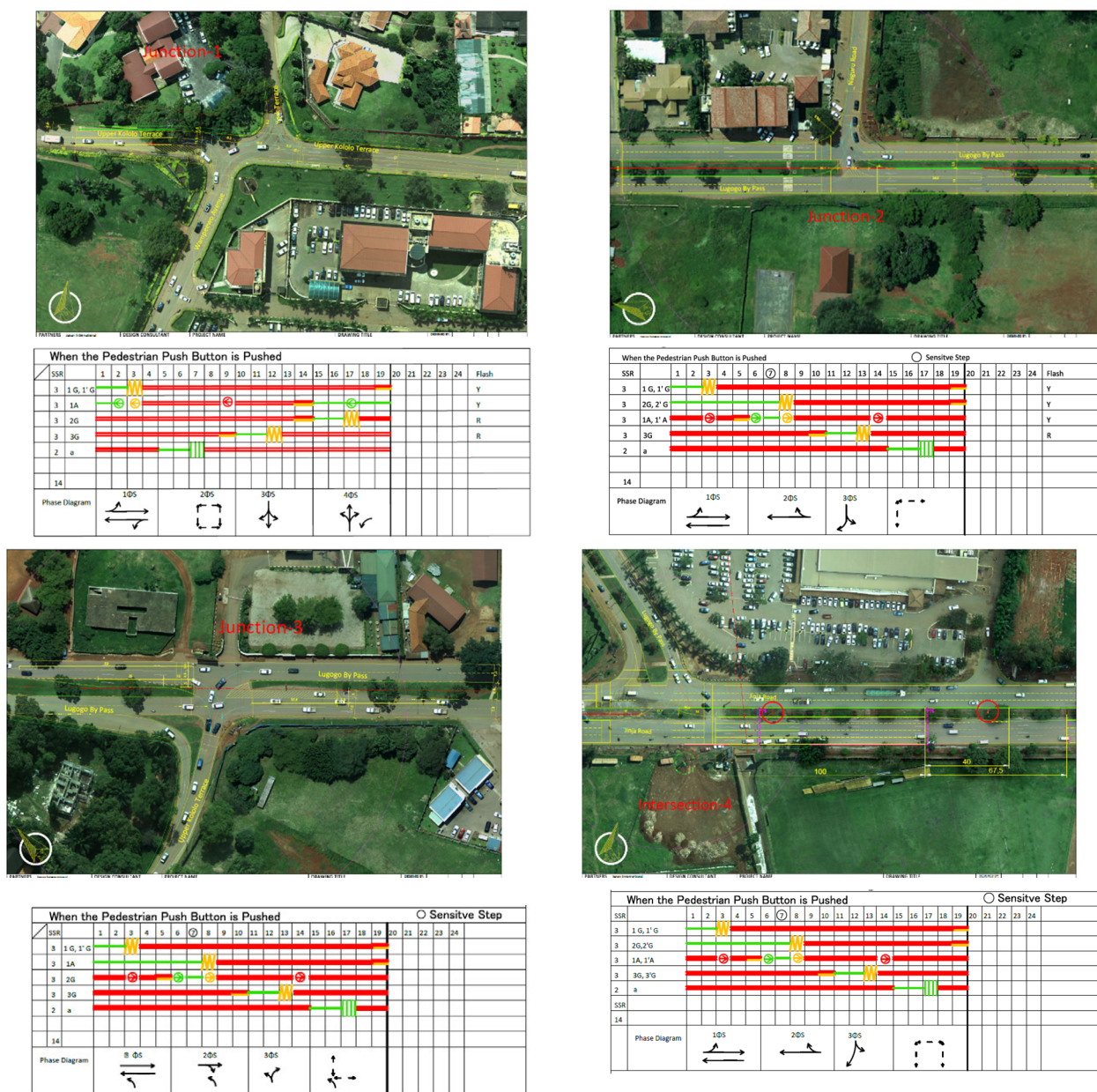


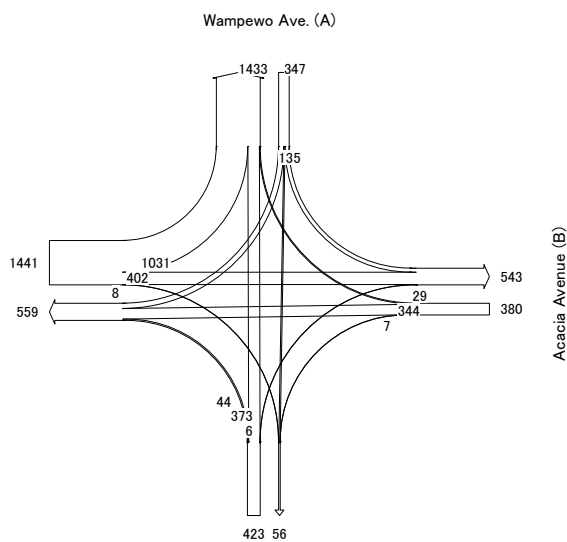
図 6.1 信号制御設計(見直し後)

6.2 フェーズ 1 の効果

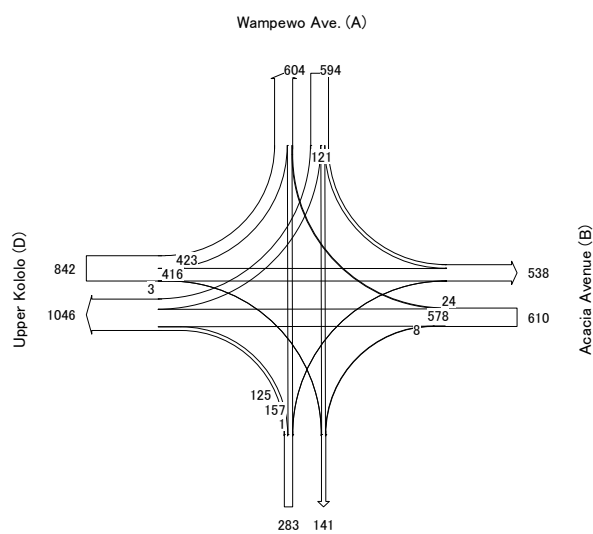
供用後に実施した交通量調査の結果より、以下の効果を確認した。

- ・ 平均 10%交差点容量の改善がみられた（図 3.1 参照）。
- ・ 改良効果の高かった交差点は No.1 であり、朝ピークで 27%,有ピークで 13%の改善が見られた。

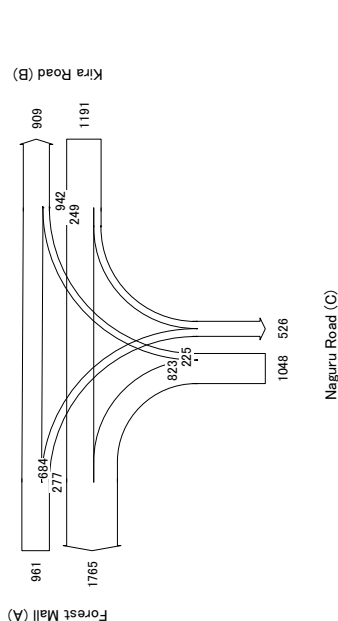
June 2019, Traffic Flows by Directions



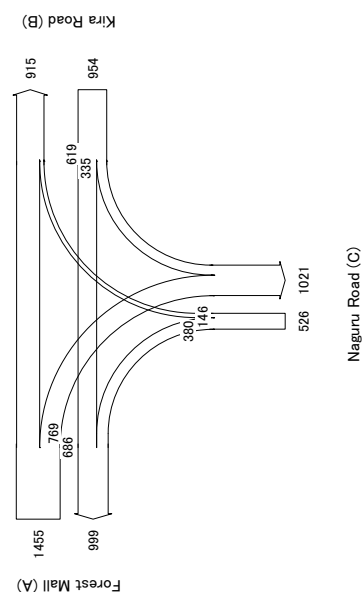
Junction 1: AM Peak



Junction 1: PM Peak



Junction 2: AM Peak



Junction 2: PM Peak

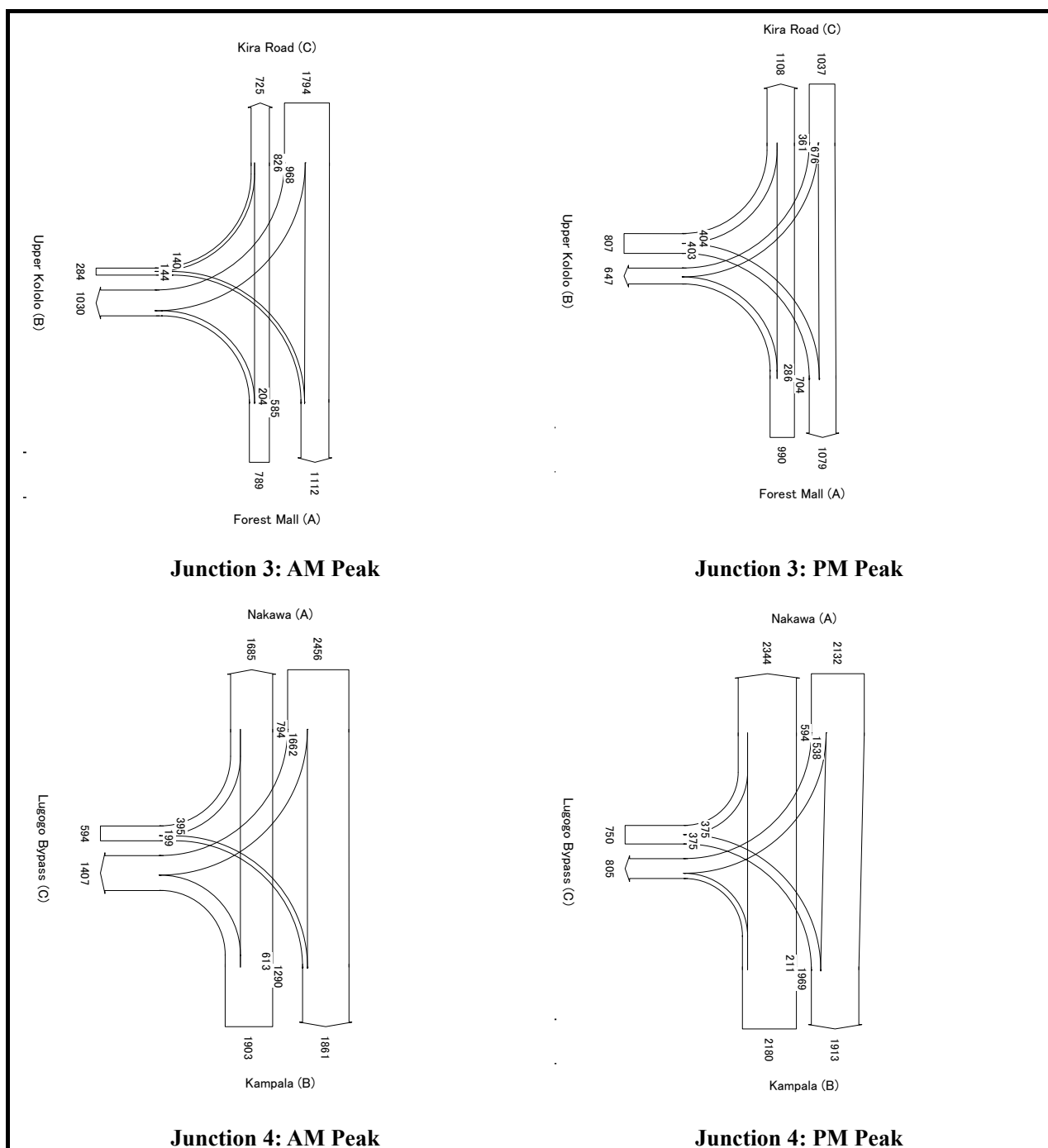


図 6.2 改良後の交通流図

7 [成果 6]「KCCA にモデラート制御運用スキルが備わる」に係る活動

7.1 システムの概要

信号のサイクル、スプリットは、感知機でカウントされたリアルタイムの交通量に基づいて、一定間隔で変更される。モデラート・システムのサーバーを KCCA に設置し、KCCA から各交差点の制御管理を行う。

対象交差点の信号制御機とサーバーは、ファイバーネットワークを介し接続した。この接続には仮想プライベートネットワーク (VPN) を使用し、日本からトラフィックを監視できる設定とし、また必要に応じてシステムの調整や制御への介入を可能とする構成とした。

