

The Challenge of Urban Mobility

A Case Study of Addis Ababa Light Rail, Ethiopia



Clélie NALLET

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Abstract

African cities are becoming increasingly populous and spread out and are undergoing rapid and acute changes. At the same time, African countries are aspiring to make their capitals showcases of professed economic dynamism and modernity. Urban sprawl and the concentration of citizens create serious challenges. That of mobility is crucial and it is both social – increasing urban mobility needs, longer distances and difficulties in accessing the city – and economic – congestion, a negative impact on business and attractiveness. The Addis Ababa Light Rail has been designed to provide a dedicated mass transit solution to meet these challenges. After two years of operation, and at a time when a growing number of similar projects are being planned (for example the metro in Abidjan and the Dakar TER), this report reviews the challenges of the planning process of the Addis Ababa tram and provides a picture of the mobility it enables.

Table of Contents

INTRODUCTION	5
CHANGING AND REINVENTING ADDIS ABABA	9
Addis Ababa: showcase and driver of Ethiopian growth	9
Urbanisation and sprawl of the capital	12
Challenges of socio-spatial changes	14
THE INTRODUCTION OF THE TRAM: PROGRESS AND CONTROVERSY.....	16
A network focused until recently on motorised transport	17
Moving towards mass transit solutions: planning under tension	18
What integration is there of different modes of transport in the city?.....	20
THE TRAM ON A DAY-TO-DAY BASIS	23
A fairly inclusive tram	24
Varied uses.....	25
Long and multi-modal journeys	27
Satisfaction and perceptions	30
CONCLUSION	32

Introduction

In September 2015, Addis Ababa introduced the first Light Rail Transit system (LRT) in sub-Saharan Africa. This tram,¹ a symbol of Ethiopian renewal, a pilot project for the continent, and an embodiment of modernity, was nevertheless barely used by the capital's residents during the first few months. However, at the time of our research trip in April 2017, access to the tram during rush hour was difficult and the trams were overcrowded. Looking beyond communication and anecdote, the introduction of this tram – raising the issue of mobility in cities which are changing very quickly – is at the heart of the issues of social and economic changes on the continent, and particularly urban development.

The urban transport sector has been neglected for a long time in southern countries. In Africa, South America and Asia, urban mobility development policies are relatively recent. They are now part of the essential data on urban development.² In sub-Saharan Africa, transport has become a top priority for African governments and international donors: it is now considered as a major challenge for growth, the fight against poverty, and sustainable development.³ This gradual interest has been driven by growing mobility needs related to major demographic changes on the continent:

- The African population grew by more than 370 million inhabitants between 2000 and 2015, reaching almost 1.2 billion inhabitants (as opposed to 814 million in 2000). According to global projections, the share of Africa's population in the world population should be around 20% in 2030 and exceed 25% in 2050.⁴
- The continent's current rate of urbanisation (+ 3.4% per year on average according to UN-Habitat) is the highest in the world. The proportion of city dwellers is currently 40% (as opposed to 14% in 1950) and will probably reach 56% by 2050.⁵

1. The Light Rail Transit system is called tram in this study for ease of reference.

2. H. Mahamat Hemchi, *Mobilités urbaines et planification : le cas de N'Djamena*, doctoral thesis, Université Michel de Montaigne, Bordeaux III, 2015.

3. Y. Meite, "Gouvernance du transport urbain et mobilité durable dans le district d'Abidjan", doctoral thesis, Université de Strasbourg, 2014.

4. *Perspectives économiques en Afrique 2016, villes durables et transformation structurelle*, AfDB, OECD, UNDP, 2016, available at: www.afdb.org.

5. *Ibid.*

This statistical data – should be viewed with caution, given the variety of national situations⁶ and the lack of statistical systems⁷ – are nevertheless indicative of major trends which are changing the African countries. African cities are experiencing a significant increase in their number of inhabitants. At the same time, they are spreading out which results in exponential horizontal expansion in most African cities. The cities, and particularly capitals, are furthermore increasingly attracting the attention of African public authorities, which are investing in city modernisation programmes that must reflect their economic ambitions for the countries. However, urban sprawl often occurs without real planning and adjustments are often made retrospectively which could also suffocate these cities.

The United Nations' economic report on Africa warns of the risks of weakening urban economic advantages, “undermined by inadequate density, residential segregation and the artificial separation of developed land”. Furthermore, “the agglomeration economies are diminished by the lack of connectivity, urban mobility and infrastructure”.⁸ The report stresses the urgency of strengthening urban efficiency through a network of well-connected transport links, including industrial areas, and of promoting public transport and non-motorised modes of transport to contain the scale of traffic jams.⁹ The large cities, which nowadays are drivers of growth, could no longer be so if they cannot solve the question of transport and congestion, which has a negative impact on business, quality of life and attractiveness.

In terms of mobility, urbanisation and urban sprawl generate both growing needs and new needs with longer travelling distances. For now, the responses provided are very inadequate and the growing demand for urban mobility is not being met. African cities are experiencing difficulties typical of developing cities.¹⁰

The increasing demand for urban mobility cannot be supported by the existing equipment and infrastructure, which is also often in poor

6. For example, Nigeria, the most populous African country (195 million inhabitants in 2016) represents one-sixth of the sub-Saharan population compared with one-thirtieth of the continent's surface area. The rate of urbanisation, although it is fast in Angola, Nigeria and Botswana, does not exceed 20% in Mali, Ethiopia or Niger.

7. The statistical data is often based on weak foundations (disparate and unclear methodologies, incomplete statistical sources, etc.) See M. Jerven, *Poor numbers: How We Are Misled by African Development Statistics and What to Do About It*, Ithaca/London: Cornell University Press, 2013.

8. *L'industrialisation et l'urbanisation au service de la transformation de l'Afrique, rapport économique sur l'Afrique*, United Nations, Economic Commission for Africa, 2017, p. 129.

9. *Ibid.*

10. *Pour une meilleure mobilité urbaine dans les pays en développement, Problèmes, Solutions, Bonnes Pratiques*, UITP, December 2003.

condition. Consequently, this results in increased traffic congestion. Indeed, despite the low level of motorisation in developing countries, the inadequate infrastructure, the low capacity of modes of transport and the poor traffic regulation create severe traffic jams in major urban areas, which significantly increase travelling times. It is increasingly difficult to get to your workplace in the large, sub-Saharan African cities. The environmental consequences (air in urban areas is increasingly polluted) and human ones (a significant number of injuries and deaths in road accidents) are worrying. The situation is particularly difficult for pedestrians, as the inadequacy of infrastructure, regulation, and safety standards encourages the mixed use of existing infrastructure and creates conflicts between pedestrians and motorised modes of transport.

Urban sprawl, which is fast and uses a lot of space, is sometimes difficult for the authorities to plan, which entails difficulties in creating networks (road networks, water and electricity supply and sanitation) or equipment (public services, shops, etc.).¹¹ There is a disparity between the increase in demand for transport due to urban development and the limited resources.¹² The lack of resources and investments in infrastructure is often combined with inefficiencies in the completion of projects, related to overlaps and conflicts between the planning agencies. Insufficient integration between transport solutions from the public, private and informal sectors (the largest in sub-Saharan Africa) also contributes to this inefficiency. This lack of planning is also explained by the land status (particularly the issue of title) and the diversity of practices in the city.

Districts situated in the further out areas are less and less connected and integrated with the rest of the city which accentuates the marginalisation of the poorest people by creating spaces devoid of adequate public infrastructure. The lack of transport options connecting these districts to the rest of the city creates immobility and therefore isolation, with the result of reproducing or even reinforcing socio-spatial inequalities.

