

# Tramways as sustainable mass-transit systems: Ex-post evaluation of Moroccan tramways

November 10th | 15:30-17:30 CET



# Welcome to this year's Mastering Mobility Series!

- ✓ Learn
- ✓ Exchange
- ✓ Connect

02.11.2021	Data types and data collection methods for an urban mobility diagnosis	
10.11.2021	Tramways as sustainable mass-transit systems: Ex-post evaluation of Moroccan tramways	
16.11.2021	Understanding air quality and its role in urban transportation	
23.11.2021	Integrating air quality into sustainable mobility planning	
29.11.2021	Reforming paratransit with MobiliseYourCity's newest catalogue of measures	
30.11.2021	Getting to know your potential: Conduct a financial assessment of your city	
07.12.2021	Reflecting about barriers and co-creating solutions for active and walkable cities	

 Translation French-English will be provided

# Agenda

15:30 **Introduction to today's session**

Vincent Larondelle

15:35 **Introduction by country directors**

Mihoub Mezouaghi

15:40 **Poll**

Vincent Larondelle

15:45 **Introduction to Rabat's and Casablanca's tramways**

Loubna Boutaleb, Shada Taib

16:00 **Ex-post evaluation of Moroccan tramways**

Thomas Delahais

16:30 **Break**

16:35 **Roundtable with Moroccan counterparts, including Q&A**

Ambrosius Baanders, Essaid Fraigui, Loubna Boutaleb, Shada Taib

17:15 **Wrap-up: What can we learn from the Moroccan tramways?**

Antoine Chèvre

17:25 **Wrap-up and participant feedback**

Vincent Larondelle

## Objectives of the session

- Understand the role of tramways as sustainable mass transit systems
- Learn about the economic, social and environmental benefits of tramways
- Reflect on lessons learned from Moroccan tramways and apply them to your own contexts

# Meet the speakers and facilitators of today's session

Speaker

**Ambrosius Baanders**

Independent Consultant  
Former Board Chair at  
Association for European  
Transport

Speaker

**Loubna Boutaleb**

Managing director  
Société du tramway du rabat-  
Salé

Speaker

**Mihoub Mezouaghi**

Country Director  
Agence Française de  
Développement (AFD)

Speaker

**Antoine Chèvre**

Transport Team Leader  
Agence Française de  
Développement (AFD)

Speaker

**Shada Taib**

Communication Manager  
Casa Transport

Moderator

**Vincent Larondelle**

Monitoring and Evaluation  
MobiliseYourCity

Speaker

**Essaid Fraigui**

Fonds d'Accompagnement des  
Réformes du Transport (FART)

Speaker

**Thomas Delahais**

Consultant and evaluation expert  
Quadrant Conseil



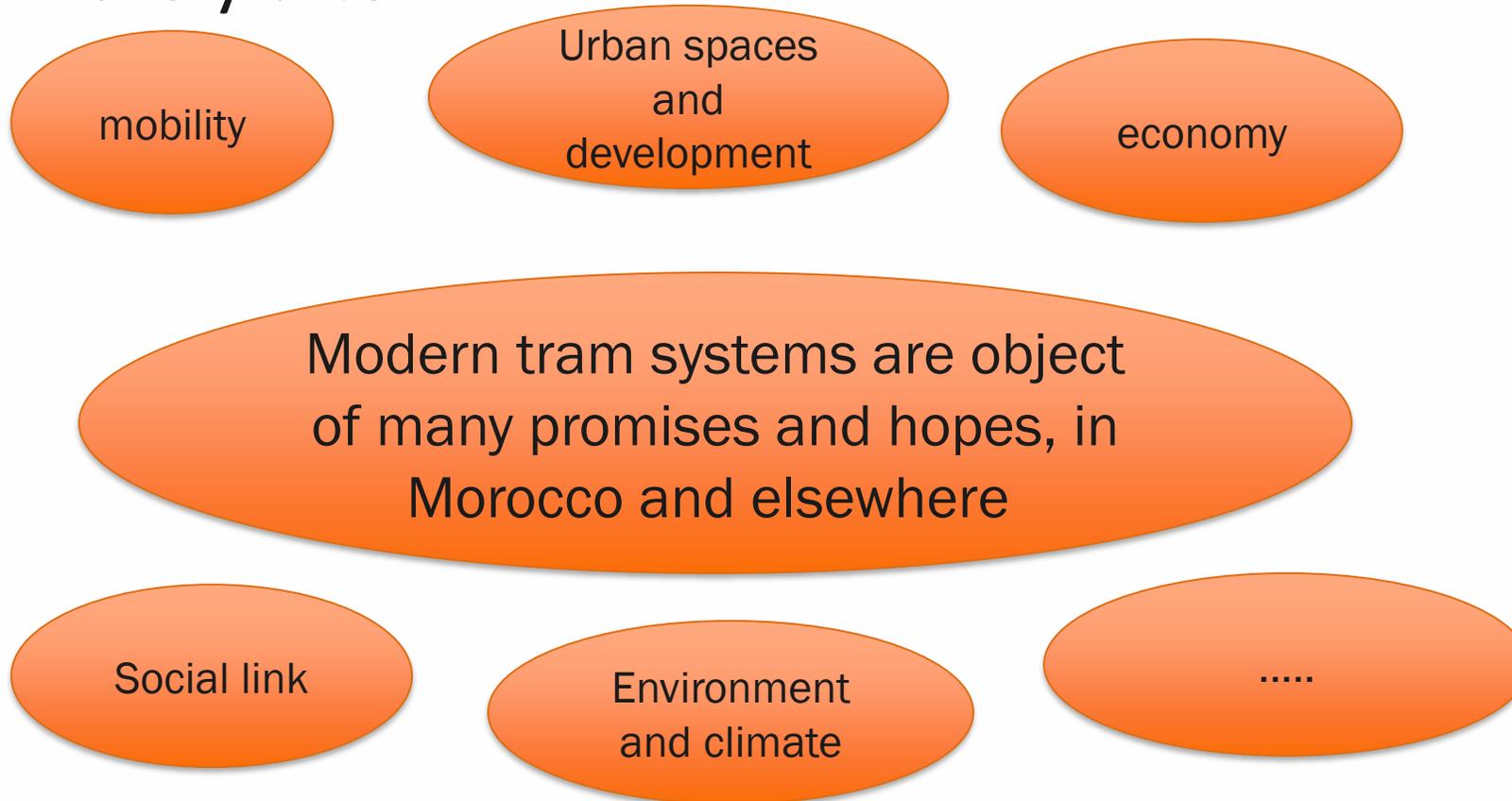
**EX-POST EVALUATION OF THE FIRST  
TRAMWAY PHASE IN RABAT-SALÉ AND  
TRAMWAY LINE 1 IN CASABLANCA**

