Adapting the Global Macro-Roadmap for transport decarbonization & resilience

Global Report 31/10/2017

ACKNOWLEDGMENTS

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digitalmatatus

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ZERO EXCLUSION CARBON POVERTY

THE EARTH INSTITUTE
COLUMBIA UNIVERSITY

OMA

OptimaDecision

TaxiJet

Transport for Cairo

مواصلات للقاهرة

WhereIsMyTransport

YOUR STORY

An African pathway to sustainable mobility

Since its creation, PPMC has been giving the floor to organizations and initiatives that support sustainable transportation models. When the 2015 Paris Agreement on Climate Change set the ultimate 1.5 Degree Celsius target, PPMC decided to launch the Global Macro Roadmap for Transport Decarbonization.

Going even further

Convinced that inclusive, resilient and cleaner models could emerge from the unique African transportation ecosystems and inspire other regions, PPMC propound to decline an African Roadmap.

But how to include the views of stakeholders not usually invited to sit at the table ?

That's how the DeTrAr initiative (Decarbonation of Transport African -Macro-Roadmap) was born.

Three steps to start a sustainable journey

To adapt the Global Macro Roadmap, PPMC needed to understand the African transportation ecosystems realities. A dialogue with experts, scientists and startups was conducted, allowing gap points to emerge.

Then, a search for the diverse but hardly reachable African transportation actors was initiated. An extensive consultation was led to get local views on how to overcome challenges for the transport sector regarding climate change. PPMC extracted valuable inputs through an online survey and a thematic workshop at Climate Chance Summit, in Agadir, September 2017.

From this actions, priorities and levers of actions arose **to help shaping sustainable African transportation ecosystems.**

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An African pathway to sustainable mobility

Along the pathway, PPMC's message went worldwide:
> 8 000+ people reached through Social Media
> 300+ people reached by emails
> 50+ participants to the survey
> 30+ calls
> 14 Interviews

PPMC met with individuals, academics, corporate, entrepreneurs and local authorities ready to take part in concrete actions to implement sustainable local transportation roadmaps.

Air Tanzania – The Wings of Kilimanjaro
ANDANDO Covoiturage
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ACRONYMS AND ABBREVIATIONS

BRT Bus Rapid Transit
CO2 Carbon Dioxide
COP22 The 22nd Session of the Conference of the Parties
CCAC Climate and Clean Air Coalition
DeTrAr Decarbonization of Transport (African Macro) Roadmap
GCAA Global Climate Action Agenda GHG Greenhouse Gas
ICA The Infrastructure Consortium for Africa
IEA International Energy Agency
LEZ Low Emission Zones
MCB Michelin Challenge Bibendum
OECD Organisation for Economic Co-operation and Development
PPMC Paris Process for Mobility and Climate SDGs Sustainable Development Goals
SLoCaT Partnership on Sustainable, Low Carbon Transport
WB The World Bank

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GLOSSARY

Black carbon: consists of pure carbon in several linked forms. It is formed through the incomplete combustion of fossil fuels, biofuel, and biomass, and is emitted in both anthropogenic and naturally occurring soot.

Fine particle: Fine particles are airborne **particles** which are smaller than coarse **particles**.

Inaction (risk of): no proactive measure are taken to prepare infrastructure resilience for climate change. **Coarse particles** are the relatively large airborne **particles** mainly produced by the mechanical break-up of even larger solid **particles**.

Wrong way (risk of): a wrong adaptation decision takes place, when an adaptation strategy is based on wrong climate change effect scenario.

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DeTrar: a short synthesis

A - Summary of actions

B - Key facts: African specificities

C - 3 priority challenges for an African Macro-roadmap

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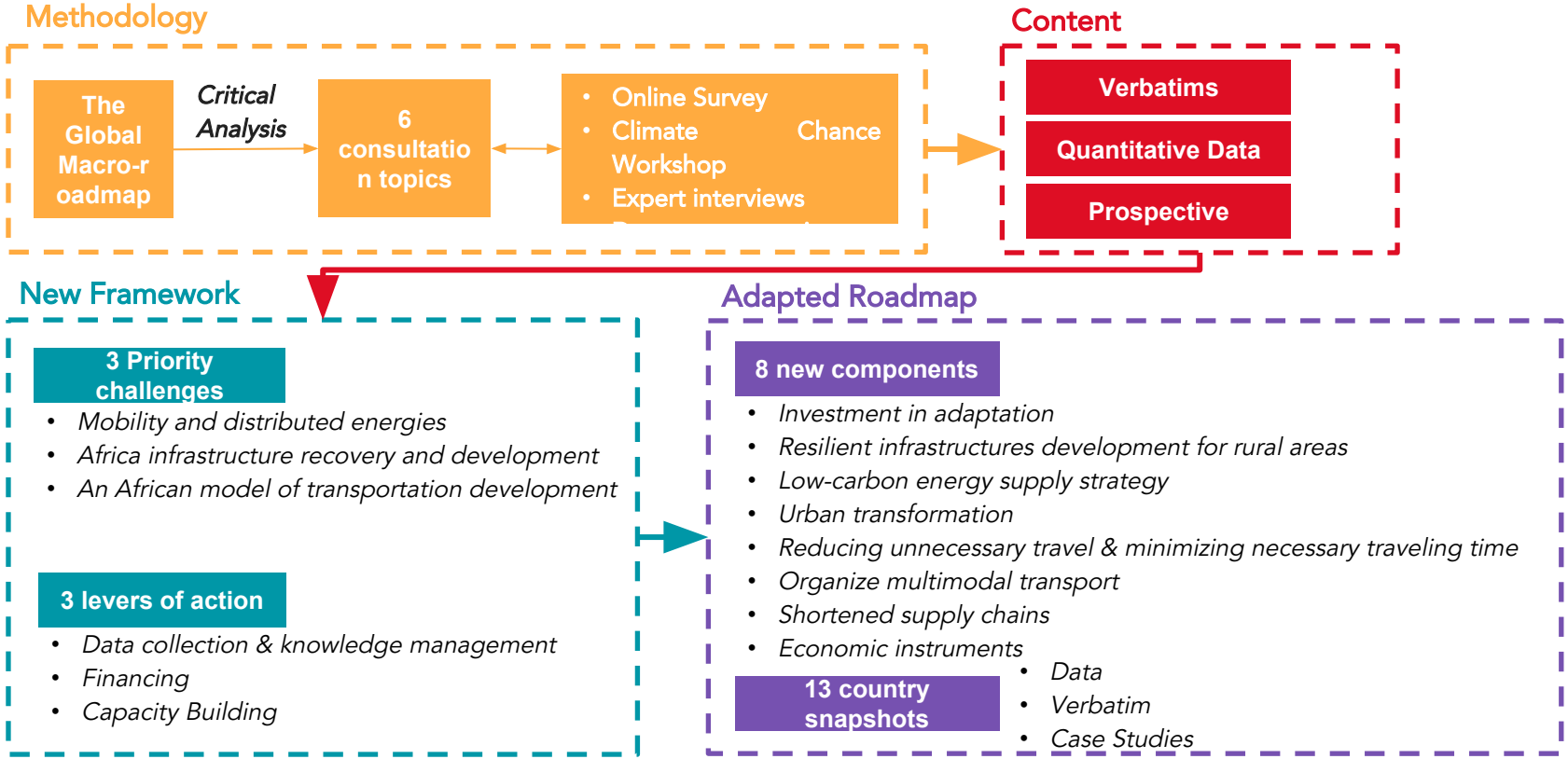
01 - Our approach



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01 - In 2100, 40% of all humans will be African.

- Of the 2.37 billion additional population expected in the World by 2050, Africa will represent 54%. By 2100, 40% of all humans will be African.
- Infrastructures needs won't follow linear path and will require agility and creativity from transportation stakeholders. The continent demographic jump comes along with a rapid urbanization and will count 12 megacities by 2025 and sprawling effect is to contain.
- African countries will have to develop low-resource consuming and inclusive transportation solutions in scaling up what already exists. In the contrary of Northern countries transport development, African countries will have to foster artisanal transports organization which represent 80-90% of public transport passengers trip in African medium-sized cities.

02 - Make the most of the Leapfrog opportunity in Africa: the potential of reverse innovation.

"The fact of having lagged behind, makes possible to skip certain steps and immediately adopt more advanced technologies, generally developed at the local scale" L. Zinzou, Benin former Prime Minister

- Africa is where the mobile revolution has started (MPesa in 2007) and expanded to other sectors (Fintech, E-Health, EdTech, Clean Energy, AgroTech...).
- According to the World Bank, there is today 314 tech hubs in 93 cities and 42 countries.
- With 900 million mobile phones currently operating, Africa is the fastest-growing mobile market and has the highest mobile broadband growth rate in the world, including in rural areas. In 2020, the continent smartphone penetration rate will be of 57%.
- Specifically in the transportation sector, digitalised information on artisanal transport is becoming increasingly abundant, allowing new bridging gap solutions development between formal and artisanal transport systems.

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01 - Mobility & distributed energies: Engage a shift toward Sustainable Transport solutions thanks to the untapped potential in renewables of the continent.

- Leapfrogging to hybrid and greener mobility solutions requires off-grid solutions development to supply remoted areas that are not connected to the main grid. Embedded PAYG system to off-grid solutions should also impact consistently transportation services.
- Off-grid solutions are overall less costly but face development challenges (last mile delivery, financing, product standardization…).
- Electric mobility is deeply connected with the necessity of reaching a certain level of maturity regarding electrification rates as only 32% of the continent is powered in 2017 (Power Light Action, 2017).

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02 - Increase Africa infrastructure development, recovery and resilience.

- Infrastructures recovery is mandatory for the continent development but project funding remains challenging (total funding was $62.5bn in 2016, a 21% decrease compared to 2015). Developing infrastructures require an additional $45 billion financial effort each year (ICA, 2017).

- Cities are booming and planning choices have to be made between nebulous and compact cities (Niamey's example in Niger snapshot). Infrastructure recovery gap is also about overcoming current polarization and disconnection between urban and rural areas (60% of the population).

- Countries must identify adaptation strategies fitting their vulnerabilities and balancing the risk of inaction with the risk of *wrong way*.

03 - Foster the emergence of an African way of transportation development.

- Despite being the global GHG emissions least contributor Africa is one of the World's most climate change vulnerable area.
- The continent carbon footprint is meant to be upward (due to its increasing economic integration) but a replication of Western transportation models is not envisionable.
- Planning approaches should be transversal, demand based and holistic especially focusing on awareness raising and capacity building. African development will need South-South coordination models and objectives synergy among multi-actors cooperation platforms that exceed common borders or similar topology of actors (States, institutions, development agencies, NGO, start-ups...).

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04 - Sustainable mobility in Africa will be safe or will not be.

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D - Levers of action

Data collection & knowledge management

Data, knowledge and ICT unavailability and inaccessibility slow down adapted transportation solutions development. However ICTs and leapfrogging can be easily activated regarding the current African context:

> **Collective open data collection** processes should be encouraged to **provide transportation actors information** (Digital Matatus in Nairobi, WhereIsMyTransport in CapeTown).

> **Data collection can participate in improving planning forecasting processes and the user experience (Transport for Cairo).**

> Enhancing ICTs use and appropriation **can participate in improving planning processes. ICTs sensitization process** needs to take into account cultural specificities (Optima Decision, Algeria).

Financing

Appropriate investment in infrastructures could accelerate economic growth by 2% per year. This can be achieved by:

> I**mproving end-users financing**: reducing the share of transportation financing in modests households spending which participation is still not sufficient to fund infrastructure project expansion.

> **Expand project funding sources** not only leaning on institutional funding (e.g ICA puts Infrastructure funding decrease on China reducing its investments efforts in Africa in 2016) by enabling more private sector participation in:

- infrastructure project (Issad Ebrab, pan-african railroad infrastructures project);
- capital venture (PIC, a venture capital investing in Mobius, the first African car-making company);
- innovation initiatives (Mest).

Capacity building

> A **transversal targeting approach** including climate change, partnership, cooperation, financing, business models, design, construction, maintenance, operation, client relationship, user behavior…

> Addressing **education and human capital development** (e.g. The survey revealed that 46.66% of participants feel that their team or themselves were not enough prepared to ICTs properly).

> **Sectoral approach**: educating and training people to targeted transportation value chain jobs. It is a technical stakes training people from R&D to mechanics but also in support functions as it is the case with Mobius in Kenya that develops one of the first African car-making company).

DeTrar: a short synthesis

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DeTrar a short synthesis

E - New components

1

Investment in Adaptation

Support resilience and adaptation through local and traditional inspiration

2

Resilient infrastructures development for rural areas

Take advantage of frugal and innovative transportation solutions and increase the maintenance of roads in isolated areas

3

Low-carbon energy supply strategy

Create synergies between transportation and access to decentralized energies (support light weight vehicle, electric motorbikes …)

4

Urban transformation

Share the value created in cities by multi-actors cooperation including rural areas, in order to develop sustainable transport solutions.

