



Policy Brief 2020

How to connect cities and transport infrastructure

Governing Infrastructure Interfaces
for Ethiopian Cities

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Summary

This policy brief presents findings on governance coordination mechanisms for joining up transport infrastructure with other utility systems and urban development in Ethiopian cities. It identifies opportunities to strengthen more integrated urban governance for these critical infrastructure systems and offers practical alternatives to the highly centralised and hierarchical coordination dynamics that characterise current approaches. The empirical evidence comes from Ethiopia's new rail systems and is based on experiences in two cities, the capital Addis Ababa and the second largest city Dire Dawa.

The document is primarily aimed at political leaders, decision makers and officials of the Addis Ababa City Administration, the Ethiopian Railway Corporation (ERC), and other National Utilities and Ministries.

Headline recommendations

1. Strengthen city-level leadership as part of strategic transport infrastructure interventions
2. Shift the focus of infrastructure development towards the development of urban places and away from sectoral solutions
3. Create dedicated multi-sectoral delivery agencies, working groups, and task forces which enable place-based development
4. Adopt an integrated urban transport strategy as a central tool for aligning sectoral efforts
5. Establish a widely available and legible stakeholder map which is kept up to date
6. Promote the use of multi-criteria assessments as part of infrastructure planning and monitoring of implemented projects
7. Take advantage of readily available information and communication technologies to coordinate the planning, design and implementation of urban infrastructure projects
8. Make transparent use of proxy data when primary statistics and information is not available
9. Build on and continuously develop existing knowledge and expertise particularly within the city administration and key infrastructure utilities
10. Educate those responsible for coordination efforts through capacity building for individuals and organisations operating at critical connection points between different infrastructures and the city

Introduction

A vast body of research has documented the shortcomings of top-down transport infrastructure development in cities (Goodwin et al., 1991; Banister, 2005; Cervero et al., 2017). Above all, this includes unequal access, local accessibility traded-off against metropolitan accessibility, place functions of streets replaced by movement functions, reduced road safety, excessive congestion and travel times, and energy intense and polluting urban mobility (Rode et al., 2017).

One of the most important priorities for urban development is enhancing urban accessibility – the ease with which people can reach destinations and connect with one another. Accessibility depends on land use – where different resources are located within the city and relative to one another – as well as transport options, the availability of opportunities at different times, and people’s individual needs and capabilities.

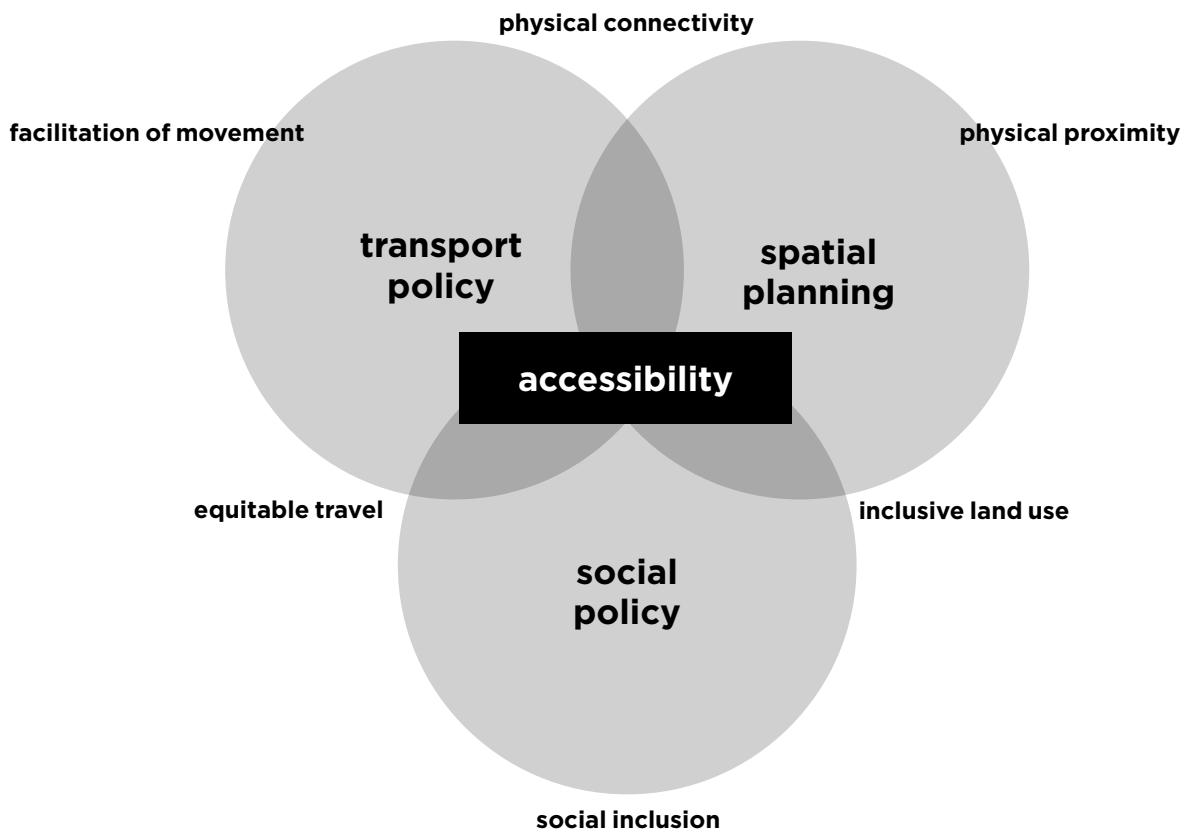
Urban accessibility requires actions in at least three policy domains (Figure 1): spatial planning (land use), transport, and social policy; with strong cross-sector collaboration and governance reforms to support joint efforts. In addition, transport infrastructure, urban utilities and city