AFD-STRS-CASA Transports 10 novembre 2021

# THE FIRST IMPACT EVALUATION OF TRAMWAYS BY THE FRENCH DEVELOPMENT AGENCY AFD

---

- In transport, we often evaluate before, more rarely after...



# TRAMWAYS IN CASABLANCA AND RABAT-SALÉ: AN ENORMOUS INVESTMENT TO PROMOTE SUSTAINABLE MOBILITY

---



- Rabat-Salé (2Mh): a link between two neighboring, but socially and economically very different cities
  - 2 lines with a length of 17 km opened in 2011; 7km extension (2021); operator: Transdev
  - Costs: 500 M€
  - Frequency: ~110 000 v/d (pre-COVID)
- Casablanca (>4Mh): 1st structural line in the Moroccan metropolis
- Line 1 opened in 2012; line 2 (2019), lines 3 & 4 in construction+ BHNS ; operator: Ratp Dev
  - Costs: >1,000 M
  - Frequency: ~120 000 v/d (pre-COVID)



# WHY CASABLANCA AND RABAT-SALÉ?

---

- Insights draw on nearly ten years of experience
- Arrival of a tramway in a similar context :
  - Growing metropolises
  - Dysfunctional bus networks, important role of taxis and informal modes in compensation
  - A common institutional scheme
- Common observation of successful projects AFD / STRS / Casa Transports deserving an evaluation to better understand the impacts and mechanisms



