

Tel Aviv University, Israel

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TEL AVIV אוניברסיטת
UNIVERSITY תל אביב

Guidance for
Transport
Planning and
Policymaking in
the Face of an
Uncertain Future

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West of
England

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Making sense of supply and demand



Decision making support

BENEFIT

COST



Forecasting
Options
Modelling
Appraisal
Guidance

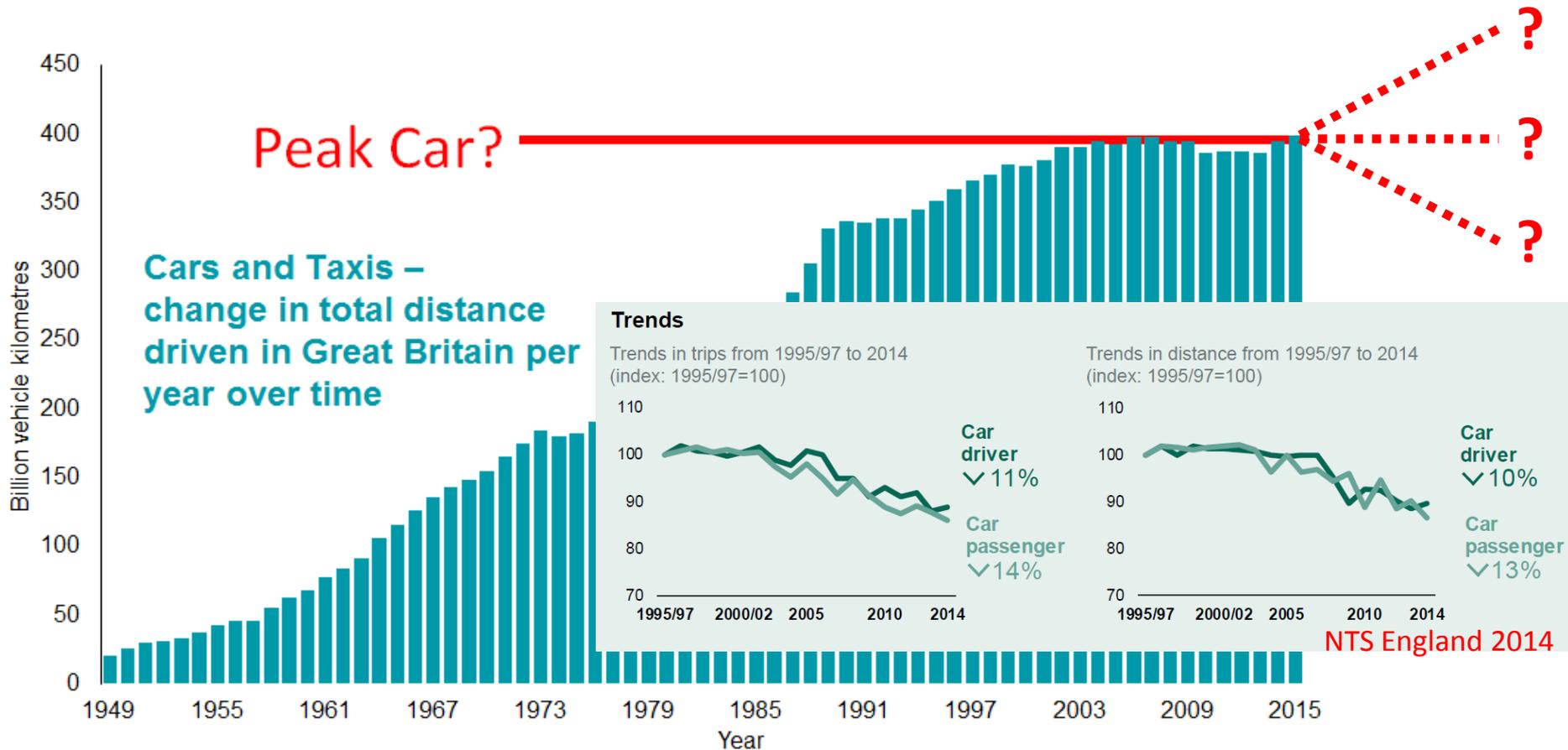
Givens of automobility?