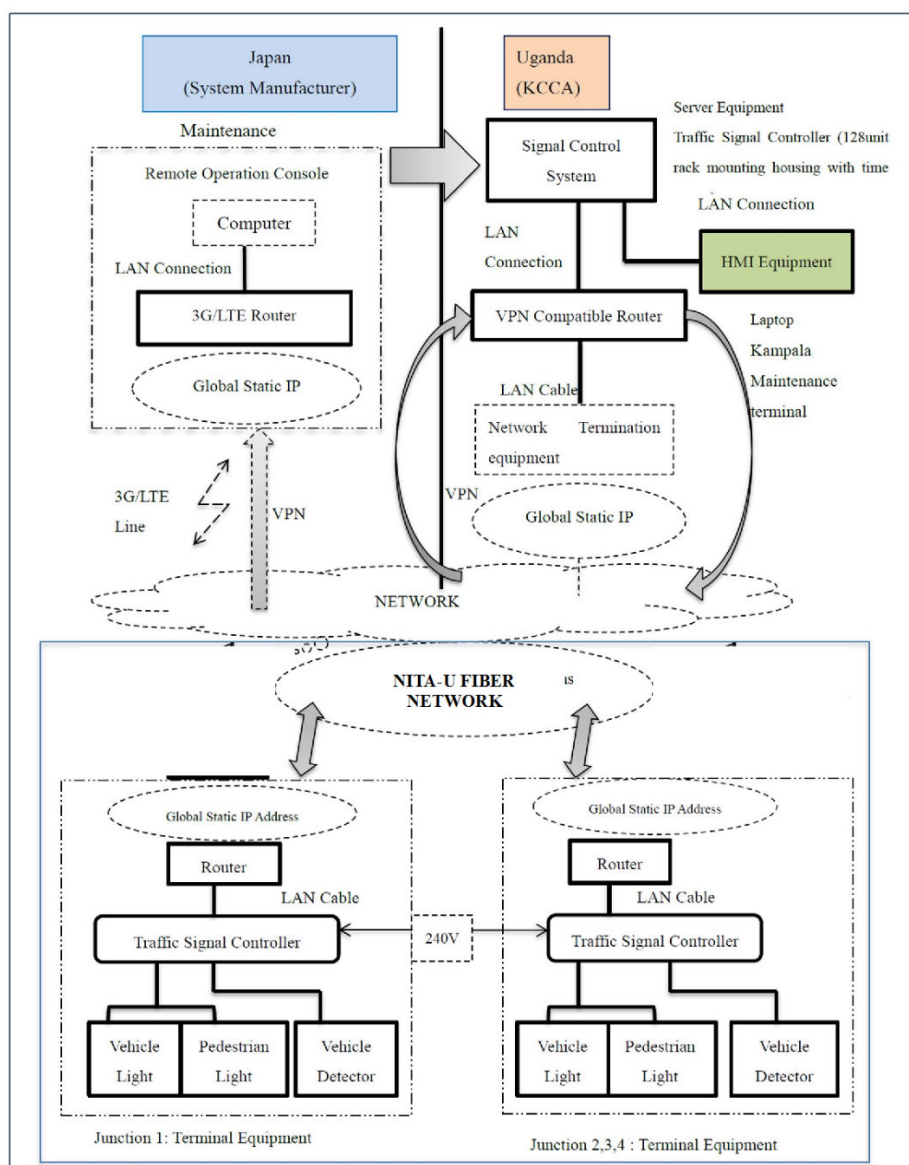


図 7.1 モデラート・システムの概要

7.2 モデラート制御の概要

制御対象地域を複数サブエリアに分割し、交通状況に応じ結合また切り離し、系統制御の最適化を図る。また制御は次の2方法から成る。

マクロ制御

サブエリア制御上のキーとなる重要交差点においてサイクル、スプリットをオンラインリアルタイムで自動算出し、制御地域を統括する。

ミクロ制御

各交差点の交通状況に応じてサイクル、スプリットを微調整する。

- ・ 交差点制御上重要な信号制御パラメーターを、サイクル、スプリットの算出原理に従い、自動算出する。この算出に当たっては、待ち行列を負荷として取り込み、閑散から過負荷状態まで一貫した制御を行う。スプリットは交差点通過所要時間が等しくなるよう算出され、公平な制御となるとともに、算出係数を変更することによって、政策的制御が容易に実現できる。
- ・ また一般に交差点における交通量到着パターンは一樣ではなく、これら交差点個々の交通状況にマクロ制御で対応することは困難であり、システムの負荷が大きくなり非効率である。このためマクロ制御の効果を減じない範囲で、端末感応制御を行うミクロ制御を組み合わせることによって、無駄時間の防止など、きめ細かな制御を行うことができる。
- ・ 交通負荷及び変動の大きい交差点を重要交差点とし、サイクル、スプリットの自動算出制御を行う。
- ・ 他の交差点は重要交差点をキーとするサブエリアに包含される一般交差点とする。

サブエリアは、重要交差点をキーとする系統を維持すべき一般交差点を含む交差点群として設定するが、サブエリアの交通整序化の適否は、重要交差点の制御の可否に依存するため、重要交差点及びサブエリア選定には特に注意を払う必要がある。

またサブエリア設定はマクロ制御を行う最小単位であり、過大にならないよう設計する。

右折交通などの交通需要の正確な把握は困難であることから、スプリット算出の対象とはならない。右折交通への対応はギャップ検出（ミクロ制御）による右折感応制御とする。

7.3 設計概要

(1) 重要交差点

交通負荷及び変動が大きく、対象エリア制御のキーとなる NO.1 および.4 交差点を重要交差点とし、サイクル、スプリットの自動算出の対象とする。

(2) 一般交差点

重要交差点に比べ交通の少ない NO.2 及び.3 交差点を一般交差点とし、重要交差点とのサイクル連動制御を行う。

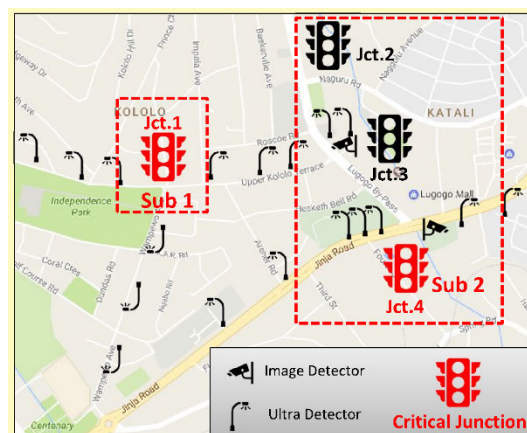


図 7.2 サブエリア設定(当初)

(3) サブエリア

上図の通り、NO.1 を単一交差点サブエリアとし、NO.2、3 及び 4 の 3 交差点を含む一つのサブエリアとする。

(4) 右折感応

NO.2、.3.および.4 交差点に右折サイクルのムダ抑制を目的として、ギャップ感応制御を導入する。

7.4 効果の事前予測

(1) 予測ケース

モデラート効果の事前予測をシミュレーション・ソフトウェア VISSIM により行った。

予測ケースは以下の 3 通りとした。

- ・ Case 0:無信号時
- ・ Case 1:定周期制御
- ・ Case 2:モデラート制御

(2) 予測結果

モデラートで制御した場合(Case 2)、Case 0 との比較では遅延時間を 35%削減し、平均旅行速度を 47%向上させることができるという結果が得られた。

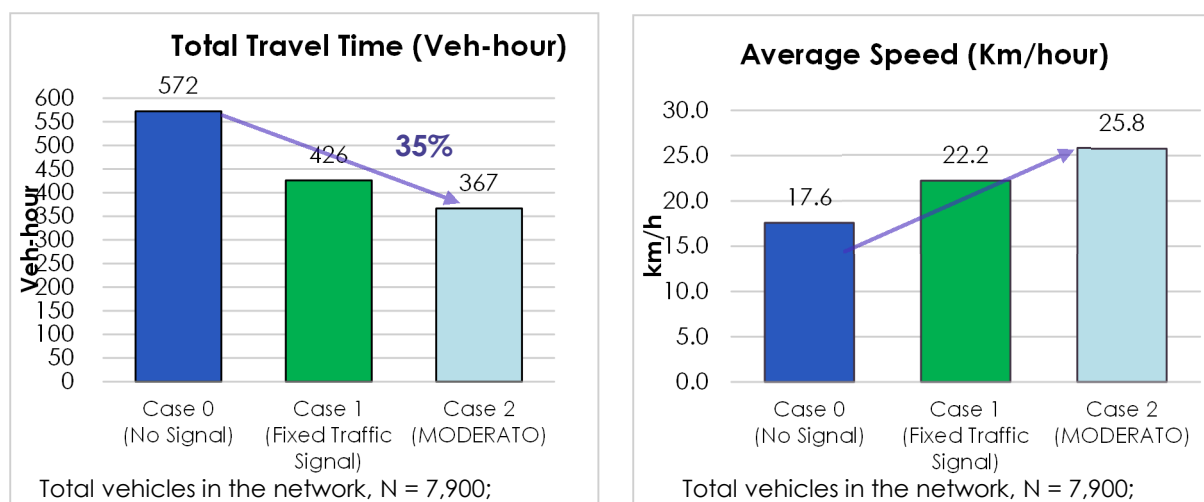


Figure 7-1 Result of Different cases using Micro Simulation

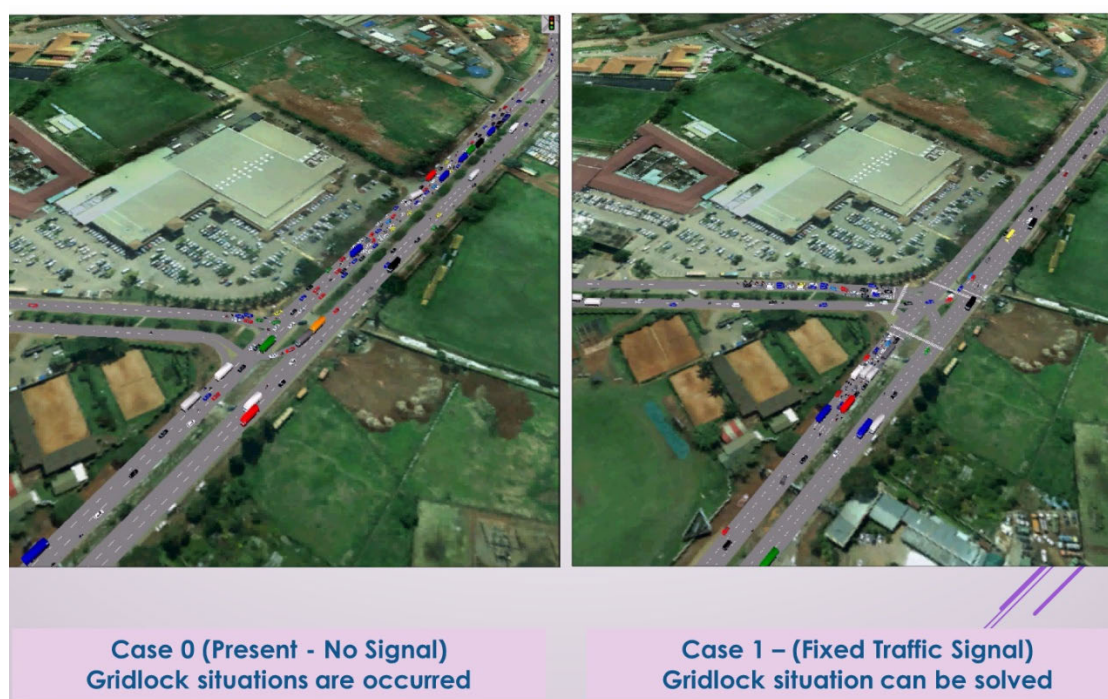


図 7.3 モデラート制御効果の事前予測

7.5 制御設定の見直し

(1) サブエリアの見直し

当初設定は No.1 を単独サブエリア、No.2,3,&4 を同一サブエリアとするものであったが、No.4 を独立させ、3 サブエリア構成に見直した。これは No.4 のサイクルが No.2&3 には過大であったため、これを切り離し、No.1 のサイクルと連動させた。

また No.4 の最大サイクルを 180 秒としたが、システムを維持するため、オフセット追従時は最大 220 秒超のサイクルが出現したため、これを抑止するため単独サブエリアとした。

(2) No.2&3 のスプリットの見直し

一般交差点である当該交差点はサイクル値に対するパターン設定となっていたが、このスプリットパターンでは交通状況に対応できないため、指定感知器の交通量比に対応するスプリット選定方式に変更した。

(3) 飽和交通流率の設定値変更

No.4 において、東西幹線道路上り（始点はケニア側）の渋滞は軽度であったが、一方下り方向の渋滞が酷かった。上りは車線幅の大きいため、スプリット算出飽和交通流率値を下りに比べ小さく設定し、優先させた。

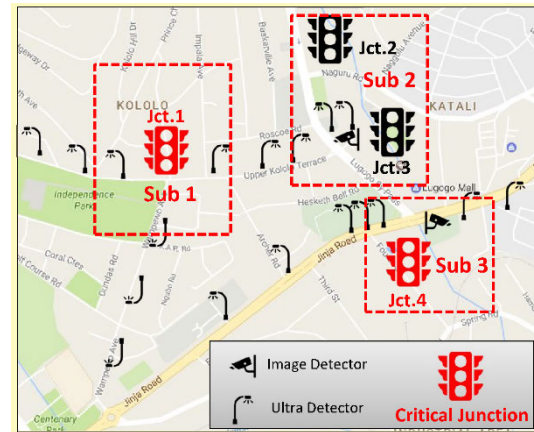


図 7.4 サブエリア設定(見直し後)

7.6 広報活動

パイロット・プロジェクトの広報を目的として、プロジェクトの概要を説明するアニメーションを作成し、KCCA ホームページ上で公開した。



図 7.5 パイロットプロジェクト広報ビデオ

7.7 マニュアルの作成

マニュアルは中央制御システムの全体像を含むシステム構成の説明から始まり、マクロ制御機能とミクロ制御の内容説明に続く構成とした。

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Traffic Condition Monitoring using HMI Device

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- Traffic Condition Query

- Signal Controller Query

Regular Monitoring Items

- Extraction of problems and countermeasures

 - From Traffic Condition Query

 - From Signal Control Status Query

- Process of Details Settings Change

Optional Items of Central Control System

- Public Transportation Priority System (PTPS)

- Variable Message Signboard (VMS)

- Parking Information

- Congestion Information Sharing in Radio/TV

🌐 モデラート技術紹介ビデオの作成

モデラートによる面的制御は、他の大都市にも適用できる。よってモデラートの水平展開を目的として、ハードコピーのマニュアルに加え、制御の主要機能を説明するビデオ・マニュアルを作成した。