5

Unnecessary travel reduction

Push forward planning transportation and accompany the development of artisanal transportation

6

Organize multimodal transport

Identify, develop and connect innovative transport solutions adapted to the African context and needs

7

Shortened supply chains

Encourage leapfrog innovations with proper enabling environment, data collection and multi-actors cooperation

8

Economic instruments

Promote incentives and regulations adapted to local specificities and artisanal transport solutions

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Part I. DeTrar's contextual setting

A - Introduction

B - Methodology

C - Key facts

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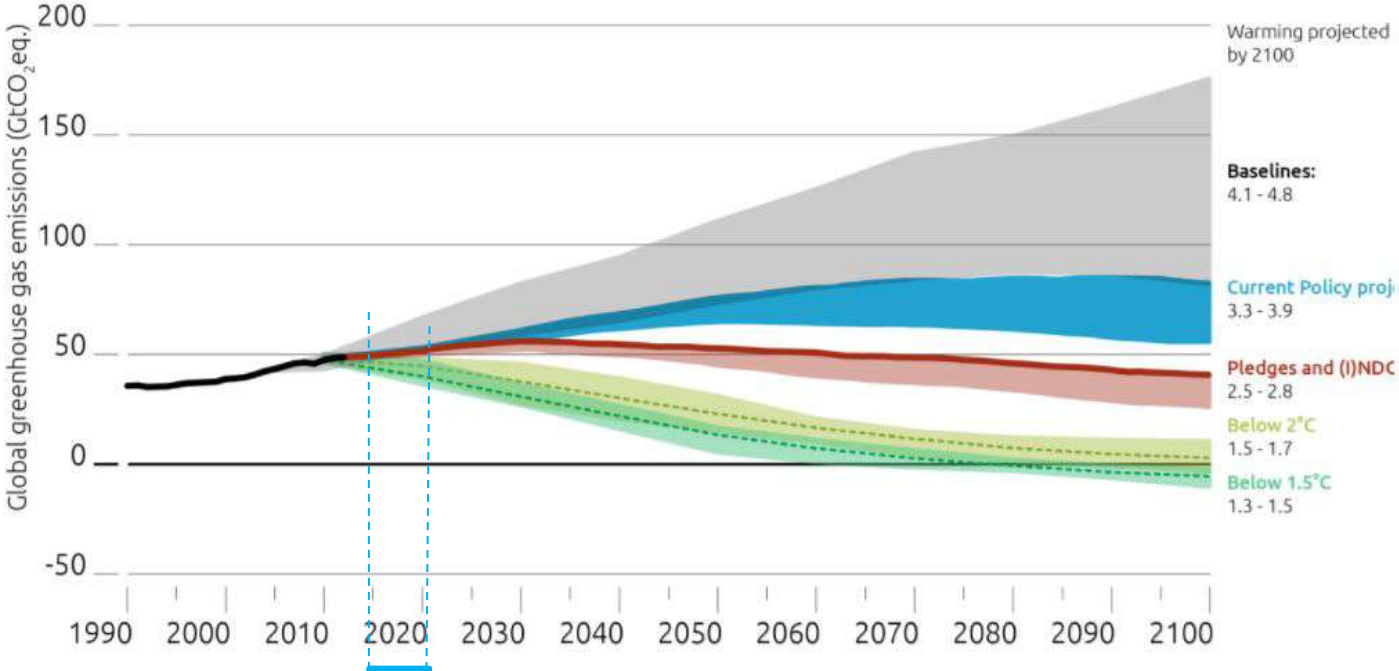
01 - What is at stake ?



Mobility of people and goods accounts for 15% of CO2 emissions globally.

5 years to stop carbon emissions growth

50-60 years to go zero net emissions

Source : Climate Action Tracker

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02 - Project context.

Transportation has been established as one of the thematic areas under the Global Climate Action Agenda (GCAA). The discussion on transports within the GCAA have been facilitated by the Paris Process on Mobility and Climate (PPMC) at COP21 and continued at Marrakesh at COP22. This entity, set up by SloCat and MCB, has work and impulse a systemic transformation of the sector aiming at a net zero emission transport economy by 2050 with a "Global Macro-Roadmap".

The Macro Roadmap is both a process as well as a document that can serve as a reference to set the course towards the long-term climate goals agreed in the Paris Agreement. It aims to give realistic and operational focus for each segment of the transport sector by combining actions such as *Avoid*, *Shift*, and *Improve*.

PPMC wishes to reinforce adhesion around this macro-roadmap and to decline it regionally. Conceived and designed by a majority of OECD-based transport stakeholders, this Roadmap needs to be locally adapted in Africa to embrace the continent priorities in decarbonizing transport.

The objective of Michelin - acting for PPMC - & L' Oreille collaboration is to adapt the Macro-Roadmap to the African context by selecting levers of action and establishing priorities for the decarbonisation and resilience of transport in Africa.

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03 - Objectives.

1

Build an inclusive global roadmap to achieve the SDGs by adapting the global *Macro Roadmap* for decarbonization and resilience of transportation, promoted and built by PPMC/SloCat.

2

Collect reliable data to adapt the chosen frameworks & priorities through an ongoing consultation process (online survey) with local key-stakeholders.

3

Give voice to the African civil society and present the first results of a participatory process at COP23 in Bonn in November 2017.

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Part I . DeTrar's contextual setting

A - Introduction

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01 - Standpoints for an African Macro-Roadmap.

REALISTIC & OPEN SOURCES APPROACH

Listen to the whole civil society in a Base of the Pyramid perspective.

= Collecting local uses and needs by using online tools (WhatsApp, Twitter…).

MULTI-STAKEHOLDERS APPROACH

Build an ecosystem and various partnerships.

= Aligning general principles and concrete outcomes, working with all different type of transport stakeholders.

DISTRIBUTED APPROACH

Embrace the diversity of the continent.

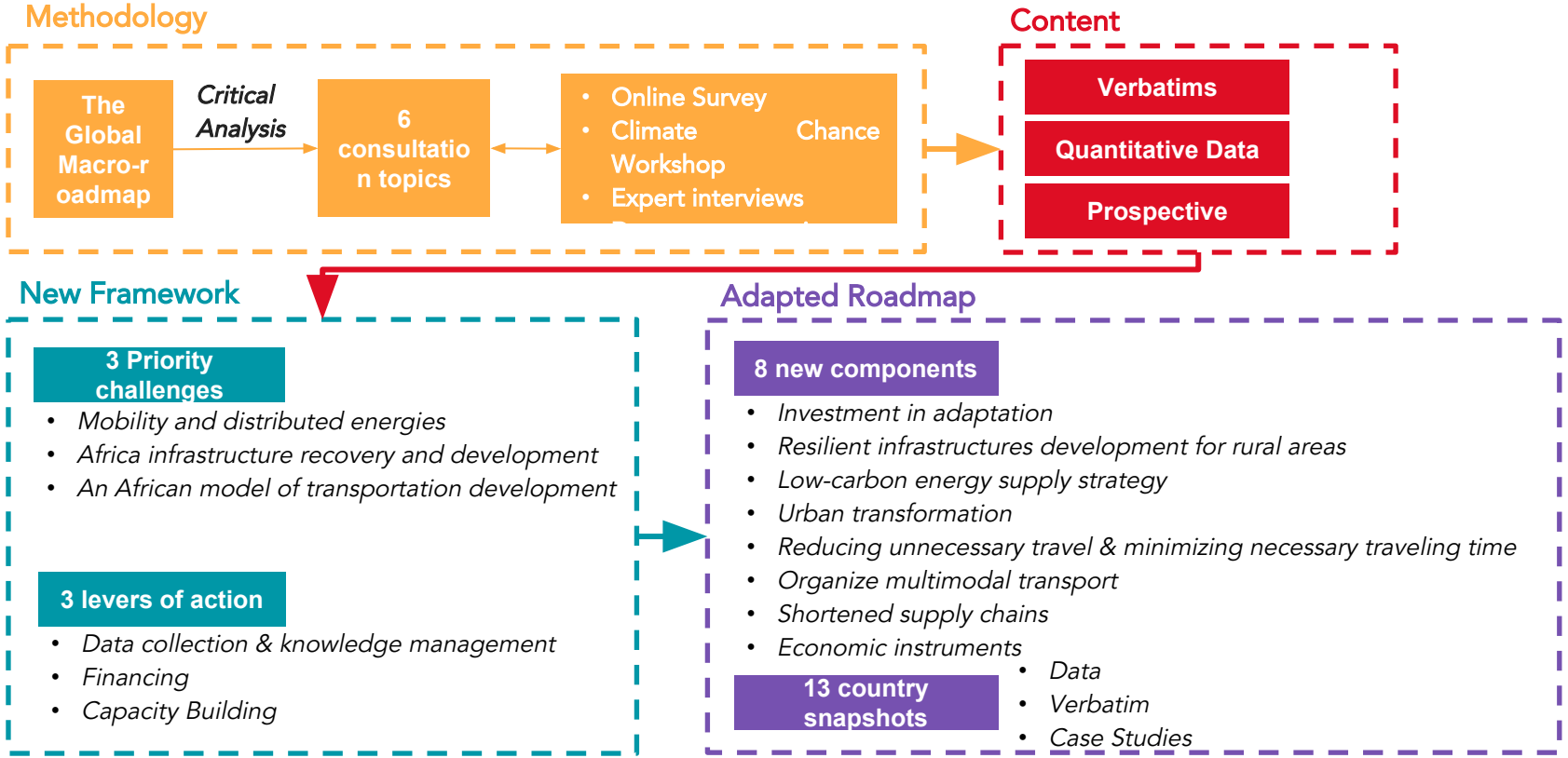
= Collecting data from 13 countries: Algeria, Cameroon, Egypt, Ghana, Ivory Coast, Kenya, Nigeria, Niger, Senegal, South Africa, Tanzania, Tunisia, Uganda.

REVERSE INNOVATION APPROACH

Learn from the African leapfrog.

= Targeting relevant stakeholders and artisanal networks (whatsapp, twitter, Facebook…).

02 - Summary of actions.



03 - Schedule

Step 0 – Producing pre-analysis material:

- Pre-selection of 19 relevant countries and aggregation of macro data material;
- Initial analysis, with experts, of the roadmap in order to identify critical gaps between the original document's priorities and the African context.

Step 1 – Brainstorm with and interview experts on transport resilience and mobility in Africa:

- Identify remarkable initiatives/ disparities;
- Define key-issues and themes to be discussed for the adaptation;
- Target 12 countries of the continent which appear to be the most relevant.

Step 2 - Conducting an online survey and a **collaborative workshop**:

- 10-20 local stakeholders in each country amongst 5 categories: government, business, regulators, think-tanks, civil society organizations;
- Multiple-choice questions (quantitative analysis) + open-ended free-text response options (qualitative analysis);
- Foster collective intelligence and suggestions from civil society;
- Identify and gather innovating initiatives through partnerships.

Step 3 – Writing report and presenting next steps at COP23.

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Part I. DeTrar's contextual setting

A - Introduction

B - Methodology

C - Key facts

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01 - Energy : the end of useful, cheap and unlimited oil.

In developed countries, transportation is based on fossil fuel. Today**, 95% of the energy consumed by the transport sector is from oil**. Developing sustainable transport solutions in Africa means to leave this energy aside since:

- It is the end of **unlimited** and **cheap** oil, with countries like Nigeria put at risk regarding its dependency to trading oil.
- **Carbon dioxide emissions public health implication and climate change** adaptation urge us to develop **low carbon** transportation solutions.
- **Access to energy** is very low and will not be developed in a full **centralized** way. According to the International Energy Agency (IEA), close to 200 million people globally, will need to gain energy access through off-grid standalone solutions if the world wants to achieve the goal of universal energy access by 2030 (Sustainable Development Goals 7).

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02 - The development challenges of the continent.

A **bipolarization** can be observed in the development of Africa. In facts big differences are noticeable between urban megacities and rural areas:

- **Rural areas are very isolated** (very low access to energy, lack of infrastructures…) but **gather 60% of the population.**
- **Urban and peri-urban areas are booming**: Lagos 21M inh., Le Caire 12M inh., Kinshasa 10M inh., Abidjan 5M inh. Urban population is almost **500M** and should double in the next 25 years (World Bank).
- **Investing capacities of Africa are insufficient** and less important than the other parts of the world. Of example, when Middle East and Asia reached 40% of urbanization, GDP per capita was **$1800** (1968) and **$3600** (1994). Africa reached this level of urbanization with **$1000/ per capita per year**.
- The *Global Infrastructure Outlook – Infrastructure Investment Needs* which reviewed the infrastructure needs of 50 countries in 7 sectors up to 2040, proposes a trend scenario in which the total infrastructure investment forecast for Africa to 2040 is projected to be $4.3trn, or $174bn per year. Information on the financing gap should also be provided in the near future by the AfDB-led Africa Infrastructure Knowledge Program (AIKP).

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03 - Data are revolutionizing Africa.

The **data revolution** can be harnessed to increase efficiency in the transport sector cuts across all dimensions and levels. One of the major effect of data use will be the implementations of solutions bridging the gap between formal and semi-formal transport systems. Other benefits will range from user information, asset management, electronic payment, maintenance, safety management, information sharing, administrations and service operators interactions, drivers and passengers, or shipping tracking (Sum4All, 2017).

If Africa is to benefit from the full transformative potential of the data revolution, more systematic, large-scale, integrated and sustainable efforts are going to be needed. These include multiple dynamic and growing data communities which range from official statistics and private-sector, civil society and citizen-based data groups, to scientific, open and big data communities. It also requires appropriate technological infrastructure and architecture and human and financial resources.

Regarding the decarbonization path, developing ICTs within the continent and reach a certain level of digitalization could help manage resources and assets while smart areas could be connected with communication channels and tools to manage traffic flows efficiently and thus reduce greenhouse gas emissions (ICA, 2017).

Part II. Recommendations to shape African transportation ecosystems

A - 3 priority challenges

B - 3 levers of action

C - 8 adapted components

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01 - Mobility and distributed energies

Engage a shift toward Sustainable Transport solutions thanks to the untapped potential in renewables of the continent.

- In emerging countries, 95% of the energy consumed by the transport sector is from oil. Leapfrogging to hybrid and greener mobility requires off-grid solutions development to supply areas (villages, peri-urban areas) that are not connected to the main grid.
- Off-grid solutions can be less costly than expanding power lines but tremendous challenges remains (last mile delivery, financing, product standardization…).
- Electric mobility is deeply connected with the necessity of reaching a certain level of maturity regarding electrification rates (off-grid solutions deployment, grid extension) as only one-third of the continent is powered in 2017 (Power Light Action, 2017).
- The development of PAYG (pay-as-you-go) linked to off-grid solutions should impact consistently transportation services.

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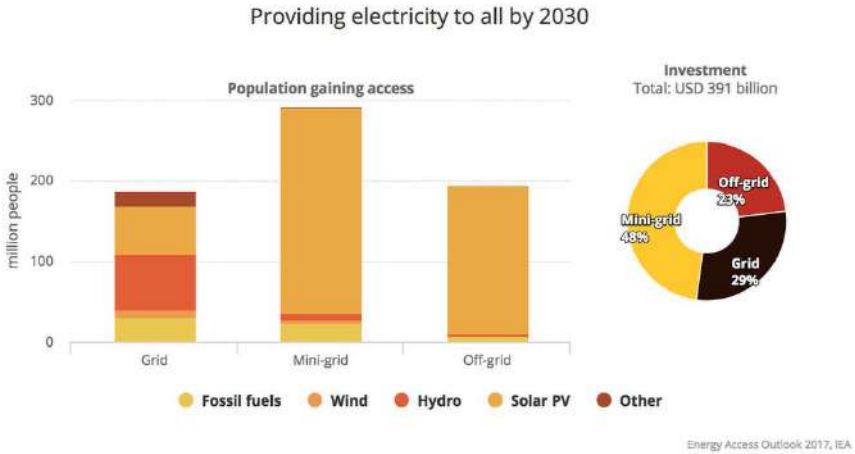
Part II. Recommendations to shape African transportation ecosystems

A - 3 priority challenges

Engage a shift toward Sustainable Transport solutions thanks to the untapped potential in renewables of the continent.

