

# Predicting the Outcomes of Africa's Regional Transport Infrastructure Projects

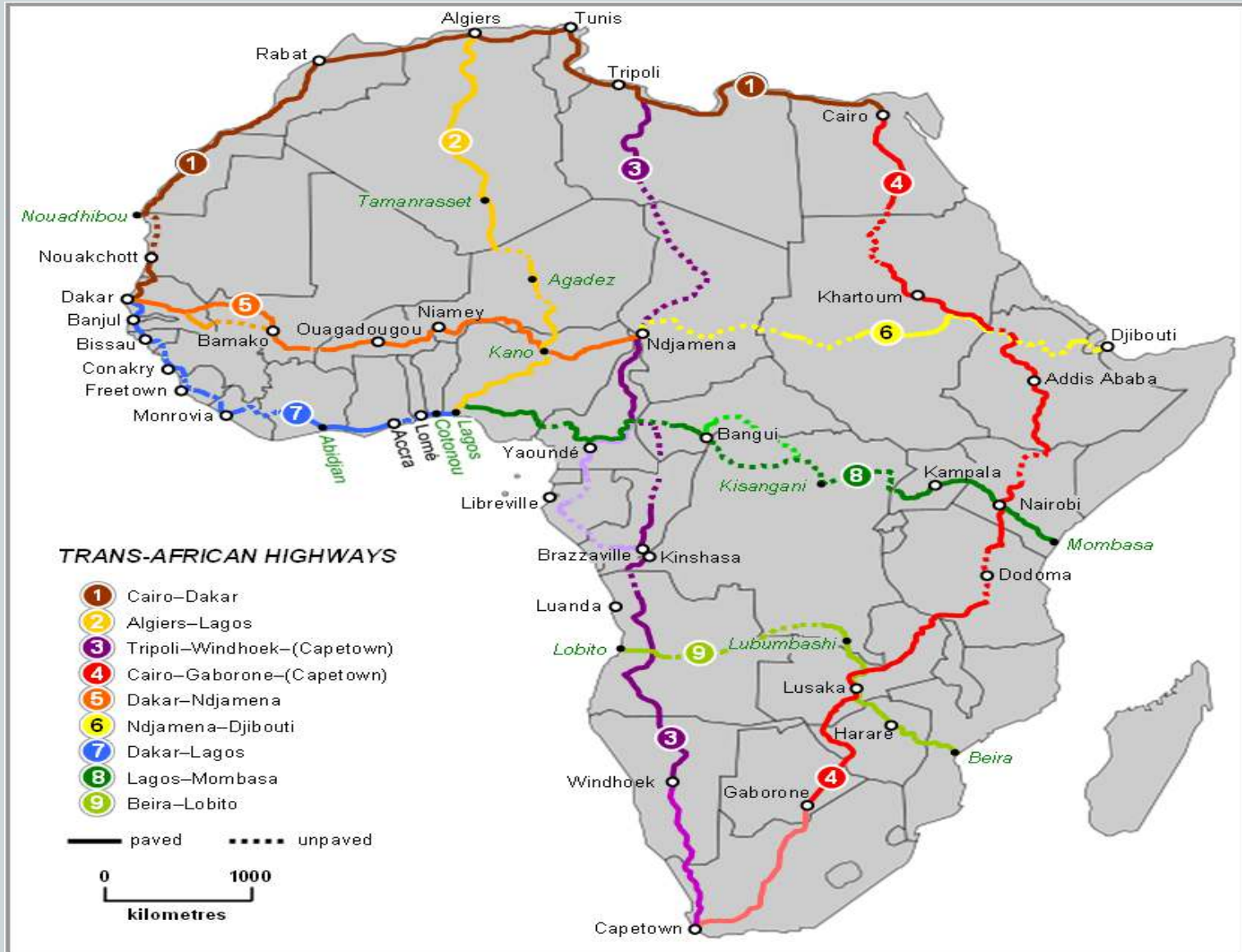
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# Outline

- Research Problem and Questions
- Background
- Objective, motivation, contribution
- Methodology
- Conclusion and Way Forward

# Conceived in 1970s: More than 20% Missing Links



# Problem Statement

- Paradox: poor infrastructure in Africa despite numerous programmes
- Reflection of low implementation of programmes – notably regional ones
- Increasing concerns about slow pace of implementation of programmes
  - Could hamper trade, regional integration and economic transformation agenda
- Broad range of explanations suggested, but mostly anecdotal
- Research aims to provide evidence based on careful study

# Research Questions

- What are the critical success factors of regional transport infrastructure projects in Africa?
- To what extent do the different factors contribute to progress in the implementation of regional infrastructure projects?
- To what extent does the initial project condition contribute to the implementation of a regional project?