図 7.6 モデラートビデオマニュアル

7.8 モニタリング結果

(1) 旅行時間調査 (2020 年 5 月)

モデラート効果の検証の為、旅行時間調査を実施し、無信号時及び定周期時と比較した。

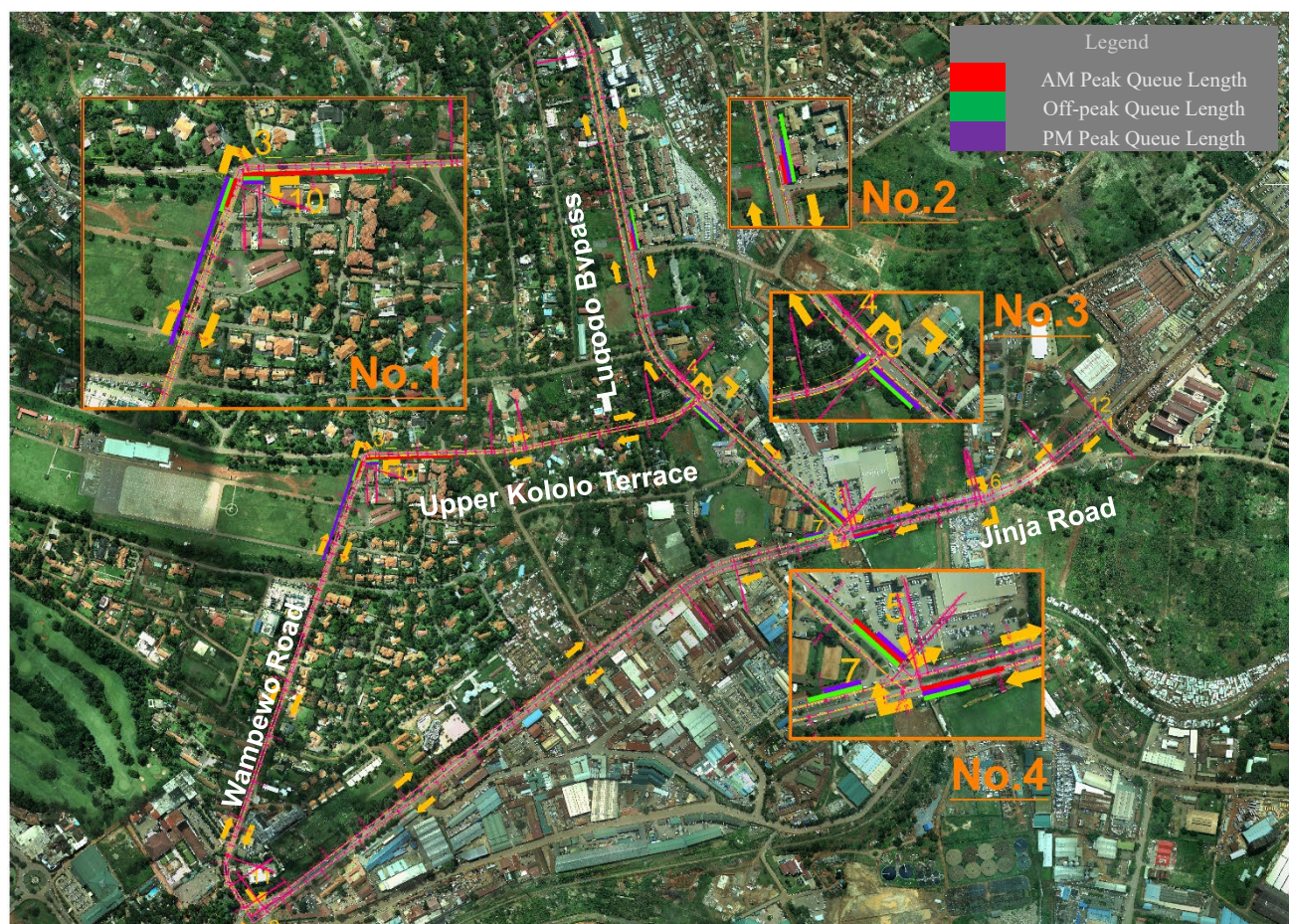


図 7.7 旅行時間調査ルート

表 7.1 旅行時間調査結果

	2020 (MODERATO)	2019 (Stand-alone)	2016 (Un-signalized)
AM Peak	19.37	20.20	13.20
Off Peak	19.14	20.47	29.00
PM Peak	15.51	17.39	16.42
Peak Average	17.44	18.79	14.81

(2) 調査結果に対する考察

旅行速度は交差点を除く全ての調査時間帯で 60km/h 程度であり、調査対象ネットワークの単路部に容量不足はなかった。

表 7.1 によれば、定周期時の速度(2019)がモデラート制御時より僅かに速いが、年 5%で増加する交通量を考慮すれば、モデラート制御の効果は少なくないと考えられる。

図 7.7 及び表 7.1 に示すように、オフピーク時においても交差点部で渋滞が見られた。(オフピークの移動時間は、朝のピークとほぼ同じである)。これは信号サイクルに不必要な歩行者専用サイクルが存在し、その結果交差点の交通容量が減少した為、渋滞が発生したと解釈できる。

また主交通と従交通の差が少ないオフピーク時には、主交通への分岐が少ないため、歩行者専用

サイクルの影響が大きくなり、結果的に渋滞が発生したと考えられる。

このほか No. 1 交差点のピーク時の速度低下が大きく、渋滞の原因となっている。これは右折レーンを持たない交差点の幾何構造によるものと考えられる。

8 結論・提言

8.1 結論

[成果 1] 「KCCA による都市交通管理政策が強化される」に係る活動

本活動の結果、KCCA は UTMP 及び IAP を作成した。特に UTMP では中長期の交通管理計画が策定されている。また IAP の中からモデラートによる中央管制のパイロット・プロジェクトが選ばれ、実施された。これらの活動を通じ、KCCA はカンパラ市の交通管理の方向性を見だし、この流れに従い、他ファンドによる交差点改良事業にも、モデラート対応の機器が選定されている。このほか、日本の無償資金を活用した MODERTO 制御による交差点改良事業も、近々実施予定である。

[成果 2] 「交差点改良設計能力が強化される」に係る活動

本活動を通じて KCCA は交差点改良設計マニュアルを作成した。

[成果 3] 「交差点における交通信号設置・維持管理能力が強化される」に係る活動

本活動を通じて KCCA は信号設置及び維持管理マニュアルを作成した。維持管理については外注を標準化し、これにより多くの民間企業がこの分野に参入した結果、従前に比べ維持管理の頻度、質が向上した。

[成果 4] 「交通ルール遵守にかかる意識啓発プログラムの実施能力が強化される」に係る活動

本活動において道路利用者の交通安全意識の調査が行われ、市民の問題意識を把握した。また交通安全キャンペーンを通じて交通安全意識を喚起し、今後の同種の活動へ多くのフィードバックが寄せられた。

キャンペーンの実施方法については、ソーシャルメディアを全面的に活用した他、キャンペーンの素材作成にコンテスト方式を採用するなど、従来とは違うアプローチが試された。

[成果 5] 「交差点を中心とする交通流管理能力が強化される」に係る活動

[成果 6] 「KCCA にモデラート制御運用スキルが備わる」に係る活動

KCCA はこれら活動を通じて交差点の面的制御システムの導入を行った。システム導入時には数多くの問題、課題を経験した他、供用後にコントロールパラメーターの改善を試みるなど、設置から運用までの一連の流れを経験し、管制技術を習得した。

KCCA 技術者はプロジェクトオフィスにある HMI を操作し、統計資料の作成、これにより交通流の変化の把握し、制御パラメーターの調整作業を行った。

以上の活動、成果により、プロジェクト目標である「KCCA のカンパラ市内道路における交通流管理能力が強化される」は達成された。

8.2 提言

このプロジェクトには、交通管理のハード、ソフト面の二つの活動が含まれており、KCCA はこの両面の管理能力向上を達成した。この能力が今後のカンパラ市の交通管理、道路開発に活かされることは疑いのないところである。今後も交通量は増え続け、デマンドコントロールやより厳しい交通規制が必要になると考えられるため、KCCA は交通警察や他の関係者と協力して、これらの課題に対応するスキルを習得する必要がある。

本技プロでは我が国管制システムであるモデラートを初めてアフリカに紹介、導入した。システム導入にあたり安定的な通信の確保に時間を要し、その為協力期間の延長が必要となった。このほか MODEARATO を構成するターミナルデバイスの設置位置は日本と異なり制約が多く、また自然災害、いたずらの他害鼠など、地域の特性を考慮した対策が必要であった。このことは日本側への教訓となった。

モデラートは SCOOT のようにユーザーが設定プログラムを自由に変更することができず、状況が刻々と変化する途上国の実状に合ったシステムとするには、ソフトのカスタマイズが必要ではないかと考える。

また交通安全に関してはデジタルキャンペーンを実施し、特にターゲットを設けず幅を広げたイベントとなった。技プロで発信したメッセージは「交通インフラ昨日を正しく理解し、正しく使う」また「自ら危険から身を守る」であった。本活動を通じて作成したビジュアルマテリアルは、今後も KCCA のウェブで視聴可能であり、今後 KCCA による更新が期待される場所である。

よって本プロジェクトを通じて得られた知識、経験を更に独自で発展させ、求められる交通管理の質を向上に対応する必要がある。

資料

資料-1 技術協力プロジェクト参加者リスト(KCCA,JICA 専門家)

KCCA		JICA 専門家	
ENG. ANDREW KITAKA	PROJECT DIRECTOR	井澤 徹郎	総括／都市交通政策(1)
ENG. JUSTUS AKANKWASA	PROJECT DIRECTOR	浅田 薫永	副総括／都市交通政策(2)
ENG. JACOB BYAMUKAMA	PROJECT MANAGER	菊池 豊	通信環境調査／指導(1)
ENG. JOEL WASSWA	PROJECT COORDINATOR	立花 邦彦	通信環境調査／指導(2)
MR. MARTIN SSEKAJJA	C/P	川口 裕久	都市道路計画
MR. ADAM SSENGOOBA	C/P	松本 公紀	交差点改良計画
ENG. FORTUNATE BIIRA	C/P	横井 昭	交通信号計画(1)
MS. BEATRICE MAGUMBA	C/P	有田 禎之	交通信号計画(2)
MR. TOM KIZITO	C/P	三瓶 昭弘	交通信号維持管理(1)
		白井 修	交通信号維持管理(2) 設置指導
		河内 孝文	交通量調査/指導(1)
		大坪 裕哉	交通量調査/指導(2)
		Tugrul Yetisgin	交通量調査/指導(3) パイロットプロジェクト土木 工事支援
		Pallab Debnath	研修計画/モニタリング
		小笠原未歩子	広報活動/データ管理(1)
		海口 光恵	広報活動/データ管理(1)

資料-2 合同調整会議（JCC）議事録

MINUTES OF JOINT COORDINATION COMMITTEE MEETING HELD ON THURSDAY 14TH MAY 2015 AT IMPERIAL ROYALE HOTEL MONGOLIA ROOM AT 10:30AM

ATTENDANCE-SEE ATTACHED

AGENDA:

1. ARRIVAL/BREAKFAST/SIGNING IN
2. INTRODUCTIONS
3. OPENING REMARKS BY EXECUTIVE DIRECTOR, KCCA
4. REMARKS BY JICA REPRESENTATIVE
5. PRESENTATION OF THE PROJECT BY CONSULTANTS (MR. IZAWA)
6. A.O.B/QUESTION AND ANSWERS
7. CLOSING REMARKS BY ENG. KITAKA ANDREW
8. LUNCH

No.	Discussion	Action/Resp Officer
1.0	<u>Arrival/Breakfast/Signing in</u>	
	Eng. Byamukama Jacob called the meeting to order after everyone had had their breakfast..	
2.0	<u>Introductions</u>	
	There was self-introduction from all members. Jacob informed the meeting that the ED was still finishing up with another meeting and would join us anytime. He thus requested the Director of Engineering and Technical Services of KCCA, Mr. Kitaka Andrew, to officially open the meeting and then invite the JICA Representative for his remarks.	
3.0	<u>Opening Remarks by Director of Engineering Department at KCCA</u>	
	Mr. Kitaka Andrew noted that KCCA is currently having technical cooperation projects with JICA and this project is aimed at mainly improving traffic management in Kampala through capacity building of staff in KCCA and also improving our cooperation with other national organizations like UNRA and also Police. He said that the project begun this year and would run for 3years and KCCA would like to make the best out of the project and make sure that the heavy investment put into infrastructure is well managed. He then invited the JICA Representative, Mr. Kawabe to give his remarks.	
4.0	<u>Remarks by JICA Representative</u>	
	Mr. Ryoichi Kawabe welcomed everyone to the first Joint Coordination Committee meeting for the Project for Capacity Enhancement of KCCA in Management of the traffic flow in Kampala. He reiterated what Eng. Kitaka has mentioned that the project would last 3 years aimed at enhancing KCCA manpower in traffic management. He expressed his sincere thanks to the host of the meeting KCCA for the excellent support to this project and for their continuous effort to make Kampala a better city. He also thanked everyone for agreeing to participate in this project. He informed the meeting that JICA's is willing to contribute towards reduction of Kampala city congestion, which goes a long way in contributing to Uganda's economic	