According the **Africa Progress Panel**, "while oil and gas will remain prominent in Africa's energy landscape over the medium term, their shares in the energy mix are likely to decline in the face of technological breakthroughs and continuous improvement in energy efficiency that are disrupting the renewable industry and the whole global energy system". (Power, Light, Action, 2017)



Investment needed in the energy sector (on the right) and number of people targeted by technology and energy source (on the left).

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02 - Infrastructure recovery and development

Increase Africa infrastructure development, recovery and resilience.

Today infrastructure financing is a main development challenge for Africa. Indeed infrastructure recovery is mandatory regarding the continent necessity to strengthen its ability to adapt to climate change. According to the ICA, total infrastructure funding in Africa reached $62.5bn in 2016, a decrease of 21% compared to 2015 ($78.9bn).

That amount remains far too low in comparison with the estimated sum needed each year to close Africa's infrastructure gap. According to the ICA, developing infrastructures on the continent in path with demographic evolutions would require an additional $45 billion financial effort each year. There is a need to focus on investments with a low carbon footprint that take into account territory specificities.

Regarding territories organization, cities are booming and planning choices have to be made between nebulous (increasing social challenges or ecological impact) and compact cities (enabling the reduction of GHG emissions or long-term investment needs).

Reducing the infrastructure gap in the different regions of the continent is necessary to overcome current polarization and mitigate the disconnection between urban and rural areas which are underdeveloped but still concentrate 60% of the population.

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Part II. Recommendations to shape African transportation ecosystems

A - 3 priority challenges

Identify the best climate change adaptation strategy and decline it within the transport sector.

Africa is already one of the most affected regions regarding climate change. Economies, ecosystems, populations, and especially those already weakened by poverty and environmental degradation, will be very negatively affected.

In its report *"Enhancing the Climate Resilience of Africa's Infrastructure"* The World Bank identify six representative climate futures, chosen to span the full range of climate futures across the 5 continent's region.

As the effects of climate change are not known in advance, it is difficult for planners and national authorities to choose a strategy. In the face of climate change, there are risks both in terms of *wrong way* and in situations of *inaction*.

Experts from the African Development Forum advocates to identify an adaptation strategy that balance the risk of inaction with the risk of *wrong way*, taking into account different possible preferences of decision makers and attitudes towards risks (Work Bank, 2017).

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03 - The emergence of an African transportation model

Foster the emergence of an African way of transportation development

Africa is the continent that has contributed the least to the global greenhouse gas emissions. As the continent is becoming more integrated within international trades (economic growth is planned to be at 3.5% in 2017), Africa's carbon footprint is meant to be upward and requires the development of an energy efficient vehicle fleets and containment of its GHG emission.

Taking into account this trajectory of development and climate change vulnerability of Africa, an unique replication of western transportation solutions would be inefficient on the long-term. Planning have to be approached in a transversal, demand based and holistic way and systematically include awareness raising and capacity building.

Moreover, in Africa, transportation solutions are often led by private or semi-formal actors. Recent initiatives (such as the "Gbaka" and "Wôrô-wôrô" in Ivory Coast) has shown that it is more efficient to support these kind actors rather than trying to ban the inefficient solutions without substitute solutions.

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Part II. Recommendations to shape African transportation ecosystems

A - 3 priority challenges

Encourage new cooperation platforms

A number of networking projects have made substantial efforts to set up grassroots links in Africa. However, many steps are redundantly duplicated due to a lack of mutual national, sub- regional, regional and international coordination.

African development will need South-South coordination models and **synergy of objectives** among multi-actors cooperation platforms that exceed common borders or similar topology of actors (States, institutions, development agencies, NGO, start-ups...). South-South cooperation is a mean of development by an exchanging knowledge, experience, ICTs and capacity development between and among developing countries through governments, civil society organizations, academic institutions, national institutions and networks to accelerate the implementation of the Sustainable Development Goals.

Fostering the existing transportation corridors and infrastructure remains an important issue but regional cooperation on common regulative standards - enabling environment, evaluation and monitoring tools or best practices replication - now appears as a priority in order to improve the efficiency of transportation solutions and reduce their costs.

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Part II. Recommendations to shape African transportation ecosystems

A - 3 priority challenges

B - 3 levers of action

C - 8 adapted components

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01 - 3 levers of action fitting African transportation ecosystems specifities

Faced with these priority challenges, **3 main levers of actions have been identified** during the data collection, workshops and interviews phase:

Data collection and knowledge management

Capacity Building

Financing

These levers of actions draw a global **enabling environment** without which each component could not be developed successfully. Connected together they provide tools for designing, implementing, monitoring and evaluating transformation actions in the transport sector. As they are, by nature, holistic, they often imply open and multi-actors partnerships.

Rather than a constraint, this can be seen as an opportunity to identify innovative models of development and to build resilience against the external risks threatening transport development in Africa (human resources, energy supply, economic growth, climate change, legal and economic instruments…).

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02 - Data collection & knowledge management

The unavailability of data, knowledge and ICT access is slowing down the development of adapted solutions of transportation. Nevertheless, ICTs and leapfrogging can be easily activated within the current constraints and context of the African continent:

- Collective open data collection processes should be encouraged to go beyond personal knowledge of transportation, provide information to both passengers and public authorities, to reduce cost or to strengthen need-finding understanding in the transportation sector (fostering demand based approaches like Digital Matatus in Nairobi, WhereIsMyTransport in CapeTown).
- Data should be use to develop solutions improving both the planning process and the user experience and to build partnerships between telecom operators, transportation actors and planning institutions like Transport for Cairo does in Cairo, Egypt and other major cities from MENA.
- Planning processes could be improved by enhancing ICTs use and appropriation but the process needs to take into account cultural specificities as suggest Optima Decision approach to Political Authorities in Algeria.

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03 - Financing

According to the World Bank, reaching investment needs in infrastructures could accelerate economic growth by 2% per year and increase private sector productivity by 40%. This can be achieved by :

- **End-users financing**: reducing the share of transportation financing in modest households spending with pro-poor solutions and policy framework could avoid situations as South Africa where 46% of the poorest households income goes on transport each month.

- **Improving Institutional Infrastructure financing calibration** (investments from National Authorities and International Organizations but also Private Sector) in order to finance projects more oriented on demand than supply generating a more adapted offer to customer (ICA puts Infrastructure funding decrease on China investments efforts reduction in 2016). See example of Mr. Issad Ebrab (Part III - Algeria country snapshot).

- **Hybrid financing:** private sector has a critical role to play in developing the economy, in terms of both infrastructure investment and driving innovation (Incubators as Mest).

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04 - Capacity building

Capacity building stakes exceed the transportation sector but is about **making the demographic dividend an opportunity** by leveraging technical skills and allow economic opportunities creation (transport sector job creation, promoting entrepreneurship in the sector). To this end it is necessary to adopt:

- **A transversal targeting approach**: climate change, partnership, cooperation, financing, business models, design, construction, maintenance, operation, client relationship, user behavior…
- **A global approach**: by addressing education and human capital development on a large scale and in a systematic way. As a matter of fact, the survey revealed that awareness both on security-driving behavior or clean-transportation benefits was extremely low. The survey revealed that 46.66% of participants feel that their team or themselves were not enough prepared to ICTs properly.
- **A specific approach**: educating and training people to targeted transportation value chain jobs (technical : from R&D to mechanics but also in support functions) as Mobius in Kenya that develops one of the first African car-making company.

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Part II. Recommendations to shape African transportation ecosystems

A - 3 priority challenges

B - 3 levers of action

C - 8 adapted components

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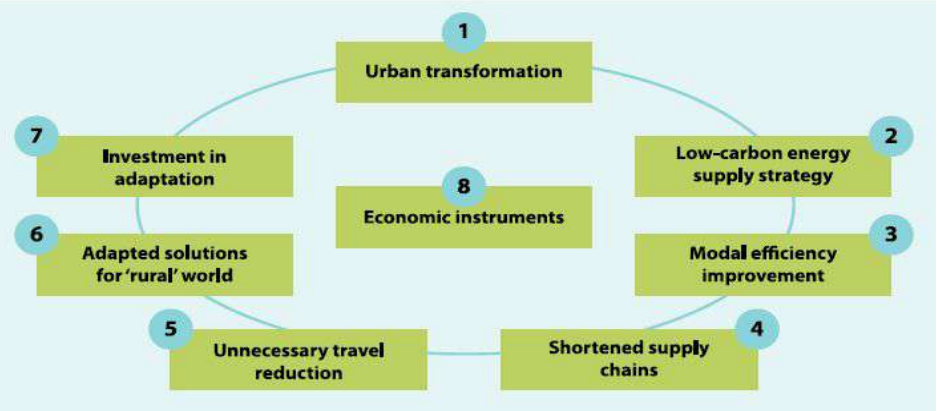
01 - An operational scheme

As shown by the initial gap analysis, the 8 components of the global macro-roadmap needed to be adapted or reformulated to the context and specificities of Africa.

The next slide presents these news **components in a new reading order.**

This adapted framework should enable each African country to develop its own **national roadmap** in order to highlight its **local specificities**, empower its **national framework** of transportation development and use **the levers of actions** presented above.



The global macro-roadmap

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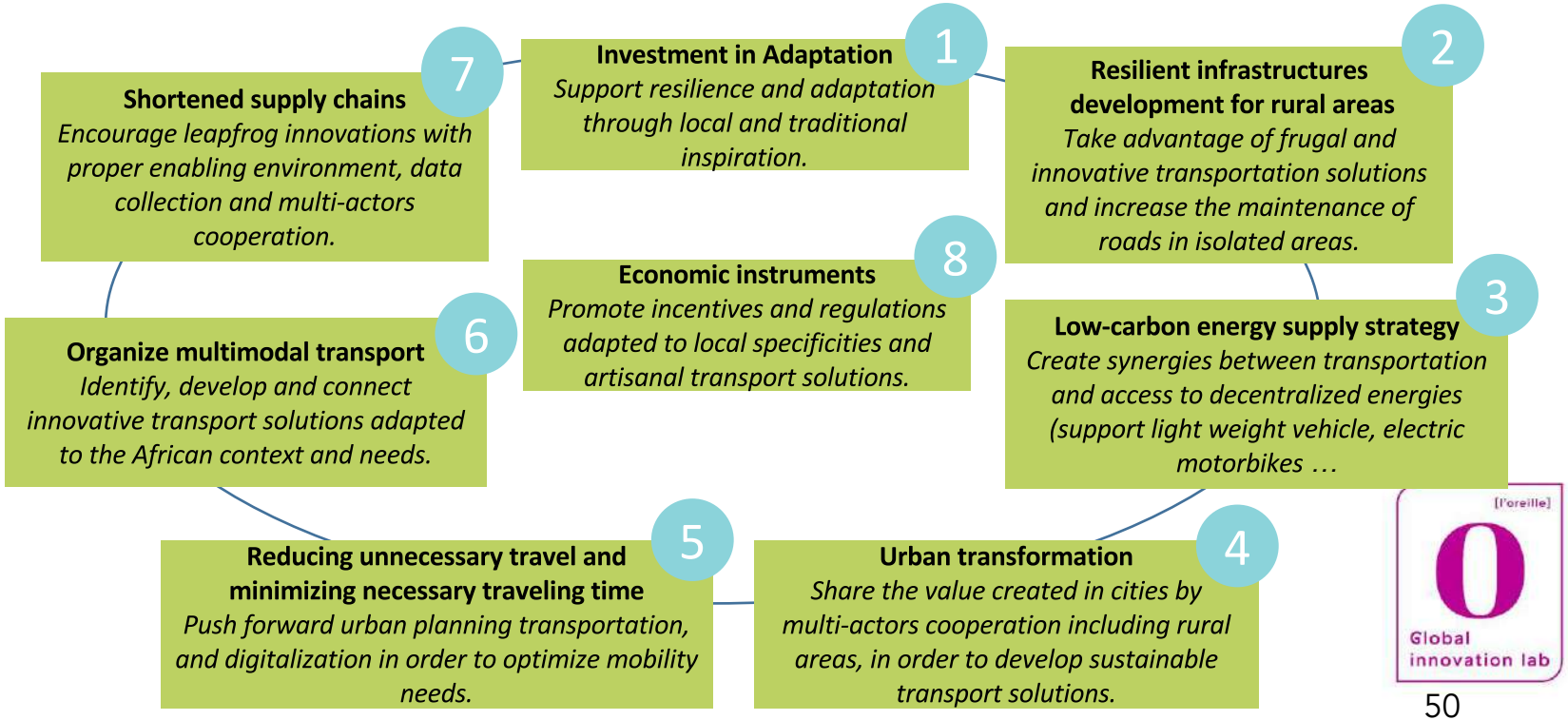
02 - An African Macro-roadmap



Part III. Country snapshots

Algeria
Cameroon
Egypt
Ghana
Ivory Coast
Kenya
Nigeria
Niger
Senegal
South Africa
Tanzania
Tunisia
Uganda

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01 - Data.

General Overview

Human development Index (2015)	0,745
Population in M of inh. (2015)	39
Demographic Growth (2010-2015)	1,89%
Urbanization rate (2015)	73%
Number of top 50 african cities	1
Number of top 10 african cities	0
Nominal GDP in bn $US (2015)	67
GDP/capita in k$ (2015)	7,3
Economic growth rate (2016)	1,70%
Electricity access (2014)	100%
Percentage of Individuals using the Internet (2015)	38%
Tech Hubs (2016)	Unknown

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	114
Exports of goods and services (% of GDP)	31%
Estimated road traffic death rate (per 100 000 population)	24
Energy consumption of transport relative to GDP (GOE per dollar)	25
Logistic performance index [1=low to 5=high]	2,37
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,074

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

3,18

3,04

2,99

2,74

02 - Verbatim.

Participants urging to act on the infrastructure recovery gap

- "Rural areas are served by individuals! People come to rural areas with their personal vehicles or minibus, they often come from the area and are maintaining a relationship with their relatives and roots."