Car traffic keeps on growing

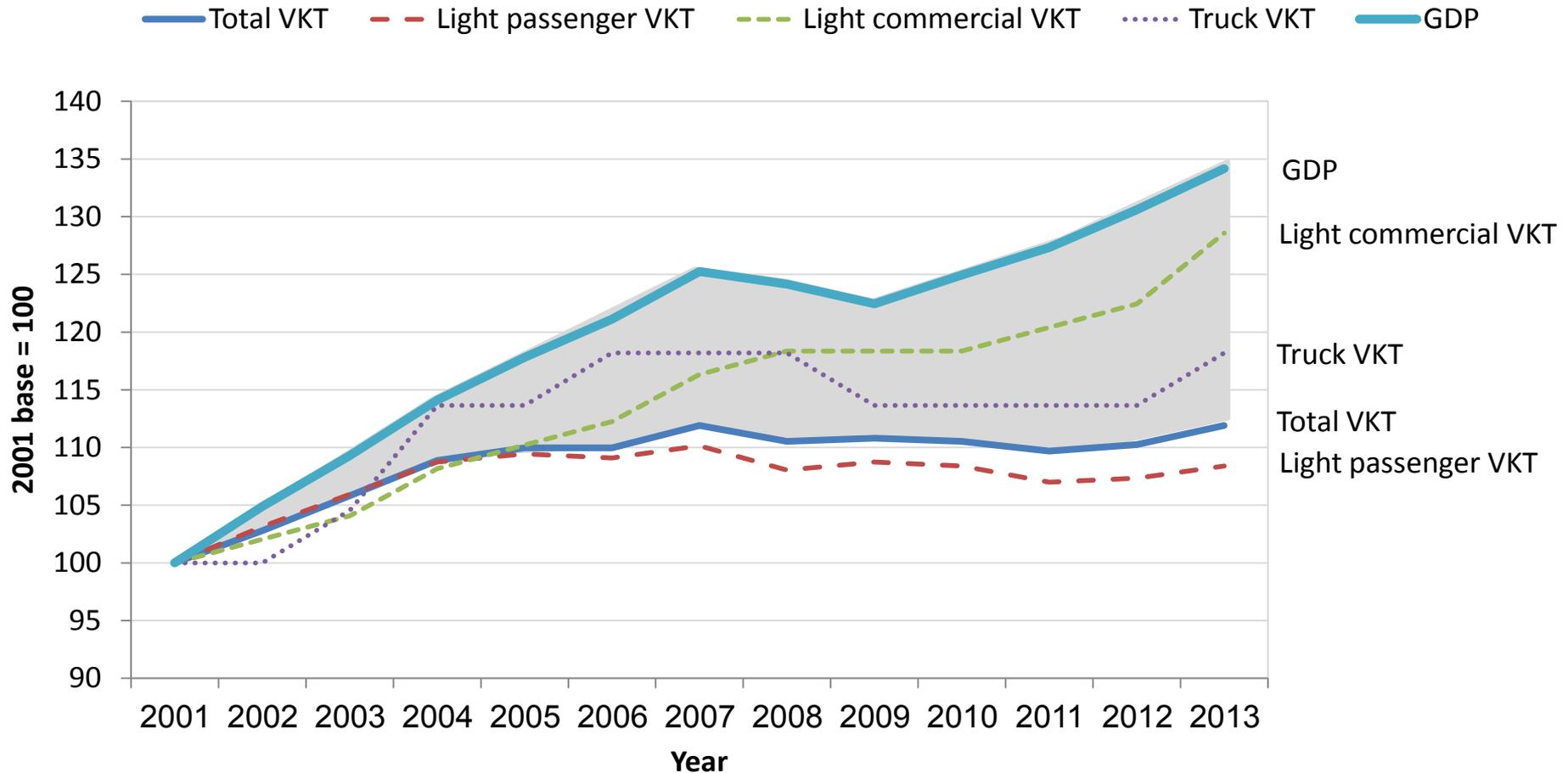
You can't have economic growth without traffic growth



'Peak car' and 'decoupling'



Gross Domestic Product (GDP) and vehicle kilometres travelled (VKT) by vehicle type



In New Zealand the traffic intensity of economic activity has been reducing

The motor age and the digital age collide and merge



T I M E



Driver-less

Futures

Drive-less

Vehicle occupancy levels?