# APPROACH TO EVALUATE TRAM IMPACT

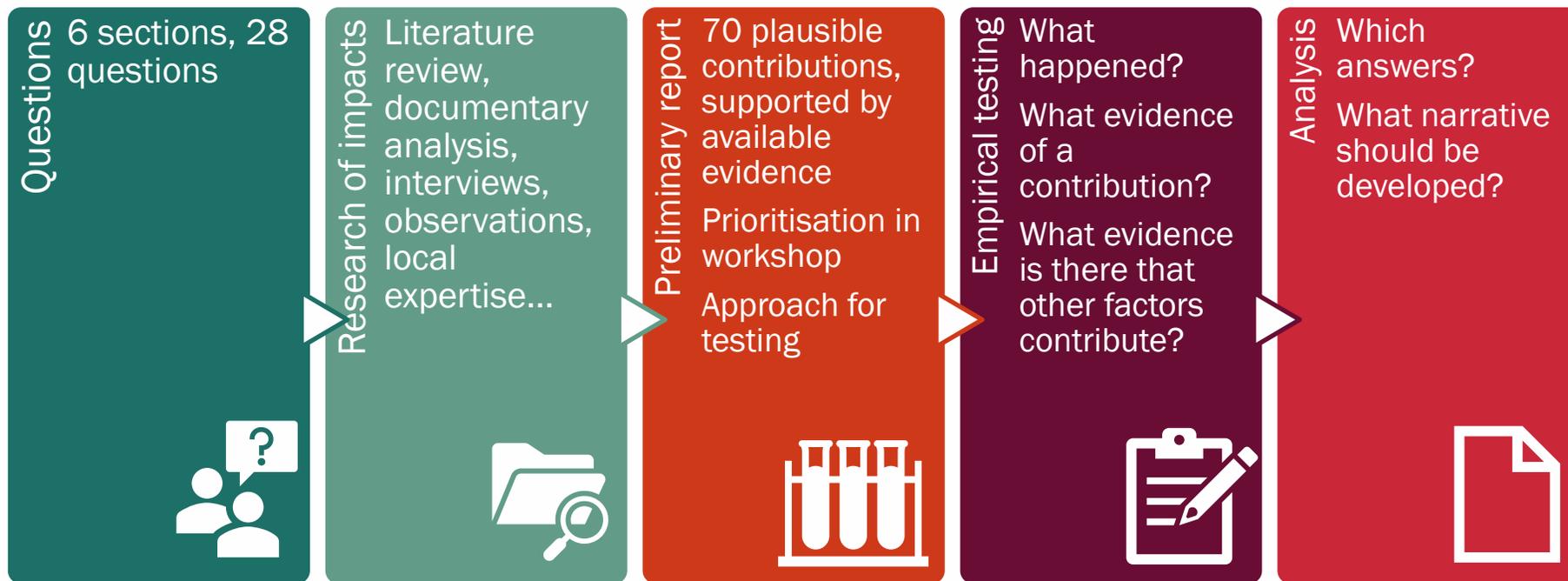
---



- Systemic promise of trams: changing mobility but not only...
- It is not the infrastructure that has an impact, it is the way the actors deal with it:
  - Importance of service and implementation in general
  - Why and how different types of users enter?
  - Essential role of political, administrative and socio-economic actors in achieving impacts

# DEVELOP PLAUSIBLE CONTRIBUTIONS AND TEST THEM

---



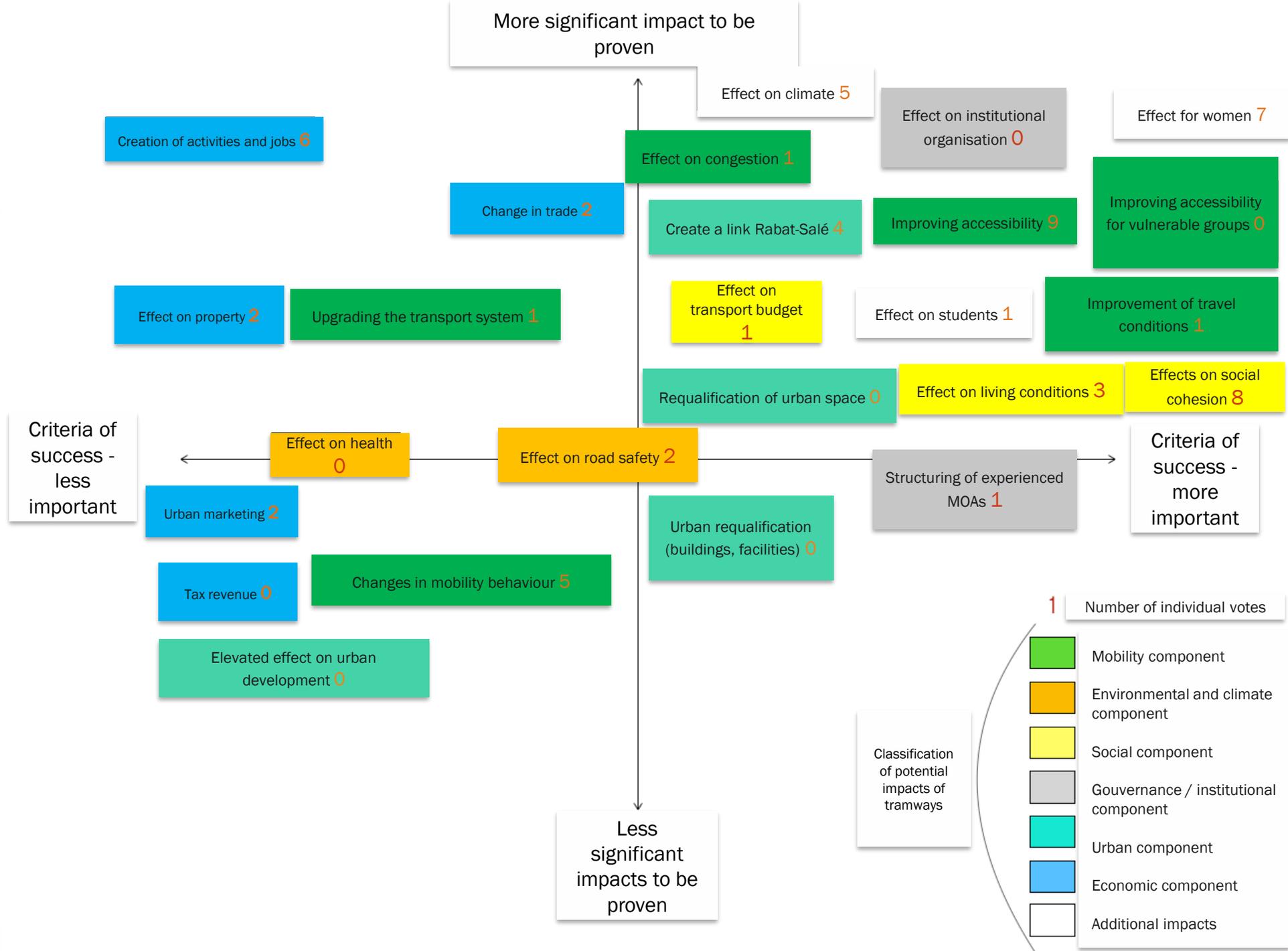
Mainly  
secondary  
data

Mainly  
primary  
data

DIMEN



Un critère de  
succès moins  
important.