development are closely interconnected. However, each sector’s role is fairly well defined and differentiated, and those sector-specific remits are robustly embedded into the institutional frameworks of most countries and cities.

This policy brief recognises that infrastructure delivery mostly happens within highly specialised departments and government agencies. The aim is to identify pragmatic opportunities to connect existing silos of governance better in order to advance a more sustainable urban transport and development agenda. Thus, even as governments work to integrate key institutions and policies, they can begin to work on sector-specific actions to advance urban accessibility. Transport infrastructure alone cannot deliver good urban access, but it has a crucial role to play.

Figure 1. The urban accessibility nexus

(source: Rode, Heeckt and da Cruz 2019)



Research Summary

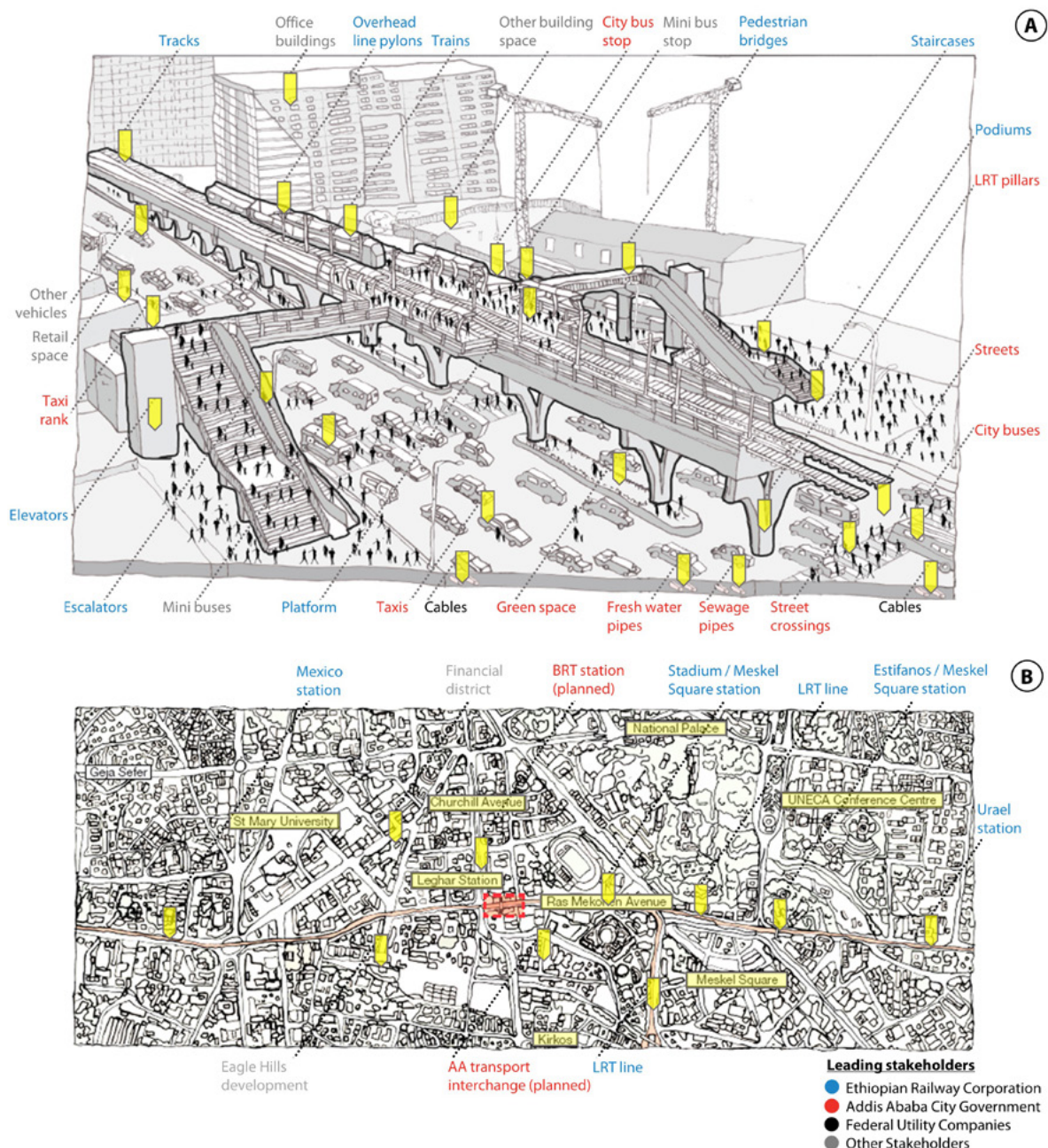
Coordinating technical systems in cities alongside other urban activities requires complex patterns of cooperation. Integrated urban governance addresses such cooperation requirements and aims to take advantage of synergetic effects and improve policy coherence; avoid blind spots, inefficient duplication and redundancy; overcome poor sequencing; enhance social learning; and break organisational lock-in to escape institutional inertia and enable innovation. Underpinning the relevance of integrated governance for cities is the recognition that a “shared spatial system” (Heeres et al., 2016) demands

