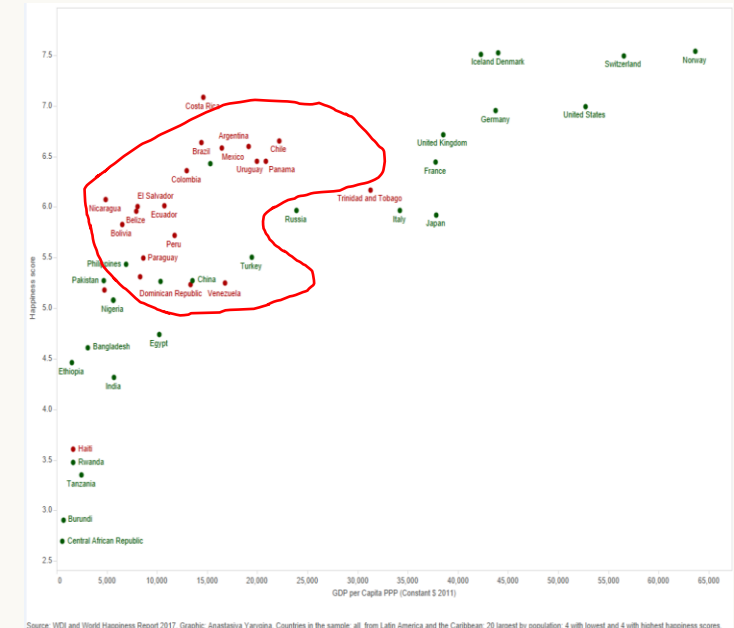
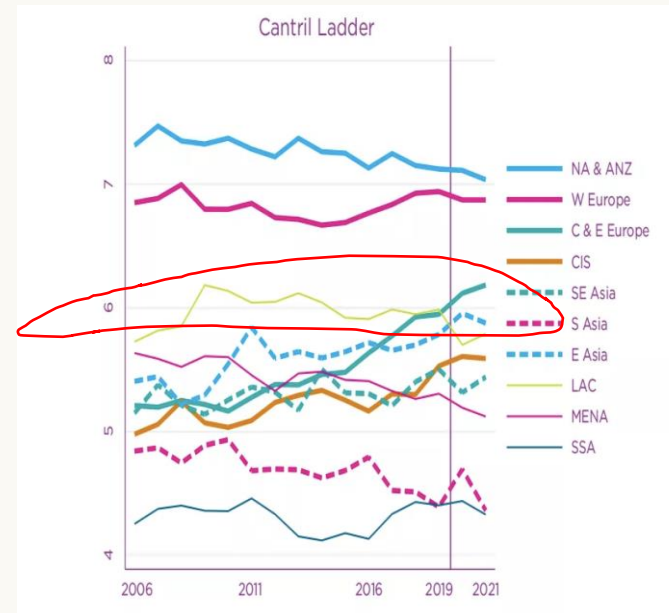


# Combining visions and modelling

# Linking good life to economics

LAC has high levels of reported happiness reported for its level of GDP (families, sociaty, religion)  
 Scores low because of poor service provision and policy envirobemnt  
 Mejorar niveles de provision de servicios, infraestructura,



How to preserve and improve these outcomes?

- El enfoque de capacidades e infraestructura (A. Sen et al).
- Felicidad y satisfacción) W. Easterlin et al.)
- Eudemonicos (L. Bruni et al.)

# Understanding options

	<b>Eutopia</b> (i.e. more of a beautiful place)	<b>Distopia</b> (i.e. more of a dismal place)
High cooperation and international action	Low emissions Good life (for instance – mobility – low travelling times, within 5 mins of public transport, affordable etc) Low level of climate impacts	Low emissions Not good life (for instance – mobility – all cars etc. are electric – traffic jams, long commute times, unaffordable mobility etc.) Low level of climate impacts
Low cooperation and international action	Low emissions Good life, hampered by impacts, slower transition Higher level of impacts	High emissions Not good life Higher level of impacts

# Connecting systems models to the good life



## Connections

Energy-environment-economy modelling environment

Technology-rich, internally-consistent, quantified

Quantify emissions, economic impacts, energy use etc etc, as required by policy.