# COLLECTING INFORMATION FROM AS MANY PEOPLE AS POSSIBLE

---



Key sources:

Household Travel Survey Casablanca 2018

Census 2014 with the help of the Haut Commissariat au Plan



Contribution of 4 Moroccan and 2 European experts



Interviews with 235 people in the vicinity of stations: women, people with disabilities, students, new residents (incl. non-users or occasional users)



30 interviews with key stakeholders



Survey of 1,600 users, of which 200 in depth



Interviews with 165 businesses, companies and administrations

# LIMITED GAINS IN TERMS OF ACCESSIBILITY TO KEY JOBS AND SERVICES...

---

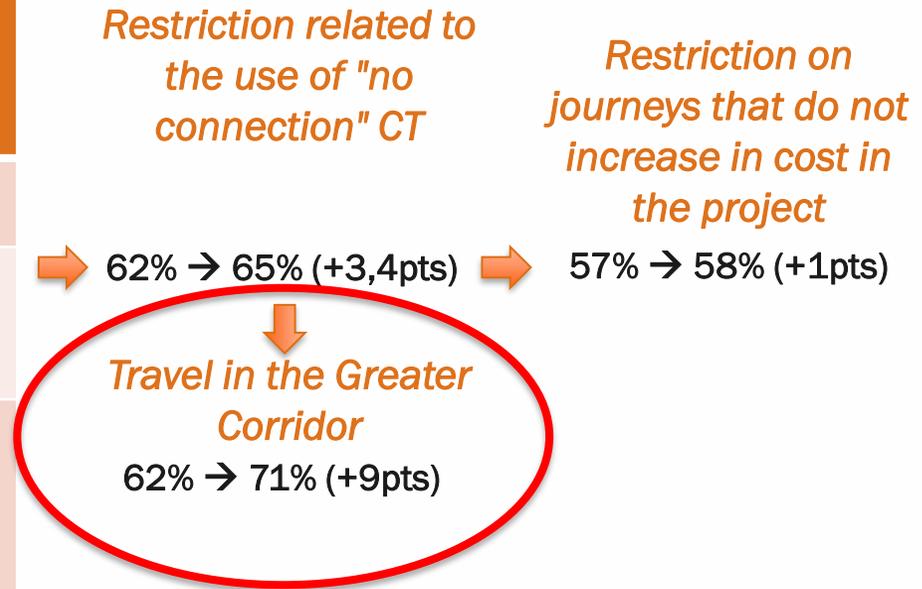


- Residents :
  - Could already get around the centre rather quickly with taxis!
  - Avoid uncertain bus connections
- The most important gains:
  - On the Rabat-Salé link between the two urban centres
  - For routes located in a "major corridor" of the tramway
  - In Casablanca, eastern branch: Sidi Moumen, Moulay Rachid

# WHAT ADDITIONAL PROPORTION OF JOBS DO RESIDENTS HAVE ACCESS TO?

- **INDICATOR** : *Weighted average accessibility gain in a given territory*

<u>TRAMWAY FROM CASABLANCA</u>	Population/employment	Average accessibility in less than 40 minutes without tram → with tram
Grand Casablanca	4,3 Mh, 1M+ employment	51% → 53% (+2pts)
Prefecture of Casablanca	3,3 Mh, 900 000 employment (est.)	66% → 69 % (+2,9pts)
«  »	1,8 Mh, 460 000 employment (est.)	



<u>TRAMWAY FROM RABAT-SALE</u>	Average accessibility within 30 & 50 min.
Rabat (30min)	30% → 36 % (+6pts)
Salé (30min)	23% → 24 % (+1pts)
Salé → Rabat (50min)	27% → 33 % (+6pts)
Rabat → Salé (50min)	19% → 25 % (+6pts)

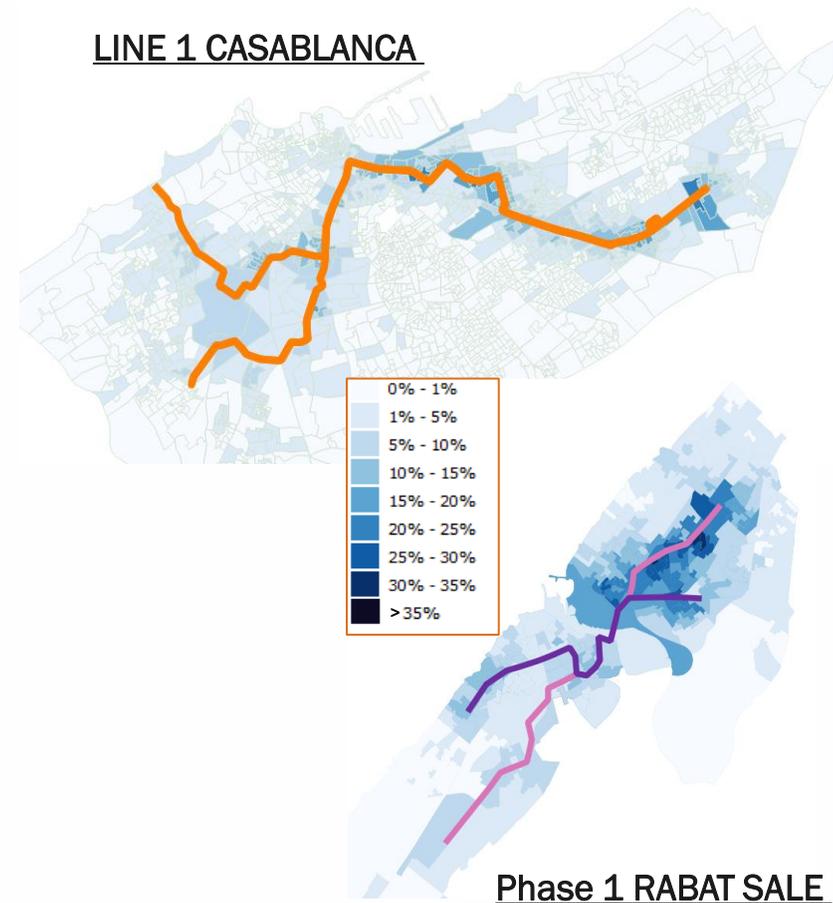
# ... BUT TRAMS HAVE FOUND THEIR AUDIENCE