However, lack of infrastructure is not only at fault. The inadequate supply is also reflected in the problem of the cost of transport. The issue of accessibility to the existing transport supply, of the cost of transport, and of the population's financial capacity is crucial. A study of mobility practices in 28 countries in sub-Saharan Africa showed that: "the low incomes of a large number of city dwellers restrict their access to motorised modes of

11. Y. Meite, "Gouvernance du transport urbain et mobilité durable dans le district d'Abidjan", *op. cit.*

12. *Ibid.*

transport, both in possibilities of buying vehicles and in daily life for paying for fuel or travel by public transport”.¹³

Generally, access to motorised transport in sub-Saharan Africa is limited. Walking is the most common mode of transport. This same study, based on household surveys, shows that a small minority of city dwellers (10 to 20%) have a vehicle. Journeys are more restricted for many of them. They are undertaken by public transport and walking (for one-third of the residents on a given day) or only by walking (30 to 40% depending on the city), not to mention the 10 to 20% of residents who do not leave the home on a weekday. According to the last assessment of the modal split in Addis Ababa in 2006, 45% of journeys are made on foot, 46% by public transport and 9% by private transport.¹⁴ The matter of the existing supply, but also of its accessibility, is at the heart of mobility issues for a continent which is experiencing rapid urban changes.

Ethiopia and Addis Ababa were chosen for this study as the changes that they have experienced in recent years are particularly fast and in some aspects, radical (part 1). As for the tram, it concentrates on, or even perhaps reconciles, the major issues of these rapid urban changes. On the one hand, it is typical of the “city showcase” policy, a symbol of professed modernity and attractiveness. The symbol is strengthened by its unique nature: the first light rail transit in sub-Saharan Africa and it aspires to be a model for the entire continent. On the other hand, it aims to connect remote areas to central districts efficiently, by its speed, but also by its social accessibility. Indeed, the affordable cost of tickets, largely subsidised by the public authorities, could help to promote the mobility of residents in precarious situations. Like all Ethiopian public policies, it is supposed to reconcile “pro-poor policies” and “market-oriented approaches”. Does the Addis Ababa tram combine the professed modernity and a response to the fundamental social issues? This study explores how the project was conceived, planned and integrated into urban issues (part 2), and then turns to the important issue of use, asking about the socio-economic characteristics of these passengers and the types of mobility it provides for them (part 3).

13. L. Diaz Olvera, D. Plat, P. Pochet and M. Sahabana, “Entre contraintes et innovation : évolutions de la mobilité quotidienne dans les villes d’Afrique subsaharienne”, *Espace populations sociétés*, 2010/2-3, 2010, p. 340.

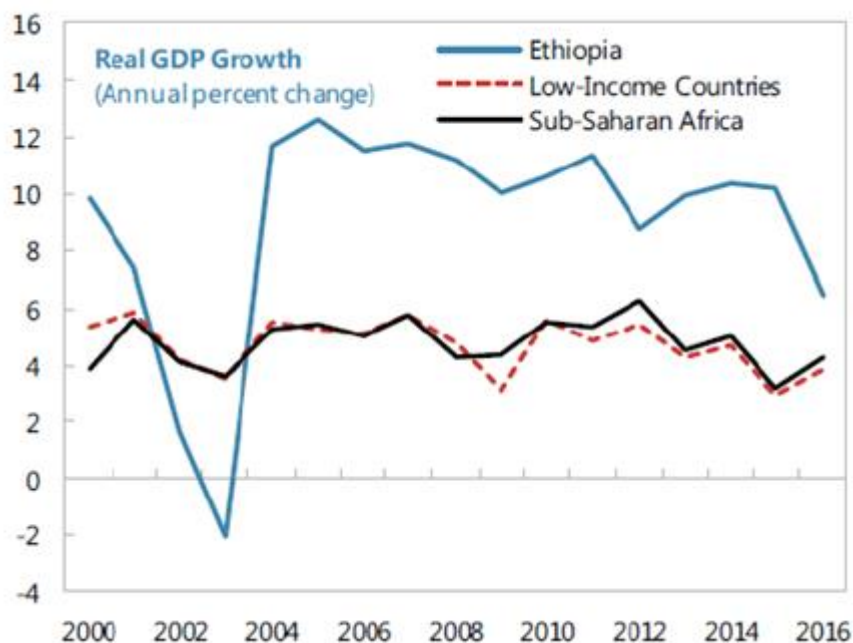
14. *Transportation Challenges in A Booming City: Coordination of the Mass Transit Network and Urban Development in Addis Ababa*, Addis Ababa City Planning Project Office and Agence d’Urbanisme de Lyon, CODATU XV, 2012.

Changing and Reinventing Addis Ababa

Addis Ababa: showcase and driver of Ethiopian growth

Ethiopia has experienced historically high economic growth in the last decade. The annual average growth rate in GDP is estimated at 10.6% according to the government and at about 8% according to the IMF, an increase which has propelled Ethiopia among the so-called “African Lions” according to McKinsey management consultants.¹⁵

Figure 1: A decade of historically high growth



Source: IMF 2016.

15. *Lions on the Move: The Progress and Potential of African Economies*, McKinsey Global Institute, 2010.

The growth rate slowed down in 2015/2016 to 6.5% according to the IMF and 8% according to the government. This downturn is due to internal shocks (drought and political tensions) and external ones (mainly a fall in coffee price on the international markets). The country's economy however remains relatively resilient and the economic outlook is positive: the IMF forecasts an upturn in growth in 2017, fuelled by the dynamism of industry and services and a policy of attracting foreign direct investment.

Figure 2: Ethiopia's economic outlook

Taux de croissance réels annuels et d'inflation (en %)

	2013	2014	2015	2016	2017	2018	2019	2020
Croissance (FMI)	9,8	10,3	8,7	6,5	7,5	7,5	7,5	7,4
Autorités éthiopiennes (GTP I et II)	8,5	...	10,2	11,2	11,1	10,1	10	9,6
Inflation	8,1	7,4	10	9,7	8,2	8	8	8

Source: IMF, 2016. The highlighted cells correspond to the forecasts.

This growth is driven by the Growth and Transformation Plan (GTP I for the 2015-2016 period and GTP II for 2015-2020), which are government economic programmes that aim to turn Ethiopia into a middle-income country by 2025. The major objectives of these plans are the expansion of the industrial sector, the modernisation of agriculture, rise in exports to increase foreign exchange availability, as well as a greater involvement by the private sector. They mainly take the form of a public works policy, particularly in large hydraulic infrastructure. Despite the relative openness of the Ethiopian economy, which has accelerated since the 2000s, it remains firmly controlled by a dirigiste state and some sectors of the economy remain state private preserves (telecommunications, banks/insurance, logistics, etc.) or in the hands of the ruling party, the Ethiopian People's Revolutionary Democratic Front (EPRDF) in power since 1991.¹⁶ The Ethiopian version of the "developmental state" is an approach combining a liberalisation of the economy (idea of the inevitable integration of Ethiopia into the international market economy) with a strong economic dirigisme (an idea of the need for state control over the public and private sectors of the economy). In this context, liberalisation is

16. Formed in the late 1980s under the leadership of the Tigray People's Liberation Front (TPLF), the Ethiopian People's Revolutionary Democratic Front is a coalition made up of four parties (the TPLF, the Amhara National Democratic Movement, the Oromo Peoples' Democratic Organisation and the Southern Ethiopian People's Democratic Movement). Since the overthrow of the Derg military regime in May 1991, this coalition (in which the TPLF remains dominant) continues to represent the centre of political power.

far from meaning a withdrawal of the state from the economy. The latter invests in, shapes and regulates sectors of the national economy. Ethiopian economic growth is also largely driven by the public sector and to a lesser extent by the booming services sector.¹⁷ Major government infrastructure projects are the basis of Ethiopian growth, whose emblems are the roads, bridges, railways and construction of the Nile dam – the Grand Ethiopian Renaissance Dam – and, more recently, the Addis Ababa tram.