Clear objective functions

Desired outcomes expressed in terms of key, common indicators (including but going beyond solely GHG emissions)

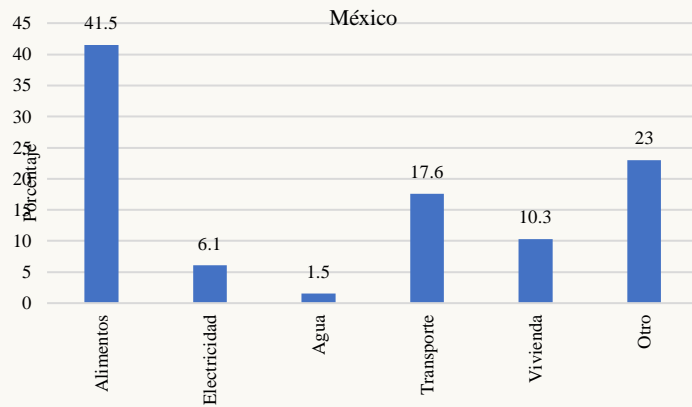
Structural detail – sectoral narratives (details of Eutopia, linked to indicators)  
Indicators of envisioned quality of life (individuals, households, regions)  
Warnings as to potential risks to pursuit of eutopia (i.e. dystopias).

## Eutopia

Complex vision for a zero-carbon society, and many other attributes which comprise the 'good life', and high levels of 'public affluence'

# A vision of benefits – who might gain?

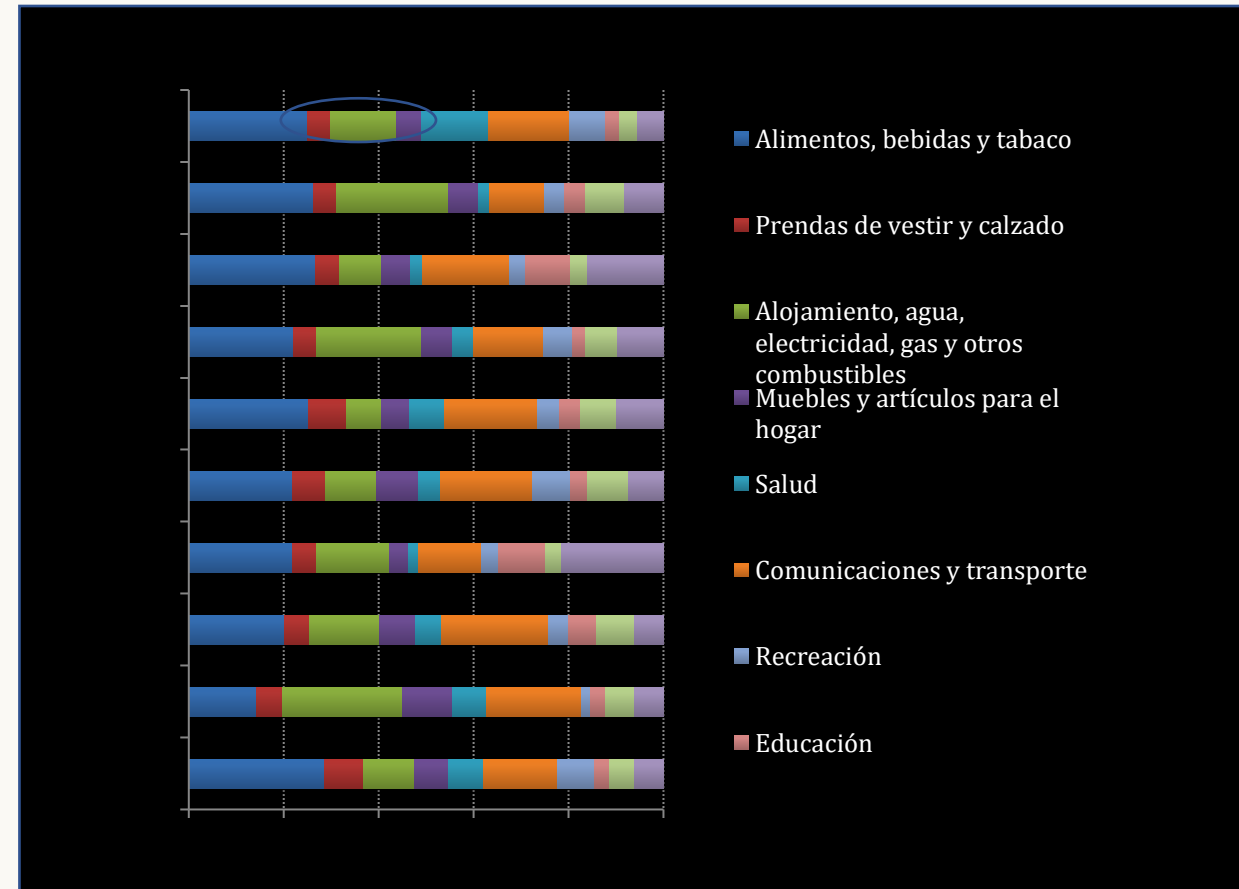
## Improving household disposable income in a LAC scenario