- "It is very difficult for people with reduced mobility to move, unfortunately the infrastructure is not suitable for them."

A call for action to National Authorities

- "Public transport is seen as a sign of poverty in Algeria. A person who owns a car has a higher social level than someone who uses public transport. Even if access to public transport is put forward by the authorities many people will not leave their vehicle, it is a marker of social success. We can build all the transport we want, in Europe we see ministers take the trains, not in our homeland. There are no examples from our leaders."

- "We must organize the reality from the ground, organize and develop transport before sensitizing people. Give them insurance that the service will be available to ensure trust."

- "Planning should not only take into account infrastructures needs but also cultural, psychological and perception criteria. It is a major matter for the sustainable evolution of transportation in our country."

Using ICTs development as a lever of action:

- "Mobility information remains the biggest challenge, we have a big lack in mobility related data."
- "The lack of ICT infrastructure in the daily life of our administrations and businesses adds to the cacophony. Our administrations are centralized, far from certain residential neighborhoods. In addition, some displacement could be avoided if we were not ask for a physical presence for each process. I have already been asked to be physically present to make a quotation... "
- "There is a trust in the ICTs to build. The administration , its representatives, businesses still lack confidence in online contacts it is also linked to the difficulty to prove our identity online and online payment is not yet well developed in the country."

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03 - Illustration.

OptimaDecision is an Algerian consulting firm specialized in transportation planning. They provide support and advice throughout all stage of a project (data collection, data analysis and synthesis, diagnosis, definition of needs, proposition of appropriate solutions and developing scenarios). Use of psychology and cultural specificities as a way to design better planning policies.

The company is founded by Miss Amel OULD AMER : Engineer in Operations Research - Master in Mathematics & Econometrics - 2013 laureate of the PACEIM program (Programme d'Aide à la Création d'Entreprises Innovantes en Méditerranée).

Algeria

Issad Rebrab, the richest man in Algeria, is embarking on an intercontinental rail network project connecting North Africa to the South and East to West (from Algeria to Zambia, and from Djibouti to Togo). The cost of the project - for the north-south portion alone - is estimated at 9 billion euros.

As mentioned by M. Rebrab : “It is about investing in a project necessary for the development of the continent”.
"We can not develop Africa today without massive investments in education, without electrification, without investments in rail, road and port infrastructures. ".

The major objective: to save precious time to transport people and goods and maximize trade. "From an Algerian port to the Central African Republic, if you have to send a piece of goods by boat, it will take you two and a half months, but a railway line will leave from an Algerian port to the Central African Republic via Chad and takes only 48 hours”.
“The idea is to make this rail network a regional but also international trading platform. The project involves the participation of African (Ethiopia, Djibouti) and foreign (China) actors”.

Issad Rebrab, Founder & CEO of Cevital, the biggest privately-owned Algerian company

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01 - Data.

General Overview

Human development Index (2015)	0,518
Population in M of inh. (2015)	21,9
Demographic Growth (2010-2015)	2,54%
Urbanization rate (2015)	52
Number of top 50 african cities	2
Number of top 10 african cities	0
Nominal GDP in bn $US (2015)	38
GDP/capita in k$ (2015)	2,3
Economic growth rate (2016)	4,40%
Electricity access (2014)	56,80%
Percentage of Individuals using the Internet (2015)	20%
Tech Hubs (2016)	Unknown

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	14
Exports of goods and services (% of GDP)	26%
Estimated road traffic death rate (per 100 000 population)	28
Energy consumption of transport relative to GDP (GOE per dollar)	17
Logistic performance index [1=low to 5=high]	2,37
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,051

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

2,85

3,04

3,28

2,75

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02 - Verbatim.

Improve the territory planning process to get more adapted infrastructures

- "We need to rethink services in order to rethink the city : informal roads are just following the urban plans. Informal roads should be included in the planning. If services were more decentralized, they would not be informal roads."
- "There are too many accidents. People feel unsafe on the roads, there are no spaces dedicated to pedestrians or when they exists it is not common at all and are the prerogative of the few – a participant from Douala, Cameroon.
- "There is a lack of connection between the country different areas because there are no roads linking the territories."
- "Population growth is to take into account while planning future territories organization. We need to provide solutions to them."

Beginnings of a conversation on energy efficiency and electric mobility

- "How can we effectively implement electric transport solutions? What are the modalities to implement to shift toward these solutions? Who's part should be in charge of monitoring such projects?"

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A willingness to cooperate

- "As an agent from the Urban Government of Yaoundé (Communauté Urbaine de Yaoundé), I'm interested in the informal transportation sector that is trying to organize itself to reinforce itself and be more efficient."

Capacity building at the heart of transportation economic potential strengthening

- "We need people to be formed to urban planning studies and to technics, like jobs related to the transportation value chain (mechanics, engineering, infrastructure maintenance). It is in our measure to be able building our own infrastructure with our local human resources. Hard infrastructures such as transport, energy are linked to soft infrastructure like Education. Education must be one of our focuses with education we'll find solutions."

03 - Illustration.

iTravel

Be informed, in real time, of the closest departure of all the bus companies reuniting the two capitals of the country. Or, buy your ticket on your mobile phone or tablet, get detailed information on different departures from travel agencies, bus fare, etc.

These are some of the advantages offered by the **itravel application**, developed by a Cameroonian start-up.

The originality of this discovery has earned this start-up to integrate the Orange Fab program, set up by the Cameroonian subsidiary of the telecom group Orange, which consists in supporting and accelerating the development of start-ups, in order to to make them viable and competitive businesses.

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Vairified

This initiative was born from the collaboration between the organization in charge of the management of Douala - the Cameroonian economic capital - and a young local start up, in order to propose a secure transport offer to the inhabitants.

The Vairified team invites taxi drivers to be "checked" by providing key documents (certificate of professional capacity dating at least 3 years, driving license dating at least 5 years, registration, insurance, national identity card, etc.). Drivers are also invited to sign the Vairified charter, committing themselves to more courtesy vis-à-vis their customers. Once the taxi driver passes all these tests, he receives an official identifier number to display in his cabin. This identifier represents a guarantee of security for the customers, because they know that in case of any problem of any order (aggression, forgetfulness of the bag, or incivility on the part of the driver), the taxi will be easily found.

01 - Data.

General Overview

Human development Index (2015)	0,691
Population in M of inh. (2015)	89
Demographic Growth (2010-2015)	1,66%
Urbanization rate (2015)	43%
Number of top 50 african cities	2
Number of top 10 african cities	2
Nominal GDP in bn $US (2015)	330
GDP/capita in k$ (2015)	6,2
Economic growth rate (2016)	4,30%
Electricity access (2014)	99%
Percentage of Individuals using the Internet (2015)	38%
Tech Hubs (2016)	28

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	45
Exports of goods and services (% of GDP)	23%
Estimated road traffic death rate (per 100 000 population)	13
Energy consumption of transport relative to GDP (GOE per dollar)	20
Logistic performance index [1=low to 5=high]	2,75
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,051

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

3,04

4,77

4,33

2,61

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02 - Verbatim.

Three main challenges regarding people and goods mobility in Egypt

- Lack of data (time for commuting, traffic congestion duration, routes available)"
- "Weak funding mechanisms (there is no information on public funding mechanisms)"
- "Outdated regulation (No standard regulation for the transportation sector; Public transportation in the Greater Cairo Region is comprised of a mix of operators working with varying forms of ownerships and governed by different regulations)."

Overall working but Perfectible infrastructures

- "Rural areas are mostly highly connected due to the geography of the country."

Vision from a participant

- "Transport for Cairo believes that mobility is a universal right. Mobility is the accessibility of people, goods and services to go where they need or want to safely, efficiently and affordably. Mobility needs to be sustainable to be affordable: economically, environmentally and socially. Transport for Cairo brings together the best of the information, urban and transportation worlds together to ensure that over the coming years congestion does not destroy our cities. We believe that mastering the lifecycle of urban and transportation data (collection, standardization, distribution, information) will directly and indirectly improve public service transit provision, ease moving around our cities using technology and advance sustainable future mobility."

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03 - Illustration.

- Every day in Cairo, hundreds of thousands of motorists line up to access the Mehwar highway. To improve transportation in such dense motorways, Transport for Cairo has developed the concept of Right to Adequate Urban Mobility. It has developed the Transport Mode Catalog with criteria such as ownership, operating model, regulation and others. The tool called the Greater Cairo Transport System (GCTS) has been proposed, to provide an overview of the mobility data and conduct gap analysis. This can help map and coordinate the mobility efforts of research entities and public institutions.

- Nearly 1.3 million lives are lost on the world's roads each year, including a staggering 12,000 in Egypt alone. Uber Egypt provides safe driving via its shared cabs, which have rating services for driver performance. Launched in Egypt in 2014, Uber operates in Cairo, Alexandria, and Mansoura. Uber also plans to launch a new public bus service in Egypt to operate across the entire country. Uber revealed that in 2016, about 30,000 drivers were using the service in Cairo as a source of income, making Cairo the fastest growing market for the application in the region.

Transport for Cairo

مواصلات للقاهرة

01 - Data.

General Overview

Human development Index (2015)	0,579
Population in M of inh. (2015)	27
Demographic Growth (2010-2015)	2,17%
Urbanization rate (2015)	52%
Number of top 50 african cities	2
Number of top 10 african cities	0
Nominal GDP in bn $US (2015)	42
GDP/capita in k$ (2015)	2,5
Economic growth rate (2016)	4%
Electricity access (2014)	78,30%
Percentage of Individuals using the Internet (2015)	24%
Tech Hubs (2016)	16

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	30
Exports of goods and services (% of GDP)	29%
Estimated road traffic death rate (per 100 000 population)	26
Energy consumption of transport relative to GDP (GOE per dollar)	24
Logistic performance index [1=low to 5=high]	2,46
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,072

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

3,22

3,9

3,5

2,16

02 - Verbatim.

The country is faced with bad infrastructures…

- Bad roads, poor road network and not getting along with the high transport fares. People mobility is uneasy because of lack of roads causing traffic
- Lack of addressing, poor connectivity and weak infrastructure:

"Lack of adequate pedestrian walkways presents continued challenge to mobility, in particular to people with difficulty in mobility and especially when it rains"

- Regarding rural areas connection:

"They are not well connected as we have a lot of bad road networks and most of the roads are not accessible"

"Most of rural areas don't have roads for easy access, weakly connected, mostly through single of dual carriage lanes that sometimes cut through villages and towns"

- Unappropriate commodities for people with reduced mobility:

"it's not easy to move for people with mobility problems as there are no systems or appropriate mode of transportations for such a category of people"

"It is not easy at all for people with reduced mobility to move around in my area"

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…And high rate of pollution

Participants in the survey mainly complain with the over aged vehicles circulating which emits carbon monoxide "We are faced with over aged vehicles which emits carbon mono oxide" lack of roads causing traffic with waste of time and money.

Regarding political leadership on transportation

- There is a transportation roadmap but it is not properly implemented
- Best way to make climate change adaptation a top priority for the transportation sector: public awareness and civil society inclusion, performance improvement
- Government's leadership with respect to environmentally-friendly transportation is at awareness and experimentation stages
- The level of public awareness about clean environmentally-sensitive driving is poor

Cooperation

- The policy-making process in transportation does have inputs from citizens, industry, academia and NGOs in its elaboration

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03 - Illustration.

Clean Air Coalition in Ghana

In most cities the diesel fleet is the main contributor to fine PM emissions – between 50-80%. Heavy-duty diesel engines are significant sources of harmful emissions. Black carbon is the second largest contributor to human-induced climate warming to-date, after carbon dioxide. The CCAC aims at eliminating fine particle and black carbon emissions from new and existing heavy-duty diesel vehicles and engines.

- In East Africa, five countries (Burundi, Kenya, Rwanda, Tanzania and Uganda) have formally adopted national standards for cleaner fuels.
- Five West African countries (Nigeria, Benin, Togo, Ghana, and Cote d'Ivoire) have agreed to ban importing Europe's dirty fuels.

As part of a low sulphur fuels roadmap, the National Petroleum Authority of Ghana proposed the adoption of low sulphur diesel fuels from 3000 ppm to 50 ppm for all diesel imports from March 2017. Fuel imports constitute roughly 85% of fuel consumption in Ghana with refinery production accounting for 15% of fuel used in the country. Ghana has about 2 million vehicles with an average age of 14.2 years. About 60% of the country's vehicles are in the Greater Accra region. The vehicle ratio to population in Ghana has also been increasing fast from 50 vehicles per 1,000 people in 2010, to about 70 vehicles per 1,000 people in 2015. In July 2017, workshops on household pollution monitoring were also conducted by Ghana Environmental Protection Agency, in coordination with the Accra Air Quality Monitoring Platform...

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01 - Data

General Overview

Human development Index (2015)	0,474
Population in M of inh. (2015)	23
Demographic Growth (2010-2015)	2,29%
Urbanization rate (2015)	51,3%
Number of top 50 african cities	1
Number of top 10 african cities	1
Nominal GDP in bn $US (2015)	34
GDP/capita in k$ (2015)	1,8
Economic growth rate (2016)	8,50%
Electricity access (2014)	62%
Percentage of Individuals using the Internet (2015)	21%
Tech Hubs (2016)	5

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	20
Exports of goods and services (% of GDP)	42%
Estimated road traffic death rate (per 100 000 population)	29
Energy consumption of transport relative to GDP (GOE per dollar)	14
Logistic performance index [1=low to 5=high]	3,17
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,047

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

Unknown

Unknown

Unknown

Unknown

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02 - Verbatim

A saturated and highly polluting traffic in Abidjan and a need for more options

Participants both asked for more options to be available and more diverse transport solutions:

- "Huge difficulties for people to move on and the city circulation is anarchic. We would be in a more comfortable situation by increasing taxis and buses in town."
- "As the current trend is the exploitation of lagoon water, we could create several lagoon transport companies."
- "It is necessary to renew the vehicle fleet which is getting older and older and act directly on the pollution level."

Infrastructure used to exist but are poorly maintained…

- "Rural areas are connected with individual cars."
- "Majority of rural areas are connected with roads and connection is acceptable."
- "Stakes form mobility are, roads rehabilitation. Roads have existed for a long time but they are merely useable."
- "We must focus infrastructures development within national territories and not only on also develop intercostal connection with neighbor countries."