The federal capital is asserting itself as an international metropolis and as a centre of economic growth, at the same time a showcase and a driver of the country's economic "success". Ethiopia's current economic growth is indeed mainly in urban areas¹⁸ and particularly in the capital. With an annual growth rate estimated at 14%, it concentrates the country's economic activities: around half of the national GDP is produced in Addis Ababa¹⁹. Since the 2000s, there has been a reinvestment in urban spaces by the public authorities which have taken on an unprecedented central role in Ethiopia's economic development (administrative reforms, centralisation of powers in cities and reassertion of public control over urban land). Cities are now seen and designed by the public authorities, as by private actors, as the main, if not the only vector for economic and human development in countries.²⁰ They are a space to invest in and to rebuild, which must embody the "professed modernity" through the infrastructure, services and opportunities that they offer. The identity of the African Union's capital is being reconstructed. It must be in a position to fulfil its ambitions as an international metropolis, which involves a major reorganisation of the city and urban planning. At the same time, it is giving Addis Ababa the advantages of an internationally competitive metropolis and of making it the central place in the Ethiopian urban network.²¹

17. See R. Lefort, "The Ethiopian Economy: The Developmental State Versus the Free Market", in: G. Prunier and E. Fiquet (ed.), *Understanding Contemporary Ethiopia*, London: Hurst, 2015.

18. According to the World Bank, urban areas have contributed to about 80% of the recent economic growth and more than 58% of GDP is produced in cities. See *Ethiopia Economic Update. Overcoming inflation, raising competitiveness*, World Bank, 2012.

19. *Addis Ababa, Ethiopia, Enhancing Urban Resilience*, World Bank Group, July 2015.

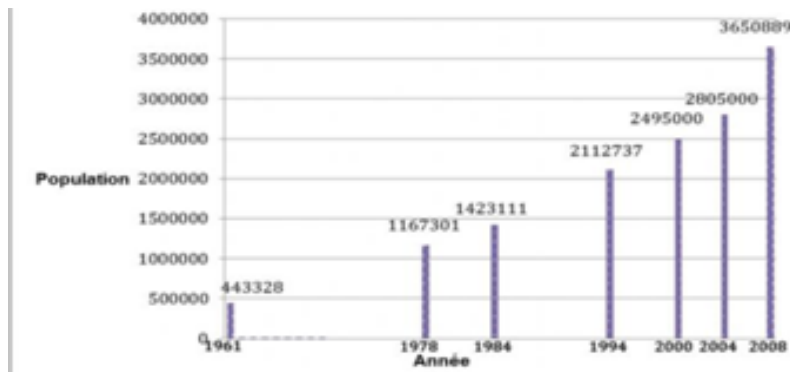
20. P. Bosredon, M. Bridonneau and P. Duroyaume, "Vers une nouvelle ville éthiopienne ? Essai d'analyse d'une fabrique radicale de la ville éthiopienne", *Les Annales d'Ethiopie*, Vol. 27, De Boccard, 2012.

21. D. Couret and Bezunesh Tamru, "Addis Abeba au risque de la modernisation", *Annales de la recherche urbaine*, Vol. 97, 2004.

Urbanisation and sprawl of the capital

Ethiopia, a densely populated country with nearly 102 million inhabitants,²² is still deeply rural today. Although the urban population only represents 20% of the total population,²³ the country is now facing very high urban growth. The urban population has more than doubled in 35 years, going from 8.5% of the national population in 1967 to 17.4% in 2012. The United Nations estimated Ethiopia's annual urbanisation rate at 3.6% between 2010 and 2015.²⁴ The country has experienced one of the fastest urbanisations in sub-Saharan Africa in recent years. Addis Ababa today concentrates 25% of the country's urban population.

Figure 3: Population growth in Addis Ababa (1961-2008)



Source: A. Pierrat, 2014, from official data.

The capital experienced a substantial increase in the number of its inhabitants which increased eightfold between 1960 and 2008. Until the mid-1980s, the city was characterised by its small population, then the capital experienced its first significant expansion during the 1970s and 1980s which followed the fall of Haile Selassie's imperial regime and seizure of power by Mengistu Haile Mariam, and then a new phase of urbanisation since the fall of the Derg,²⁵ which has accelerated since the 2000s.²⁶ Addis Ababa is now urbanising at an exponential rate. According to the forecasts, the capital is expected to double its population by 2030

22. Figure from the United Nations' last forecast. The country's surface area is 1,104,300 km².

23. *Ethiopia Economic Update*, *op. cit.*

24. *Transport Systems Improvement Project*, World Bank, 2016.

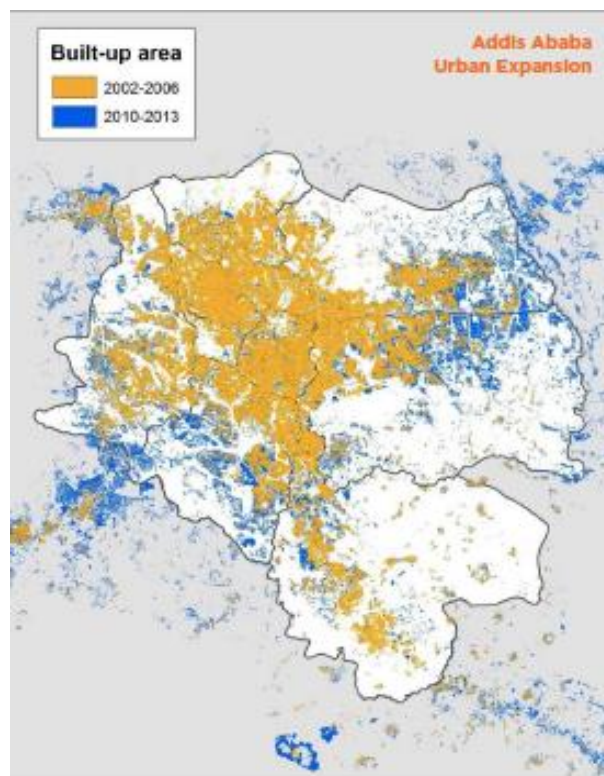
25. "Committee" in Amharic corresponds to the military group, which after having taken part in the 1974 revolution, ended Haile Selassie's regime and finally usurped the revolution to set up a highly centralised military regime dominated by Mengistu Haile Mariam. The military regime, was by extension called the Derg until its collapse in 1991.

26. A. Pierrat, "Les lieux de l'ordure de Dakar et d'Addis Abäba. Territoires urbains et valorisation non institutionnelle des déchets dans deux capitales africaines", doctoral thesis, Université Paris 1, 2014.

and to have almost 10 million inhabitants by 2037.²⁷ This growth in the number of inhabitants is combined with a dynamic spatial development of the capital, with a sprawl of the city particularly towards the east and the south. The urban expansion is particularly large towards the south-east where a mixed industrialised and residential area is developing, towards the cities of Debre Zeyit and Nazret. This spread does not occur without political tensions. The announcement of the “Master Plan” in April 2014, providing for an extension of Addis Ababa’s administrative borders over more than a million hectares, at the expense of territory in the Oromia province, also triggered a large wave of protests and crackdowns.²⁸

For the time being, the central districts are the most populated. Indeed, the rate of urban sprawl is faster than that of population growth, which is reflected by a very high density in the central districts (around 15,000 to 30,000 inhabitants per kilometre) which concentrates 30% of the population in 8% of the urban area.²⁹

Figure 4: Addis Ababa’s urban expansion



Source: Addis Ababa, Ethiopia, *Enhancing Urban Resilience*, World Bank Group, July 2015.