an integrated approach (see Figures 2 and 3 for the case of transport interchanges). For example, economists emphasise that cities are built around ‘integrated returns’ by profiting from a range of cross-sectoral synergies, economies of scale and lower transport costs that each demand appropriate planning and policy practice. Calls for strengthening integration are typically related to market and policy failures and, particularly in cities, by the desire to address the negative outcomes of sectoral policies of previous decades (Rode, 2018).

Figure 2. Leghar interface and stakeholders

(A) high resolution (approximately 150 by 150 meters),
 (B) low resolution (approximately 2.5 by 1 kilometres)

(source: authors).



Over the last decades, questions about more integrated designs for urban infrastructure have become particularly important as a result of breaking up and privatising formerly unified infrastructure utilities (Graham and Marvin, 2001; Graham, 2009); new requirements for infrastructure resilience (Derrible, 2017); an urgent need for integrating transport infrastructure with spatial development (Rode, 2018); and various ecological concerns (Hajer, 1995; Geerlings and Stead, 2003; Kennedy et al., 2005).

For operationalising integrated governance, four main groups of integration mechanisms can be differentiated (Figure 4): those related to governance structures, those that focus primarily on processes of planning and policy-making, a range of more specific integration instruments, and underlying enabling conditions. Such mechanisms can target integration at strategic or operational levels (Heeres et al., 2016). Below follow relevant insights on each of the four mechanisms that have emerged from the analysis in Addis Ababa and Dire Dawa.

Figure 3. Dire Dawa interface and stakeholders

(A) high resolution (approximately 250 by 250 meters),
 (B) medium resolution (approximately 6 by 2 kilometres)
 (source: authors).



Figure 4. Four principal groups of integration mechanisms

(source: Rode, 2018).