Mobility in transition

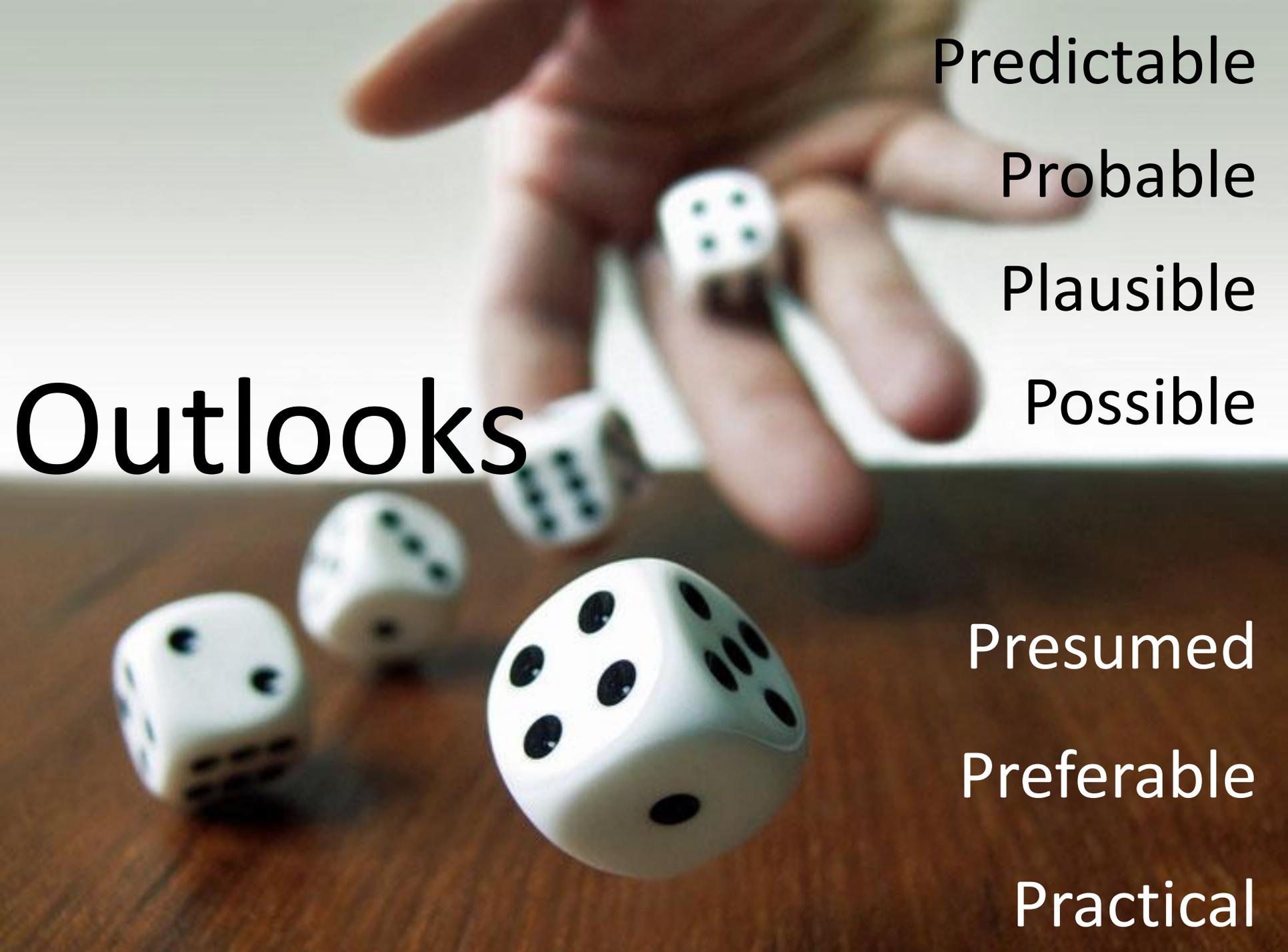




“Uncertainty is an uncomfortable position.
But certainty is an absurd one.”

Voltaire, 1694-1778

Outlooks

A hand is shown in the upper half of the image, dropping several white dice onto a dark wooden