Opportunities to reduce emissions as Transport, Energy, housing provision improves

*Eutopia:* disposable household income expands as cost sectoral relative expense reduces from better low carbon services

*Distopia:* the augmented household disposable income is lost through rent extraction from beneficiaries by service providers

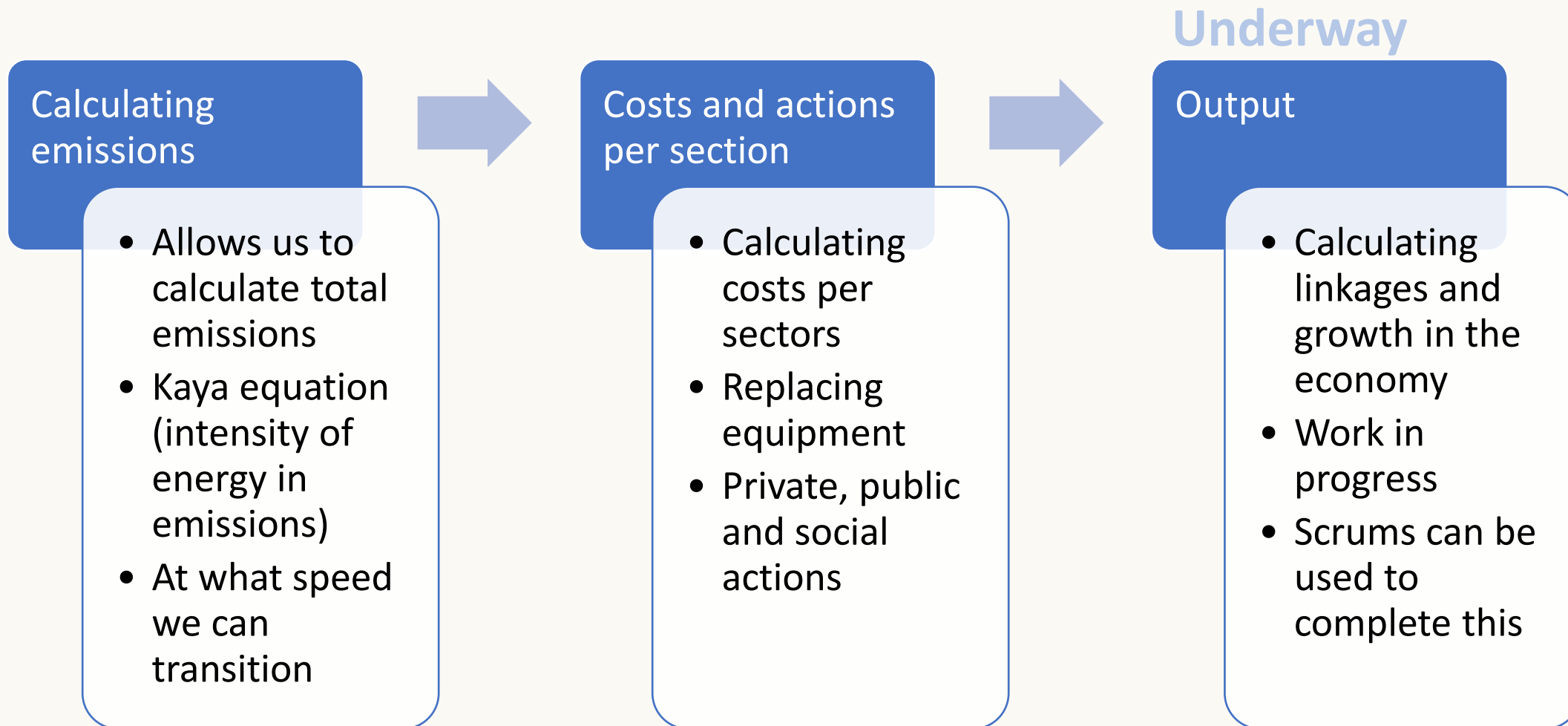


# Sectoral Storylines being analyzed

- Energy
- Transport
- Industry
- Built environment
- Food and AFOLU

- Sectoral models calculate costs of net zero transition
- Input output models measure expansion of green economies
- General equilibrium models outline carbon prices and taxes

# What are we modeling on sectors?



# Transport sector

Transport Demand Management for an equitable, safe, efficient, sustainable, cohesive, and healthy transport sector

## Targets:

- Reduce the distance travelled by the private car
- Shift from fossil-fuel technology
- Reduce the overall distance travelled
- Shift towards non-motorized mode
- Alternative lines of transport on roads