No.	Discussion	Action/Resp Officer
	development. As such JICA is willing to support the Uganda government in projects like; - The Kampala Flyover Project at a cost of \$180m. - The project for the completion of the Queen's way substation at a cost of \$18m whose construction will commence in July 2015. - Kampala transmission system upgrade, which would most probably begin this summer (July or August). This project thus aimed at helping Kampala become a world standard capital. He concluded by promising that JICA will continue to support towards KCCA and thanked everyone for the harmonious relationship they have accorded JICA for this project.	
5.0	<u>Presentation of the Project by Consultants (Mr. Izawa)</u>	
	Mr. Izawa gave his presentation on the outline and aims of the project. He later welcomed questions from members in the meeting. The presentation was halted with the arrival of the KCCA executive director. Apologies were made for her late arrival, but she had been involved in another meeting elsewhere. Mr. Kitaka informed the ED that a presentation on the project was being made and he requested Mr. Izawa to continue with his presentation.	
6.0	<u>A.O.B/ Questions and Answers.</u>	
	Mr. Kitaka thanked Mr. Izawa for the informative presentation. He added that JICA is in the country to give soft skills in management of the technologies KCCA is investing in. He noted that Kampala would soon have more junctions than before i.e. from 9 to 60. He then invited questions from members in the meeting. - Mr. Olobo from UNRA asked to questions. - He asked whether the consultant is considering Demand-Driven signals instead of fixed time signals because some junctions have overwhelming demands at different times of the day. - He also asked whether the consultant is planning on having primary and secondary signal heads? - One of the town clerks asked if there would be improvement on areas around Kampala because as they develop, they too would definitely have an effect on the Kampala traffic. - Mr. Wambesyo Israel from UPF asked for how some un-signalized junctions are being catered for because they have a lot of traffic flowing into the signalized junctions.	
6.1	<u>Answers</u> - To Mr. Olobo: - The demand-driven signals (detective signals) would be use during the KIIDP2 project. But we have to first understand how these signals work before we can start using them. All this training would be done during the course of the project and hands-on will be in japan for some of the trainees. - Mr. Izawa said that the primary and secondary signalization is used in Japan, and would be considered to be check its effectiveness in Kampala. - Target areas: - This project focuses on the KCCA but our overall target would be beyond KCCA area since it also forms part of the road network. - To Mr. Wambesyo (Traffic Police): - The un-signalized junctions would be signalized and Mr. Izawa requested the traffic police to have some faith in the signalization. He	

No.	Discussion	Action/Resp Officer
	explained that the current Kitgum junction signals are not doing their job well because they are surrounded by un-signalized junctions. Mr. Wambesyo reiterated that Traffic Police had agreed with the JICA team to have a ground experience on what happens during peak hours. Mr. Kitaka responded that the project scope includes involvement of traffic Police so many visits would be made. He added that KCCA is also in the process of acquiring more sophisticated traffic controllers that are both fixed time and demand driven, on top having a traffic control center. Mr. Kitaka then invited the ED to give a few remarks.	
7.0	<u>Remarks by the KCCA Executive Director, Mrs. Semakula J. Musisi</u>	
	The ED started by greeting everyone. She expressed her joy at being part of the meeting and said she is excited about the project. She said that, however, her main reason for coming was to thank the JICA technical team that is providing the technical knowledge. • To mitigate congestion in Kampala, KCCA started by remaking roads (improving the driving surface, getting rid of potholes), then widening of some roads. Under the KIIDP2 Project, some junctions would be widened and signalized. She said that under KIIDP2, 32 junctions would be signalized and the BRT project would see 30 more. • She said the that plan to put in place a manual is a very good idea because it not only helps the current team, but all other teams that will do similar works later on. • She said the KCCA would avail themselves for capacity building and any local component that would be needed. • She hoped that at the end of the project with all or most goals achieved, KCCA would be very appreciative to the JICA technical team, especially since at the end of this project the effects would be around for a very long time. • She thanked all stakeholders i.e. UNRA, Traffic Police, World Bank, MOWT, the KCCA team and the JICA technical team. • She promised that KCCA would continue supporting the JICA team, sensitization of the masses through social media would continue as has been happening since the public is very expectant of the results of this project. • She concluded her remarks by thanking everyone for their contribution towards this project. Mr. Kitaka requested everyone present to publicize this project and to take interest in it. He delivered apologies from MOWT who could not send any representative as they were preparing for a conference. He emphasized that all partners are very necessary in order to achieve the objectives of the project. He then invited Mr. Kawabe to give a few remarks to the ED.	
7.1	<u>Remarks from JICA Representative, Mr. Kawabe</u>	
	Mr. Kawabe thanked Eng. Kitaka for offering him a chance to give remarks yet again. He thanked the ED for accepting to attend the JCC meeting. He commended her for her efforts in wanting to mitigate the congestion in Kampala and pointed out that as the World bank would be providing the hardware support, JICA would be providing software support. He hoped that with the upcoming projects of the flyover and BRT, congestion would be done away with in Kampala. He then ended his remarks by thanking everyone for being attending.	
8.0	<u>Closing Remarks by Eng. Kitaka Andrew</u>	

No.	Discussion	Action/Resp Officer
	• Eng. Kitaka thanked everyone for participating in the first JCC meeting. • He said he would not repeat what previous speakers had said. • He also said that KCCA would support this project. • Unlike other projects where a lot of hardware is involved, this project would be more of technical knowledge transfer. • He stressed that with the development of the Urban Traffic Management guidelines, their approval from the Ministry of Works and transport, KCCA would take the lead on how to manage traffic in the country. • He also noted that with the upcoming projects like the BRT, Flyover, World bank KIIDP2, Kampala will slowly but surely be moving from a low technology city to a moderately high technology city. All this requires building of human capacity in all these projects. Therefore, there is need for a unifying standard so that the country can move in a more organized manner. • All these would be coming to Kampala within the next 5years and Eng. Kitaka requested members to prepare well for all these projects. He reiterated that we need to train as many engineers as possible, and also preempt capacity in the private sector because all other developed cities have the private sector involved in the development. • He closed the first JCC meeting and invited everyone to take keen interest in the technical meetings that would be help from time to time. He invited everyone for lunch.	

ACRONYMS

Acronym	Definition
KCCA	Kampala City Council Authority
MoWT	Ministry of Work and Transport
ED	Executive Director
UNRA	Uganda National Roads Authority
JCC	Joint Coordination Committee
JICA	Japanese International Cooperation Agency

No.	Name	Meeting Attendance List Title/Organization	Tel	Email
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MINUTES OF JOINT COORDINATION COMMITTEE MEETING HELD ON TUESDAY 12TH APRIL 2016 AT GRAND IMPERIAL HOTEL SHELINEA ROOM AT 02:00PM

ATTENDANCE-SEE ATTACHED

AGENDA:

1. ARRIVAL/LUNCH/SIGNING IN
2. INTRODUCTIONS
3. OPENING REMARKS BY EXECUTIVE DIRECTOR, KCCA
4. REMARKS BY JICA REPRESENTATIVE
5. PRESENTATION OF THE PROJECT BY CONSULTANTS (MR. IZAWA, MR. PALLAB)
6. BREAK
7. A.O.B/QUESTION AND ANSWERS
8. CLOSING REMARKS BY ENG. KITAKA ANDREW

No.	Discussion	Action/Resp. Officer
1.0	<u>Arrival/Breakfast/Signing in</u>	
	Eng. Byamukama Jacob called the meeting to order after everyone had had their breakfast.	
2.0	<u>Introductions</u>	
	There was self-introduction from all members.	
3.0	<u>Opening Remarks by the Executive Director (E.D) of KCCA</u>	
	• The E.D begun by greeting everyone and introduced herself by name. • She welcomed everyone to the meeting and also recognized the JICA chief representative to Uganda, the Director Traffic from Uganda Police, officials from development partners, KCCA staff. • She acknowledged the support the Japanese government has rendered to Uganda particularly in Kampala regarding the reduction of the traffic congestion problem. • She pointed out that there is a lot of health, economic and social problems associated with traffic congestion. • She added that a lot of valued time is lost in traffic jam. It also causes a lot of climatic problems due to the bad gases emitted from the cars. Thus, she welcomed any effort or support from anyone who wants to work with KCCA in mitigating the traffic congestion problem in Kampala city. • She also expressed her happiness at the presence of all the partners who are helping in the solving the problem. • She noted that Kampala currently has only 9 signalised junctions, which are still few but thanked the Japanese government for providing them to the city. • She added that following up with the donation, the Japanese government also provided technical support after identifying the need to provide capacity enhancement to KCCA engineers. This included Japanese experts coming to Uganda to train Ugandan engineers and also the Ugandan engineers flying to Japan to have more exposure. • She also pointed out that KCCA would soon start on the Kampala flyover project, also funded by JICA, which will greatly address the traffic congestion problem in the city. • She added that KCCA is currently implementing the World Bank funded KIDDP2 Project. This includes the signalization of over 30 junctions so we will	

No.	Discussion	Action/Resp. Officer
	soon be seeing more traffic junctions in Kampala. Under the same project, a Central traffic Control Centre is being designed so that all traffic lights are synchronized to provide better control of the traffic within the city. • She also pointed out that KCCA hopes that Japan will provide more support to equip the traffic control centre when its in place, and also training the manpower to run the centre. • She noted that KCCA needs to train staff to manage all junctions because without such capacity, KCCA will not be able to manage all traffic lights and all the technology that comes with it. • She said that she hopes that this progress will help improve the quality of life of people in Kampala with the improved traffic flow and management. • She added that as KCCA, we have had some intervention we have put in place, like expanding the road network (filling potholes, regular maintenance of the roads, and upgrading many others to paved roads in the last 5years). • She noted that KCCA has also tried to improve public transport; they have recently awarded contracts to bus service providers for routes in Kampala, worked with Rift Valley railways to restart the passenger train services between Namanve and Kampala. The trains have increased daily user capacity up to 1,000 passengers of recent. She added that in fact KCCA is under pressure to provide additional train coaches since the public has appreciated the train service and many have stopped using their private cars to come to the city. She said that, hopefully, the train service would be extended to Nalukolongo and Luzira in due course. • She said that KCCA has recruited 30 traffic wardens to help in traffic management hand-in-hand with Uganda Traffic Police, and expect to recruit another 200 if funds allow. • She added that KCCA is also beginning to work with schools to reduce the number of vehicles coming into the city to bring children; KCCA is encouraging mass transport vehicles for schools. • She also said that KCCA is also considering other modes like Non-Motorised Transport (NMT) for certain parts of the city. Walkways and bicycle lanes are also being established in places where space allows. • She also added that a feasibility study for cables was done and the report is ready. She noted that such a project is rather ambitious but a possible venture since it has succeeded elsewhere. • She reiterated the objectives of this project as: ❖ To strengthen the capacity of KCCA staff in transport management policy, ❖ To improve the capacity of KCCA staff in junction management (esp. designs), ❖ Enhance the capacity of KCCA in maintaining traffic signals something which has already started with the support of JICA, ❖ To increase capacity to raise awareness concerning observance of traffic rules and regulations (already ongoing and are already working together with Uganda Police), ❖ To enhance capacity in traffic flow management mainly at junctions which will involve having a pilot project with the help of JICA experts. • She pointed out that the World Bank under KIDDP2 has provided funds for the construction of the traffic control centre but it needs equipment and manpower to run it. She thus said that one of the reasons for the JCC meeting was to appreciate support from JICA (and government of Japan) and other development partners, but again to express the need for additional support to	

No.	Discussion	Action/Resp. Officer
	enable the successful completion of the ongoing projects in order to make Kampala a benchmark city among all developing cities especially in managing traffic flow. • She appreciated the JICA support, the JICA expert team at KCCA and thanked everyone for the great interest showed by attending the JCC meeting. • She promised that KCCA would continue communicating with everyone on the progress and called for continued participation and advice from all partners. • She also added that she is looking forward to the day she will be able to drive to work in 15min (at any time of the day) like she does very early in the morning or very late at night. • She finished by thanking everyone for listening to her.	
4.0	<u>Remarks by JICA Representative</u>	
	• Mr. Kawabe welcomed everyone to the Joint Coordination Committee and introduced Mr. Kawahara, the Chief JICA representative in the JCC meeting. • Mr. Kawahara started by greeting everyone and expressed the honor he had at being in Kampala for the JCC meeting. • He said that as mentioned in the first JCC meeting, JICA is very dedicated to infrastructural development in Uganda and that they intend to continue supporting a number of transport infrastructural projects as well as technical cooperation like the on-going program. • He added that the current project by JICA experts is very important to KCCA to clearly understand the UTMP and to coordinate with other agencies and officials as well as stakeholders, some of who were in the meeting. • He assured the meeting of JICA's continued support, with a major announcement coming up in the TICAD 6 meeting to be held in Nairobi in August. • He ended his speech by thanking everyone for coming to the JCC meeting.	
5.1	<u>Presentation by JICA Expert. (Mr. Izawa Tetsuro)</u>	
	Mr. Izawa made a presentation on the project background, goals, and expected output: in summary, the project progress since the previous JCC meeting. <i>See Appendix: 1</i>	
5.2	<u>Presentation by JICA Expert (Mr. Pallab Debnath)</u>	
	Mr. Pallab made a presentation on the Urban Traffic Management Plan (UTMP). <i>See Appendix: 2</i>	
6.0	<u>Break</u>	
	There was a short break taken after the presentations	
7.0	<u>Question and Answer Session.</u>	
	Eng. Kitaka Andrew, Director Engineer and Transport Services at KCCA invited anyone who had questions to present them. He requested anyone who wanted to ask a question to first introduce themselves before asking. 1. Henry Komakech (KCCA engineer Kawempe Division): - He asked for what means the experts had to bring the cost of the central control centre down since UGX 4 billion seemed like a very high figure. - What (other) measures are being worked on to improve on the drivers' behavior in Kampala?	