surface. The dice are scattered, with one in the foreground showing a five. The background is a plain, light-colored wall.

Predictable

Probable

Plausible

Possible

Presumed

Preferable

Practical

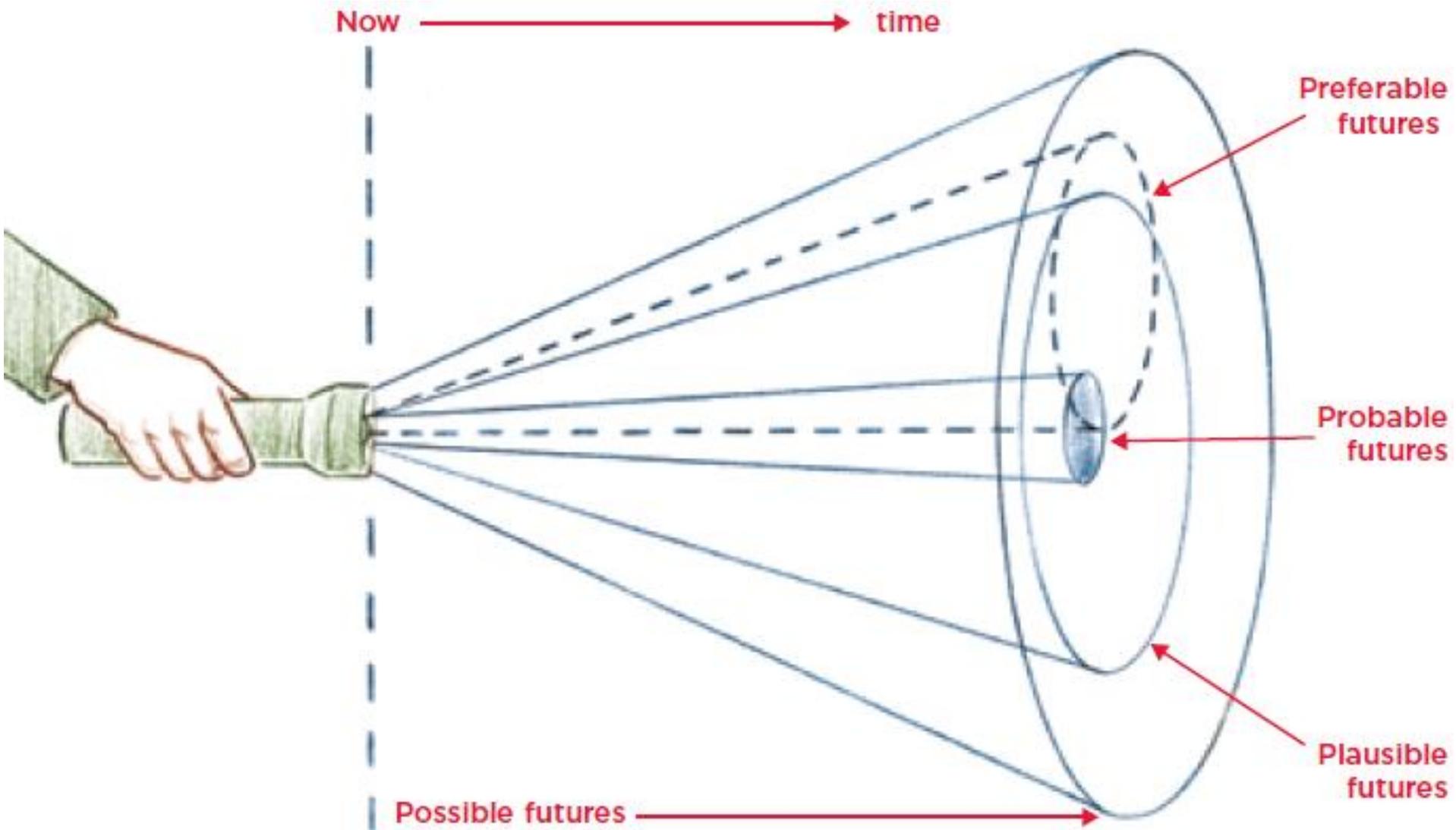
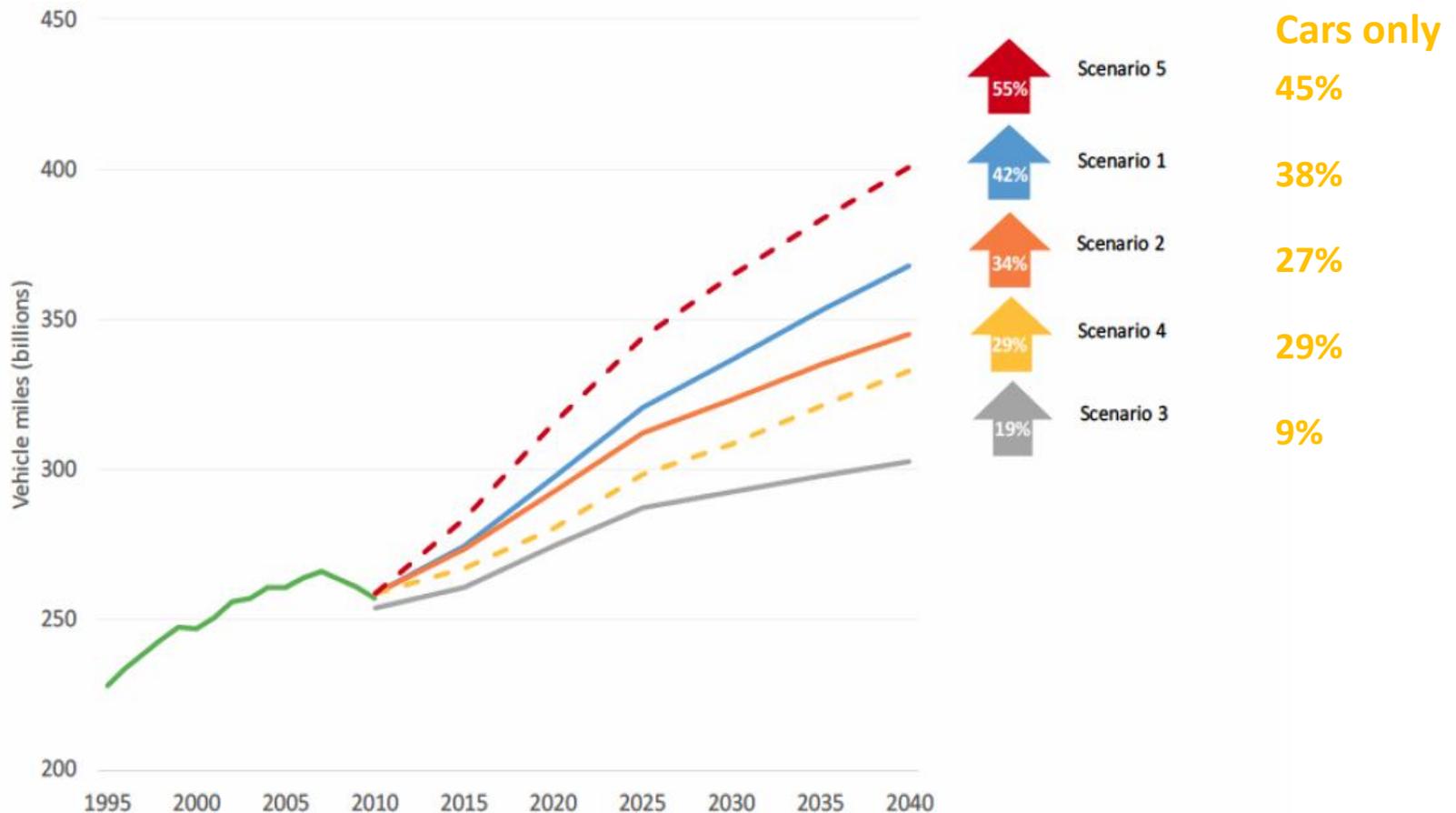