27. Addis Ababa, Ethiopia, *Enhancing Urban Resilience*, World Bank Group, July 2015.

28. See J. N. Bach, “État d’urgence en Éthiopie : nouveau far East, vieux far West”, *L’Afrique en questions*, No. 28, Ifri, 28 October 2016, available in French at : www.ifri.org.

29. *Ibid.*

Challenges of socio-spatial changes

Despite high economic growth rates, many inhabitants live in precarious conditions and the unemployment and poverty rates remain high, estimated at 23.5% and 22%³⁰ respectively. We should not lose sight of the fact that the urban reality is still largely dominated by the combination of poverty, inequality and slums, whose juncture occurs around public control of access to urban land, to adequate housing and to basic infrastructure.³¹ The unprecedented rapid growth of the capital adds significant development challenges, particularly in terms of ability to supply the population with basic services, access to housing, mobility and health services.³² The city's viability will depend on the public authorities' capacity to support/control the urbanisation process. It is also one of the objectives of GTP II: "to proactively manage the ongoing rapid urbanization to unlock its potential for sustained rapid growth and structural transformation of the economy".³³

The government is conducting a proactive urban modernisation policy (modernising infrastructure, destruction–regeneration of city centres and reclassification of rural peripheral areas). The objective of turning Addis Ababa into a "showcase-city" involves radical changes in the urban landscape, which are partly the result of importing globalised urban standards (notably the introduction of verticality) and specifically borrow from the model of cities in the Gulf countries. In the central areas of the city, entire districts are destroyed to be rebuilt at height,³⁴ and their poorest inhabitants are relegated to increasingly peripheral areas, where new multi-family housing estates, condominiums, are being built quickly and on a large scale³⁵. The implementation of these condominium programmes has led to substantial redevelopment in the urban space and has meant a move for all their inhabitants, enforced for the poorest and desired for the wealthiest, who hence had access to property.³⁶ This socio-spatial reconfiguration tends to accentuate, rather than solve the

30. *Ibid.*

31. P. Bosredon, "Villes d'Afrique de l'Est en mutation", *Territoire en mouvement Revue de géographie et aménagement*, Vol. 27-28, 2015.

32. Currently, only 40% of inhabitants are supplied with clean water and less than 30% with sanitation. See *Addis Ababa, Ethiopia, Enhancing Urban Resilience*, World Bank Group, July 2015.

33. *Growth and Transformation Plan II (2015/16-2019/20)*, Federal Democratic Republic of Ethiopia, National Planning Commission, May 2016.

34. The rebuilding of the city at height also corresponds to a desire to densify the housing solutions.

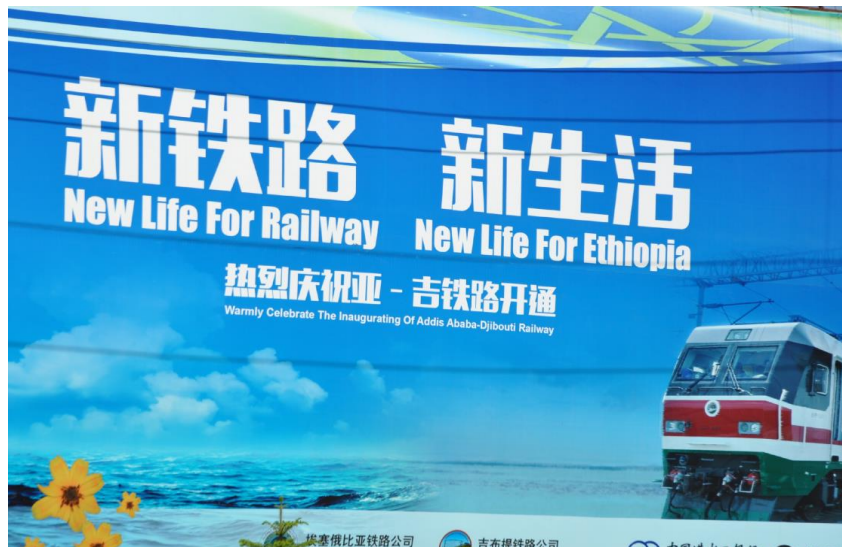
35. The *condominiums* are multi-family social housing buildings increasing vast access programmes to housing and to small private properties since the mid-2000s. See S. Planel and M. Bridonneau, (Re)making Politics in A New Urban Ethiopia: An Empirical Reading of the Right to the City in Addis Ababa's Condominiums, *Journal of Eastern African Studies*, Vol. 11, No. 1, 2017.

36. *Ibid.*

inequalities of access to the city, and raises major concerns, particularly that of the risk of social fragmentation. This risk is even greater if these peripheral areas are isolated from the rest of the city. The issue of mobility and access to transport is crucial here.

The Introduction of the Tram: Progress and Controversy

Transport infrastructure is a priority for the Ethiopian state, which is investing heavily in this area. The railway infrastructure projects have become symbols of the “new Ethiopia” which is being built in close collaboration with China. The renovation of the 750-km railway line connecting Addis Ababa and Djibouti is a flagship project of this impetus. This line, which was opened in 2016, was 70% financed by the Chinese Export and Import Bank (Exim Bank) for a total amount of \$3.4 billion. It is part of a vast railway network project, which is expected to connect the line with Sudan, Kenya and South Sudan, and which could eventually be part of the Chinese New Silk Roads initiative.³⁷



© Virginie Boutueil, Addis-Ababa, April 2017.

The Addis Ababa tram, which was also implemented with China, aims to be the symbol of the new Ethiopia in the capital. It is important to review the planning of this showcase project which raises the important question of its integration into the city's transport network and the city.

37. A. Ekman *et al.*, “Three Years of China’s New Silk Roads: From Words to (Re)action”, *Études de l’Ifri*, Ifri, February 2017, available at: www.ifri.org.

A network focused until recently on motorised transport

The Anbessa City Bus Service Enterprise was founded in 1943 during Haile Selassie's reign and introduced motorised intra-urban transport to the capital. The company, owned by the royal family, started with five buses running five routes.³⁸ The state agency, which is currently owned by the Ethiopian federal government and managed by the municipality of Addis Ababa, now operates a fleet of 700 buses. They carry 600,000 passengers per day.³⁹ The prices, which are set and subsidised (at 0.2 ETB per journey) by the public authorities, are among the lowest in sub-Saharan Africa.⁴⁰ With capacity for around 100 people (30 seated and 70 standing), the majority of these buses are uncomfortable and are often considered as a means of transport for the “very poor”. The waiting time (on average 40 minutes), travel time (48 minutes on average with an average speed of 15 kilometres per hour), but also the condition of the stations, buses (care and maintenance problems) make the service unattractive. The bus transport service has however diversified in recent years. A private company joined the network in 2009 and a special public bus service was created in 2012 to provide transport for civil servants in the morning and evening. The rest of the day, these buses are turned into paying buses for the residents. In 2016, new city buses, the Sheger buses, were introduced. New, more comfortable and “modern” Anbessa buses should also be put into operation, with the aim of restoring the buses' image to attract “middle income people” in high-capacity buses to reduce congestion.⁴¹



© Clélie Nallet, Addis Ababa, April 2017.

38. A. Chavet Henry, “Cohabitation entre transports en commun publics et auto-organisation des transports. Le cas d’Addis Abeba – Éthiopie”, mémoire, Université Aix-Marseille, 2015.

39. *Transport Systems Improvement Project*, World Bank, 2016.