	Static, formal, visible	Dynamic, variable, invisible
Governance systems	<p>1 Structures</p> <ul style="list-style-type: none"> - system boundaries as administrative boundaries - central node single leadership - networks of trust and mutual interest 	<p>2 Process</p> <ul style="list-style-type: none"> - management of interrelated tasks and milestones - incorporation of broader sectoral perspectives - collaboration of key stakeholders
Support systems	<p>3 Instruments</p> <ul style="list-style-type: none"> - Information and communication technology - strategic visions and integrated plans - multi-criteria assessments and resource distribution 	<p>4 Enabling</p> <ul style="list-style-type: none"> - capacities of individuals, groups and civil society - leadership and quality of senior officials - knowledge, experience and collaborative culture

The findings summarised in this Policy Brief are based on a detailed analysis of two case studies: the Light Rail Transit (LRT) Leghar station in Addis Ababa and the Addis-Djibouti Railway (ADR) Dire Dawa station. These are both exemplary cases of infrastructure interfaces where different infrastructure systems or sub-systems interact. The fieldwork revealed that across the various integration mechanisms, ‘structures’ based on hierarchical and central leadership prevailed. Both the ADR and Addis Ababa’s LRT were projects directed from the highest political level. More networked governance structures, elaborate planning processes and integration instruments only played minor coordination roles. In terms of integration ‘processes’, the main vehicle for wider stakeholder engagement was a form of ‘coordination-by-committee’. The Railway Development Committee was organised via the Prime Minister’s Office. It met monthly and included high-level individuals. Reference to a range of integration ‘instruments’ cutting across pre-assessments, evaluations, communication technology and financial mechanisms was almost entirely absent from the interviews. By contrast, a final coordination domain, which was repeatedly mentioned, falls under the broader ‘enabling’ category and concerned leadership and technical capacities of organisations and individuals.

There is widespread agreement that the fast pace of designing and building the LRT and the new national railway to Djibouti benefited from the institutional power and actions of the ERC and the federal government’s political leadership. But this has come at a cost from which the projects are

suffering today and that is visible in the context of the two analysed transport interfaces.

The perceived rationale for this tightly controlled and centralised leadership approach according to most interviewees was twofold. First, there was a perceived and real trade-off between fast delivery and broader coordination – which also resulted in a lack of extensive consultations with project affected populations for both the rail projects as well as their interfaces. Second, financial constraints limited broader engagements with urban development concerns for which the professional capacity, at least in Addis Ababa, would have been available.

By contrast, a decentralisation of responsibilities during the operations phase was seen as generally more advantageous, given that transport tariffs are set by the city government and transport service experience is considerable within the city transport bureau. The bigger question as both projects moved towards day-to-day operations was about how to deal with land holdings and land development that may be able to generate the revenue to cover infrastructure and operational costs. For the Leghar LRT station this concerns the coordination of transit oriented development (TOD) involving various land and urban development organisations alongside transport and other utilities in Addis Ababa. For the Dire Dawa station, coordination mainly concerns the new industrial and logistics developments, the creation of a new urban hub around the station and infrastructural and service links with the Dire Dawa city centre.

Governance Structures

- Governance geography - system boundaries as administrative boundaries:** The examined transport systems mainly relied on sectoral governance via technical departments. Even city-level governance in Addis Ababa and Dire Dawa was mostly subjected to national level sectoral responsibilities. While national rail concerns linked to the ADR were more naturally part of ERC’s remit, the urban transport character of Addis’ LRT made this choice less obvious and attitudes towards ERC-led coordination were more critical.
- Central node single leadership:** This approach to coordination was by far the most recognisable and centrally included the Prime Minister’s Office and the ERC as leading actors. Both the ADR and Addis Ababa’s LRT were projects directed from the highest political level which was evident even for each of the two analysed transport interfaces, the Dire Dawa station and the Leghar station.
- Networks of trust and mutual interest:** A balanced multi-level urban governance approach as well as a pro-active role for key stakeholders beyond rail-related responsibilities was only marginally evident in the coordination efforts. For example, both city-level urban governance during the design and implementation phase of the LRT project and city-level strategic transport planning tended to be overruled by national

coordination efforts. Here, the leading coordination role of ERC, could have benefited from more frequent exchanges with technical staff, their empowerment and a great willingness for compromise.