Image taken from:

https://www.nesta.org.uk/sites/default/files/dont_stop_thinking_about_tomorrow.pdf

Forecasting

Traffic growth by scenario (billion miles, all vehicles)



Source: Department for Transport 2015 Road Traffic Forecasts for England

“there is still much uncertainty around travel behaviour”

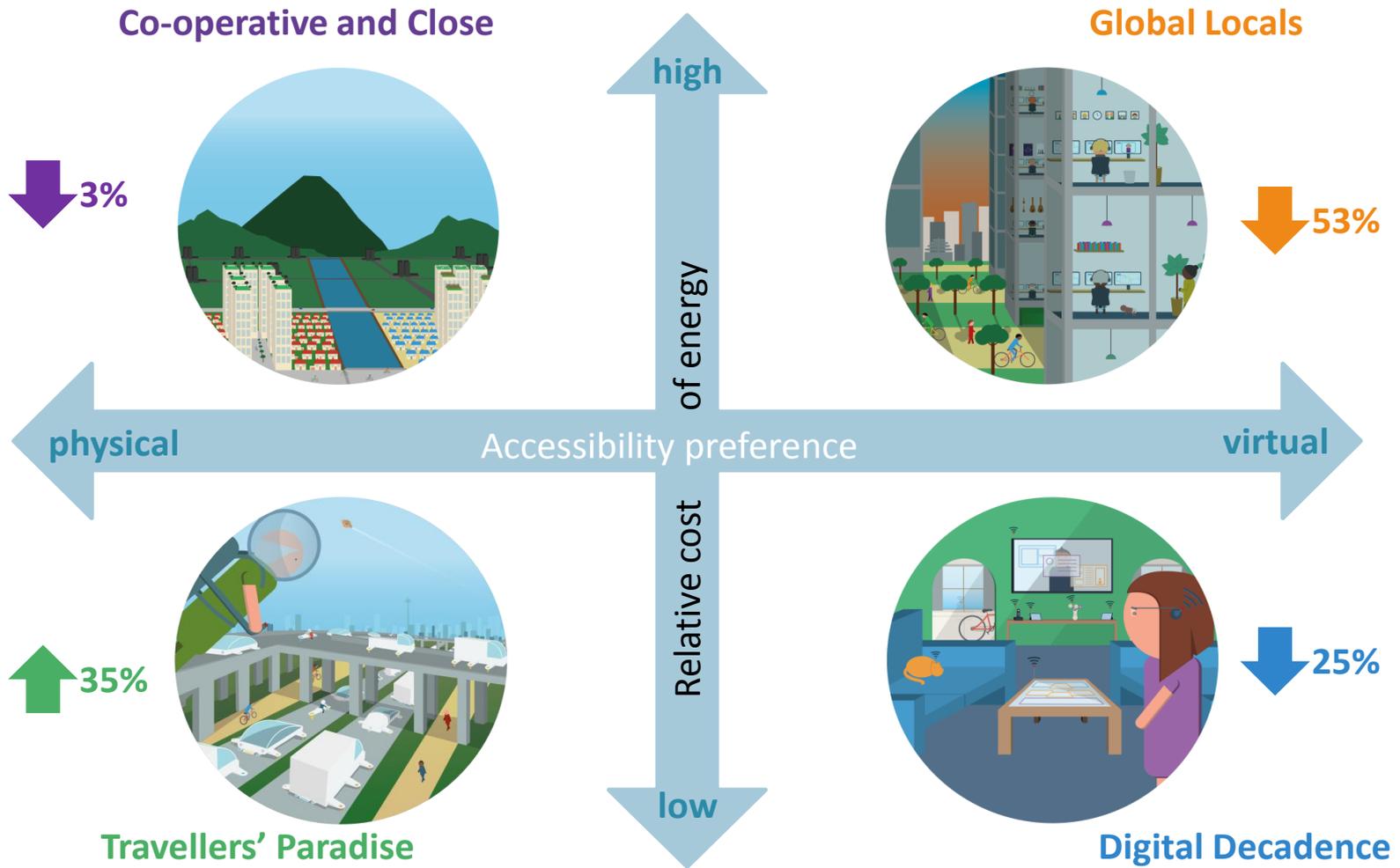
“Clearly forecasts of the inputs are very uncertain”

“Uncertainty in the model can result from three key sources:

- Forecasts of key inputs, such as the forecasts of GDP, fuel prices and population
- The relationship between these key drivers and traffic demand.
- The emergence of new factors which affect travel behaviour”

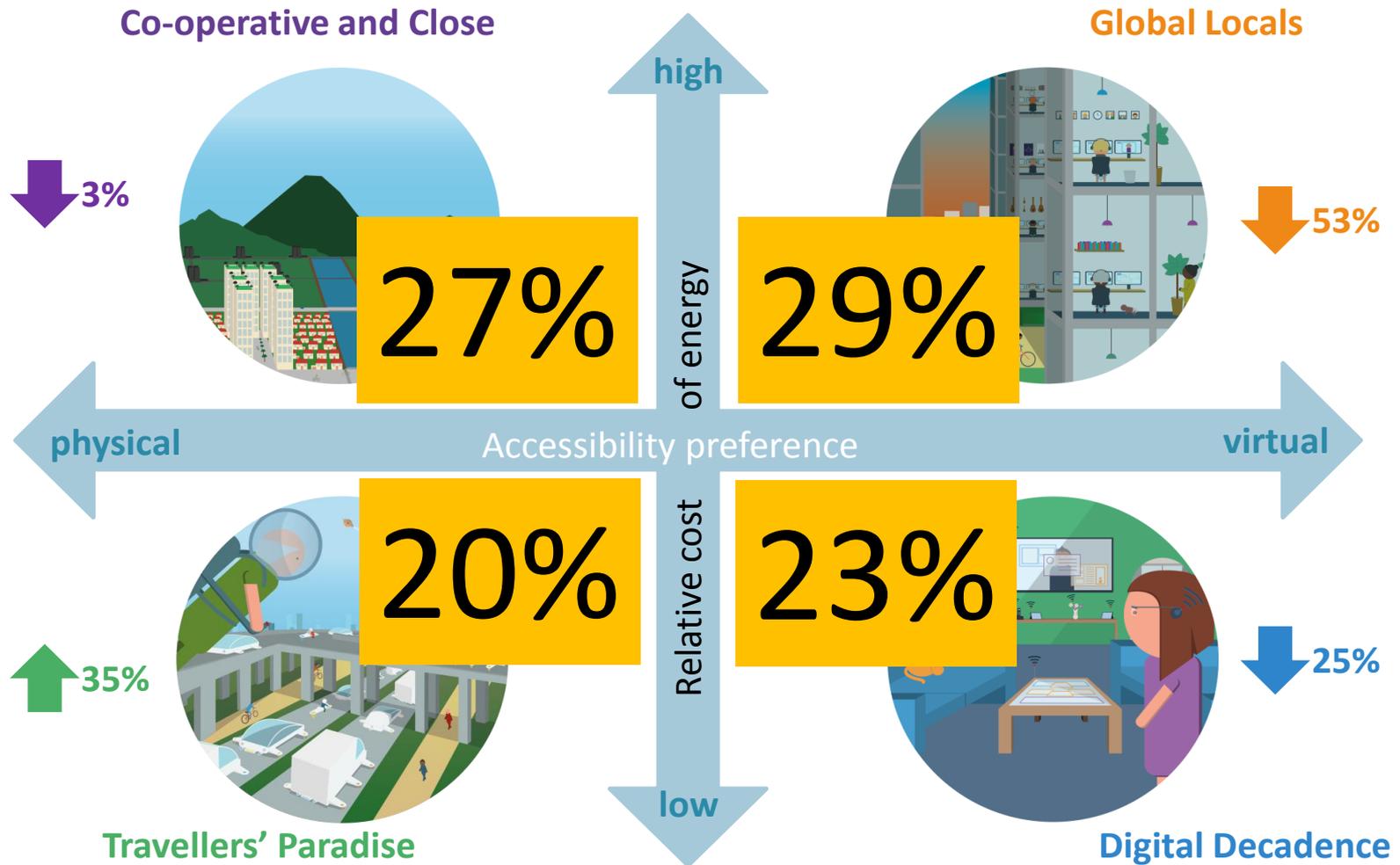
“when controlling for errors in the economic and demographic inputs, the model was able to predict reasonably well the period of flat growth”