40. L. Boudet *et al.*, “Les transports à Addis Abeba”, mémoire, Université de Rennes 1, 2015.

41. Interview with an official at the Addis Ababa Road and Transport Bureau, Addis Ababa, 20 April 2017.

The minibus-taxis – currently the main mode of motorised transport in the capital – appeared about 50 years ago at the initiative of private individuals who saw an economic opportunity in the ACBE bus system’s inability to fully meet the capital’s residents’ mobility demand.⁴² Their presence particularly increased during the 1990s and the minibus system, which was initially self-organised, was gradually regulated by the authorities and is now part of the transport network.⁴³ There are now approximately 10,500 minibuses in the capital, which undertake 840,000 daily journeys and each travel on average 180 kilometres per day.⁴⁴ They have about 10 places and make fixed journeys (approximately 250 different routes through the city), stopping at the passengers’ discretion. The journey prices are set by the public authorities and remain relatively affordable although higher than those of buses. They are used a lot, but are not allowed to absorb the constant increase in demand. The queues to get on board are huge, especially during rush hour, when it is very difficult to find a place. Generally, the spread of minibuses in African cities is the cause of heavy congestion and bottlenecks.⁴⁵ The bus and minibus systems are more concentrated in the densely populated central areas, where demand is also higher.

Moving towards mass transit solutions: planning under tension

The idea of developing a mass transit project for Addis Ababa began to emerge in the 2000s, a period during which time the desire to establish strategic planning for the capital increased. With the decentralisation movement of the Ethiopian political system, initiated by the Ethiopian People’s Revolutionary Democratic Front (EPRDF), the federal city authorities became a major player in the city’s planning.⁴⁶ Public transport had an important role in the structuring of the 2003 City Development Plan, designed by municipal players with the support of the *Agence d’urbanisme de Lyon* [Lyon Urban Planning Agency]. The east-west and north-south axes of the city were then identified as priorities in terms of strengthening transport infrastructure and the project of developing a

42. A. Chavet Henry, “Cohabitation entre transports en commun publics et auto-organisation des transports. Le cas d’Addis Abeba – Éthiopie”, *op. cit.*

43. Rather than working to eliminate the parallel transport system, the authorities have adapted and linked the existing systems, by implementing measures to legalise and regulate it. See *ibid.*

44. L. Boudet *et al.*, *Les transports à Addis Abeba*, *op. cit.*

45. See “Petits autobus, gros problèmes”, in: A. Kumar et F. Barrett, *Coincés dans les embouteillages : le transport urbain en Afrique*, World Bank and SSATP, 2008.

46. Elsewhere, this is not the case. In other cities, planning remains the responsibility of urban agencies (at the *killil* level). Only municipalities which have the means to fund a master plan can participate in urban planning and most of the time, they simply endorse the urban agencies’ master plan.

mass transit system along the east-west corridor emerged. The sectoral planning implemented in 2006 with the support of the World Bank reinforced the choice of a mass transit solution for Addis Ababa which became the subject of many studies. Hence, a Bus Rapid Transit (BRT) network was considered for a long time to form the backbone of mass transit.⁴⁷ It was relegated to the background⁴⁸ when the central government finally decided to introduce a Light Rail Transit system in 2008, called tram here for ease of reference. The Ministry of Transport then entrusted its subsidiary company, the Ethiopian Railway Cooperation (ERC) – a state-run company founded in 2007 to manage the railway projects – with studies on the LRT. The project was quickly implemented with the China Railway Engineering Corporation (CREC), a Chinese company commissioned to build the tram line.⁴⁹ 25% of the project funding of \$475 million was provided by the Ethiopian government and 85% by the Chinese Export-Import Bank (Exim Bank). The network operation (operation and maintenance) is provided by the ERC and another Chinese company, the Shenzhen Metro Company. The tram is run by Chinese and Ethiopian professionals, with the aim of realising a transfer of skills which would result in solely Ethiopian management by 2019.

Whereas up until now, the municipality of Addis Ababa was the driving force behind urban transport planning, the central government's decision to set up a LRT system and to entrust the responsibility to its own company, ERC, is not insignificant. So, the introduction of the tram became a powerful symbol of the central government's proactive sectoral approach, which despite the political decentralisation process, remains dominant and retains control over the organisation of its territory and the way in which the country's development goals should be materialised⁵⁰. So, the Addis Ababa tram was designed as a showcase project of "Ethiopian renewal", proudly presented by the ERC as one of the most important government projects, alongside the Grand Ethiopian Renaissance Dam.⁵¹ The project is praised for its scale and its unique nature: "Addis Ababa is

47. L. Boudet *et al.*, "Les transports à Addis Abeba", *op. cit.*

48. Addis Ababa had originally planned a network of 7 BRT lines in its Mass Rapid Transit Plan. Due to the priority given to the LRT, only one 8 km line is certain to be operational soon. It is a specific pilot bus route, running 16 km along a north-south axis. It connects with the two tram lines. See L. Boudet *et al.*, "Les transports à Addis Abeba", *op. cit.*

49. The construction of the railways and the supply of rolling stock are the responsibility of the Chinese company, from which 41 trams were ordered in March 2014.

50. The observation is the same in many areas. See for example, Dessalegn Rahmato *et al.*, *Reflections on Development in Ethiopia: New Trends, Sustainability and Challenges*, Forum for Social Studies, Friedrich Ebert Stiftung, 2014.

51. The Grand Ethiopian Renaissance Dam, a large hydroelectric dam on the Nile under construction since the early 2010s, is Meles Zenawi's government's flagship project. It is being built as a symbol of unity for all Ethiopians for a prosperous Ethiopia.

the capital city of Africa. So, we had to change the city landscape, to make an indication that Addis is growing up and becoming an international city with a huge project. No one in Africa has managed to realize such a project. Nigeria didn't succeed."⁵² From the point of view of some players in the municipality of Addis Ababa's transport sector, the bombastic and costly side⁵³ of the project is highly criticised, as well as Chinese involvement in the project. "The demand is growing very fast. So, we need to be fast. This LRT is so expensive. For buses we don't need additional infrastructures, and we don't need someone to come and tell us how to do. Because we know how to do."⁵⁴ More generally, the tram is a source of criticism and questioning related to the quality and efficiency of the infrastructure, given that a third of the rolling stock is currently at a standstill, the effectiveness of the stated transfer of skills, and the central government's ability to repay the loan under the agreed terms.

What integration is there of different modes of transport in the city?

The tram, under the responsibility of the federal body, the ERC, is therefore disconnected from the city's co-ordination programme, which poses additional challenges in terms of co-ordinating services, prices, subsidies and for its integration into the overall transport network. Interviews conducted with ERC officials show that linking the tram with other modes of transport is a matter of concern: "We have the issue of integration. We want to make integration in the future. We are planning to make an agreement with minibuses. Now we know that there is no harmony and that we have to organize an infrastructure for integration."⁵⁵ They also show that this integration was thought about retrospectively and that co-ordination with the other agencies is currently in its early stages: "We don't really have direct relations with the other transport agencies but we are planning to coordinate the transport in the city. For now, we don't cooperate."⁵⁶