# Africa's Major Infrastructure Initiatives

TAH (1970s – ongoing)	UNTACDA (1978-2000)	PIDA (2012-2040)
<ul style="list-style-type: none"> <li>(a) Provide direct road links between capital cities in the continent</li> <li>(b) Contribute to the political, economic and social integration and cohesion of Africa</li> <li>(c) Ensure road transport facilities between important areas of production and consumption</li> </ul>	<ul style="list-style-type: none"> <li>(a) Establish an efficient and integrated transport system to promote the physical integration of Africa, facilitate trade, and ultimately achieve self-sustaining economic development</li> <li>(b) Ensure Africa's participation in globalisation process and</li> <li>(c) Contribute to poverty alleviation on the continent</li> </ul>	<ul style="list-style-type: none"> <li>(a) Slash transport costs and boost intra-African trade</li> <li>(b) Link major production and consumption centres</li> <li>(c) Provide connectivity among major cities in Africa</li> <li>(d) Open landlocked countries and improve their contribution to sub-regional and continental trade</li> </ul>

# Africa's Major Infrastructure Initiatives

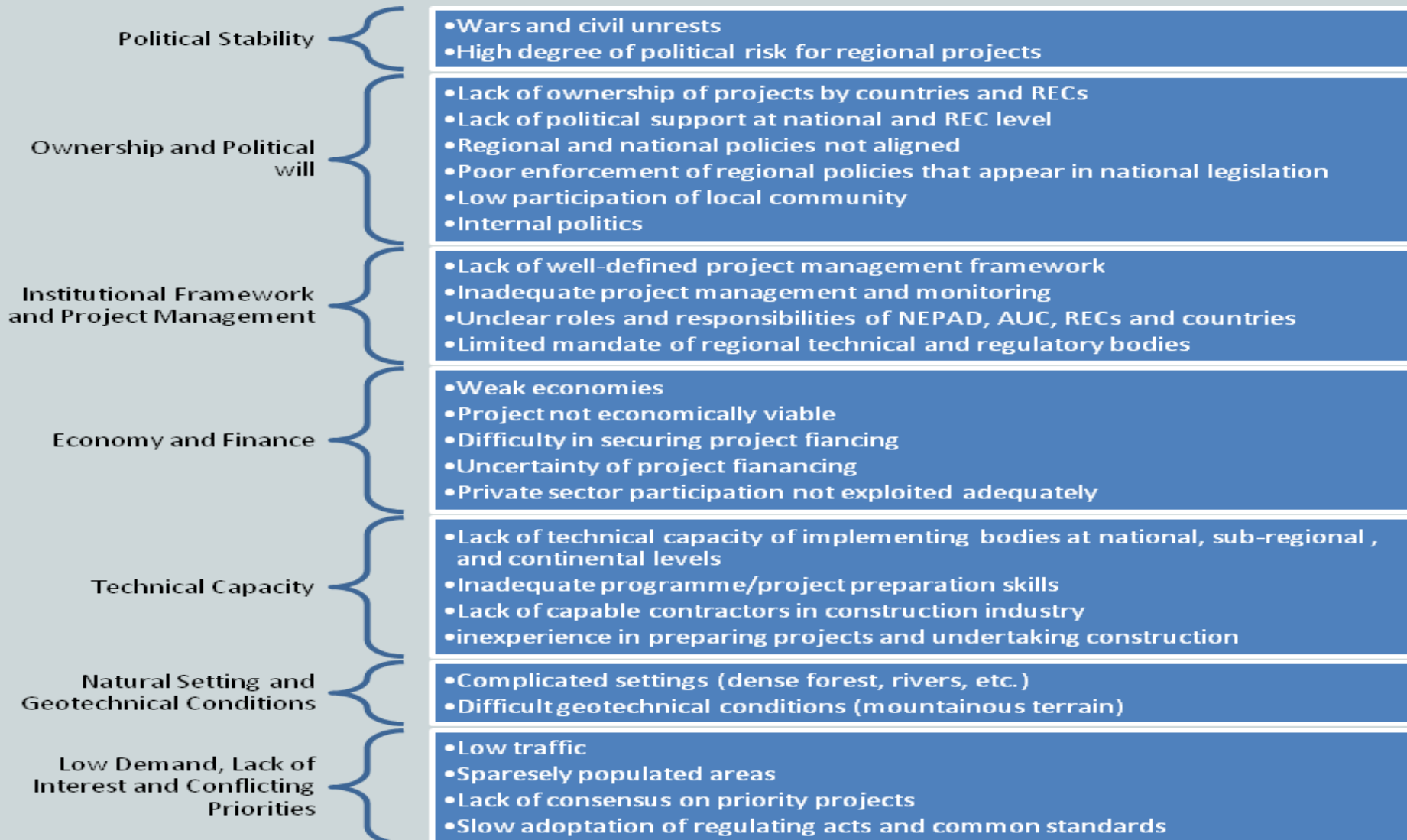
<b>NEPAD Short Term Action Plan (2002-2010)</b>	<b>AU/NEPAD African Action Plan (2010-2015)</b>
<p>(a) Assist in implementing policy reforms in RECs and member States</p> <p>(b) Facilitate and support implementation of short-term regional projects</p> <p>(c) Focus on: Facilitation; capacity building; investment; preparing future projects</p>	<p>(a) Accelerate implementation of Africa's development initiatives , including MDGs</p> <p>(a) Priority programmes to speed up regional integration</p>