# Transport Planning Oriented Thinking

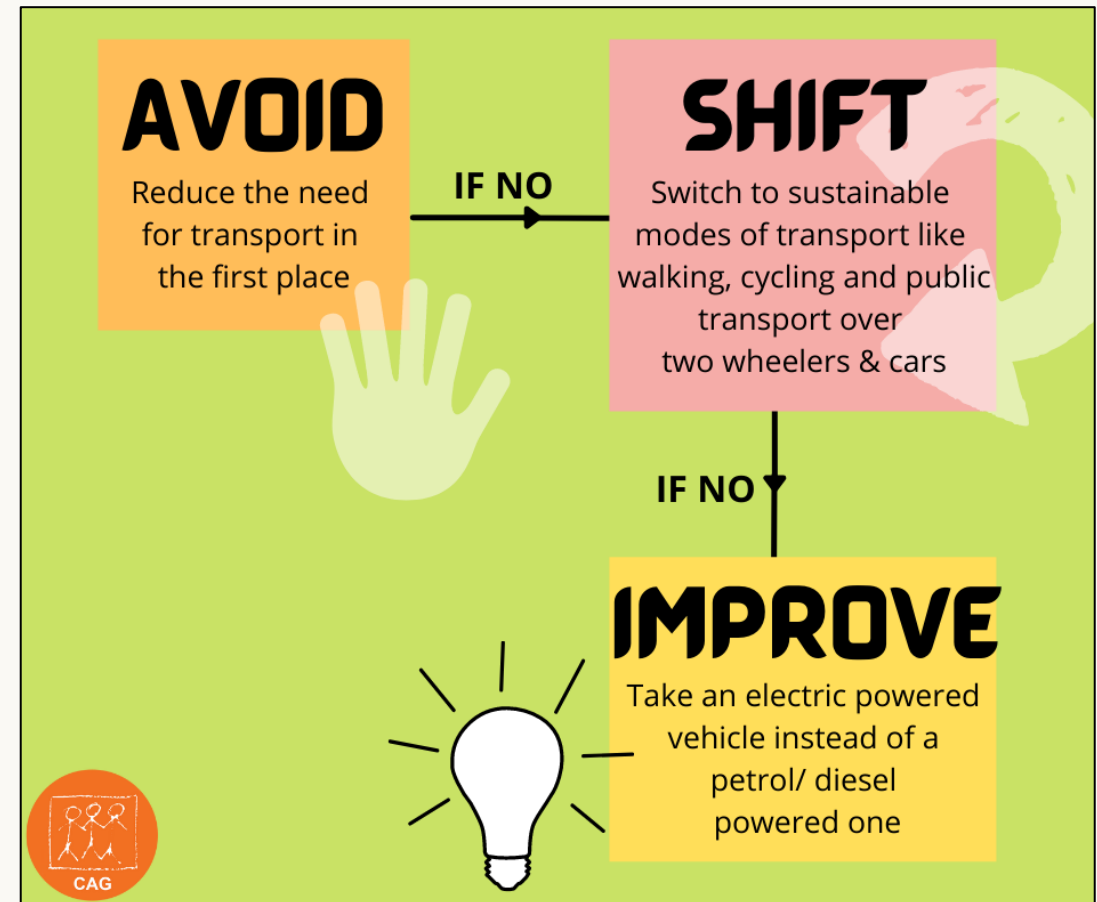
- Typical modelling questions

“The 4-step Travel Demand Model”

1. Do we travel?
2. Where do we travel to?
3. What mode do we use to get there?
4. Which route to take?

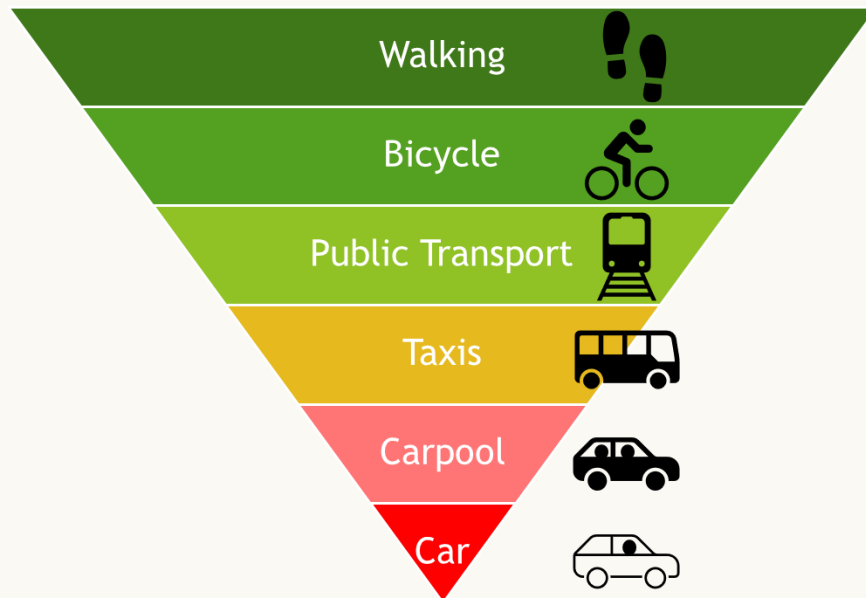
- What does (this) eutopian transport look like?