Scenario Planning



Percentage change in total distance travelled by car from 2014 to 2042

Relative plausibility



Percentage change in total distance travelled by car from 2014 to 2042

Beware biases

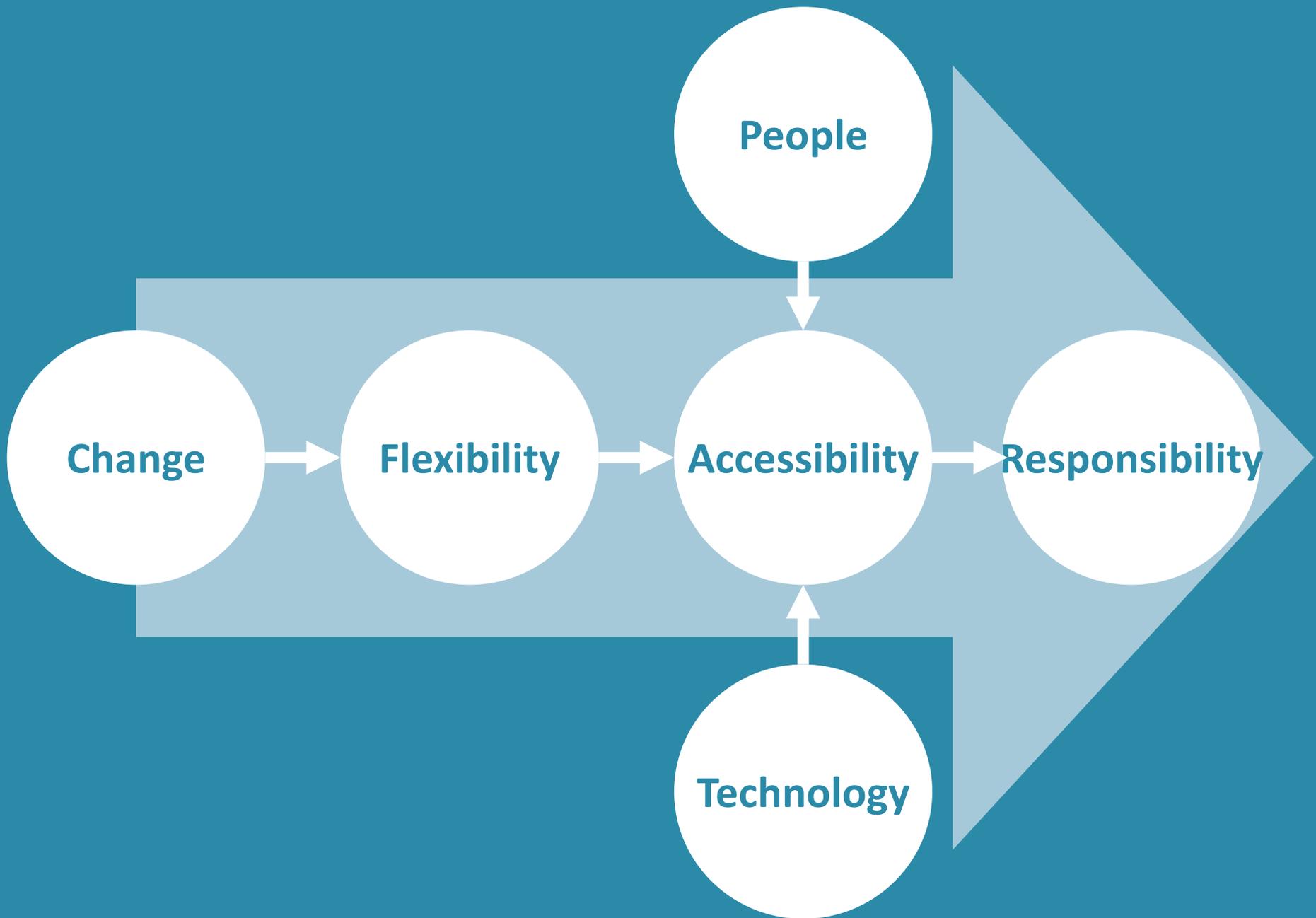


Cognitive fluency
Confirmation bias

03:55



[http://www.transport.govt.nz/ourwork/
keystrategiesandplans/strategic-policy-
programme/future-demand/](http://www.transport.govt.nz/ourwork/keystrategiesandplans/strategic-policy-programme/future-demand/)