No.	Discussion	Action/Resp. Officer
	2. Dr. Kasiima (Director Traffic, Uganda Police Force) - He sought for clarification on whether the policy being formulated (as mentioned in the presentation) is for government or KCCA, because there is already an existing one for government, although not yet approved by cabinet. - He also wanted to get a figure of the number of vehicles and bodabodas in Kampala since the graph from the presentation had only indicated percentages. - He noted to the JICA experts that despite the fact that the presentation had considered traffic congestion for morning and evening peaks, it has no formula since congestion is persistent throughout the day on some days and almost non-existent on others. - He pointed out that capacity building seems to be putting almost all emphasis on KCCA staff yet traffic police manages the control centre in many other jurisdictions. He requested for a joint effort between Police and KCCA. - He added that the project is 1/3 way and yet nothing tangible has been observed. - Many people are not aware of the existence of many of such projects so he requested more sensitization of the public on such projects. 3. Mwesigwa Sam (Wakiso Dept. Engineering) - What are the alternative routes (outside KCCA jurisdiction) that can be taken by road users to avoid congested areas? This could help in decongesting the city instead of investing a lot in traffic signals. 4. Patrick Muleme (Design Engineer, UNRA) - What is the extent of the study done by JICA experts? Shouldn't the study be expanded beyond KCCA borders? - Shouldn't the assumptions made have considered on going and yet-to-begin projects since some projects may not start on schedule, which might affect the results based on project assumptions. (realistic assumptions) - We need to analyse all the available systems (MODERATO, SCAT, SCOOT) before choosing on a particular one to adopt in Kampala. 5. Lawrence Pario (Manager Bridges and Structures, UNRA) - Grid separated interchanges are going to be introduced to Kampala, has the project put into consideration the impact of some of these mega projects? Mr. Izawa first attended to the questions from the first 5 people; 1. Regarding the cost, he pointed out that though seeming very expensive, this figure was still a preliminary one, and the figure may change according to the final design from the experts. 2. Regarding Dr. Kasiima's questions; - Regarding road users, he said it was still a big challenge. One of the approaches is to sensitize ALL roads with cooperation from enforcement authorities. The necessary enforcement would be discussed with police at a later stage. - Road Transport Policy. Mr. Izawa noted that the policy being formulated is for KCCA. - Cars in KCCA area. He pointed out that that's a very difficult figure to come to since car registration in Uganda is not done by region but by registration order. He added that the figure that was presented was derived from an approximation using traffic count data. - Traffic Congestion. He pointed out that though it's true that congestion	

No.	Discussion	Action/Resp. Officer
	doesn't happen during peak hours only, there is always a fluctuation. The unpredictability of the traffic situation in Kampala is one of the reasons an Area Traffic Control (ATC) system is being recommended. - Target parties for capacity enhancement. During formulation of the technical assistance program, 3 parties were identified; - o KCCA, the Road Management Body, - o Police the Road Regulation Body, and - o Road users. - Achievement so far. Mr. Izawa pointed out that, soon, tangible results will be available the first being the UTMP. - Road safety campaign. A road safety campaign will be carried out after discussions with the various district leaders. 3. Alternative routes. We are aware of the issue but the project focuses mainly on the KCCA area jurisdiction. 4. To Eng. Patrick Muleme. - Covered area. This question had a similar answer to that of question 3. - Regarding studies. Mr. Izawa noted that other projects like the BRT were considered although it never came to fruition. He added that many scenarios are looked at but since the project is for capacity enhancement of KCCA staff, all they can do is to train these staff in all different scenarios for implementation later. He however noted that the experts are working with KCCA to use more realistic scenarios by looking at the KCCA master plan. - MODERATO He said that no final decision had been made on the use of MODERATO but it was just a recommendation. He added that Area traffic Control system was very necessary for Kampala, and that MODERATO was one of the systems that can address that. • Jacob Byamukama, Manager Roads and Traffic at KCCA added more to the point of number of vehicles in Kampala that was asked by Dr. Kasiima. He said a survey was done in 2015, with an inner and outer cordon, to count vehicles coming in and going out of Kampala but that the report was not yet out. • He promised to share the report with the different stakeholders when it comes out, since figures from URA couldn't be counted on as cars are decommissioned quite often yet URA has no records of such. • Eng. Kitaka added that the survey would be repeated on a regular basis since the travel patterns of the vehicles coming into Kampala are not static especially with the development of projects like the Southern Bypass, the Entebbe Expressway etc. Thus traffic counts will be done every two years. • He requested Mr. Izawa to address the question asked earlier on separated grids. • He added that the modeling process was still ongoing to ascertain the different solution to the different junctions i.e. grid separation, tunnels, signals etc. More questions were then asked. 1. Godfrey Kisekka, Townclerk KCCA. - Instead of focusing on KCCA, can't we focus more on the entire Uganda especially in trying to divert traffic away from Kampala by creating alternative routes, especially putting great consideration to water transport? - He expressed his concern about having tunnels since the workmanship in the country is still very poor as this would lead to collapse of many buildings.	

No.	Discussion	Action/Resp. Officer
	- He also pointed out indisciplined drivers especially those that drive government vehicles and simply get away with it. He also requested for clarification from police on who has right-of-way apart from obvious cases like ambulances. - Can't government take ownership of all road reserves since individuals usually don't want to let go of their land? 2. Patrick Muleme, UNRA. If we are deriving interventions based on travel speed alone, aren't we missing other aspects like delay that also affect the performance of the network. 3. Eng. Nabbosa Betty. Urban Roads in-charge at MoWT. - She first thanked KCCA for having such a visionary project in Kampala. She however asked stakeholder not to look at Kampala only but at Uganda as a whole. - Due to indiscipline of the drivers, as we consider the first 200 junctions, the remaining junctions might face congestion issues. We thus need to look at ways of having all 500 junctions monitored at a go in a central place. - She requested stakeholders like URA to consider fining indisciplined drivers as a source of revenue to the country. She requested for an integrated system that can automatically bill a car driver without having to take them to court since they can easily get away with the offence. 4. Okuk Bright (Supervisor, KCCA) - Have alternative routes been considered other than signalization with the aim of decongesting the city? - What is in plan to decongest the city with regards to hotels, offices etc.? 5. <i>(Did not identify himself)</i> - KCCA should work on proper handling of road users especially bodabodas who just use any space they have. - He requested for plans beyond the KCCA jurisdiction as this project can only address problems with the KCCA mandated area. 6. Rwakabale Geoffrey Kawempe Division Town Clerk, KCCA - He requested authorities to consider the fact that not all drivers with driving licences understand or even appreciate the traffic rules since the licences are very easy to get. More stringent regulations should be placed when once is acquiring a driver's permit, on top of periodical driving tests. - He asked for implementation of comprehensive program in all schools to teach children traffic rules and the Highway Code. • Dr. Kasiima interjected and pointed out that many questions were targeted towards the Traffic Police yet members were supposed to ask questions related to the presentations. 7. S. Ajalu, World Bank - He also pointed out that the questions being asked were not focused on the presentations made by JICA experts. He thus asked for clarification from KCCA when a meeting for such traffic questions would be held. - He asked whether the JICA experts had considered the fact the traffic fluctuates at different times. - He asked the responsible parties to consider other options other than junctions as the possible bottlenecks to the traffic flow in the city. - He wanted clarification on whether capacity would be in place even without the traffic control centre.	

No.	Discussion	Action/Resp. Officer
	- Mr. Izawa was called upon to answer the questions. - Alternative Transport mode. He said that water transport was a good idea but it was not the JICA experts' mandate to implement. - It is difficult to measure the junction delay, however, estimates can be made. - Traffic Control Centre. He pointed out that the experts too have the same idea of setting up a central control centre. He, however, noted that the challenge would be a budget for it. - Road Safety (Driving Licences). He pointed out that in Japan, driving licences are reviewed every 5 years and good drivers are rewarded with licences of 10 years. Seminars are also held to equip drivers with better skills. - The experts will also have talks with MoWT in regards to the road safety policy to have copies availed to schools for road safety education. - Road conditions. He pointed out the junctions are not the only bottlenecks but also the condition of the roads. He requested KIIDP2 consults to provide road works information so that the experts could plan accordingly. - Eng. Kitaka pointed out that although the problem is bigger than Kampala, KCCA can only work within Kampala boundaries since that's where their mandate ends. He however requested members from other jurisdictions to come on board so that KCCA can synchronise its work with them. - He added that the laws calls for compensation of individual landowner so government cannot just take over such land. However, some owners willingly give away part of their land in exchange for improved roads and a higher value of their remaining land. - He also reiterated the need for another forum where traffic discipline would be addressed with police. - Two more questions were allowed before the meeting would be closed. 1. UNRA official. - He requested for focus on proper management of the traffic signals since that would come in handy. He proposed a smart real time information exchange system (website or application), if its part of the project Terms of Reference (TOR). This would help drivers know the alternative routes that can be used to avoid congested places. - Dr. Kasiima interjected and said that drivers simply have no alternative routes to use and thus end up crowding a certain route since it's their only gateway out of the city. He called for immediate action before the situation becomes a crisis. - He also clarified that Traffic Police has no mandate on the driving school and that it's KCCA that licences them even when they don't have operational grounds. - Jacob Byamukama invited Eng. Kitaka to officially close the meeting.	
8.0	<u>Closing Remarks by Eng. Kitaka Andrew</u>	
	- He thanked everyone for attending the meeting and for the ideas brought forward by everyone. - He thanked JICA for the assistance given to Kampala in particular and Uganda in general and thanked Mr. Kawahara for making the journey all the way from Tokyo to Kampala, and expressed his hope that all requests to JICA will be looked into favourably.	

No.	Discussion	Action/Resp. Officer
	• He announced another JCC meeting in 1 year's time and invited everyone to be back for the same. • He then closed the JCC meeting.	

ACRONYMS

Acronym	Definition
KCCA	Kampala City Council Authority
UTMP	Urban Transport Management Plan
MoWT	Ministry of Work and Transport
ED	Executive Director
UNRA	Uganda National Roads Authority
JCC	Joint Coordination Committee
JICA	Japanese International Cooperation Agency
ATC	Area Traffic Control
AfDB	African Development Bank

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46	Mr. Mwesigwa Sam	D. Engineer, Wakiso	0782 998 675	dsmwesigwa@yahoo.co.uk
47	Mr. Asada	Dep. Team Leader, JICA Expert team		

MINUTES OF THE 3RD JCC MEETING OF THE PROJECT FOR CAPACITY ENHANCEMENT OF KCCA IN MANAGEMENT OF TRAFFIC FLOW IN KAMPALA CITY, HELD ON WEDNESDAY 14TH DECEMBER 2016 AT HOTEL AFRICANA RWIIZI HALL AT 1:00 P.M.

ATTENDANCE-SEE ATTACHED

AGENDA:

1. OPENING REMARKS BY DEPUTY EXECUTIVE DIRECTOR, KCCA
2. REMARKS BY CHIEF REPRESENTATIVE JICA
3. JCC OBJECTIVE BY TL, EXPERT TEAM
4. BRIEF REPORT OF TRAINING IN JAPAN BY DDRM, KCCA
5. PILOT PROJECT BY URNP, EXPERT TEAM
6. UPDATE OF PROJECT DESIGN MATRIX (PDM) AND WAY FORWARD BY TL
 - HEALTH BREAK
7. Q&A
8. CLOSING REMARKS BY DED

No.	Discussion	Action/Resp Officer
1.0	<u>Opening Remarks by DED, Eng. Kitaka Andrew</u>	
	He started by welcoming everyone to the 3rd JCC meeting and expressed his gratitude on behalf of KCCA for the help rendered to KCCA by the Japanese government. He followed this up with the project background. He noted that some progress had been registered due to this project and that this progress can be sped up to address the increasing traffic congestion problem. He outlined the objectives of the project as; 1. Strengthening of KCCA's Urban traffic Management Policy 2. Enhancement of KCCA's capacity on junction improvement design 3. Enhancement of KCCA capacity for installation and maintenance of traffic signals at junctions 4. Enhancement of KCCA's capacity on raising awareness concerning observance of traffic rules and regulations. 5. Enhancement of capacity for traffic flow management at junctions He also pointed out that due to many other upcoming projects within and around the city at around the same time, traffic flow will have to be affected and thus coordination in planning and design are needed when implementing these projects to ensure minimum inconvenience to the public. He also added that with the expected increase in traffic signals in the city, there is need to enhance capacity of both KCCA and the private sector in maintenance of these signals, and thus there is a need for a central control for all these signals. He then invited the JICA Chief Representative Mr. Yutaka Fukasi to give his remarks	
2.0	<u>Remarks by JICA Chief Representative Mr. Yutaka Fukasi</u>	