- Changes to demand patterns
- Changes to technology
- Changes to behaviour



# Passenger Transport Planning

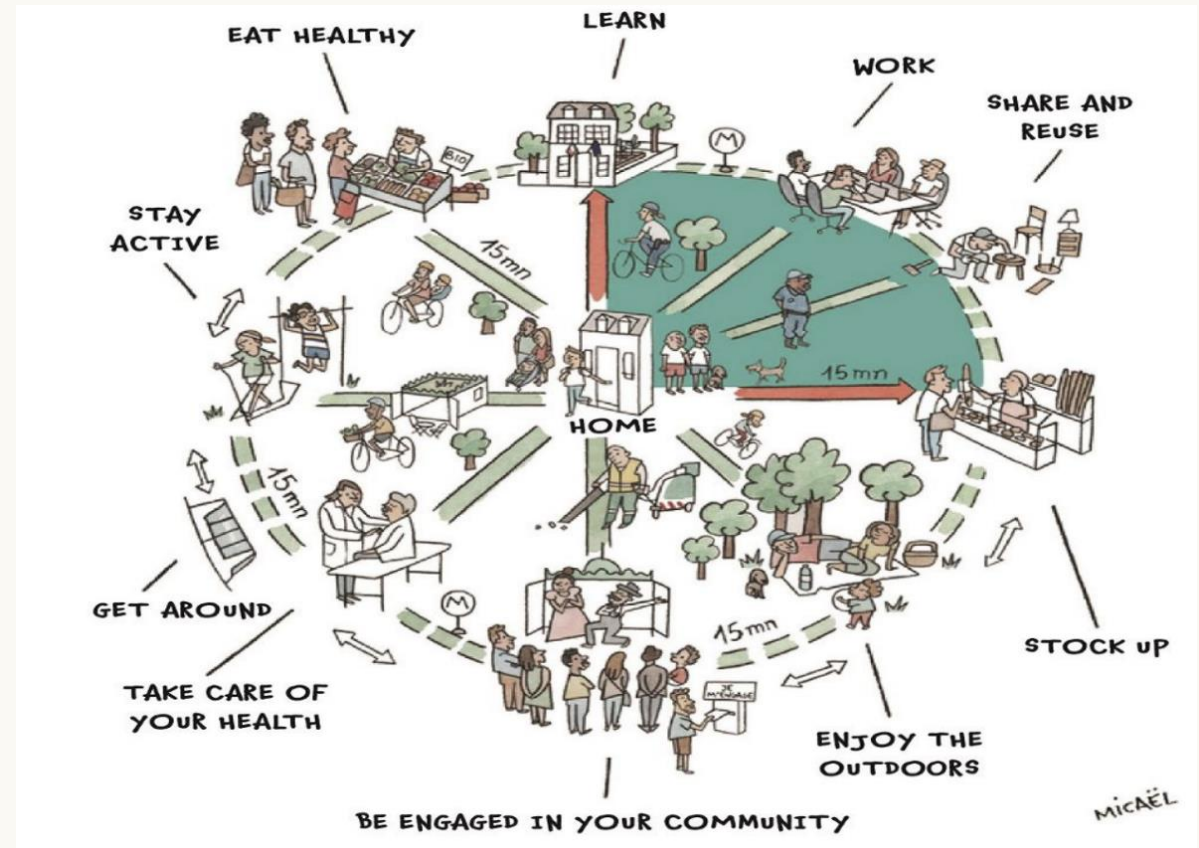
- NHTS Trip Purpose and Modes
- Shared vehicles? Commonly owned?



Purpose	Mode
Work	Walk
Education	Train
Shopping	Bus
Look for work	Metered taxi
Medical	Rideshare / Uber
Welfare	Minibus
Visit	Bakkie taxi
Sport	Car
Church	Truck
Other	Motor
	Bike
	Animal
	Air
	Other

# The 15-Minute City Concept

- The 15-minute city is a residential urban concept in which most daily necessities and services, such as work, shopping, education, health, and leisure, should be located within an easily reachable 15-minute walk or bike ride from any point in the city.



# Intersection with other sectors

- Urban planning: Distance from basic needs facilities (school, pharmacy, grocery store)
- Equitable development of regions (creating economic opportunities in all parts of the country).
- Corporate policies: Working from home, providing shuttle busses, car pooling policies.
- Food security: Substitution of imported food by local.
- Circular economy: proximity principle
- Tourism: local tourism vs international tourism
- Local community SMEs / social engagement
- Security / crime level

# The challenges of consistency

- The expansion of the de-carbonization impulse is a major demand on sources of energy in its composition and its origin
- The change in vehicles that consume 12 BOE a year through hybrid, HE or electric means, implies an extra demand of electricity.
- Many significant polluters (trucks and tractors) cannot be made electric with batteries with our current technology – they require cells, catenaries, hydrogen – or maintain CI.
- Abstaining the demand of power and of low heat carbon implies an excessive use of energy – equally, a role for hydrogen and gas

The risk in underestimating demand increases as does the price risk.

# Considerations for a transition

- The calculated costs are within a range of 0.7-2% of GDP per year calculated for the sectoral roadmaps within the required infrastructure
- It can improve the urban and rural standards of living
- The actual trajectory implies important transitional risks
- The change requires an effort to redirect capital and finance
- Increasing necessities and compositions of the energy offer above the supply
- Managed poorly, a transition can substantially privilege capital over labour