	Tram share (total agglomeration)		Tram share (for inhabitants of the catchment area*)	
	Home Work	Home Study	Home Work	Home Study
Rabat	1,6%	7,8%	9,8%	28,8%
Salé	5,0%	16,6%	25,1%	34,9%
Casablanca	2,1%	4,2%	12,6%	12,6%

- Attractive tram especially for the population near the stations
- High tram modal share: DT Salé and DT/DE Rabat+Salé

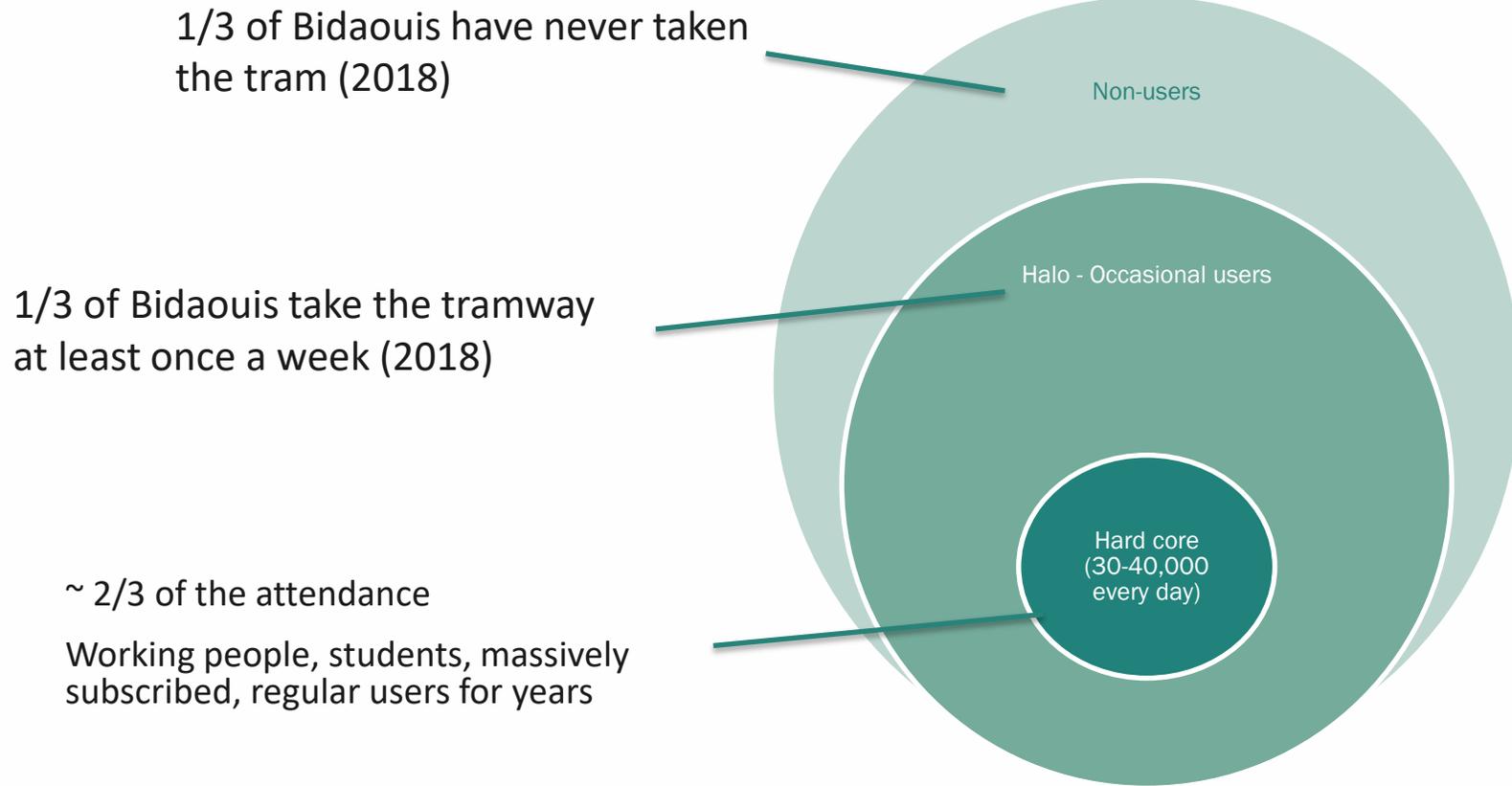
Share of work (WT) - study (ST) trips - (HCP 2014)