No.	Discussion	Action/Resp Officer
	He started by welcoming everyone to the 3rd JCC meeting. He said it was a great opportunity for him to be in Kampala especially given the opportunities that the city has to offer. He also mentioned the good weather, young and vibrant people and the Kampala's proximity to lake Victoria as motivations to working hard to make sure he makes a contribution to Kampala's development in the next 3years he will be in office. He appreciated the KCCA leadership for having managed this project since its commencement in 2015. He added that Kampala and Tokyo have a lot in common especially with the transport sector and he hopes the Tokyo experience can be used to develop Kampala to world class standards. He added that he hopes that if the ATC is successful, it will be used to improve the traffic congestion situation in the city. As JICA, he said that they are looking forward to further working with KCCA in the area of traffic management. He thus said that it's important to participate in the sessions and meetings that will be held for the remaining part of the project. He reiterated JICA's commitment to supporting the socio-economic development of Kampala. He added that Japan is already working with the Ugandan government to ensure adequate electricity supply to Kampala to support the city's economic activities with projects like; - The improvement of Queensway substation, which will be finished in February 2017. The government of Japan contributed ￥2.5 billion (\$25 million) towards the project. - The Kampala Metropolitan Systems Improvement project whose procurement has commenced. JICA is contributing a loan of ￥13.659billion (\$130million). He added that JICA believes that if Kampala's economic potential is exploited, it will significantly contribute to Uganda's attainment of middle-income status by 2020. He concluded by encouraging KCCA management to strengthen their planning process especially around this time when a number of key projects are being proposed. E.g having a comprehensive development master plan for the city in place. This will help KCCA have planned and coordinated development leading to KCCA's vision of a vibrant, Attractive and Sustainable City. He closed by wishing everyone a Merry Christmas and Happy new year.	
3.0	<u>Presentation of the Report by the JICA Expert Team Leader</u>	
	Mr. Izawa made a presentation on the brief of the JCC meeting. <i>See Appendix 1</i> He pointed out that the main objective of the 3rd JCC meeting was to request for more time for the project to be completed fully.	
4.0	<u>Presentation of the KCCA Mandate by Ag. Director DETS, KCCA</u>	
	Mr. Jacob Byamukama presented on the KCCA mandate with a bias on roads. <i>See Appendix 2</i> He then made a presentation on the Technical training trip to Japan in August. <i>See</i>	

No.	Discussion	Action/Resp Officer
	<i>Appendix 3</i>	
5.0	<u>Presentation by Mr. Kawaguchi on the Pilot Project using ATC</u>	
	<i>See Appendix 4</i>	
6.0	<u>Presentation by the JICA Expert Team Leader</u>	
	Mr. Izawa made a presentation on the Update of the Project Design Matrix (PDM) and way forward. <i>See Appendix 5</i>	
7.0	<u>Q&A.</u>	
	- Mr. Izawa asked for the opinion of the members regarding the extension period for the Kampala Smart traffic Project No objection was raised - Dr. Mwesige Godfrey (Private Consultant): - Assumption 3 omitting some traffic data in the simulation (e.g. Archer road), can we also include this assumption on the physical traffic flow by (maybe) refusing some turns? What would be the impact of this traffic data, using MODERATO? Traffic signal specialist recommended that no traffic signal was needed at Archer road. This would however be considered in the future - Can we coordinate junction 4 with the Nakawa junction, since it has a spill back effect due to its proximity? Nakawa junction is not within the scope of the pilot project but it definitely needs to be considered for coordination. - What is was the threshold of the traffic volumes per hour used and was the future traffic volume increase considered? Simulation was based on the prevailing traffic conditions at the time and the future traffic volumes were not considered. But future works and projects, like BRT, will have to consider both current and future traffic volumes. - Eng. Kitaka Andrew; He requested JICA to consider the fact that since there is a plan for a TCC, proper plans need to be done to consider the different technologies available in the future. Mr. Izawa answered that even though current technologies don't enable effective communications, there will be a solution to that in the future. - Mr. Byaruhanga Edward, UNRA Transport Planning Engineer: - Disadvantages of MODERATO. Kampala has load-shedding problem which has to be put into consideration.	

No.	Discussion	Action/Resp Officer
	Only being applied in Japan currently. Soon to be used in Cambodia. But it's the same reason why it's being tested in Uganda too since parameters can be adjusted. With a UPS, these lights will continue working even during load shedding. Japan too has backup but the cost has to be considered too. Mr. Izawa added that after several tests with Eng. Magala (MoWT), generators were observed to be the best backup option. - What plans are in place for pedestrian safety? System mainly considers cars but pedestrians are also considered. They are given appropriate times enough for crossing. 5. Norman Musinga (Senior Superintendent of Traffic Police for KMA). - Kampala was planned poorly, narrow roads, too many auxiliary roads; How does KCCA intend to solve this problem? Kampala road network is very complicated and its one of the main reasons KCCA is preparing an Urban Master Plan to consider mass transport means. - What's the plan for pedestrians who always block roads when crossing? MODERATO system will consider them too. The junction geometry and pedestrian time will have to be considered. They will also be educated on the basics of junction crossing and enforcement from police will also be required. - Roundabouts surround the few available signalized junctions. Are traffic lights going to be installed at every junction, and will they be coordinated so as to ease police work? As a short-term solution, police help will be needed to control drivers who violate the traffic signals. 6. Henry Komakech; - Consideration needs to be given to the assumptions used in the project, as the traffic volumes will change especially after road improvements on particular roads. This is a pilot project that is testing different parameters so most of the traffic volume patterns will have to be considered when the permanent traffic signals are being installed. Mr. Izawa added that one of the advantages of the MODERATO system is that it adapts to the different traffic conditions, and that the ATC system will be able to handle all these situations.	
8.0	<u>Closing Remarks by Eng. Kitaka Andrew</u>	
	He thanked the presenters for the lively presentations given and all participants in the meeting. He noted that MODERATO was approved for the pilot project since no objection had been given to it. He said that the pilot project that was to be conducted was not going to be the answer to all traffic problems in Kampala but just attempting to answer a few issues	

No.	Discussion	Action/Resp Officer
	KCCA is having with traffic. He noted that another project for dualling of more roads was undergoing, and the government of Uganda was funding many more road construction projects in the country. He added that more buses were being introduced by KCCA as they look to reducing the number of matatus, which cause a lot of congestion, in the city. He asked that what was going to happen next after the pilot project is completed since it only considered 4 junctions. He added that other than Kololo, there are many other junctions that are worse off that needed such interventions/improvements, with the support of the development partners. This would enable KCCA and the country at large to get the full benefit of the MODERATO system. He noted that the workshop had been very successful and it came at this time of the project because MODERATO needed to be approved. He noted that KCCA needed MoWT to be on board during the preparation of the traffic control guidelines. He finished by saying that he hopes all stakeholders will adhere to all the improvements going on in the city as the country looks to achieving middle-income status by 2020. He thanked everyone for attending the meeting and wished them a good evening, Merry Christmas and a Happy New Year.	

ACRONYMS

Acronym	Definition
KCCA	Kampala Capital City Authority
DED	Deputy Executive Director
ATC	Area Traffic Control
DDRM	
URNP	
PDM	Project Design Matrix
KMA	Kampala Metropolitan Area
JICA	Japanese International Cooperation Agency
MoWT	Ministry of Works and Transport.
UNRA	Uganda National Roads Authority

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MINUTES OF THE 4TH JCC MEETING OF THE PROJECT FOR CAPACITY ENHANCEMENT OF KCCA IN MANAGEMENT OF TRAFFIC FLOW IN KAMPALA CITY, HELD ON WEDNESDAY 7TH JUNE 2017 AT HOTEL AFRICANA RWIIZI HALL AT 1:00 P.M.

ATTENDANCE-SEE ATTACHED

AGENDA:

1. OPENING REMARKS BY DIRECTOR DETS, KCCA
2. REMARKS BY CHIEF REPRESENTATIVE JICA
3. PROJECT PROGRESS BY TESTURO IZAWA, JICA EXPERT TEAM
4. MANUAL INTRODUCTION BY PALLAB DEBNATH, JICA EXPERT TEAM
5. ROAD SAFETY CAMPAIGN BY YETISGIN TUGRUL, JICA EXPERT TEAM
6. TEA BREAK
7. Q&A
8. CLOSING REMARKS BY DIRECTOR DETS, KCCA

No.	Discussion	Action/Resp Officer
1.0	<u>Opening Remarks by Director DETS, KCCA, Eng. Kitaka Andrew</u>	
	He started by welcoming everyone to the 4th JCC meeting viz. the director of traffic police, UPF, the town clerks, KCCA, Oriental Consultants, UNRA representatives, and MoWT representatives. He noted that the ongoing technical cooperation project was being implemented by Oriental Consultants of Japan and it has been in place since 2014. He noted that it was originally meant to run for 3 years but that a one-year extension had been granted, all being funded by the government of Japan. He noted that the main objective of the project is to improve traffic flow in Kampala as traffic congestion is one of Kampala's biggest problems and that more projects in that regard would be coming up. He noted that under this project, several KCCA personnel have been trained from both in and out of the country, design guidelines relating to junction design are being prepared as well as standards of traffic control. He added that under the project, KCCA was in the process of implementing a pilot project at 4 junctions (Jinja road-Lugogo Bypass, Upper Kololo-Wampewo Junction, Naguru road - Lugogo bypass and KatiKati junction) within the city and that the civil works had commenced. The intention of the pilot project was to try out a new method of traffic control, which would be	

No.	Discussion	Action/Resp Officer
	implemented city-wide if successful. He added that another bigger project for improving traffic flow within the city was being formulated and that many more junctions within the city would be improved and also construct a traffic control center. He added that KCCA was still counting on JICA in the improvement of traffic flow within Kampala. He thanked JICA for the friendly gesture to the people of Kampala and hoped that the friendship would continue to grow, especially given the already existing funding for the New Nile Bridge and Kampala Flyover projects. He added that the 4th JCC was to review the project progress as indicated on the agenda. He wished everyone a good afternoon and encouraged all to participate in the discussion. He then invited the JICA representative to give his remarks.	
<u>2.0</u>	<u>Remarks by JICA Chief Representative Mr. Yoshino</u>	
	He started by welcoming everyone to the 4th JCC meeting of the Kampala Smart Traffic Project. He noted his awareness of KCCA's cooperation with the JICA Expert Team and for that he thanked KCCA for the cooperation. He specifically appreciated all parties that are supporting the project to ensure its executed on time. He noted that a JICA team is already working on a survey for the upcoming project that will follow the Kampala Smart Traffic Project. He added that JICA is committed to support KCCA in their fight to improve traffic flow in the city, putting in mind the environment of the city. He thanked everyone for their kind attention.	
<u>3.0</u>	<u>Presentation from the JICA Expert Team Leader</u>	
	Mr. Izawa made a presentation on the brief of the JCC meeting and the technical assistance project purpose. <i>See Appendix 1</i>	
<u>4.0</u>	<u>Presentation of Technical Manuals by Pallab Debnath</u>	
	Mr. Pallab Debnath presented the contents of the technical manuals prepared by the JICA Expert Team. <i>See Appendix 2</i> Mr. Izawa noted that at the beginning of the project, the initial plan for approval of the manuals was to be done by the government of Uganda and thus reminded the officials from MoWT and UNRA to pick DVD copies of the draft manuals for perusal and comments upon which the final copies would be produced for approval	
<u>5.0</u>	<u>Presentation about the Traffic Safety Campaign by Mr. Yetisgin Tugrul</u>	
	<i>See Appendix 3</i>	
<u>6.0</u>	<u>Questions & Answers.</u>	

No.	Discussion	Action/Resp Officer
	1. Agnes Biribonwa: Communication Specialist with KIIDP Project. She expressed her excitement with the Kampala Smart Traffic Project since it has a community outreach component (road safety campaign) and expressed her readiness to work with the team in-charge. 2. MoWT Engineer: He wanted to know whether the traffic signals had been programmed to follow the traffic flow patterns of the city since these vary with the different times of the day. Mr. Izawa answered that all that information would be out into the final copy of the manuals being prepared by the JICA Expert Team. He also added that the traffic signals will have detectors that will help in knowing the traffic flow patterns which information will help in future designs and control patterns. Eng. Kitaka also added that the traffic signals being installed are dynamic ones, which automatically adjust the green times according to the demand at any particular time. 3. Dr. Steven Kasiima, Director Traffic, UPF He requested road and junction designers to consider improving the approach and exit roads to and from the junctions since this is where the congestion arises. Number of lanes should be uniform. Eng. Kitaka noted that it's not the intention of KCCA to have narrow roads but expansion of some of the roads was being carried out under the KIIDP project. 4. Patrick Muleme, UNRA - He didn't see any section in the manuals for someone to assess the necessity of signals at some junctions. Mr. Izawa noted that the criteria would be included in the manuals. - He requested for a section in the manuals to provide for a review of signal settings, as adjustments maybe be needed from time to time. - He said that road users need a longer period of sensitization, as the one indicated in the plan was short-lived. He also advised that video clips might have a bigger impact to road users as compared to talk shows. - He also noted that as UNRA, they are also planning on installing signals along all their corridors. He thus noted that a central control would be very welcome for the better operation of all signals. Eng. Byamukama noted that this would be a very good idea and it would indeed be great to have a central control for all signals. 5. Eng. Byamukama Jacob, KCCA He requested UNRA to especially consider expanding Entebbe road as the 4 lane stretch suddenly terminates into 2 thus causing a lot of unnecessary	