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…. And tend not be effectively adapted to people's needs

- "The government has more developed infrastructure such as: roads, and the construction and rehabilitation of bridges to promote tourism but not individual travel".
- Mobility offer in Abidjan is problematic. Insecurity is a consistent problem of Ivory Coast. Pricing is really high and the availability is not growing as fast as demography is, especially as people are getting poorer.
- People with reduced mobility can't use the same itinerary as others, there is clearly a lack of mobility options for them and where roads are already difficult to access for non-disabled it is near to impossible for disabled to move freely in town.
- Commodities are not designed for people with reduced mobility and people are not sensitized to their special needs.

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Ivory Coast

Paratransitl transportation is the norm

- The trend is the mass use of 3-wheel motorcycles called "katakata"
- No ... the road. And the means of transport practically nonexistent
- A bit difficult because at peak times, the means of public transportation is rare which leads to fierce struggles for a place

Start-ups develop new initiatives more respectful of the environment

- We believe, at TaxiJet, that the evolution of transport will inevitably pass by alternative energy sources that are less polluting and destructive of the environment. We are working on prototypes that will come to fulfill these different conditions mentioned below.

Vision:

- Availability, accessibility, reliability → these are the stakes for developing effective transportation systems in CI but not only.
- Development of road networks..and reduction of transport costs
- Resilience: I think we are imbued with the consequences of climate change, so why not make it a priority ?

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03 - Illustration.

TaxiJet CI business starts from this 4 key findings:

- Poor quality of the current fleet of taxis
- Bad behavior from people on the road and no driver discipline
- Safety concerns
- Pricing unfitting

To fight back those constraints, TaxiJet CI management invested in a fleet of brand new vehicles, which we also allowed to test the mechanical characteristics of 8 models. TaxiJet CI also advocate to third parties wishing to invest in the Taxi sector to opt for new vehicles both for technical performance and with maintenance advice! "TaxiJet Academy" in partnership with a driving school has been created to accentuate training and literacy efforts for drivers (Several modules, with the aim of training professional drivers, able to use ICTs) . Finally thanks to an embedded system and tags installed in all vehicles connected to the platform, The company manages to offer an additional level of user safety (in addition to identification).

Finally regarding the fit between pricing and customer purchase power, a dynamic pricing algorithm is operational.

Paratransitl transportation: the example of 'Gbaka'' and ''Wôrô-wôrô''

In 2015, the police department announced the ban of public transport vehicles ''Gbaka'' and ''Wôrô-wôrô'' on some roads in the district of Abidjan. In fact, these means of transport represent a real danger for users. Shoving, theft, tariff increases, non-compliance with destinations, delays, verbal abuse of drivers, insecurity and pollution factors due to the poor condition of vehicles are some of the inconvenience experienced by the passengers of those clandestine vehicles.

Nevertheless, Gbaka and Wôrô-wôrô are unavoidable today as they carry about 65% of the 3,452,800 people traveling per day in the capital, and their walkout seriously disrupts the flow of economic activities. Especially because the public transportation company SOTRA is not capable to ensure the displacement of those millions of Abidjanese.

The total ban is therefore unrealistic but, as emphasized by the Minister of Transport Koné in September 2017, it is necessary to ensure the sustainable mobility of people at a much more acceptable cost and by reducing the age of the imported used vehicles and by limiting the operating life of transport-related vehicles.

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01 - Data.

General Overview

Human development Index (2015)	0,555
Population in M of inh. (2015)	45
Demographic Growth (2010-2015)	2,70%
Urbanization rate (2015)	24%
Number of top 50 african cities	2
Number of top 10 african cities	1
Nominal GDP in bn $US (2015)	64
GDP/capita in k$ (2015)	1,6
Economic growth rate (2016)	6%
Electricity access (2014)	36%
Percentage of Individuals using the Internet (2015)	45%
Tech Hubs (2016)	Unknown

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	23
Exports of goods and services (% of GDP)	24%
Estimated road traffic death rate (per 100 000 population)	29
Energy consumption of transport relative to GDP (GOE per dollar)	14
Logistic performance index [1=low to 5=high]	3,17
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,047

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

4,19

4,82

4,15

2,6

02 - Verbatim.

Major improvement are necessary regarding transport regulation in Kenya

- “Its defies logic when all aspects that should have been considered are taken into granted i.e proper regulation to avoid exploitation from transport owners. The opportunities are unlimited if utilized. The most factors that tend hinder transport are brokerage which reduces revenue to both the government and owners. The other trend which is emanating hurt transport is corruption both from the government and the private sector. Should we seat down take it as part of ways of facilitating transport or a norm that should be eliminated?”
- A national roadmap in transportation including carbon decarbonization: Somehow, but not enforceable .. political will.

An inefficient transportation system and a poor road connexion

- Lack of efficiency, poor infrastructure, disorderly, not client focused.
- In real sense to my country we are at least connected except to the interior part of the country where connectivity depend on how the locality relates to the government ie if your are in the opposition or you support the government.
- To give access to transport broadly in Africa expand road network.
- rural areas Fairly connected.
- rural areas connection is moderate and mainly by road.

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Lack of transportation planning for urban areas

- 48 - 51 % of the people in Kenya walk with no other alternative means of transport. 70% of the people in the cities in this category have used bicycles before in rural places but city culture is not supportive of cycling. Infrastructure gaps existing can be bridged if a deliberate effort is focused toward encouraging NMT spaces in the policy table.
- “Regarding people with reduced mobility, it’s not easy for them to move around as, informal transport and those in the city exclude this groups from design plans.”
- “Disabled can’t move around easy because vehicles are not designed for their safety”.

- “My vision of transport in my country is less car centric thinking in urban areas, encouragement of cycling and other simple ways in rural areas, good connectivity via rail between towns”.

03 - Illustration.

Digital Matatus Project

- Users with smartphones collect and analyze data from the network of matatus
- Data is searchable in Google Maps, and is meant to be used by 3.5 million people
- Impacts: better planning of routes, reduced passenger delays, less pollution

Senga

- On-demand platform connecting shippers and road-based transporters of goods
- Tracks routes and movement of goods across cities
- Impacts: better visibility, transparency, affordability, and optimisation of fuel consumption

Mobius Motors (Kenya)

Founded in 2009, Mobius Motors is a Kenyan company that designs, manufactures, and markets durable, affordable for the African market. vehicles automobile maker in Kenya making inexpensive vehicles. Many parts are taken off-the-shelf. It is designed to be affordable yet reliable. The company is currently developing the second version of its vehicle and 500 units are reportedly targeted in 2017-2018. The company claims to have a central Nairobi warehouse with all spares.

01 - Data.

General Overview

Human development Index (2015)	0,353
Population in M of inh. (2015)	18
Demographic Growth (2010-2015)	3,84%
Urbanization rate (2015)	18,70%
Number of top 50 african cities	1
Number of top 10 african cities	0
Nominal GDP in bn $US (2015)	10
GDP/capita in k$ (2015)	0,7
Economic growth rate (2016)	2,30%
Electricity access (2014)	14%
Percentage of Individuals using the Internet (2015)	2%
Tech Hubs (2016)	Unknown

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	8
Exports of goods and services (% of GDP)	Unknown
Estimated road traffic death rate (per 100 000 population)	26
Energy consumption of transport relative to GDP (GOE per dollar)	Unknown
Logistic performance index [1=low to 5=high]	Unknown
CO2 emission from transport relative to GDP (PPP) in kg/dollar	Unknown

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

Unknown

Unknown

Unknown

Unknown

[l'oreille]
0
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02 - Verbatim.

The lack of public transportation for the capital

- Our transport system is dominated by cars via roads sometimes tarred. There is no public transport in Niamey which leaves very little choice to the inhabitants. Either we can afford a personal vehicle, or we move on foot and when we have small means we take the taxi to places that can not be reached on foot.

The importance of the implication of public authorities along with private sector to improve mobility

- Reduced mobility is not easy by lack of standards.
- We finally adopted in May 2017, a draft decree adopting La Stratégie de développement durable et de croissance inclusive (Sddci). This orientation document is very much about transport, particularly because it is an issue in the development of our country for domestic and foreign trade.
- Open to the private sector the opportunity to invest in a sector that is the preserve of an under-funded public sector that does not have a field vision. If there is a competition on the power to reduce the price of projects and improve the quality of proposals made to the authorities who vote the projects.
- I think that there is a need for dialogue between decision-makers and users in order to have a better match between what they propose and then the expectations of those who live the reality of Niamey streets on a daily basis.

03 - Illustration.

Niamey victim of its own development pathways: the example of a nebulous city

Despite 5500 “red head” taxis serving Niamey, Niger’s capital using this mode of transportation at peak hours remains a struggle to travellers.

Depending on neighborhoods of the city, situations are really diverse you can alternate between "deserted" areas, some areas being avoided by taxi drivers at certain times of the day, and others where they will be in excess.
“ I live in the periphery of Niamey and when in the morning I stop a taxi and ask the driver to take me to my place of work in the center of Niamey, he always turns his head and presses the accelerator. I have the impression of having given him for destination '' the afterlife '' or even '' hell ''

Even though Niamey, seems to be one of the sub-region most supplied capitals with taxis, the fleet of taxis is insufficient, because with the disproportionate extension that knows the capital (a demographic growth higher than 3.9%, the highest in the world) the demand for public transport is only increasing without being satisfied.

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01 - Data.

General Overview

Human development Index (2015)	0,527
Population in M of inh. (2015)	181
Demographic Growth (2010-2015)	2,79%
Urbanization rate (2015)	49%
Number of top 50 african cities	8
Number of top 10 african cities	1
Nominal GDP in bn $US (2015)	537
GDP/capita in k$ (2015)	2,5
Economic growth rate (2016)	-1,50%
Electricity access (2014)	57,70%
Percentage of Individuals using the Internet (2015)	47%
Tech Hubs (2016)	23

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	31
Exports of goods and services (% of GDP)	37%
Estimated road traffic death rate (per 100 000 population)	21
Energy consumption of transport relative to GDP (GOE per dollar)	10
Logistic performance index [1=low to 5=high]	2,46
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,025

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

2,71

3,38

2,98

1,49

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02 - Verbatim.

Infrastructure is pointed at as the main challenge of transportation in the country

- More ferry stations are needed since Lagos is an island. Well-functioning train stations are also needed. For the trends, the quickest way to navigate traffic in Lagos is via motorbikes.
- Rural areas in some states are well connected. But this is might be in the minority. Bad roads make road connectivity and accessibility a major challenge and all rural areas are not all that connected.
- Bad road network, making the link between the rural dealers to the distributors in the market and to the cities difficult in Nigeria.
- Access to transport broadly: Access to improved alternatives to road transport
- Mobility products and services should be available in both rural and urban centers to make them easily accessible to the citizens.
- Investing in technology, and infrastructure.
- Access to improved alternatives to road transport.
- There are a lot of challenges among which are deplorable road condition and emission of dirty carbon gases.

Nigeria

An old vehicle fleet and traffic congestion are causing air pollution to increase however premise of a National Strategy regarding transport decarbonization are noticeable in the country

- The opportunities and market are there and are dominated by bus and minibus transport very polluting because the fleet is old. The high volume of fuel consumed in transportation continues to dirty the environment and increase global warming.
- National transport roadmap including decarbonation For now, there isn't. However, our government just signed the Paris Agreement on climate change which is yet to be ratified by the legislators.
- Yes, it should be a national roadmap including carbon elimination in the near future.

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03 - Illustration.

MileFriend

MileFriend develop an app for users to check in real time the status and health of their vehicle.

Thanks to the mobile app, the driver dispose of :

- Auto Vehicle Documents renewal in 2hrs.
- Access to detailed information on Engine light codes,
- Full diagnostic report, directions to the nearest verified Auto center and a repair cost estimate.

Milefriend also provides with a driving score so the user can always compete with his friends.

01 - Data.

General Overview

Human development Index (2015)	0,494
Population in M of inh. (2015)	14
Demographic Growth (2010-2015)	2,92%
Urbanization rate (2015)	42%
Number of top 50 african cities	1
Number of top 10 african cities	0
Nominal GDP in bn $US (2015)	19
GDP/capita in k$ (2015)	1,9
Economic growth rate (2016)	6,60%
Electricity access (2014)	61%
Percentage of Individuals using the Internet (2015)	22%
Tech Hubs (2016)	10

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	22
Exports of goods and services (% of GDP)	25%
Estimated road traffic death rate (per 100 000 population)	27
Energy consumption of transport relative to GDP (GOE per dollar)	23
Logistic performance index [1=low to 5=high]	2,31
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,074

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

3,73

3,64

4,13

2,31

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02 - Verbatim.

A certain lack of infrastructure

- In rural areas, populations are often let on their own because the services and the transport equipment are considerably failing: overall asphalted natural roads, degraded roads and public transport services almost non-existent. Failing to use public services, people move by horse-drawn carriage, moped, etc. Nevertheless, in Senegal, the public authorities have a real desire to network the network of national transport: in addition to the improvement of rural roads and regional sections (development of a transport system with large projects in the greater agglomeration Dakar, the connections Dakar Thiès, Touba, through small towns and villages, etc.), we note the setting up of a public transport service called 'Senegal Dem-Dikk' which is an extension of intra-urban transport serving rural areas in the interior of the country.

- "[…] people move mostly by walking. It would therefore be necessary to develop pedestrian tracks, bicycle paths to encouraging soft mobility in the context of preserving the environment and improving public health. Finally, a massive investment and private sector to compensate for the drying up of public finances in this sector."

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Governance and planning of transportation

- "The issues of the mobility of goods and people is that we must deal with problems related to transportation and they are numerous. There are excessive spending for end-users, wasted time for all, discomfort, pollution and lack of alternatives. At Andando we develop an application that allows to record a planned route and find carpoolers to save time and money. It is necessary to improve the way carpooling works in Senegal, because it is a major mode of transportation in the country and necessary to reduce the number of cars on the roads to fight against pollution."

- "There is a lack of inspiration in transport and mobility policy shaping coming from the absence of political visions geared towards meeting the real needs of the populations in terms of transport and mobility. […] How can we want to import the model of a toll highway in a country where the majority of the population is poor and moves by walking? Without questioning the usefulness of the built toll highway in Dakar for the fluidification of road traffic, in a city that has long been held hostage by urban congestion - Senegalese public decision-makers should do better upstream sociological surveys to find out the real needs of the populations who, like mentioned above, mostly move on foot."