## MODAL SHARE OF TRAMS FOR HOME-WORK PURPOSES BY RESIDENCE (HCP, 2014)



# THREE LEVELS OF USERS

---



86% of users intend to continue using it

# THE TRAM HAS GAINED A LOYAL PUBLIC

---



- Users are willing to make long journeys to avoid other modes and connections
- The tram replaces large taxis, buses and cars as passengers...
- But it is also the initial mode for > 1/3 of trips!
- The tramway has made it possible to maintain the share of public transport despite the collapse of the bus networks **and to give a new impetus to public transport**

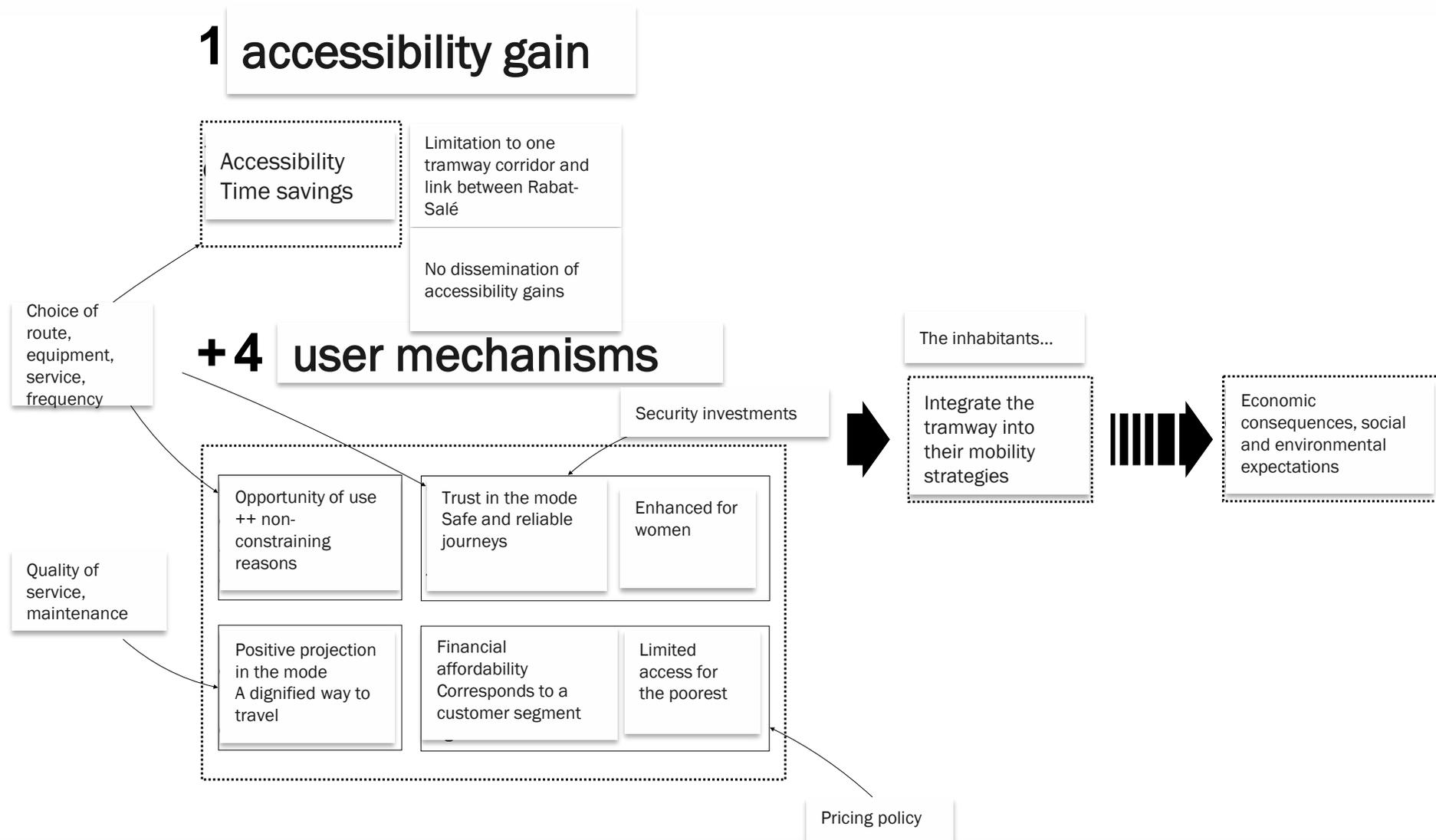
# WOMEN AS AN EMBLEMATIC AUDIENCE

---



- 50% of passengers are women, although they are less mobile and less active than men.
- Women prefer the tram to go to work:
  - +70% in Casablanca compared to men
  - +150% in Rabat-Salé
  - Ready to walk more to reach a tram station
- For women, the tramway replaces in particular large taxis (-10 pp) and the car as a passenger (-9 pp)
- More occasional use for more reasons (health, relatives, shopping, leisure...) in more new areas
- The result: in the catchment area, 13.5% of women use the tramway compared to 7.5% of men (Casablanca)