Governance Processes

4. **Management of interrelated tasks and milestones:** Two committees were at the core of stakeholder coordination for the LRT project – a steering committee and a technical committee. The EPC (Engineering-Procurement-Construction) contracting format that the ERC signed with the Chinese contractors exacerbated some of the coordination tensions and rigidified the implementation process. Essentially, it meant that once the contract was signed there was little room for revisions and, according to one interlocutor, other stakeholders including the Federal Transport Authority had “no right to engage with the Chinese” (interview with Senior Official, 2018).
5. **Incorporation of broader sectoral perspectives:** Coordination of the ADR remained mostly sectoral involving stakeholders operating at the scale of the entire line rather than place-based coordination specific to the individual interfaces. The LRT project coordination also did not include dedicated sub-committees working on individual interfaces such as Leghar station. Consultations that took place with Ethiopian Electric Power after the contract had been signed were described as courtesy meetings with little weight.
6. **Collaboration of key stakeholders:** Committees facilitated stakeholder coordination but with mixed effectiveness, partially due to the capacity and agency of individuals and organisations. Across both interfaces, more critical interviewees emphasised how little ERC coordinated with other stakeholders, particularly at the beginning. But there was also disagreement regarding the extent to which the ERC did everything behind closed doors. While some argued that the city administration was surprised to see certain LRT design features being implemented (having not being informed about them), others emphasised that the city had accepted the designs as outlined in the contractual agreements. Although stakeholder meetings were held on a regular basis, interviewees agreed that the processes of involvement may not have been as meaningful as they could and should have been.

Instruments

7. **Information and communication technology:** A key role of readily available information and communication technology as part of coordination efforts was not registered as part of the research. Interviews confirmed that utility companies at times did not have the accurate and up-to-date documentation of their own assets, which posed a particular challenge in this regard.

8. **Strategic visions and integrated plans:** References to Ethiopia’s elaborate framework of strategic planning documents, from the Planning Commission’s Growth and Transformation Plans (GTP I and II) to Addis Ababa’s Structure Plan were rare. For the case of Dire Dawa, and according to one of the Mayor’s advisors, the fundamental logic of regional plans being developed based on national planning documents was not followed: “policies were [only] used as a reference points” (interview with Senior Advisor, 2018). As a result, opportunities for better systems integration for the Dire Dawa station may have been missed.
9. **Multi-criteria assessments and resource distribution:** No references were made to multi-criteria assessments as part of infrastructure planning and monitoring once projects were implemented. Both could have facilitated the evaluation of complex infrastructure interfaces. “The government is in a hurry to give solution [...] without evaluating what went wrong” (interview with Country Director, 2018).

Enabling Conditions

10. **Capacities of individuals, groups and civil society:** Above all, the considerable advances in railway-related knowledge and expertise allowed for an increasingly confident rail-coordination approach led by ERC beyond relying on Chinese subcontractors. In the context of capacity building, ERC centralisation was seen by interviewees as a major advantage in establishing a hub that specialised in railway-related concerns.
11. **Leadership and quality of senior officials:** Strong leadership capacities by Ethiopia’s Prime Minister at the time as well as ERC’s first CEO were important for enabling the centralised coordination described above. Individual career paths also mattered. The former Minister of Transport Diriba Kuma at one point became the Mayor of Addis Ababa chairing the technical committee, this compensated for the lack of formal coordination between the city and the ERC and allowed for some informal influence on behalf of the city administration.
12. **Knowledge, experience and collaborative culture:** Some existing knowledge and expertise within the Addis Ababa City Administration and the old railway organisation could have been utilised to a greater extent. For example, instead of retraining the workers of the old railway and integrating them into the newly established ERC, Meles Zenawi, Ethiopia’s President at the time, decided to let the old railway organisation “sink or swim” (interview with Department Head, 2018). However, new local expertise was rapidly being developed and the ERC established a Center for Railway Engineering at the Addis Ababa Institute for Technology intended to build capacity and train staff in core engineering courses.

Policy Recommendations

It is important to acknowledge that the rollout of major, large scale infrastructure systems in cities is an enormously challenging task in any context worldwide. The coordination and governance challenges faced by transport infrastructure interfaces such as Berlin's new international airport, London's new Crossrail line and New Delhi's BRT stations (a system now permanently closed) are prominent and recent examples of this. The fact that Ethiopia has been able to build and start operating two electrified rail systems in less than ten years needs to be recognised as a major achievement. Based on the findings of this research, the following ten recommendations were identified to improve the planning, design and implementation of transport infrastructure in Ethiopian cities. These action points reflect the critical need for a better integration and coordination between infrastructure rollout and the development of cities.