No.	Discussion	Action/Resp Officer
	congestion. Patrick Muleme answered him by saying that it was the shortage of finances that forced UNRA to terminate the 4-lane stretch instead of going all the way to Entebbe. The expansion was thus done for the most critical section of Entebbe road. He also added that any further expansion would be done only when the expressway was functional to avoid congestion problems. 6. MoWT Engineer He advised that the current project was limited to within KCCA jurisdiction and thus there was need to expand to areas out of the KCCA jurisdiction in order to comprehensively solve the whole problem. Eng. Kitaka noted that there is a greater Kampala multi-modal master plan being worked on and that would involve all areas outside KCCA jurisdiction viz. Mukono, Mpigi, Wakiso and Kiira. He added that sometimes the scope of many of the projects is dictated by the available budget. 7. Engineer from MoWT He noted that the roundabouts in the Kampala should be removed and replaced with grid-separated junctions like the one at Bwaise to reduce on the congestion problem. Mr. Patrick Muleme answered that part of the works on the on-going northern bypass improvement was to create grid separation, and those that will remain will be signaled. 8. Eng. Lawrence Mugenyi. He noted that nothing had been talked about the non-motorised traffic especially when it comes to safety. Mr. Izawa noted that KCCA was working on an NMT corridor. Eng Byamukama Jacob added that the NMT corridor would be on Luwum street. He requested Mr. Pallab to expound on what the manuals say about the NMT to which Mr. Pallab replied that NMT hadn't been considered in the manuals but would be included in the final copy. 9. Morris. He noted that enforcement had not been talked about when it came to discussing road user safety. Mr. Izawa added that the current project was not focused on enforcement but rather education. Dr. Steven Kasiima also added that Uganda Traffic Police needs complementary help from other stakeholders like KCCA if the traffic congestion problem was to be solved. He encouraged stakeholders to educate road users prior to enforcement. 10. Wakiso District Engineer. - He asked KCCA whether they considered the traffic impact assessments before approving any new installations within the city. Eng. Kitaka noted that this was a serious issue and KCCA was going to follow it up seriously. - He wondered what happened to KCCA's plan of having satellite/peripheral taxi terminals instead of having all traffic flowing into	

No.	Discussion	Action/Resp Officer
	the city. Eng. Kitaka noted that KCCA had plans of decongesting the city center by setting up peripheral terminal and had reached the level of signing MoUs. This was however, hampered by the taxi industry operations since they have different leadership groups and are not forthcoming in having only one leader. He added that the same applied to the bodaboda group. He however noted that plans were in place to have the bodaboda riders wear colored jackets to reflect their areas of operations. - He noted that the different players in traffic management are not coordinating and thus end up causing congestion instead. Mr. Izawa noted that discussion with MoWT, KCCA and UNRA will be commenced to address the issue of management. - He also added that bodaboda riders need to be regionally regulated to avoid having all of them using the city center. Eng. Kitaka noted that plans were in place to have the bodaboda riders wear colored jackets to reflect their areas of operations. 11. Eng. Irene, KCCA She noted that enforcement should consider putting deterrents in place to complement enforcement. Eng. Jacob noted that the temporary deterrents were providing good results and thus more would be considered where necessary.	
7.0	<u>Closing Remarks by Eng. Kitaka Andrew</u>	
	He thanked the presenters for the lively presentations given and all participants in the meeting. He noted that the meeting had been productive and hoped that it was informative enough for, especially, the JICA team in knowing the needs of the city. He encouraged everyone to gain more interest in the issues of Kampala and also spare time to attend such meetings. He once again thanked everyone for attending and closed the meeting.	

ACRONYMS

Acronym	Definition
KCCA	Kampala Capital City Authority
KIIDP	Kampala Institutional Infrastructure Development Project.
ATC	Area Traffic Control
DETS	Directorate of Engineering and Technical Services
UPF	Uganda Police Force
PDM	Project Design Matrix
KMA	Kampala Metropolitan Area
JICA	Japanese International Cooperation Agency
MoWT	Ministry of Works and Transport.
UNRA	Uganda National Roads Authority
NMT	Non-Motorized Transport
SGR	Standard Gauge Railway

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MINUTES OF THE 5TH JCC MEETING OF THE PROJECT FOR CAPACITY ENHANCEMENT OF KCCA IN MANAGEMENT OF TRAFFIC FLOW IN KAMPALA CITY HELD ON WEDNESDAY 30TH MAY 2018 AT HOTEL AFRICANA ORANGE HALL AT 02:00 P.M.

ATTENDANCE-SEE ATTACHED

AGENDA:

1. OPENING REMARKS BY KCCA;
2. REMARKS BY JICA
3. PRESENTATIONS BY JICA AND KCCA
4. QUESTION & ANSWER SESSION.
5. CLOSING REMARKS BY UGANDA POLICE FORCE

No.	Discussion	Action/Resp. Officer
1.0	<u>Opening Remarks by Eng. Kitaka Andrew, KCCA</u>	
	- Mr. Izawa welcomed everyone to the meeting and requested for self-introductions from all attendants. - Eng. Kitaka started by apologizing for being late to the meeting. - He then welcomed everyone to the 5th JCC meeting. - He noted that KCCA is very grateful to JICA for funding the technical cooperation project that's tackling traffic congestion, a key challenge in Kampala. - He added that the Japanese government has continuously funded projects aimed at reducing traffic congestion in Kampala city, including 9 of the current signalized junctions in the city. - He noted that the soon-to-start Kampala flyover project, also funded by JICA, would also come in very handy in solving the traffic congestion problem in the downtown area of Kampala. - He added that KCCA is currently implementing the KIDDP2 project, a world bank funded project, which includes the signalization of over 30 junctions and the design of a Traffic Control Center (TCC). Under this same project, KCCA expects further funding from JICA for the construction, equipping and training of staff to work in the TCC. - He added that Kampala would, in about 2years, have about 60 signalized junctions and thus the need for the technical cooperation project. - He noted that one of the greatest achievements of this project, which started in February 2015, is the signalization of 4 junctions under a pilot. - This will be followed by installation of the MODERATO system to pave way for the testing of its operation including the rest of the junctions. - He noted that KCCA staff were training in signal phasing using the Bakuli junction lights and many other external trainings in Japan have been conducted.	

No.	Discussion	Action/Resp. Officer
	- He added that a road safety campaign competition was also conducted and the target was addressing the challenges faced by road users in the city. The results would soon be announced by the JICA Expert Team. - He expressed hope that after the end of the technical cooperation project, a bigger project would soon start. In this new project, JICA has committed a grant of \$26m and this was for the establishment of a traffic control center, which would be the first of its kind in sub-Saharan Africa. - He noted that the design of the traffic control center was funded under the world bank and JICA would be funding the design review and implementation parts. - He ended by thanking all partners that have participated in the technical cooperation project and hoped that the KCCA team involved with the project has all the necessary skills to run the TCC.	
2.0	<u>Remarks by Mr. Tanaka from JICA, Tokyo</u>	
	- He stated by welcoming everyone to the JCC meeting. - He said that the traffic improvement program is one of the biggest projects in JICA and has a long history. - He expressed delight at being part of the project. - He added that the technical cooperation project was at first aimed at building capacity in signal maintenance and management but after a request from the Ugandan side, the project was extended to include traffic management. - He added that JICA is now preparing for the upcoming project which involves the improvement of 30 junctions in the city using the MODERATO system. - He noted that JICA is also involved in other projects such as the Kampala Flyover project. - He finished by noting that he believes that such technical cooperation project by JICA would help the economy of Uganda and also enhance the friendship of JICA and the people of Uganda.	
3.0	<u>Presentation of Project Progress by Mr. Izawa, JICA Expert Team</u>	
	<i>Refer to annex 1</i>	
4.0	<u>Presentation of Manual Introduction by Mr. Pallab, JICA Expert Team</u>	
	<i>Refer to annex 2</i>	
5.0	<u>Presentation of KSTP Pilot Project by Mr. Pallab, JICA Expert Team</u>	
	<i>Refer to annex 3</i>	
6.0	<u>Presentation of the Training Program in Japan by Mr. Wasswa Joel, KCCA</u>	
	<i>Refer to annex 4</i>	
7.0	<u>Presentation of the Road Safety Animation Contest by Mr. Pallab Debnath, KCCA</u>	
	<i>Refer to annex 5</i>	
8.0	<u>Question & Answer session</u>	
	1. Eng. Mukiibi Joseph Kiwanuka, MoWT. Comment on goals and purpose presentation by Mr. Izawa. Consider installing some signals in other places of the country so that people can acquaint themselves with the operation of these lights. Eng. Jacob also added that KCCA can share manuals with other jurisdictions in addition to having workshops to share such information. World Bank is also working on expanding into more municipalities with 26 already chosen.	

No.	Discussion	Action/Resp. Officer
	2. Anita, KCCA. Appreciated the traffic safety contest since it was targeting the younger generations more people. 3. Eng. Kitaka. Comment on public sensitization. - A video on the usage of signalized junctions by pedestrians and motorists too. - Most junctions are susceptible to power blackouts and yet the backups also have very small capacities (about 4hrs). He suggested that UMEME is involved more in such meetings so that they might probably consider giving dedicated power lines to the signalized junctions. 4. Mr. Tanaka, JICA: He was very impressed with the creativity of Ugandans when it came to the traffic safety contest. He suggested that if possible, some could also be broadcast in Japan media. He wondered whether Uganda has a system of enabling such creativity in making movies. 5. Fortunate to Mr. Mukiibi, MoWT commissioner urban roads. A request to MoWT to participate in the review of the manuals prepared by the JICA team. The commissioner accepted that they received the manuals and are still studying them. Feedback would soon be brought to KCCA. 6. Mr. Ssenyimba to Dr. Kasiima, UPF. - Why are police still not working hand-in-hand with KCCA to improve traffic flow? New officers have been recruited and the operation of all traffic officers will improve with time. - What plan does police have to improve the Driving License system? - Government, in collaboration with the government of South Korea, is planning on establishing an automated testing center for all drivers. A bill is coming to parliament to have a point system for the whole country. 7. A brief of the training in Japan by Fortunate. - There was a training with the human-machine interface - Training for operating traffic controllers - Controller and pole cabling training from Nippon signals. - Training in detection and MODERATO operation.	
9.0	Closing Remarks by Dr. Kasiima, UPF	
	- He thanked everyone for sparing their time to come for the JCC meeting. - He thanked JICA for supporting Uganda especially in trying to improve the traffic flow in the city, UMEME etc. - He requested for the signalization of all roundabouts in the city so as to improve traffic flow and reduction of accidents (both serious and minor) in the city. - On behalf of the team that went to Japan for training, he thanked JICA for funding the training since it was very fruitful. - He thanked the government of Japan/JICA for funding the traffic safety campaign since it would help the younger generation in understanding traffic safety. - He added that UPF traffic also carries out road safety education especially in schools located on the highways.	

ACRONYMS

Acronym	Definition
JICA	Japan International Cooperation Agency.
UPF	Uganda Police Force
MoWT	Ministry of Works and Transport
KCCA	Kampala Capital City Authority
F/O	Flyover
JCC	Joint Coordination Committee
AC	Assistant Commissioner
UR	Urban Roads
SE	Senior Engineer

Meeting Attendance List				
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MINUTES OF THE 6TH JOINT COORDINATION COMMITTEE MEETING FOR THE PROJECT FOR CAPACITY ENHANCEMENT OF KCCA IN MANAGEMENT OF TRAFFIC FLOW IN KAMPALA CITY UGANDA, HELD ON WEDNESDAY 26TH SEPTEMBER 2018 AT KCCA CITYHALL, DETS DIRECTOR'S OFFICE AT 08:30 A.M.

ATTENDANCE-SEE ATTACHED

AGENDA:

1. OPENING REMARKS BY KCCA;
2. REMARKS BY JICA
3. PRESENTATIONS BY CONSULTANT
4. QUESTION & ANSWER SESSION.
5. CLOSING REMARKS BY JICA

No.	Discussion	Action/Resp. Officer
1.0	<u>Introduction Remarks by Eng. Kitaka</u>	
	- Eng. Kitaka started by welcoming everyone to the meeting and requested for self-introductions. - Technical program since 2015 and has been very beneficial to KCCA in terms of technical training and some infrastructural improvements. - KCCA staff have worked well with JICA consultants and he prayed that more activities would be held together for more technology transfer. - He noted that the project is almost coming to the end but there are still some pending issues, like the installations of the MODERATO system and monitoring of its performance. He also expressed his hope that the project would usher in bigger projects for the betterment of the city especially traffic jam which brings about economic losses and a lot of air pollution. - He then requested the JICA representative to give brief remarks	
2.0	<u>JICA Chief Representative Remarks</u>	
	- Mr. Fukase, Representative JICA UG said that JICA is glad to be supporting KCCA in the alleviation of traffic jam in the city and he expressed his hope that the JICA support would help in the solving the traffic problem in Kampala city	
3.0	<u>Presentation from Mr. Izawa</u>	
	- Mr. Izawa gave a presentation on the project progress. <i>See Annex 1&2</i> - Mr. Izawa requested Ms. Fortunate Biira to give an update on the pilot project. - Ms. Fortunate noted that all civil works and signalization was done, pending the MODERATO system installation. Procurement of the communication system by the contractor is going on and hopefully the process will be done by December 2018. The detector poles were already installed and only detector installation is pending. This is	

No.	Discussion	Action/Resp. Officer
	keeping the contractor on site which needs to be fast tracked. - Mr. Izawa requested for a 1year extension to the technical cooperation project to December 2019 to enable installation and monitoring of performance of the MODERATO system. - Eng. Kitaka expressed support to the extension as requested by Mr. Izawa and requested that Nippon Signal is urged to carry out the MODERATO system installation early enough so that KCCA and the Consultant can have more monitoring time.	
4.0	<u>Questions & Answers</u>	
	- Eng. Kitaka: Can the Nippon Signal equipment work with both fiber and microwave communication? Mr. Izawa answered in the affirmative. The equipment can work with both but will require a media converter to enable proper communication. In the future, the microwave devices will be removed and replaced with fiber during the Grant Aid Project. - Mr. Fukase: What is the technical difficulty in changing the communication system from microwave to fiber? Mr. Izawa answered that there is no technical challenge in switching between these two modes of communication. - Muhame Ivan: How far is KCCA with the adoption of the manuals prepared by the consultant? Who is covering the broadcasting charges of the traffic safety animations? Mr. Izawa noted that the draft manuals are ready and were shared with World Bank KIIDP team for comment. He also added that discussions are on-going with KCCA to determine the cost implication of running the traffic safety (animation) campaign on TV. Mr. Izawa also added that this would be finished as soon as possible so that the campaign is run on TV. - Mr. Saito: How will the MODERATO system be transported? Mr. Izawa noted that transportation will be by sea. Mr. Saito expressed concern regarding the transportation by sea since it takes a very long time especially due to storms at sea. Eng. Kitaka also requested for confirmation with Nippon Signal regarding the time it takes to ship MODERATO. Mr. Izawa noted that JICA is also taking the possible delay very seriously and thus all will be done to ensure there are no delays in shipping.	
5.0	<u>Closing Remarks by JICA</u>	
	- Mr. Fukase thanked the team for the project update and then stressed the importance of the project to both JICA and KCCA. - He humbly requested KCCA not to overlap JICA technical cooperation projects with other non-JICA projects so that there is harmony in the work being done. - He thanked everyone for coming for the meeting.	