# KEYS OF SUCCESS



# THE TRAMWAY AND THE URBAN SPACE

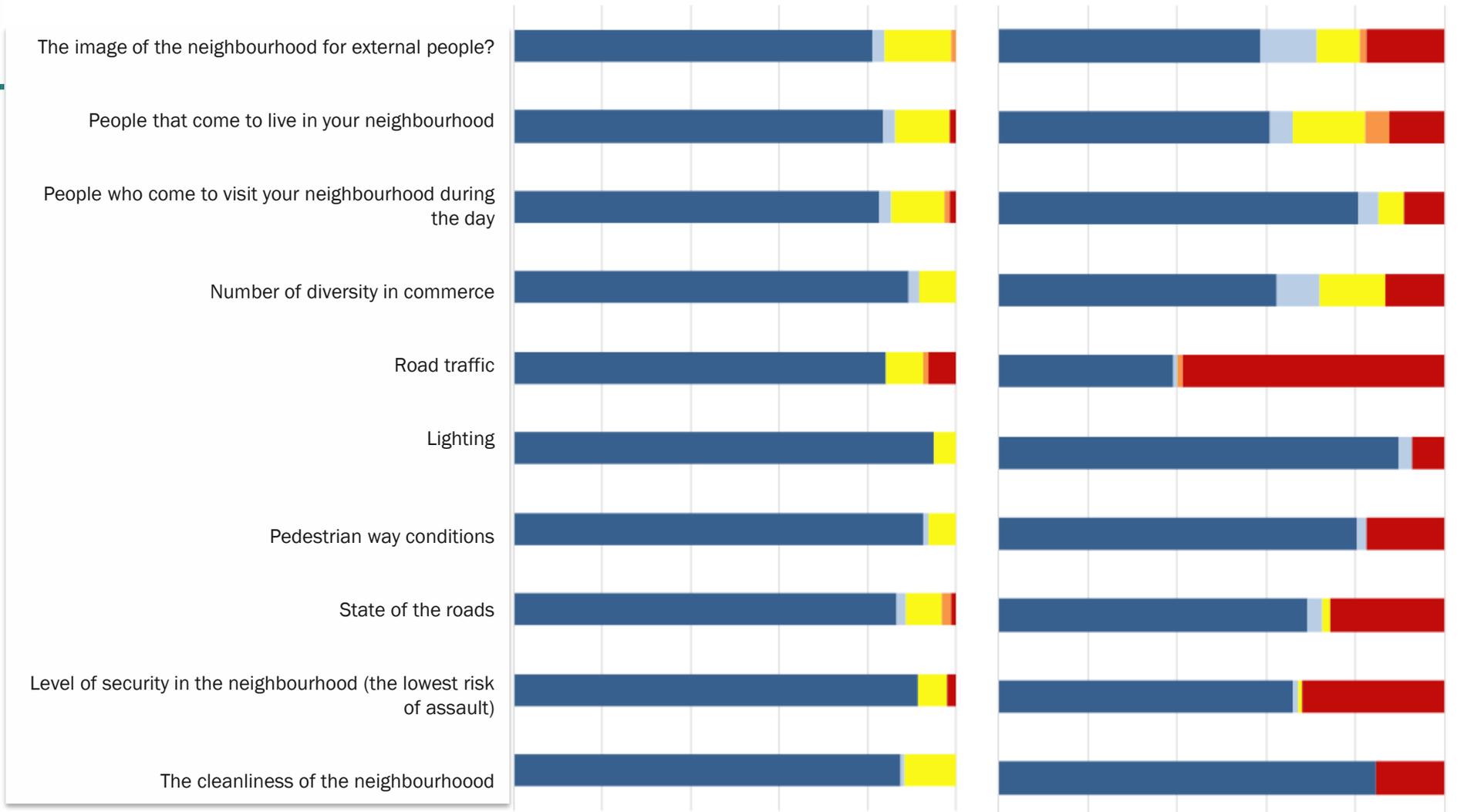
---



- Re-qualification of the areas near the tramway, more pleasant to walk around, safer
- A projection of the modern city (pedestrian, airy, etc.) that also concerns working-class neighbourhoods
- Positive consequences for the neighbourhoods crossed by the tram:
  - "Marketability, especially in Casablanca
  - Residents' assessment of the consequences on the neighbourhoods crossed, especially in Rabat-Salé