Land Use System

Spatial Proximity

Triple Access

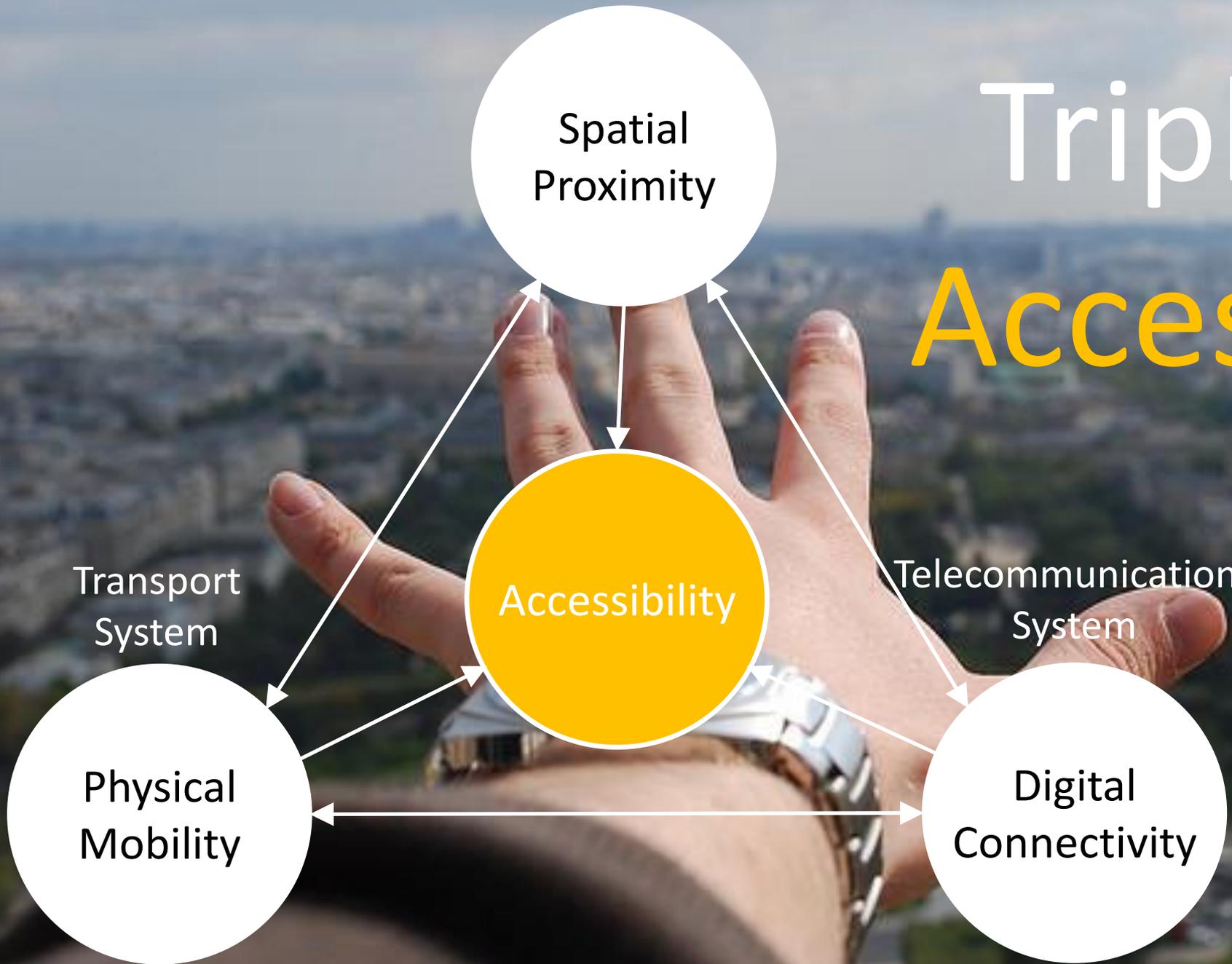
Accessibility

Telecommunications System

Transport System

Physical Mobility

Digital Connectivity



REGIME-COMPLIANT

predicted and practical
outlooks

founded upon

Transport – Economy
coupling

leads to

Weak planning

which encourages

Concealed uncertainty

resulting in

Justified decisions

underpinned by

Benefit-Cost Analysis

culminating in

Predict and provide

REGIME TESTING

plausible/preferred
outlooks

founded upon

Access – Economy
coupling

leads to

Strong planning

which encourages

Exposed uncertainty

resulting in

Guided decisions

underpinned by

Real Options Analysis

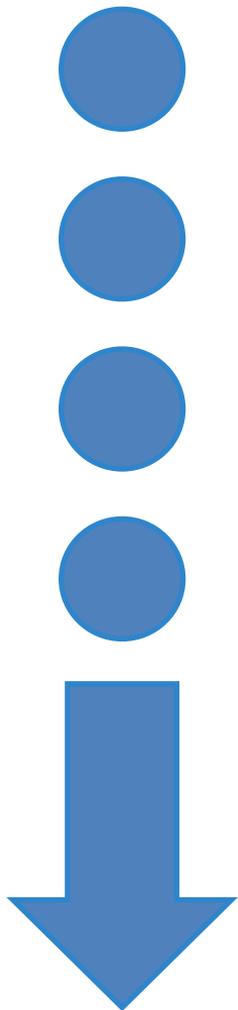
culminating in

Decide and provide

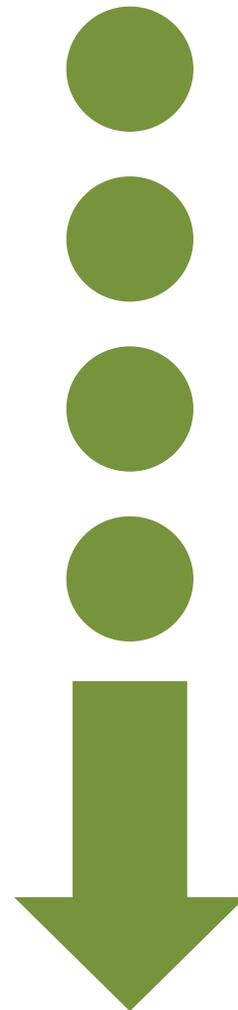
Which
path-way
are we on?