- 1. Strengthen city-level leadership as part of strategic transport infrastructure interventions:** In Addis Ababa, city level agencies can play a central role in coordinating with multiple stakeholders particularly at the hyper-local level (i.e. transport infrastructure interfaces). The research indicates that city-level governance may be better suited for dealing with planning dynamics, achieving better integration and delivering more responsive transport operations – perhaps at the cost of a lengthier implementation period than the national level governance.
- 2. Shift the focus of infrastructure development towards the development of urban places and away from sectoral solutions:** Make use of a greater degree of place-based coordination linked to individual transport infrastructure interfaces that complements pure sectoral coordination. Adjusting the 'governance geography' of complex urban infrastructure development to city-wide and sub-city levels can help to incorporate a greater degree of place-based coordination. In addition, use specific locations as test cases/simulations of coordination and compatibility. Think about and design specific infrastructure interfaces – where different infrastructure systems or sub-systems interact. Scale up what you learn across the whole system.
- 3. Create dedicated multi-sectoral delivery agencies, working groups and task forces which enable place-based development:** Ensure that revised governance structures facilitate multidisciplinary by actively going beyond engineering and including other urban-related professionals. Promote the formation of operational project groups with shared responsibilities and increase the diversity (rather than the absolute number) of stakeholders. Stakeholder participation is a resource to help government make better decisions, not to delegate political accountability. So, even if extended consultation takes place, assume political responsibility for final decision. Also, enable a more collaborative work culture where middle-level managers and technical staff can collaborate across agencies and as part of dedicated project groups. A dedicated organisation responsible for the integrated delivery of transport infrastructure and urban development can help to overcome a sectoral bias where one dominant sector overpowers others. This organisation can be of temporary nature and is given special coordination powers by the mayor and national leadership.
- 4. Adopt an integrated urban transport strategy as a central tool for aligning sectoral efforts:** The preparation and publication of such a strategy establishes a guide for all subsequent work. This dedicated strategy should stem from a city's structure plan and should be entirely aligned with it. In addition, any integrated urban transport strategy will have to be centrally concerned with the ultimate objective of increasing urban accessibility and put forward principles and strategies for better movement enhancing and not compromising overall accessibility. This is particularly important when it comes to micro-accessibility, the place function of streets and the full integration of land use and transport systems.

5. **Establish a widely available and legible stakeholder map which is kept up to date:** A comprehensive and accessible overview of all key stakeholders involved in or impacted by the transport infrastructure and urban development nexus establishes the basis for better communication, institutional designs and coordination arrangements. Understanding the (continuously changing) network of actors and their links and how these influence coordination activities provides the baseline for any improvements.
6. **Promote the use of multi-criteria assessments as part of infrastructure planning and monitoring once projects have been implemented:** Cost, quality, time, social, economic and environmental performances of new infrastructure and urban development initiatives entail many trade-offs and are difficult to consider in aggregate terms. The latest generation of policy-led multi-criteria analysis provides an opportunity to more holistically assess alternative proposals. Similarly, making greater use of assessing the impact of existing and already implemented programmes can provide particularly insightful information for future projects.
7. **Take advantage of readily available information and communication technologies to coordinate the planning, design and implementation of urban infrastructures:** Basic ICT infrastructure already offers considerable opportunities for better coordination. Besides more frequent virtual communication (phone calls, conference calls, text messages, message boards, group chats, etc.), more efficient sharing of information across key stakeholders is particularly important. This can be facilitated by new sharing protocols for exchanging information stored on physical storage devices (memory sticks and mobile hard drives) or on virtual storage when bandwidth and internet reliability is sufficient (e.g. secured FTP servers or cloud storage). Increasingly ICT also offers dedicated coordination solutions and Addis Ababa's city administration is already trialling a virtual infrastructure coordination facility for the development and maintenance of streets.
8. **Make transparent use of proxy data when primary statistics and information is not available:** Access to reliable data and statistics for urban development and infrastructure coordination are likely to remain limited over the coming years. To a degree, this can be compensated by making use of data that is inferred from readily available information. Most importantly, visual records such as aerial photography can increasingly be used for data analysis via computer-assisted sensing programmes and can help inform planning and coordination efforts.
9. **Build on and continuously develop existing knowledge and expertise particularly within the city administration and key infrastructure utilities:** It is central for maintaining and advancing knowledge and coordination efforts to embrace and take advantage of existing expertise and working relationships within institutions at various levels but particularly at the city level. Innovating and allowing for new ideas and perspectives to be embraced is equally important and ideally both can be brought together.
10. **Educate those responsible for coordination efforts by offering capacity building for individuals and organisations operating at critical connection points between different infrastructures and their governance:** Capacity building is crucial across government levels and within the wider stakeholder organisations. But it is particularly key for the people responsible for coordination and integration across sectors. For central government agencies such as ERC, there is an opportunity to increase internal capacities on how to involve key stakeholders efficiently and constructively.

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