# RABAT SALE

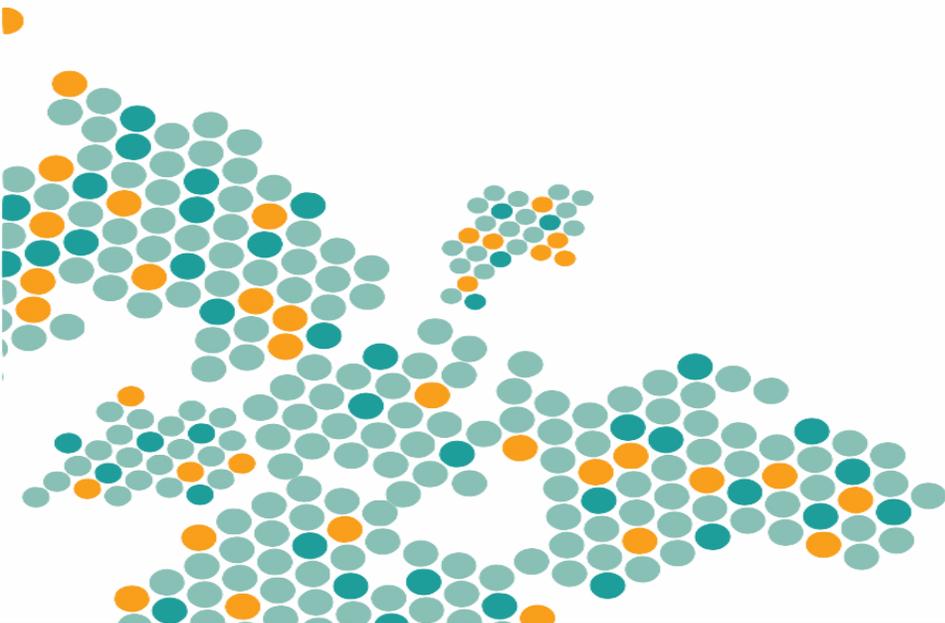
# CASABLANCA



- Yes, a positive influence
- A positive influence in the beginning, now not anymore
- No influence
- A bad influence in the beginning, but now not anymore
- Yes, a negative influence

% 40% 60% 80% 100%      % 20% 40% 60% 80% 100%

# SOME CONCLUSIONS



# IT IS POSSIBLE TO CARRY OUT STRUCTURING PROJECTS

---

- Successes of the project-based approach:
  - Tram projects **completed on time and on budget**
  - Tramway operations are **almost break-even** (revenues cover operating expenses), which is an exception for mass transit systems
  - Establishment of **high-level ad hoc project management** and validation of the Local Development Company (LDC) model
  - Strengthening of a "technical governance of mobility".
- But there are also limits:
  - Little consistency with mobility, urban, economic and environmental policies...
  - ... which limits the possible impacts of the tramway

# TOWARDS WIDER URBAN RECONFIGURATIONS?

---



- Little consideration of the tramway by real estate or economic players, but...
- The core group of users are looking for a job (41%) or a home (43%) along the tramway: Maximisation of gains:
  - travel time, safety, quality of space, lighting, etc.
  - No purchase of a car or a second car
- The next logical step: the reconfiguration of businesses and shops...
- How to accompany this reconfiguration with adapted policies?
- Moving from Salé → Rabat to Rabat ↔ Salé?

# TOWARDS SYNERGY EFFECTS

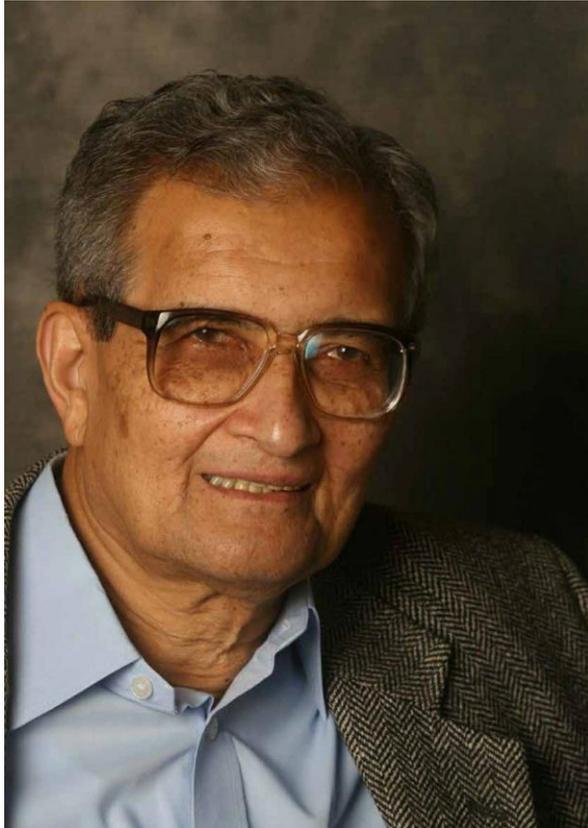
---



- The first stage of wider, multimodal, more reliable networks, with adapted urban mobility governance. **Casa Transports and STRS have successfully led the development of tram and bus networks for the past 10 years.**
- Key aspects for the future:
  - Everyone takes the tram
  - The inhabitants have confidence in it
  - They see themselves as if they were in a car
- Impact of line 2 in Casablanca :
  - Increase in ridership and reaching a small balance on both lines
  - Capacity gain for the whole network
- Challenge of multimodal networks: spread confidence in the tramway mode to the bus network

# A DIGNIFIED MODE OF TRAVEL RECOGNISED AS SUCH BY THE POPULATION

---



- A sense of hogra that the bus networks were a symbol of for many
- Amartya Sen: Development investments should be judged by how they empower people to improve their own lives through their own choices and regain self-esteem.
- The tramway :
  - A major investment by the authorities for the benefit of the working and middle classes
  - A "new normal" reflecting that of the rich countries: comfortable, silent, odourless
  - A place to live together corresponding to the Moroccan ideal of society: social diversity, civility
- Because it allows people to travel with dignity, the tramway thus appears to be a long-term tool for Moroccan development



# Thank you for your attention

Keep in touch



[Mobiliseyourcity.net](http://Mobiliseyourcity.net)



[contact@mobiliseyourcity.net](mailto:contact@mobiliseyourcity.net)



[@MobiliseCity](https://twitter.com/MobiliseCity)



[MobiliseYourCity](https://www.facebook.com/MobiliseYourCity)



[MobiliseYourCity](https://www.linkedin.com/company/MobiliseYourCity)