# Low Implementation Rate of Initiatives

Programme	Implementation Progress
Trans-African Highways	> 20% remains as missing links
UNTACDA II	<ul style="list-style-type: none"><li>• 354 Out of 708 projects (50%) completed</li><li>• 112 (16%) partly completed</li><li>• 202 (28%) unimplemented</li><li>• 40 (6%) abandoned</li></ul>
NEPAD Short Term Action Plan	<ul style="list-style-type: none"><li>• 15.3% completed</li><li>• Completion rate varied across categories of project. 0% for capacity building; 20% for investments; 33.3% for studies; and 6.9% for facilitation projects</li></ul>



# Determinants of Project Implementation



# Purpose of Study

- Improve understanding of factors underlying performance of regional infrastructure projects in Africa
  - Determine the critical success factors of regional transport infrastructure projects in Africa
  - Quantify the contribution of different factors to progress in regional projects

# Motivation & Contribution

- Contribute to practical managerial knowledge on infrastructure projects in Africa
  - Use identified critical success factors as checklist in project preparation and implementation
  - Sheds light on why some projects are more successful than others
  - Provoke thought on possible solutions to regional transport infrastructure challenges

# Methodology

- Identifying factors contributing to implementation of projects
  - From programme reports and review of literature
- Undertake survey of experts to confirm critical success factors
- Identify and select data sources for indicators to measure critical success factors
  - Selection criteria: readily availability of data; time series data; minimum information requirement from project implementation units

# Survey Findings

- Confirmed critical success factors:
  - Ownership of project
  - Access to finance
  - Technical capacity
  - Project management
  - Institution/Governance
  - Environmental factors
  - Project characteristics

# Hypotheses

- A project is more likely to progress from one stage to another in the project development cycle if:
  - It is small in scale, has a low cost and was at an advanced stage of preparation at the start of programme ;
  - It is located in a country which is politically stable and secure; and that has good governance, strong institutions, as well as an expanding economy;
  - It has effective management and strong ownership at regional and national levels;
  - There is strong national capacity to plan and implement projects; and
  - There is access to donor funding.

# Statistical Analysis: Logistic Model

- Logistic regression (logit model) used to test hypotheses
  - Since dependent variable is categorical
- Assumption to be tested
  - Probability of progress in project implementation depends on the critical success factors
- The equation for such a model could be:

$$L_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_{k-1} X_{k-1,i} \quad (1)$$

- When an X variable increases by one unit, the predicted values (logarithmic odds of progress in project implementation) increases by  $\beta$  units
- The Value of logit can be converted to probabilities

# Statistical Analysis (con't)

- Inserting the independent variables in equation (1), the model becomes
- $L_i = \beta_0 + \beta_1 AF + \beta_2 TC + \beta_3 G + \beta_3 E + \beta_3 PC + PIC\beta_3$
- Where:
  - AF = Access to Finance
  - TC = Technical Capacity
  - G = Governance
  - E = Economic Environment
  - PC = Project Cost
  - PIC = Project Initial Condition



# Operationalization of Variables

Instrument: Data Source	Targeted Respondents	Variables			Analysis
		Dependent	Independent	Indicators	
<p><b>Document analysis (GCI, WGI, IAG)</b></p> <p><b>Structured Questionnaires /in-depth interviews</b></p>	<p>Project Managers/Focal Points in Project Implementation Units</p>	<p>Project Performance</p> <p>Shifts across stages in project cycle</p> <ul style="list-style-type: none"> <li>Dummy Variable: 1 if there is shift and 0 otherwise</li> </ul>	<ul style="list-style-type: none"> <li>Access to Finance</li> <li>Technical Capacity</li> <li>Governance</li> <li>Economic Environment</li> <li>Project Cost</li> <li>Project Initial Condition</li> </ul>	<ul style="list-style-type: none"> <li>Donor Support</li> <li>Higher Education and Training &amp; Availability of Scientists and Engineers</li> <li>Aggregate Governance Score</li> <li>GDP Growth</li> <li>Project Cost</li> <li>Project Initial Condition</li> </ul>	<p>Logistic regression</p>

# Data Collection

- Interviews
- Questionnaires
- Secondary sources
  - World Bank – World Governance Indicators (WGI)
  - World Economic Forum – Global Competitiveness Index (GCI)
  - Documentation
  - Project Fiche
- Almost all information required to run model is publicly available

# Selection of Project and Size of Sample

- Model applicable for projects in specific sub-regional or regional programme
- Suitability determined by number of projects in programme
- Techniques for determining sample size
  - Ratio of observations to independent variable should not fall below 5: therefore sample size of 30 is sufficient
  - Degree of freedom (number of observations minus number of variables: should not be too small)

# Conclusion

- Flexibility of model
  - Can be used to analyse separate programmes at sub-regional or regional levels
  - Can also be used to compare effectiveness of different programmes
- Practicality of model
  - Most information required is readily available from credible sources
- Way Forward
  - Application of model
  - Establish contact with project implementation units
  - Project level data collection
  - Partners/Sponsors are welcome

# Thank You

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**Present**



**Future**