52. Interview with an ERC official, Addis Ababa, 11 April 2017.

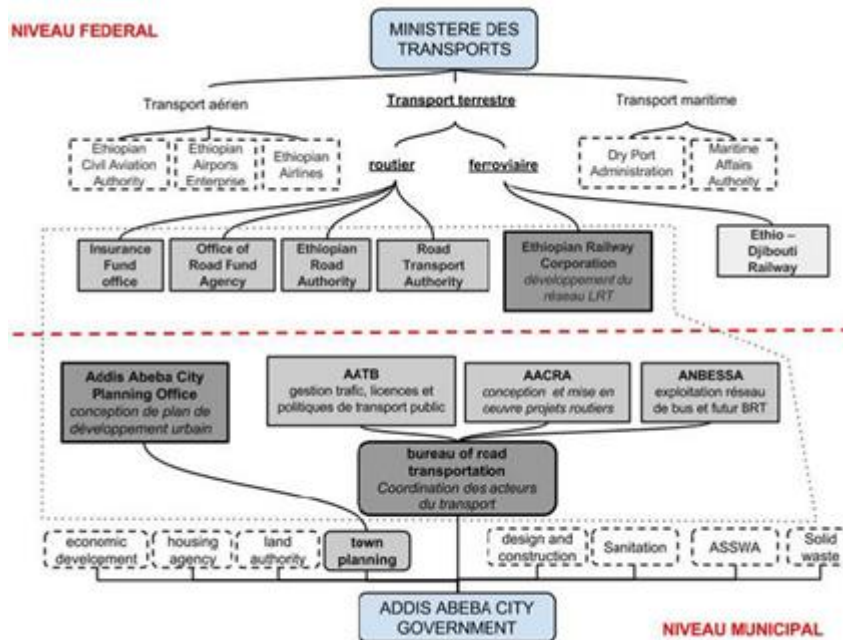
53. The BRT network option, more traditional in the context of developing countries, would have provided a lower-cost mass transit solution.

54. Interview with an official at the Addis Ababa Road and Transport Bureau, Addis Ababa, 20 April 2017.

55. Interview with an ERC official, Addis Ababa, 11 April 2017.

56. Interview with an ERC official, Addis Ababa, 21 April 2017.

Figure 5: Transport actors in Ethiopia



Source: L. Boudet et al., 2015.

This disconnection and the palpable tensions between the ERC and the city agencies are an additional challenge. Indeed, if the question of integrating the tram is put aside, the public transport services are designed, planned and delivered in a fragmented manner, despite some efforts to coordinate at city level, particularly with the creation of a supervisory authority (the Addis Ababa Road and Transport Bureau – AARTB) in 2012. The institutional framework for urban planning is complicated and multiple agencies have planning responsibilities and their activities overlap.⁵⁷ The lack of co-ordination between agencies in the same sector and between the different transport and housing programmes, for example, is problematic. The urban expansion makes these aspects all the more visible and concerning, as this passage from a World Bank report demonstrates: Land use and transport developments are poorly coordinated. Housing and land-use decisions are taken on the basis of the location of available land, with almost no assessment of transport impacts while road transport investment decisions are made on the basis of criteria often unrelated to land-use patterns. For example, new condominium housing has been developed on the (current) outskirts of the metropolitan area, with no coordination with transport services, rendering them largely inaccessible not only to employment locations, but also to social services

57. *Transport Systems Improvement Project, op. cit.*

and interaction.⁵⁸ The overall integration of the city's transport network, as well as its accessibility for residents are nevertheless key issues for the AARTB and many projects are being conceptualised, such as the construction of large terminals at strategic points in the city designed so as to "fit in" the different transport types, connection systems with regional buses, or even an overall transport smart card with flexible prices depending on the passengers' incomes.⁵⁹ It remains to be seen to what extent these projects will be feasible.

58. *Ibid.*, p.3.

59. Interview with an official at the Addis Ababa Road and Transport Bureau, Addis Ababa, 20 April 2017.

The Tram on a Day-to-Day Basis



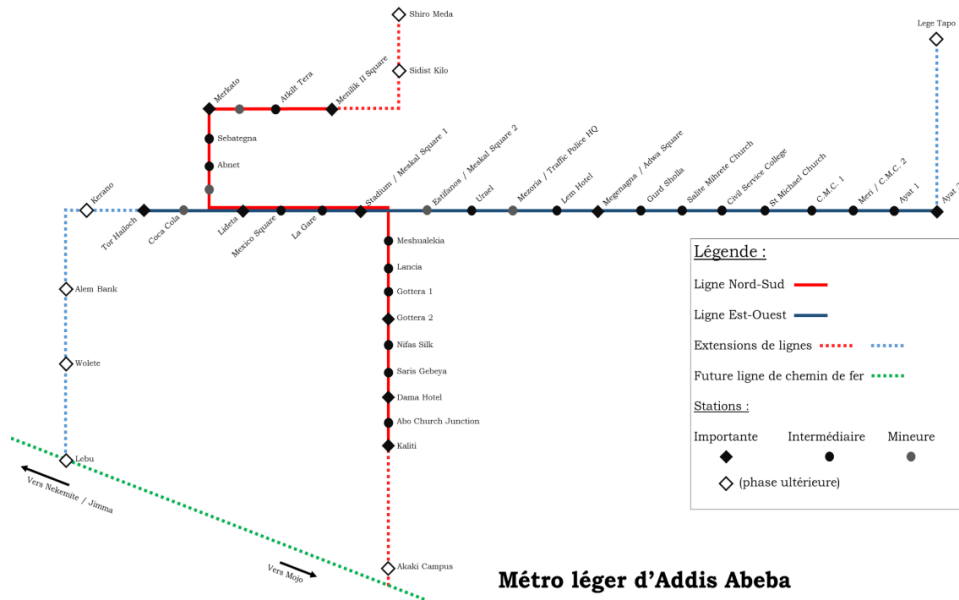
© Clélie Nallet, Addis Ababa, April 2017.

The tram currently consists of two lines (one north-south and one east-west) covering 34 kilometres and serving 39 stations. According to the ERC, a tram contains 317 passengers on average and between 110,000 and 150,000 tickets are sold every day.

In order to understand the question of tram use, short interviews were conducted with 200 passengers to collect basic data on their socio-economic profiles and types of journeys. The database is supplemented by about 20 in-depth interviews with residents in the capital who do or do not use the tram. The passenger interviews were conducted at five tram stops, Mejenagna and CMC on the east-west line, Gojam Berenda and Autobus tera on the north-south line, and at Mexico Square where the two lines intersect.

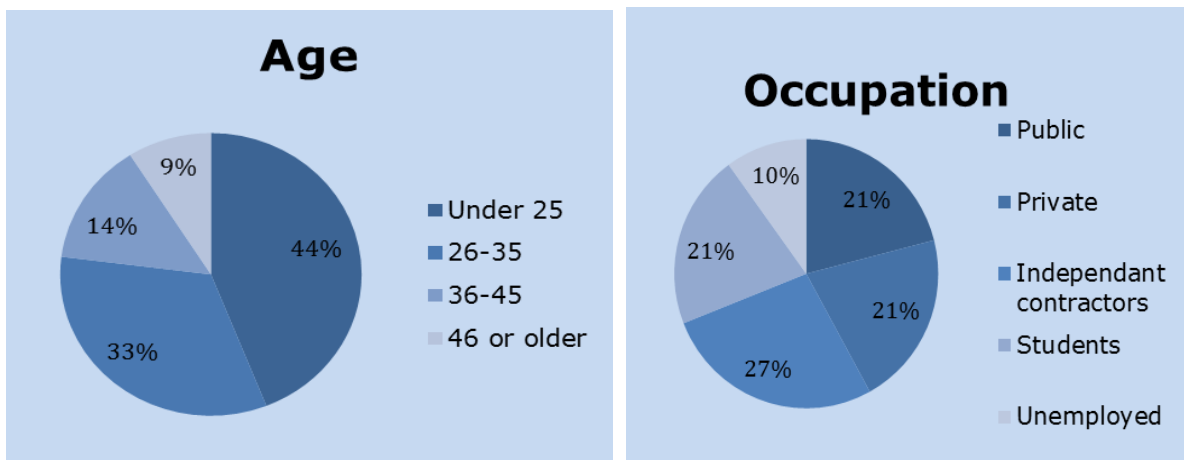
Who does (or does not use) the tram? Why and for what types of journey? Does the tram make access to the city easier and for whom?