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Cooperation dynamics

- "Public-private partnerships could be envisaged with the incentive to participate in the capital of start-ups capable of to provide more innovative mobility services that meet the needs of the population and a fundamental transformation in terms of costs and economic models. Today, start-ups (andando carpooling, sen carpool) appear more and more like which not only compensate for regulatory gaps, but also a lack of formalization of the transport sector, but also the financial limits of the public sector in terms of innovation and creativity of transport and mobility services for different categories of populations."

- "Road networks cross-border exist between West African countries, but the roads are globally in a disastrous state and are therefore generating insecurity. Similarly, the rail link, a colonial heritage in Africa (Dakar-Bamako, Bamako-Ouagadougou, etc.) is still relevant, but the mesh of the network is very weak and the equipment (rails and trains) are dilapidated. Today, with the help of international donors, policies aim to develop these cross-border links, but it is a policy which is struggling to take shape and these initiatives often end up in oblivion."

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03 - Illustration.

Andando (Senegal)

- Andando is an App that helps commuters find carpoolers for short and long journeys
- Trips can be rated for safety and professionalism
- The benefits from using andando are savings of money, time and fuel, as well as travel comfort

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01 - Data.

General Overview

Human development Index (2015)	0,666
Population in M of inh. (2015)	54
Demographic Growth (2010-2015)	1,18%
Urbanization rate (2015)	62%
Number of top 50 african cities	6
Number of top 10 african cities	1
Nominal GDP in bn $US (2015)	266
GDP/capita in k$ (2015)	10,7
Economic growth rate (2016)	0,30%
Electricity access (2014)	86%
Percentage of Individuals using the Internet (2015)	52%
Tech Hubs (2016)	54

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	165
Exports of goods and services (% of GDP)	29%
Estimated road traffic death rate (per 100 000 population)	25,1
Energy consumption of transport relative to GDP (GOE per dollar)	26
Logistic performance index [1=low to 5=high]	4
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,084

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

4,96

5,85

4,87

3,63

02 - Verbatim.

A call for action from National Authorities for a better end-user transportation experience

- Transportation policy making and planning is fragmented and lack of co-ordination for an integrated/ user centered system. Growing private car usage and not enough public transportation.

- Long commute times and too much of household income spent on transport.

- Poor access to quality, reliable, and affordable public transport excludes populations from access to socio-economic opportunities. South Africa continues to erase a legacy of Apartheid planning which purposefully used access to mobility and transport corridors to segregate populations. Furthermore, the majority of public transport is informally run with little recorded and accessible information on routes. This impedes the ability of transport planners to integrate these services with formal systems, such as BRT.

- High levels of air pollution and crashes.

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Improve the territory planning process to improve territories connection

- Rural areas are underserved: "In my opinion, rural areas connection to cities is tolerable, but rural areas between them are poorly connected, since access roads are either not developed or poorly managed; Rural areas are poorly connected; Rural areas are underserved by adequate public transport; Rural areas connections are acceptable by road. Railways have been neglected."

- Bad public transport infrastructure. Neglect of existing infrastructure and railways. Privately owned bus services and minibus taxis. No bicycle lanes.

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03 - Illustration.

MellowCabs

- Electric three-wheeler taxis for low-cost, environmentally-friendly last-mile transport.
- Context: 80% of all urban vehicle trips in South Africa are shorter than four kilometres.
- One cab can cover 120 Km per day and save up to 4.3 metric tons of carbon dioxide a year.

WhereIsMyTransport

- Offers journey planning information for public transport modes.
- Available in Johannesburg, Tshwane, Cape Town and Durban.
- Won the Global Urban Innovator award from the New Cities Foundation.

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01 - Data.

General Overview

Human development Index (2015)	0,531
Population in M of inh. (2015)	51
Demographic Growth (2010-2015)	3,04%
Urbanization rate (2015)	27%
Number of top 50 african cities	1
Number of top 10 african cities	1
Nominal GDP in bn $US (2015)	43
GDP/capita in k$ (2015)	1,4
Economic growth rate (2016)	6,60%
Electricity access (2014)	15,5%
Percentage of Individuals using the Internet (2015)	5,36%
Tech Hubs (2016)	Unknown

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	7
Exports of goods and services (% of GDP)	23%
Estimated road traffic death rate (per 100 000 population)	33
Energy consumption of transport relative to GDP (GOE per dollar)	15
Logistic performance index [1=low to 5=high]	2,78
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,048

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

3,34

2,97

3,38

2,1

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02 - Verbatim.

Unreliability of public transportation

- Public transport is unreliable especially on working hours.
- Buses are not well funded, we use it because we don’t have any option but in reality they are not safe to be used by human being.

Infrastructure development

- Rural areas are connected by roads.
- For people with reduced mobility many urban areas are not adapted.

Governance

- One of the main challenge: difficulty to develop an activity because of the excessive bureaucracy.

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03 - Illustration.

Bus Rapid Transit (BRT)

Tanzania decided to tackle effects of growing urbanisation in Dar es Salaam by introducing quality, high-capacity buses in order to cleaner emissions and faster travelling times.
The project called Bus Rapid Transit (BRT) is funded by the African Development Bank, World Bank and the Government of Tanzania. The first phase was completed in December 2015 at the cost of €134 million and it provides a total length of 21.1 kilometers with dedicated bus lanes on three trunk routes with a total of 29 stations. The route is serviced by 140 Chinese built Golden Dragon buses, providing express and local service for 18 hours daily from 05:00am to 11:00pm.
In Some part of the line, BRT system is accompanied by cycle paths, sidewalks, and improved pedestrian safety features, with well-designed, at-grade pedestrian crossings that comply with universal accessibility principles.
The second phase of the project will be completed in 2018 with the deployment of more than 300 buses.

01 - Data.

General Overview

Human development Index (2015)	0,725
Population in M of inh. (2015)	11
Demographic Growth (2010-2015)	0,97%
Urbanization rate (2015)	66%
Number of top 50 african cities	1
Number of top 10 african cities	0
Nominal GDP in bn $US (2015)	165
GDP/capita in k$ (2015)	9,4
Economic growth rate (2016)	1%
Electricity access (2014)	99%
Percentage of Individuals using the Internet (2015)	48%
Tech Hubs (2016)	15

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	125
Exports of goods and services (% of GDP)	49%
Estimated road traffic death rate (per 100 000 population)	24
Energy consumption of transport relative to GDP (GOE per dollar)	19
Logistic performance index [1=low to 5=high]	1,96
CO2 emission from transport relative to GDP (PPP) in kg/dollar	0,052

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

3,47

3,93

3,56

2,97

02 - Verbatim.

Improve road security and infrastructures

- “Among the challenges to the mobility of people in my area there is road safety, slow travelling, anarchy and lack of infrastructures.”
- “Mobility is difficult for reduced mobility users, because sidewalks and walkways are not well landscaped.”

Encouraging feedbacks concerning the connexion of rural areas

- “I identify opportunities like the geographical situation of Tunis and the variety of transportation modes in a quite satisfactory number.”
- “In Tunisia, rural areas are in the process of being well served. The main issues are economic and political stability. I think the opportunities for opening up rural areas are diverse. By opening access to rural areas, action is taken to promote the rural economy, its know-how, and the fight against smuggling, which is the result of the "lawlessness" that operates when areas are landlocked and terrorism, which is the most extreme manifestation of this isolation.”

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But concerns remain about financial costs for users

- "There is a at stake the economic viability of transportation solutions that are offered to end-user, we may adjust pricing calibration to fit to people financial realities."
- "To develop accessibility to transportation solutions in Africa, we must strengthen access to finance by reinforcing public capacities development and design more bankable and sustainable projects. It is directly linked with political will…"

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03 - Illustration.

Secure Drive

Secure Drive is a Tunisian star-up specialized in making security product for cars and drivers. Secure Drive offers an Accident GPS Assistance : an embedded system composed of a hardware part which it will be installed into vehicles in order to guarantee the detection of accident and an assistance part that ensures accidents reporting to the emergency and police services. SDC's mission is to ensure driver safety by reducing the mortality rate due to traffic accidents and provide maximum assistance, even in isolated areas through automatic systems. Engineer in embedded systems, the CEO Ahmed Ghamgui embarked on the entrepreneurial adventure in 2014 during his last year of studies at the campus of Esprit.

01 - Data.

Uganda

General Overview

Human development Index (2015)	0,493
Population in M of inh. (2015)	37
Demographic Growth (2010-2015)	3,35
Urbanization rate (2015)	16%
Number of top 50 african cities	1
Number of top 10 african cities	0
Nominal GDP in bn $US (2015)	25
GDP/capita in k$ (2015)	1,4
Economic growth rate (2016)	4,70%
Electricity access (2014)	20%
Percentage of Individuals using the Internet (2015)	20%
Tech Hubs (2016)	12

Source : Worldbank, United Nations

Transport Sector

Motor vehicles, per 1,000 people	8
Exports of goods and services (% of GDP)	23
Estimated road traffic death rate (per 100 000 population)	27
Energy consumption of transport relative to GDP (GOE per dollar)	Unknown
Logistic performance index [1=low to 5=high]	2,97
CO2 emission from transport relative to GDP (PPP) in kg/dollar	Unknown

Source : Sustainable Mobility for All

Quality of infrastructures

[1=low to 7=high]

3,41

3

2,53

1,54

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02 - Verbatim.

- Challenges: Poorly constructed roads, weak traffic laws and high costs of maintenance. Opportunities; Transport is still at the developing stage and there is room and chance for development. Trends; technological trends like online booking for tickets.

- roads networks are still under construction but in the next two years, all rural areas will be connected with the city centers.

- Challenge to public transportation are over-crowding,lack of punctuality,lack of information on route availability and lack of safety.

- Rural areas are Infrequent or unpredictable onward connections.

- No, it is very difficult for people with disabilities to move around since there is facility to enable them move for example buildings lack walk ways for the PWDs.

- It is not possible to get Real time info, bad performance exposed of transport solutions on a regular basis.

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03 - Illustration.

SafeMotos (Rwanda)

- Kigali: motorcycle taxi platform that connects riders and drivers via an app.
- Passengers and drivers have safety scores, and drivers must maintain a certain score.
- Impact: safety of road transport, more convenience and cost effective transportation.

SafeBoda (Uganda)

- Uber-like app which makes rides more safe, affordable, and convenient.
- Backed by Shell Foundation, Development Innovation Ventures, Global Innovation Fund.
- 1,000+ drivers with helmets, app access, and training in safe driving and even first aid.

Appendixes

A - Detailed Methodology

B - Consultation report

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01 - Online survey.

Assessing parameters of proper mobility

The survey has been designed to assess African transportation ecosystems on several parameters that combined together are keys to proper mobility.

1	2	3	4	5
Affordability meaning the financial costs associated with transportation in relation to travelers paying abilities.	**Availability** meaning the route options, frequency and timing and associated platform of information.	**Acceptability** meaning the extent to which mode of transportation are acceptable based on end-users standards.	**Safety** meaning the prevention of harm such as being killed or injured to road users (including pedestrians, cyclists, motorists and vehicle passengers).	**Sustainability** meaning the economic, social, environmental & governance aspects necessary to sustainable mobility solutions.

A - Detailed methodology

Releasing the survey with multi-channel approach using both classic marketing tools & social medias.

Twitter | **WhatsApp** | **One-to-one** | **Phone calls** | **LinkedIn post** | **Mass-mailing tool & InMail campaign**

A - Detailed methodology

Designing three adapted bilingual surveys covering both people and goods mobility to reach and understand the African transportation ecosystems.

- **A general questionnaire for a diversity of profiles to participate to the data collecting process.**
- **A specific survey targeting established businesses and startups operating in transportation.**
- **An adapted questionnaire for the non-profit sector to survey political authorities, civil society representatives, academics, think tanks and media.**

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02 - Experts, Ecosystem & Partners Development.

Qualitative interviews:

Jérôme Chenal, Lecturer & Senior Researcher at the Ecole Polytechnique de Lausanne
Cheikh Cissé, Urban planner and PhD Candidate at the University of Rennes
Amal Ould Kher, Founder & CEO Optima Decision
Zakaraye Dabone, Co-Founder & CEO Bifasor
Mohamed Fathy Eng. Mohamed Fathy Project Manager "Sustainable Transport Project for Egypt"
Mohamed Hegazy, Founder & CEO of Transport for Cairo
Jacqueline Klopp, Associate Research Scholar Center for Sustainable Urban Development Earth Institute,Columbia University
Romain Kouakou, Head of Land Transportation at the Transportation Ministry of Côte d'Ivoire
Sylvestre Kouassi Kouamé, Lecturer at Université de Bouaké, Côte d'Ivoire & Head of the Michelin African Mobilities Observatory (OMA)
Barthélémy Kouame, CEO of Acturoute
Vanessa Lassey, Urban planner & Geographer
Parfait Ouattara, Founder & CEO of TaxiJet
Amal Ould Kher, Founder & CEO of Optima Decision
Denise Sioson, Coordinator, Diesel and HFC Initiatives Climate & Clean Air Coalition Secretariat

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Appendixes

A - Detailed methodology

African transportation ecosystem mapping:

Products
Mobius Motors, MellowCabs, Medbikes

Carpooling applications:
Zayride, Taxify South Africa, GoMyWay, Raye7, eTaxi, Chifco, Kumwe, Andando (and of course, Uber!), Buupass

Routing App:
WhereIsMyTransport, Digital Matatus, Transport for Cairo

Logistics services:
TransPoint, Delivery Science, Roambee, Zomato, Ebutler, SnapCart, Bifasor, GIGM

Professional organizations
Kenya Digital Taxi Association, Vairified an app aiming at verifying drivers identity and respect of the rules.

International incubators
AfriLabs, Seedstars Academy, Ooredoo Start

National incubators
Co-creation Hub, Wennovation, Juicelabs, Innovation Hub, U-accelerator, Boost

Co-creation spaces
GE Garages Algiers (Skylabs), Nailab, Flat6 Labs Tunis, Orange Fab Côte d'Ivoire, CTIC Dakar, Jokkolabs

Mentorship
Meltwater Entrepreneurial School of Technology (MEST), Entreprevolution Foundation, Intilaq

Investment Funds
Sawari Ventures, Access to Energy Ventures, Lenana Capital

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03 - Critical Analysis of the actual macro-roadmap.