ACRONYMS

Acronym	Definition
JICA	Japan International Cooperation Agency.
KCCA	Kampala Capital City Authority
JCC	Joint Coordination Committee

Meeting Attendance List				
No.	Name	Title/Organization	Tel	Email
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3	Mr. Muhame Ivan	JICA Headquarters, Kampala	0772560852	Muhameivan.ug@jica.go.jp
4	Eng. Kitaka Andrew	Director DETS, KCCA	0794660979	akitaka@kcca.go.ug
5	Eng. Byamukama Jacob	Deputy Director DETS, KCCA	0794660980	jbyamukama@kcca.go.ug
6	Mr. Wasswa Joel	Ag. Manager Transport Planning, KCCA	0794660989	jwasswa@kcca.go.ug
7	Ms. Biira Fortunate	Transport Engineer, KCCA	0794661049	fbiira@kcca.go.ug
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9	Mr. Ssenyimba Andrew	Electrical Engineer, JICA Expert Team	0794 661459	andethso2002@yahoo.co.uk

MINUTES OF THE 7TH JOINT COORDINATION COMMITTEE MEETING FOR THE PROJECT FOR CAPACITY ENHANCEMENT OF KCCA IN MANAGEMENT OF TRAFFIC FLOW IN KAMPALA CITY UGANDA, HELD ON THURSDAY 20TH JANUARY 2022 AT HOTEL AFRICANA, KAMPALA AT 2:00 P.M.

ATTENDANCE-SEE ATTACHED

AGENDA:

1. OPENING REMARKS BY DETS KCCA;
2. PRESENTATION 1 ON THE RESULTS OF THE BY CONSULTANT MR. IZAWA/EXPERT TEAM
3. PRESENTATION 2 ON THE WAY FORWARD ENG. JACOB BYAMUKAMA
4. QUESTION & ANSWER SESSION NO.1
5. PRESENTATION 3 ON THE KAMPALA DIGITAL ROAD SAFETY AWARENESS
6. QUESTION & ANSWER SESSION NO.2
- 7. CLOSING REMARKS BY JICA CHIEF REPRESENTATIVE**

No.	Discussion	Action/Resp. Officer
1.0	Introduction Remarks by Eng. Justus Akankwasa	
	- Conveyed apologies from the Executive Director who was unable to attend meeting due to other engagements. - Welcomed everyone to the meeting and thanked all members present for making time to attend the JCC. - Thanked JICA for their commitment to the Technical Assistance Program since its inception in 2015 and noted that this meeting was the last JCC marking the end of the Technical Assistance Program. - Noted that the technical assistance program has been very beneficial to KCCA in terms of technical training and infrastructural improvement. - Noted that KCCA staff have worked well with the JICA consultant and he requested that more activities would be held together for more technology transfer. - He requested JICA to consider extending the technical assistance program so that JICA and KCCA can achieve more together. - Thanked JICA for the projects that have been done so far and expressed his hope that this cooperation would usher in even bigger projects for the betterment of the city especially in terms of reducing traffic jam, which brings about economic losses and a lot of air pollution. - He then invited the JICA Expert representative to make his presentation	
2.0	Presentation from Mr. Izawa	

No.	Discussion	Action/Resp. Officer
	- Thanked KCCA for working with JICA. - Informed meeting that JICA had taken up the challenge of solving the traffic situation in Kampala because they possess skills of managing traffic in urban areas like Tokyo and the same skills can be applied here in Kampala. - Mr. Izawa gave a presentation on the project progress and on plans. See Annex 1 for detailed presentation - Informed the meeting that the objective of the 7th JCC was to present the achievements of the Technical Assistance Program and discuss how KCCA can develop the skills gained through the project activities for future traffic control and road transport management in the capital city of Kampala. - Noted that the project had Six Major Outputs. (These are detailed in the presentation of Annex 1) - Informed meeting that the UTMP MP1 Phase 1 proposes improvements to 109 junctions - 27 of the 109 are going to be done under the JICA Grant Aid Project that is expected to start in March 2022 and will include the construction of the traffic control centre at City Hall. - MP2 is its utilization Plan - MP3 is the Peak Demand Movement Plan. It involves; • Road Pricing • Time Management • Park and Ride • NMT corridor - MP4 is the Enforcement Strengthening Plan - MP5 is the Public Involvement and Awareness plan which included items like the road safety Campaign - Informed members about the JICA Pilot Project where 4 junctions were signalized in 2018 to carry out the Area Traffic Control. - Showed that the traffic speeds improved significantly in this area, after signalization and that there was even more improvement after installation of the MODERATO system. - Analysis of the Travel Survey Results showed that the system had been effective in improving travel speed but that the effect would be more apparent if the Area Traffic Control is expanded to cover other areas. (See presentation attached for details) - Informed the meeting that the project had also produced 4 manuals and presented them to KCCA. These are; ➤ Traffic Signal maintenance ➤ Planning and Designing of at Grade Junctions ➤ Traffic Signal Design and Installation ➤ Management of the Traffic Control Centre. - Proceeded to play the MODERATO technical video. - Reminded KCCA of the need to regulate Boda-Bodas because they are the major culprits when it comes to not utilizing traffic signals properly. - Underscored the need to work together with Uganda Traffic Police to ensure respect for traffic signals.	KCCA
3.0	Presentation By Eng. Jacob Byamukama	
	- Thanked members present for their attendance.	

No.	Discussion	Action/Resp. Officer
	- Informed the meeting that the partnership between KCCA and JICA had achieved a lot over the past 7 years of the Technical assistance program. - Spoke about the genesis of the project where KCCA got pilot training and was able to check the efficacy of using traffic signals to control traffic vis a vis using hand signals. The exercise demonstrated the need for signalization of junctions and acted as a proof of concept for the project. - The Second phase involved using fixed timing for the traffic on the JICA Pilot signals and was implemented and later configured for demand control using MODERATO. - Informed meeting that so far KCCA has been able to signalize more than 40 junctions. 16 Junctions were signalized in 2021 year under KIIDP2. - Another 27 are going to be signalized under the JICA Grant Aid within the next 3 years and it was agreed that in places old signals already existed, the signals will be transferred to other places as required. - Reiterated the need to develop the capacity to manage and maintain the signals especially since they have increased in number. - Informed the meeting that KCCA was promoting public transport and therefore the signals should be flexible enough to manage the Bus Rapid Transport as is the case in Japan. - Informed the meeting that with support from JICA, KCCA can adopt an Intelligent Transport System and should consider aspects like road pricing and utilizing traffic information to strengthen collections from aspects like street parking. - Underscored the need for support by the IGP during enforcement of traffic regulations. Informed meeting that KCCA had an MOU with Police in place which allows for access to the camera surveillance network for better traffic management. - Informed the meeting that there was still need for red-light enforcement and for improvement. - Underscored the need for greater public involvement. For example, the need to educate Boda-Bodas on road usage in order to bring about sanity in the city. - Spoke about the need to integrate the existing Traffic Control Systems like the RMS from UK and MODERATO from JAPAN in order to optimize control impacts. - Reiterated that KCCA still needed more support from Japan in the management of Traffic and requested JICA to continue the support.	JICA
4.0	<u>Questions & Answer Session No.1</u>	
	Dr. Emmanuel Serunjoji (Mayor Kawempe): - Isn't this project inconsistent with the city's plan to have a less polluted city and how are the Environmental aspects going to be incorporated? Mr. Izawa responded by explaining that the project aims at reducing traffic congestion which is one of the major causes of air pollution because vehicles pollute less when they are moving than when they stationary for long periods like during traffic jams. - Will this project not merely exacerbate traffic in suburbs like Kutaano? Eng. Jacob informed the meeting that Kutaano and many other junctions have been earmarked for improvement/signalization under the Upcoming AfDB Project. Ssande Kenneth Kasenene(MoWT):	

No.	Discussion	Action/Resp. Officer
	- How will the Signals installed cater for intervening variables like Traffic Police, Boda-Boda cyclists and Matatus and how can the models be improved to cater for those? Mr. Izawa noted that JICA is willing to work with KCCA and the political leadership to find a win-win situation to all these. He called for the opinions and support from all stakeholders in handling such intervening variables. Sensitization is key here according to Izawa - Mayor Serunjoji remarked that the issue of Boda-Bodas and Matatus could be managed if the city leaders are given time and chance to do the work. There needs to be political will from central government. Eng. Hasan Nyende: - Before the project closes, can all the signals have vehicle detectors installed? Mr. Izawa responded that all signals have had vehicle detectors installed. 27 detectors have been installed so far. Joseph Ssekandi (Engineer KCCA): - Has the Project put into consideration that the concentration of economic activities is increasing in the city every day and therefore increasing on traffic volumes? Mr. Izawa responded in the affirmative and noted that all these are taken into account during the design stage. Yamamoto San: - What is the status of the authorization of the Manuals that were prepared by the JICA Consultant? What is the plan by KCCA for maintenance of the traffic infrastructure, case in point the incident where lightening hit a signal and KCCA could not repair it for a long time because of not having spare parts in stock? Does KCCA have plans to recruit and train staff in the utilization and management of these systems? Jacob responded that KCCA is in the process of checking whether the manuals are fit for purpose. MoWT is also in the process of updating the urban design manuals which will soon be authorised soon per each edition. - On the maintenance of the equipment and infrastructure, Jacob responded that KCCA responded had learnt from the experience and that there is need to do proper documentation about the condition of all infrastructure. A Framework contract for the maintenance of traffic signal equipment is now in place. - On the recruitment of staff to handle the TCC, Eng. Akankwasa guided that The Directorate of Engineering submitted the needs requirement to Management and that Public Service Commission is looking into the staffing structure and will provide the requisite staff.	
5.0	<u>Presentation 3 On The Kampala Digital Road Safety Awareness</u>	
	- Thanked Members present for their attendance. - Informed meeting that KCCA in partnership with JICA had launched the Digital Road Safety Campaign in October 2021. - Informed meeting that KCCA plans of improving the safety capacity of Kampala roads and to implement Road safety education in schools - Informed meeting that JICA had produced videos and infographics on social media and was able to get feedback. <i>See full presentation attached for details.</i>	
6.0	<u>Questions & Answer Session No.2</u>	

No.	Discussion	Action/Resp. Officer
	Ssande Kenneth Kasenene: - Are there any plans to implement safe school zones? Eng. Justus replied telling the meeting that there are measures in place to make schools safe by KCCA for example; there's a contract for painting Zebra crossings which is coming out soon. KCCA also intends to start using the road marking machine for road marking for creating zebra crossings and safe school zones. Joseph Ssekandi: - How can we instill sense into the 'Wanaichi' (local person) about road safety? How can we carry out a mindset change to make the public more conscious about road safety? Eng. Justus responded that this can be done through continuous sensitization of the public. - Mpungu Hanifa (Deputy Mayor Central): - Underscored the need to involve political leaders and pledged support the project? Asked whether there is a fair and consistent enforcement mechanism for the traffic laws in place. Eng. Justus Responded on the need for more dialogue with the police about this issue. Eng. Andrew Serungoji: - How do we bring a component of enforcement to Boda-Bodas? Eng. Justus replied by underscoring the need for empowering police in this regard. -	
7.0	<u>Closing Remarks by Chief Representative JICA, Uchiyama San</u>	
	- Thanked everyone for attending the meeting. - Reminded the meeting of JICA's commitment to the improvement the living conditions within Kampala through ongoing projects like the Kampala Flyover Project, the Greater Kampala Urban Masterplan Project and the upcoming Grant Aid Project. - Remarkd that he hopes that the recommendations discussed would be implemented in order for Kampala to become safe for all road users. - Expressed his happiness about the commitment of KCCA to creating safer road spaces. - Said that he hoped that the Grant Aid Project would be implemented successfully and that MODERATO would improve on the efficiency of traffic flow. - Made the following requests to KCCA - o KCCA to Build Capacity of staff in the management of traffic - o KCCA to carry out more sensitization about the importance of Road Safety. - o KCCA to carry out proper maintenance of traffic equipment and infrastructure. Meeting Closed at 4:15pm	KCCA

ACRONYMS

Acronym	Definition
JICA	Japan International Cooperation Agency.
KCCA	Kampala Capital City Authority
JCC	Joint Coordination Committee
UTMP	Urban Traffic Management Policy
AfDB	African Development Bank

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