Figure 6: Addis Ababa’s tram lines and the planned extensions



A fairly inclusive tram

While the tram is used by men and women of all ages, the overall trend is a rather young and male public. The make-up of our sample is indicative of this: 67% of men and 33% of women, aged between 14 and 76 years (on average 30 years). 44% are under 25, 33% are between 25 and 35, 14% between 35 and 45, 9% are over 45.



Source: author's survey, Addis Ababa, April 2017.

The passengers' lines of work are varied: police officers, engineers, chauffeurs, accountants, security guards, nurses, shopkeepers, teachers, business people, construction workers, receptionists, doctors, bankers, etc. The different business sectors are represented at similar levels (21% civil servants, 21% employees in the private sector and 27% self-employed). Students (21%), and to a lesser extent, unemployed people (10%) are also fairly numerous.

People with different socio-economic profiles take the tram. The majority of passengers are part of the lower and middle segments of Addis Ababa's middle class (middle-income civil servants-employees, small traders, and small business owners), as well as more precarious socio-economic positions (low wage-earners, the unemployed and workers). The survey shows that the tram is a mobility solution for low-paid workers. For example, it is widely used by construction workers to commute from their homes to construction sites and from one construction site to another.

In this respect, it seems that the service meets one of the ERC's aims, to provide mobility to those "with limited resources", particularly students, as a priority.⁶⁰ The prices – 2 bir, 4 bir and 6 bir⁶¹ depending on the distance travelled – are judged very competitive. Indeed, travelling by tram is cheaper than by minibus-taxi. One of the ERC's other social priorities is to provide access for people with reduced mobility. Presently, if amenities to facilitate access to stations (lifts and escalators) are built, they are generally out of service.

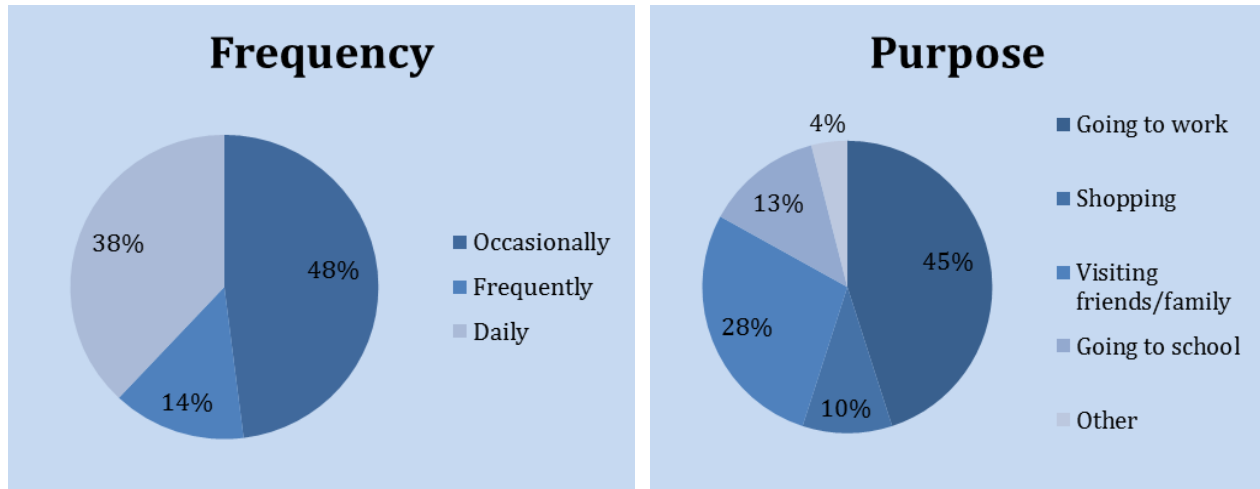
Varied uses

Nearly half of the passengers interviewed report that they make occasional journeys on the tram (48%), 38% daily and 14% one to several times per week.

Most of these journeys are commuting (45%), and then visits to family or friends (28%), to get to their place of study (13%) or even to go shopping (10%). The uses of the tram are therefore varied; some people also travel to carry out administrative procedures or to look for work.

60. Interview with an ERC official, Addis Ababa, 11 April 2017.

61. 0.06; 0.12 and 0.19 in euros current.



Source: author's survey, Addis Ababa, April 2017.

The survey shows that in the case of commuting/journeys to get to place of study, the use of the tram is not always on a daily basis (whereas the journeys are). The workers and students who use it daily are generally those who have the longest distances to travel. Indeed, the tram is unanimously seen as the best way to travel long distances quickly and cheaply. The crowd at rush hour and the random waiting time (between 5 and 30 minutes with no indication) discourages other workers, who use it on some days, if they see it approaching: "It's too complicated, there are too many people in the morning from the first station, and you don't know when it will arrive. I sometimes take in the morning if I see it coming from a distance and often in the evening, I have more time. Otherwise I take the minibuses." The problem of lack of transport and the waiting times in rush hour is also more general and also affects the minibus-taxis, which additionally take advantage of these busy times to increase their prices, to the point that some people opt to walk long distances in the end.

Difficuly journeys

Tadesse is a chauffeur for an ambassador and earns 6,000 ETB per month (186 euros current). He is married and a father of three children. His wife is a homemaker. They rent an apartment in a condominium in Summit. The rent is 3,000 ETB. He works in a district north of Megenagna. “To go to work, I can take two minibuses or a minibus and the tram for three stops. I prefer not to take the tram since you never know when it will arrive. I would say that I spend about 20 minutes in the minibus, but you often have to wait 30 minutes at 7 o’clock in the morning and even longer in the evening. At that time, I prefer to walk, besides they increase the prices at these times, it’s 10 ETB. So, I walk home and it takes me an hour and a quarter. I am not the only one, many people walk. I use the tram at the weekend to go and see my family at Mexico or Tor Hayloch. It’s faster and cheaper than the minibus for long distances. From my house to Tor Hayloch, it’s quick and costs 6 ETB, whereas by minibus you would need to take three and it would be 12 ETB in all, double the amount. So, the tram is really good for that, especially for people like me who don’t have much money.”⁶²

The passengers are generally very satisfied when they travel at times when there is less use, during the day or at the weekend, for leisure and shopping (buying cheaper products far from their district, with a reasonable transport cost) or even just to “go for a walk”. This finding is at odds with the project’s main objective to provide a mobility solution for access to work.

Long and multi-modal journeys

In terms of place of residence, most of the passengers surveyed (65.5%) live in areas that are rather far from the capital’s central districts. The passengers surveyed travel between 3 and 35 stations (on average 9.3). More than half travel between 5 and 10 stations (53.4%), 27% of them between 11 and 15 stations, 10% less than 5 stations and 9.5% more than 15 stations. The journey time in the tram is mainly between 20 and 40 minutes.

Only 25% of the passengers surveyed walk to get to the tram station and to leave it. The others take a motorised mode of transport, generally

62. This latter statement is relative with regard to the socio-economic characteristics of Tadesse’s household, which correspond to the middle segment of the Addis Ababa middle classes.

the minibus-taxis to get to and/or from the tram stations. So, the journeys are mainly multi-modal.

Figure 7: cross tabulation
mode of transport before the tram journey * mode of
transport following the tram journey

		following				Total
		walking	minibus	bus	car	
before	walking	50	38	1	1	90
	minibus	49	40	3	2	94
	bus	8	5	0	0	13
	car	2	1	0	0	3
Total		109	84	4	3	200

Source: author's survey, Addis Ababa, April 2017.

The time spent in transport before and after the tram varies respectively between 15 and 40 minutes. Therefore, the journeys in their entirety are generally relatively long, approaching one hour and for the most part exceeding it.