On July 11th, a team of experts from the transportation sector and Africa was gathered in order to brainstorm on new priorities to adopt for the African roadmap:

Michelin :
- **Nicolas Beaumont**, Senior VP Sustainable development and mobility
- **Claire Bernard**, PR Officer
- **Gael Queinnec,** Director of prospective research
- **Laurence Ullman,** DGCD/Prospective

FERDI:
- **Camille Da Piedade**, Research Assistant

Experts :
- **Sylvestre Kouassi Kouame,** Head of prospective at Ministère du Plan - Ivory Coast & Professor, Academic Researcher at University of Bouaké (Geography) and Director of l'OMA (Observatory of African Mobility)
- **Jackie Klopp**, Researcher at Columbia University, Urbanist expert in all the issues related to Land, Transport, Environment and Politics.
- **Romain Kouakou,** Directeur Général des Transports Terrestres au Ministère des transports de Côte d'Ivoire

Start-ups :
- **Mohamed Hegazy,** CEO of Transport for Cairo (Egypt)
- **Parfait Ouattara** , CEO of TaxiJet (Ivory Coast)
- **Barthélémy Kouame,** CEO of Acturoute (Ivory Coast)

The analysis underlined several "gap-points":

I - Least cost development pathways and global needs for economic development and mobility

- Growth of demography and mobility needs
- Investment capacity
- Rural areas isolation
- Interregional connectivity
- Pro poor policy framework

II - Cultural practices & need of awareness raising

- Prestige and economic inequity
- Corruption and lack of political leadership
- Level of education

III - Enabling environment

- Policy making
- Legal environment and law enforcement
- Economic instruments
- Academic research & available knowledge (data, study, feedbacks…)
- Technical and qualified human resources
- Lack of infrastructures (railway, roads, electricity …)

IV- Biofuel externalities

- Deforestation
- Land use management, land grabbing and corruption
- Competition with subsistence farming
- Water resources

V- Sectoral cooperation

- Professional & consumer associations
- Technological transfer
- Regional and interregional cooperation
- Balance between private and public actors

VI - Urbanization

- Urbanization growth rates
- Inter-urban mobility
- Planning and artisanal transport inclusion
- Peri-urban development

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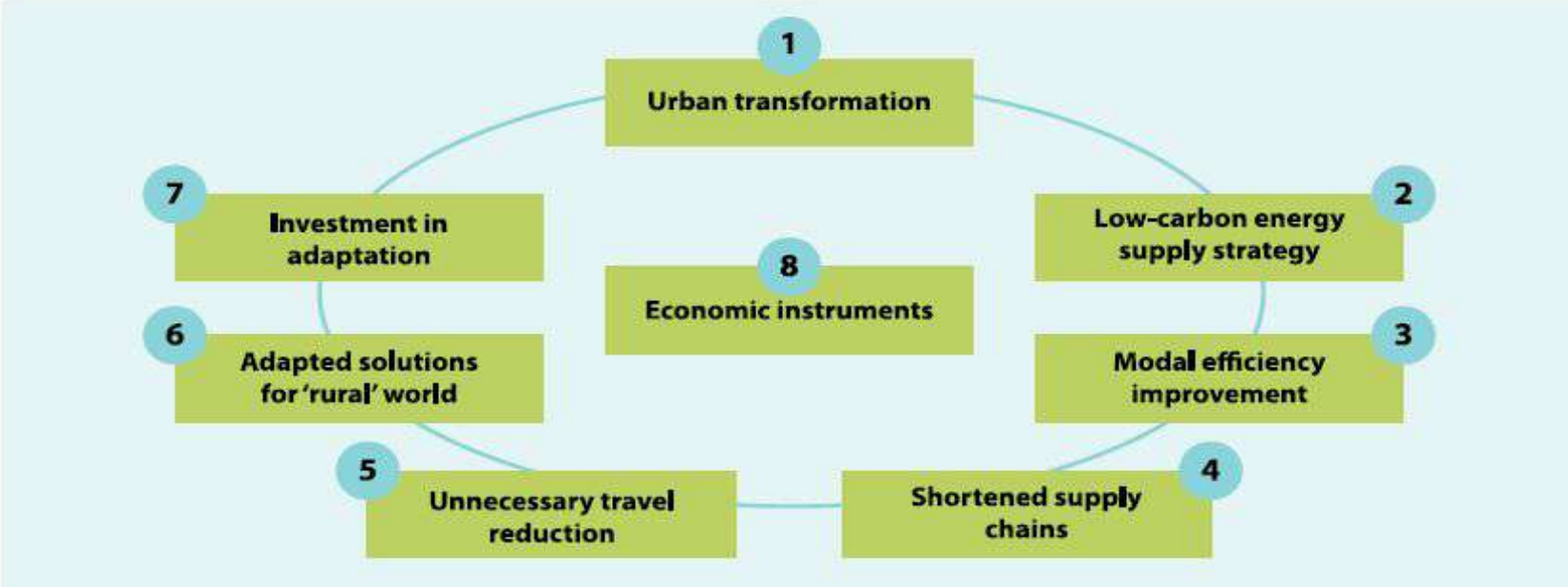
Gap points identification from the actual roadmap

The actual macro roadmap is built on 8 components. The first phase of the analysis enabled to identify the gaps between the implementation of this roadmap and the specific context of Africa. The following slides shows the summary of the actual roadmap and the identified gap-points for each component.



i - Component 1: Urban transformation
LEZ → ULEZ → ZEZ → ULEC → ZEC

The actual macro roadmap:

Limit the growth of individual car ownership

Increase the number of LEZ (Low emissions zones) by :

- Increasing walking (pedestrian areas) and cycling (cycling lanes…)
- Measuring and controlling emissions (access restrictions)
- Promote and develop mass transit systems

Move to ULEZ (ultra low emissions zones) and ZEZ (zero emissions zones) by :

- Shifting individual travel to clean public transport
- Phasing out ICE vehicles

Replicate ULEZ to create ULEC (Ultra Low Emission Cities) and ZEC (Zero Emissions Cities)

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Gap points:

Why people are using individual car ?

- Prestige and cultural specificities : big cars = proof of success
- Even if they live in cities, people need car to go in rural areas, road conditions could justify the use of individual cars.

Lack of technical resources for monitoring, evaluation and law enforcement

- Policy making and regulation environment, law enforcement
- cooperation with the academic sector, human resources
- corruption and social inequity

Very few (if not at all) LEZ in Africa (Durban, South Africa)

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ii - Component 2:
Low carbon energy supply strategy

The actual macro roadmap:

Decarbonize power generation through renewables

- Increase clean electrical generation, storage capacity and smart distribution

Develop a clean hydrogen industry

- Develop hydrogen production and distribution

Ensure a sustainable bio or synthetic fuel supply

- Increase biofuel use specially for aviation and boats

Gap points:

Access to energy :

- need for new generation capacity
- low income of consumer leading to low financing capacity
- low level of qualified HR
- Institutional and academic support

Lack of technological Transfer & Financing capacity

Biofuel externalities

- Deforestation
- Land use management, land grabbing and corruption
- Competition with subsistence farming
- water resources

iii - Component 3: Improve modal and system efficiencies

The actual macro roadmap:

Drive down energy consumption and emissions of Light Duty Vehicles (LDVs)

Curb GHG emissions of Heavy Duty Vehicles (HDVs)

Electrify and improve energy efficiency of rails

Two key technical transitions for aviation : sustainable low carbon kerosene and hybrids

Electrified and LNG powered long-haul shipping

Develop sectoral emissions pathways (Sciences Based Targets), improve transport systems efficiency

Gap points:

Cultural vs technological lever :

- technological : the efficiency of the motorization
- cultural : size and weight of the vehicle = seen as a proof of success in Africa

Weight of the paratransit sector vs lack of technical control enabling environment

Infrastructure development : Clean railroad to be developed

Electricity & Telecom access : coverage rate

iiii - Component 4: De-fragment and shorten supply chains to manage freight transport emissions

The actual macro roadmap:

Relocalizing and optimizing purchasing choices, simplifying distribution circuits

Redesign supply chains by de-fragmenting manufactured and assembling

Develop collaboration in the logistics sector

Develop policies to underline social costs of transportation

Gap points:

Available data and knowledge

Transparency on the distribution circuits

Policy enabling environment

Transport services are led by private entrepreneurs that are not willing to cooperate

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iiiii - Component 5: Avoiding vehicle km for commuting, shopping and accessing services

<u>The actual macro roadmap:</u>

Reduce commuting time capacities

- Work (Work at home, telework, remote office centers)
- Shopping (on-line, home-delivery, local markets…)
- Access to education

Underline co-benefits of reduced commuting time

- Health
- Availability for work
- Cash savings
- CO2

Develop land-use limiting policies

Gap points:

Mobility needs concern essential needs

Pro-poor economic development framework and least cost pathways are needed

Artisanall urban & periurban planning

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iiiiii - **Component 6:** Provide low-carbon solutions for the rural population

<u>The actual macro roadmap:</u>

Answer the large unmet demand for mobility of people and goods in rural areas

Design transport solutions based on rural areas current trends :

- Continued migration from rural to urban areas
- Deployment of decentralized renewable energy
- Roll out of fast internet
- Increased incomes because of greater productivity

<u>Gap points:</u>

Rural areas are even more isolated in Africa

- Access to basic service
- Financing capacity of final users
- Political priority

Migrations & urbanization growth rates are booming

Interregional connectivity : transportation solutions between cities could help the development of rural areas

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iiiiiii - **Component 7:** Accelerate action on adaptation in transport sector

The actual macro roadmap:

Raising adaptation discussions in the transport sector

Promoting climate risk screening and vulnerability assessment of transport system, services and new projects

Adopting industry relevant standards, integrating transportation in adaptation programs and activities

Leveraging climate finance

Integrating adaptation into project design

Strengthening coordination, building capacity at local, national and international levels

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Gap points:

Is there any cooperation processes in the transport sector in Africa ?

- Professional associations
- Consumer associations and NGOs
- Bilateral cooperation
- Interregional platform

Lack of institutional and academic support

Climate finance in transport development programs

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iiiiiiii - Component 8: Large scale deployment of economic instruments giving value to carbon

The actual macro roadmap:

Developing carbon pricing in the transport sector combined with regulatory approaches

Pumping back carbon market income into investment including public transport and walking/cycling facilities

Working with business and consumer associations

Gap points:

Enabling environment in Africa is less developed

- Policy making
- Academic support
- Cooperation platforms

Cultural specificities : the paratransit sector is preponderant
There is a great need for awareness raising among political leaders and for capacity building among operators.

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Appendixes

A - Detailed Methodology

B - Consultation report

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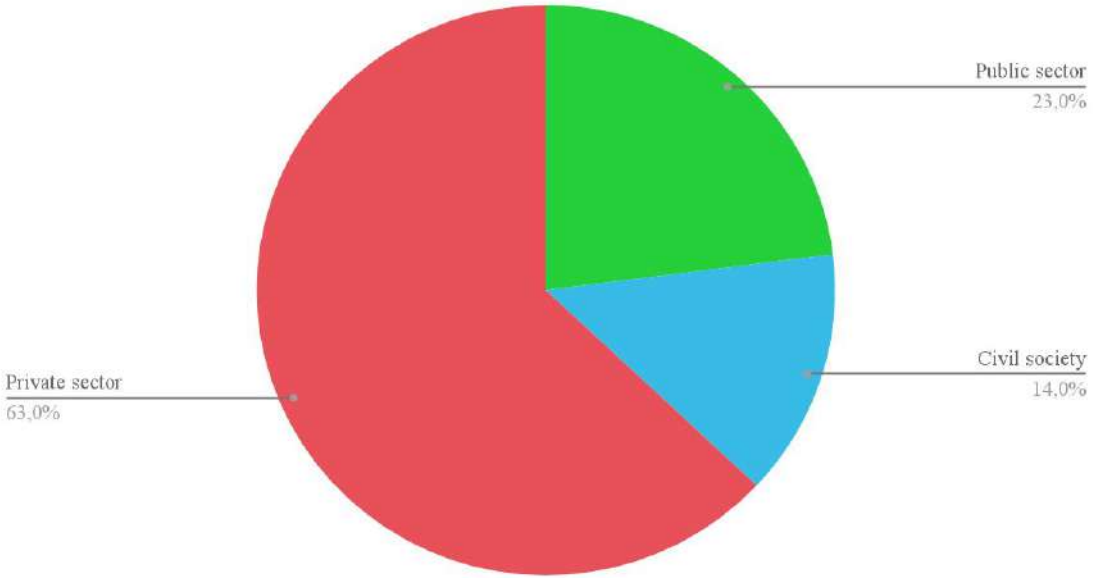
01 - Survey report.

i - Profile of the participants

The **50+ participants** are coming from 17 countries divided between the 5 African regions. There is a massive participation from West African countries.
The majority of the participants have a private sector background with a various representation of the transport sector crafts : CEO in logistics, Planning bureau Manager, Transport Manager ...

Knowing that the survey takes 30 minutes to fill out and that 40+ participants are willing to stay up to date with the project progress, we can detect a qualitative community can be addressed around DeTrar.



B - Consultation report

ii - Areas covered by the survey

iii - Synthesis of the report

- **The necessity to tackle mobility & access to energy challenges (including decentralized energy solutions)**

While 59% of the participants consider sustainable energy a major factor for the evolution of the transport sector, 80% of them still use fuel in their activities.
According to them, the shift toward renewable energy is complex because of the lack of affordable alternative energy solutions (23,4%), the unavailability of affordable or reliable electric/solar vehicles (23,4%), the industry's reluctance to switch renewable energy sources (19%), the lack of affordable solutions for distributing alternative energy (16,2%) and the commuter reluctance to use alternate energy vehicles (10,8%).

- **A striking lack of infrastructures in both urban & rural areas**

Most of the participants would say that it is common and easy to send a package abroad in their area (86,6%). But 80% consider that the infrastructures in their business are not well-funded and 50% wished rural areas where better connected to the city.

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- **Reinforcing leadership and cooperation regarding transportation**

The governmental support to the transportation industry appears limited as the participants consider it provides regulation but little funding (38,4%) or short-sighted policy and little funding (30,7%). For transportation knowledge and decisions, there is an effective cooperation between neighbour countries and other African countries according to 47% of the participants.

Only (13,3%) of the participants consider that there data and studies on climate change trends are available to ensure proper project vulnerability assessment. 94% of them consider that the level of public awareness about transportation security (accidents and safe-driving) is insufficient.