Changing between the different modes of transport is sometimes difficult. Some tram stations are directly on the road, sometimes without a dedicated pedestrian crossing, and crossing is difficult. The ticketing stage is also often seen as painful. The passengers buy their tickets for each journey in ticket offices, often (but not always) close to stations, but which here still involves sometimes dangerous crossings. A smart card system has been designed, but is not in use. The idea of creating multi-modal platforms at the busiest stations is also planned. For the time being, inter-modality is hardly facilitated by the existing configurations and equipment.

The tram stage nevertheless reduces travel times and facilitates access to the city for some people. This is particularly the case for some residents in condominium areas in the east of the city, who travel by tram to their workplaces in the capital's more central districts. Without the tram stage, the journeys would be possible, but more expensive and difficult. In this sense, it plays the role of facilitator of access to the city for these residents.

Summit condominium and access to the city



© Clélie Nallet, Addis Ababa, April 2017.

This photograph was taken during the afternoon in the Summit condominium area in the east of the city. During the day, when the workers had left their homes, you only saw a few pedestrians and hardly any vehicles in the streets. On approaching the buildings, we met many residents who hardly ever leave the district: those who own shops and restaurants on the ground floor of the buildings, women who were homemakers, and unemployed people, who were often young. For the latter, this withdrawal into the district is partly related to a privileged access to transport within households for those who are actually or potentially “useful” (working or studying). In a context of scarce resources, the access of working people to the city includes a restriction of other residents’⁶³travel needs. Their confinement in the district is also increased by the difficulty of long-distance travel.

The survey shows on the other hand that the tram has reduced the difficulty in commuting for many residents and facilitated their access to the city. The term “reduce” is adapted as access to the tram station is not

63. For a detailed case study on withdrawal phenomena, see L. Diaz Olvera *et al.*, “Étalement urbain, situations de pauvreté et accès à la ville en Afrique subsaharienne. L'exemple de Niamey”, in : Y. Bussiere and J. L. Madre (ed.), *Démographie et transport. Villes du Nord et villes du Sud*, Paris: L'Harmattan, 2002, p. 147-175.

direct. This involves a minibus journey of about 10 minutes (without including the wait) to access the tram station, sometimes preceded by another journey in a “bajaj” (a three-wheeled auto-rickshaw vehicle) which connects some condominium areas to the minibus stops. Then, those who use the tram find this part of the journey significantly saves time and money, which allows them to get to their workplace easier, but also to undertake other journeys (for example leisure, visits, administrative procedures).

Satisfaction and perceptions

In passenger interviews, the majority (80.5%) are satisfied, 12.5% moderately satisfied and 6.5% dissatisfied with the service provided by the tram. However, it is necessary to put the large number of statements of satisfaction into perspective, given that the tram is a government flagship project, which leaves little room for criticism.

The most common reasons for satisfaction are affordability and speed of travel over long distances covered at a “minimum price.” So, one passenger, a former 60-year old general states: “I use it for everything. To shop, to visit friends and family. It is a very important mean of transportation. It is easy and cheap as well. I use it to go from here [mercato] to every corner: stadium, any place, sometimes Kality or Piassa.... Of course, I am happy with it. Young and old people use it. You save time and it is really cheap: long distance for minimum price.” Some passengers with more measured answers consider the tram cheaper than the minibus, while pointing out some difficulties: “It is not bad. In the morning and afternoon, the road is very crowded. Even if there are too many people in the train, it is better and faster than minibus. Sometimes it is out of use or full but it is good because it is not expensive and when the road is crowded the train goes quickly. When it is really, really busy I don’t use it, I take the minibus instead.”

The dissatisfied passengers describe difficult journeys: the crowds, bad smells, discomfort, but above all lack of regularity and trains. “Sometimes there are so many people that I can’t breathe. It is often late, I wait too much, sometimes 30 minutes. The capacity is not enough, we need more trains. They need to add more trains and lines. This is a very important mean of transportation, we need to have it everywhere in the city.” In terms of safety, the tram is perceived as having less risk of accidents than the minibus. However, it is described by some people as a favoured place of thieves and unsafe for women.

Hanna, a young woman who is an accountant, uses the tram daily at 8.00 a.m. and 5.30 p.m. She lives a ten-minute walk from Tor Hayloch station with her family and works next to Aya Hulet station (a 12-station journey on the east-west line).

“I don’t like it. There are thieves and it’s very hot. On the one hand, the minibuses are also overcrowded and more expensive. A journey would cost me 7 ETB by minibus, whereas it costs me 4 ETB by tram. But, it is mostly a matter of time. I save a lot of time with the tram, there are no hold-ups, and it takes me 15 minutes, whereas by minibus I have to change and that would take a minimum of 45 minutes. Therefore, I am satisfied with the price and speed, but it is too hot and there are thieves. A friend was robbed of 1000 ETB today in the tram. Sometimes, it smells bad and it can be rough. As a woman, there are serious problems, it’s not easy, people stick together. At the start, it was fine, there weren’t many passengers. Now, you can no longer sit down. For a month, it was almost empty, people were scared. Now, everybody uses it. Even, the elderly are no longer afraid.

Despite these inconveniences, the tram is mainly considered by the passengers as a symbol of Addis Ababa’s modernity, which “makes the city beautiful”.⁶⁴ Checks carried out at the stations relating to numerous prohibitions, *a priori* rather disabling, such as transporting the staples of Ethiopian cuisine (kibbeh, some spices and animals), are seen as evidence of this modernity: “You don’t take the tram any old how, here it’s modern.” The social perceptions which are played out in the tram are marked by an ambivalence between these markers of professed modernity and a use sometimes deemed out of step with it (crowding, smells, wrong kind of people).

64. Again, it is necessary to stand back from these statements, which above all are the sign of an internalisation of the official line by the population.

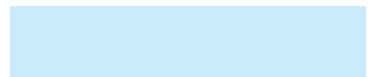
Conclusion

The Addis Ababa tram was designed as a showcase project to promote urban space and as a mass transit solution to the major issues of urbanisation and sprawl of large African cities.

The study shows that the mobility needs in this rapidly changing city are indeed considerable. These needs are both present in the densely populated and congested central districts, as well as in the newer and increasingly remote districts, often poorly connected to the rest of the city, which raises the important issue of access to the city.

The Addis Ababa tram partially addresses these issues. The study of use shows that two years after coming into operation, the tram provides a fast and affordable transport solution, which facilitates access to the city for residents in far-out districts and low-income people. The implementation of the second phase as originally planned, consisting of an extension of the existing lines, would reinforce these beneficial effects, as new and more distant districts are still being isolated from the existing network. However, the achievement of this second phase is uncertain for the time being, the management of the existing network is currently the subject of pressing technical (maintenance of the rolling stock, management of daily traffic, achievement of the transfer of the skills) and financial challenges (issue of repaying the loan).

In terms of passenger numbers, the bet is successful and passengers are many and mainly satisfied with this new, fast and inexpensive means of transport. But, the rush-hour crowd is indicative of a wider problem than the difficulty of passengers' journeys: the Addis Ababa tram is under-sized vis-à-vis existing mobility needs. While the study shows that it actually helps to improve residents' mobility, we cannot currently talk about a mass transit solution. For the time being, the tram improves, but does not change anything. The lack of frequency, trains, and integration into the existing transport network are obstacles to this change. The official line of the ERC, which is aware of these difficulties, highlights the achievements already made possible by the tram's introduction, while recalling that a project of this size needs time to be really effective, but also pointing out the difficulties related to the lack of resources. The showcase side of this project has resulted in expensive choices, without them necessarily being the most suitable for local conditions.



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