- **The mobility of people and goods**

" Traffic congestion is always high. Smoking vehicles and public roads unchecked. Heavy trucks damage the roads and little checks is imposed on them "

" Still transport is unreliable especially on working hours. Buses are not well services, we use it because we don't have any option but in reality it's not safe to be used by human being."

"Long commute times and too much of household income spent on transport."

In most of the countries surveyed, the transportation sector is regulated by governments and run by distincts operators - either public or private - (63%). **Main identified challenges regarding people and goods mobility are infrastructures and vehicles bad quality, the lack of organized multi-modality (connection remains a challenge for passenger transportation daily use). Overall participant call for governments, professionals and users morality and a more civic attitude.**

Regarding the call for morality, participants identified the fixed prices of public transport as too high, as a result of the lack of governmental regulation regarding the exploitation of transport company owners. Participants also pointed out the behaviors of drivers (both professionals and individuals) due to a lack of regulations and coercitive measures, identified as a risk-factor for accidents and insecurity feelings on the road. In fact more than two-third of the participants think that public awareness on safe-driving is poor or inexistant.

- Climate change in Africa: Key-factors

Different political agendas ...
Even though few of the participants' countries have set a roadmap for the transportation sector including carbon elimination (20%), national authorities in some countries have shown climate change as a priority in their political agenda (65,21%).

… but the same levers to trigger ...
The perception on the best way to make climate change adaptation a top priority for the transportation sector is yet the same for anglophone and francophone participants : getting political authorities to concretize actions (34,5%) and achieving a certain level of public awareness & civil society inclusion (38%). Although being sensitized to climate change (59%), **the participants come with user-centric responses when asked about the main benefits of efficient transportation,** such as : less passenger delays and improved productivity (38%), less traffic congestion (23,5%) and reduced stress and frustration for passengers (14,7%). Climate change is only mentioned by 11,7% of the participants.

… for a more efficient and inclusive transport sector.
The participants identified the most promising innovations for mobility as being the mapping and sharing transportation data (40%) and special courier services for express delivery and shopping; e-commerce (20%).

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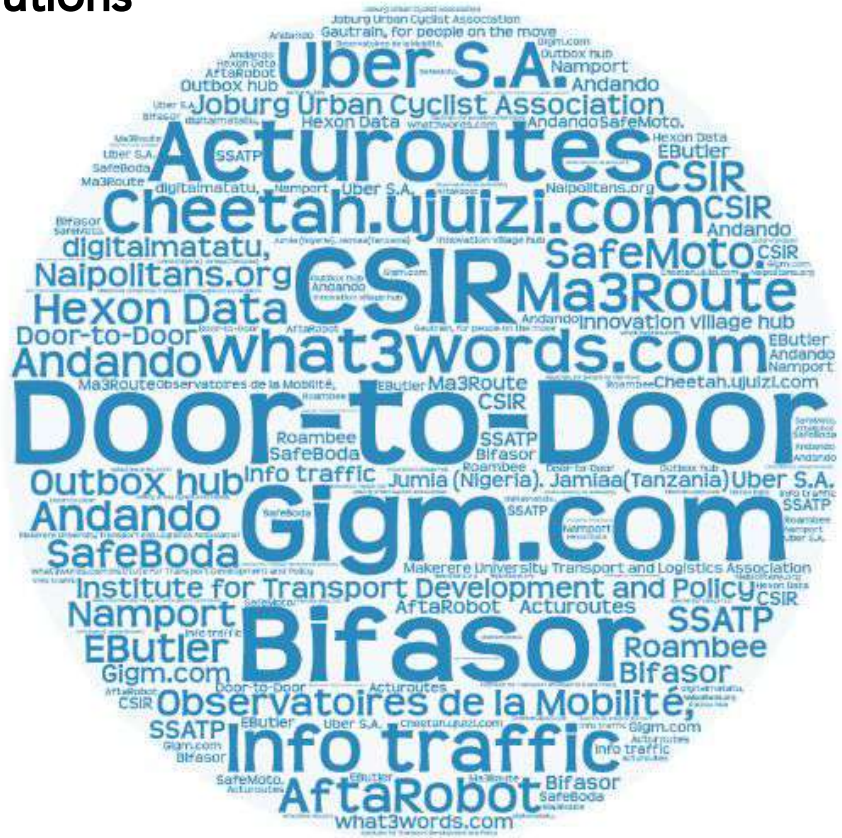
iii - Innovative solutions identified



02 - Workshop report.

i - Consultation topics

The online consultation and the organization of a participative workshop at Climate Chance (Agadir, September 2017) enable to identify several elements for each topics, these results are presented in 4 parts :

A. **« Why is it a priority ? »**

B. **Verbatim from the consultation**

C. **Identified priorities of actions**

D. **Raised questions – Next steps**

ii - Political leadership and cooperation

A. **« Why is it a priority ? »**

- Sustainable transport solutions will emerge only with a strong political commitment to develop transportation for all with a least-cost development pathway.
- Global awareness is necessary about the transformative capacity of transportation in other sectors (healthcare, economy, security, environment…).
- Political actors must play their role in regulating and building of the a new transport ecosystem

B. **Verbatim from the consultation**

- « Political leadership and cooperation must be linked with capacity building » e capacités
- Morocco have shown promising results in access to energy, transportation. It brings a lot of expertise to other african countries »
- « Leadership and cooperation in transportation force to adopt a systemic approach »

C. Identified priorities of actions

- Identify flagship actors (countries, companies, institutions, regions…) and promote them
- Encourage cooperation between states, companies and cities
- Promote a synergy of objectives among multi-actors cooperation platforms (States, institutions, development agencies, NGO, start-ups…)
- Encourage the production and sharing of indicators about mutual benefits of sustainable transportation solutions.
- Inspire from best practices implemented on the continent
- Encourage the implementation of common regulative standards across the continent
- Encourage capacity building of political decision makers (politicians, counselors, technical staff…)
- Develop specific transport south-south cooperation platforms between African countries
- Accompany the semi-formal sector rather than try to eradicate it.

D. Identified priorities of actions

- Which inclusive governance model for a sharing platform of cooperation in the transportation sector ? Which actors to be included in ?
- How to identify key success factors from local best practices ? How to replicate them in a different enabling environment ?
- What should be the place of the semi-formall sector in the development of transportation solutions in Africa ?

iii - Capacity building

A. **« Why is it a priority ? »**

- Capacity building is necessary at every level of African societies. The scope is large and exceed the transportation sector.
- It must target all the stakeholders of the sector in a transversal approach : financing, business models, design, construction, maintenance, operation, client relationship, user behavior…

B. **Verbatim from the consultation**

- « Civil society can pressurize political decision making but we need independence, transparency, control and the keys to understanding the problems »
- « We need more human capital, we need talents and local innovators ! »
- « We need to take advantage from what we already have. We should look at African schools that have proved their efficiency such as INPB (Ivory Coast) or IDEP (Senegal) »
- « Capacity building must be design from local needs and answer to the reality of socio cultural specificities »
- « Senegal wants to start oil exploitation. As citizens, we need arguments against this . We need tools and good practices. »

C. Identified priorities of actions

- Encourage regionalization and decentralize the efforts of capacity building
- Foster the use of TIC in order to massive expansion of lifelong learning.
- Boost the impact by building capacity among capacity builders
- Associate a minimum part of capacity building in every developing project
- Produce and share transversal knowledge about transportation (business planning, urban transformation, contractual processing…)
- Bring concrete tools to civil society in order to put political pressure on governments and institutions.

D. Raised questions – Next steps

- How to design capacity building solutions specific to the transportation sector ?
- How to prioritize the capacity building of the most relevant actors in order to encourage the rapid emergence of sustainable solutions ?
- What role could be played by TIC in this capacity building ? What links could be done between e-learning and transportation ?

iiiii - Climate change adaptation

A. **« Why is it a priority ? »**

- Climate change attenuation in Africa is a burning topic as the continent is looking for development. However, Climate change adaptation is inevitable in order to achieve this development.
- Transportation is in frontline for the resilience of infrastructure (heatwaves, flooding…) but also in the analysis of the future needs of mobility.
- Taking into account climate change vulnerability of Africa, the replication of western transportation solution could be dramatic.

B. **Verbatim from the consultation**

- « There's already several initiatives. People manage to implement transport solutions including climate adaptation. Start-ups use this frugal sense of innovation »
- « Without global awareness raising about waste management, drainpipe are often blocked.
- « Non local resources strengthen climate change vulnerability. We need to learn to build resilient solutions from local resources and expertise »

C. Identified priorities of actions

- Approach planning in a transversal way by including a minimum part of climate change adaptation and awareness raising
- Balance bitumen paving with natural ecosystems that can foster resilience in case of flooding or heatwave
- Encourage the emergence of general interest and long-term thinking
- Develop in a collective way technical knowledge about climate change adaptation of transportation.

D. Raised questions – Next steps

- How to anticipate natural hazards when there are other short-terms priorities and essential needs ? How to inspire political inspiration about long-term trends ?
- What is the level of implementation of adaptation approach in the development of current transportation project (roads, railway, ports…) in Africa ?
- How to encourage the production and sharing of technical data about adaptation of the transport sector ?
- How to inspire from the traditional and resilient climate adaptation techniques in order to support the design and implementation of new transport solutions ?

iiiii - Infrastructures

A. **« Why is it a priority ? »**

- With access to energy and access to water, transportation is an investing priority in Africa. Investments in infrastructures (rails, roads, ports…) for construction but also maintenance are substantial.
- However the low financing attractiveness and ROI of transportation projects are slowing down the massive development of new infrastructures.
- According to the World Bank, the lack of total investments in Africa in 2015 reached 48 billions of dollars although the current investment extend to 45 billions.

B. **Verbatim from the consultation (1/2)**

- "The level of quality and coverage of transport solutions are insufficient : punctuality, comfort, security, coverage. Everything need to be upgrade !" a participant from Climate Chance
- "In Tetuan, in Morocco, transports are clean, secured, with a good level of coverage and real time data ! They've proved that it was possible in Africa !" – Morocco
- "We need to rethink services in order to rethink the city : informal roads are just following the urban plans. They should be included in it. If services were more decentralized, they would not be informal roads" – Cameroon
- "Bus Rapid Transit (BRT) were implemented following the world cup in South Africa but aren't cost-efficient now because the design of the paths were not thought based on the needs of the population» - a participant from Climate Chance
- "Rural areas are served by individuals! People come to rural areas with their personal vehicles or minibus, they often come from the area and are maintaining a relationship with their relatives and roots." - Algeria

C. Identified priorities of actions

- Inspire from artisanal networks and solutions when designing new infrastructures.
- Encourage the cooperation between cities and transportation actors on the development of urban planning.
- Strengthen decentralization in order to unblock the main transportation pathways.
- Take into account the needs of the population before designing a new transportation infrastructure.
- Encourage « big actors » with the appreciation of co-benefits induced by the development of effective transportation solutions.

D. Raised questions – Next steps

- What transportation infrastructures enable to accompany the regulation of the artisanal sector ?
- What methodology and ecosystems (academic, technical) should be implemented in order to systematically analyze the needs before designing a new project ?
- What is the current mapping of the transport sector role in urban planning ?
- Which economic sectors would benefit from the development of efficient transportation systems ? How to encourage them to participate in the development of transportation solutions ?

iiiiiii - Data & Knowledge

A. **« Why is it a priority ? »**

- Population will always need roads or vehicles. Trade will always need ports and trucks to carry goods. But new technologies coupled with entrepreneurial spirit and innovative business models are revolutionizing the development of Africa.
- As well as energy or financing, the transportation sector could benefit from this technological leapfrog if the proper enabling environment is put in place

B. **Verbatim from the consultation**

- "The mobile market in Africa is the second in the world with 560M of users in 2015"
- "The development of new technologies is promising but the support from institutions and government is not efficient. We need a strong political leadership"
- "Mobility information remains the biggest challenge, we have a big lack on mobility related data" – Algeria

C. **Identified priorities of actions**

- Connect data collection with population habits
- Encourage partnerships between telecom operators, transportation actors and planning institutions in order to accelerate data collection
- Produce data and knowledge in order to demonstrate the co-benefits of transportation solutions development
- Improve the regulation environment in order to encourage new technologies initiatives

D. **Raised questions – Next steps**

- How to identify the best practices in order to trigger a knock-on effect on the political sector
- What is the proper enabling environment (regulation, support from academic support, economic incentives…) that could encourage the development of data and knowledge collection processes ?
- How to disseminate knowledge and technical means in order to massively share the use of data collection among African populations ?

iiiiiii - Energy & transport

A. **« Why is it a priority ? »**

- With no energy, there is no transportation.
- Africa is suffering from the lack of energy access although Africa has promising resources.
- Rural areas are the more isolated in terms of transportation but also in terms of energy access
- African energy grids are not ready to support electrical transportation solutions

B. **Verbatim from the consultation**

- « 95% of the energy consumed by the transportation sector is oil »
- « If we have the solar resource but we are not able to use it, it's completely useless. Africa depend on the other continents. The link has to be made with capacity building. »
- « For African countries, the temptation to rely on fossil fuel industry is very important. Even more important if the country has some fossil fuel in its soil. In that case, they could be reluctant to encourage the development of low carbon solutions ».
- « In Asia, they succeed to promote electric two-wheeled vehicles. Why not in Africa ? »
- "For the moment, and especially in West Africa, access to energy is a major condition for the evolution of transport." – Senegal

C. Identified priorities of actions

- Encourage the use of electric two-wheeled vehicles in order to create synergies between energy access and transportation in urban areas.
- Limit the weight and size of the vehicles by regulation and economic incentives.
- Rely on traditional transportation solutions (bicycles, animal power…) by including them in planning tools.
- Rely on low tech solutions from local resources.
- Design solutions that can be adapted to a lot of different uses.
- Support African civil society in advocacy actions in order to limit the exploitation and use of fossil fuel.

D. Raised questions – Next steps

- What regulation environment could be implemented to promote the use of electric two-wheeled and/or small combustion-powered vehicles ? How to adapt the Asian enabling environment to Africa ?
- What tools could be implemented among civil society in order to support advocacy and lobbying actions on energy and transportation? How the transportation actors could strengthen the existing initiatives ?
- How to encourage political leadership on soft mode of transportation when it is often assimilated to a lack of development ?

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