Which
path-way is
desirable and
achievable?

“Regime-Compliant”

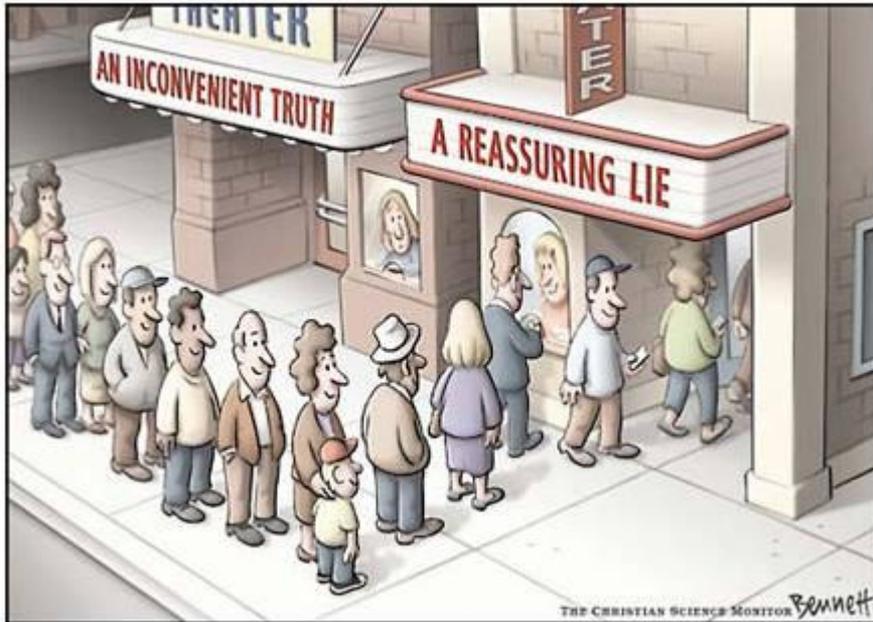


“Regime-Testing”



Dominant preconceptions of actors
predicted, presumed and practical
outlooks

Dominant preconceptions of actors
plausible and preferred
outlooks



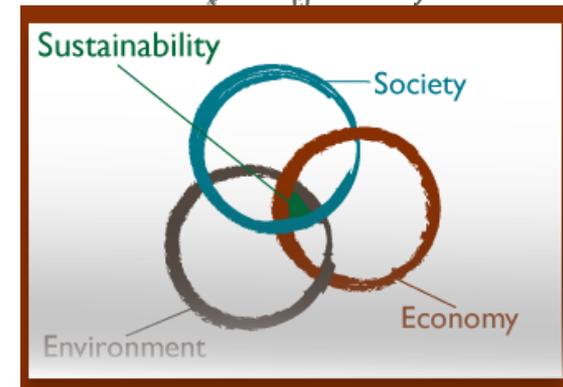
Transport-economy coupling

transport as a principal enabler and consequence of economic prosperity



Access-economy coupling

multiple enablers of economic, social and environmental prosperity



http://pngimg.com/upload/chain_PNG19.png

<http://puertoricoluxury.com/wp-content/uploads/2014/04/internet.jpg>

<http://ak.picdn.net/shutterstock/videos/2378081/preview/stock-footage-new-york-circa-june-crowd-of-people-commuters-walking-crossing-street-at-a-busy.jpg>

http://envirolution.org/images/pagepics/three_rings.png

<http://www.jameswinsoar.com/wp-content/uploads/2014/06/traffic.jpg>

<http://darrenhardy.success.com/wp-content/uploads/2013/03/chain2-300x192.jpg>

<http://mcmnz.co.nz/wp-content/uploads/2015/05/14.jpg>

Weak planning
emphasis on
extrapolated future with
limited appetite to deviate



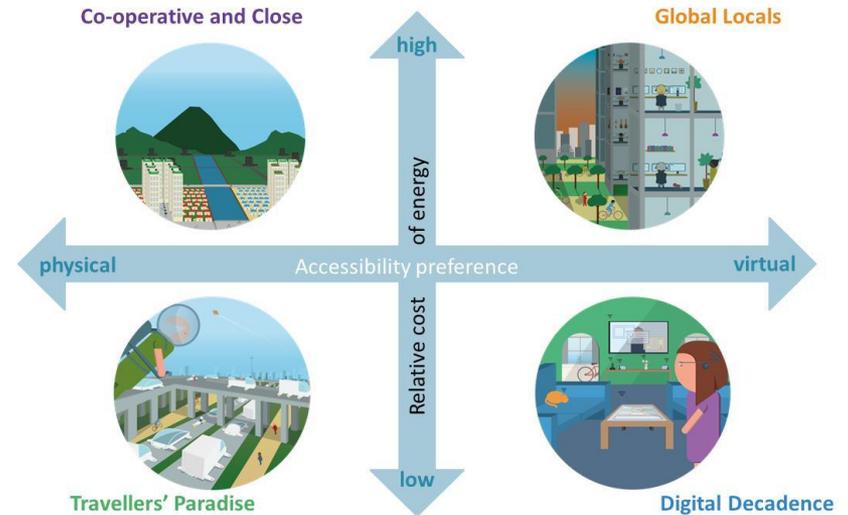
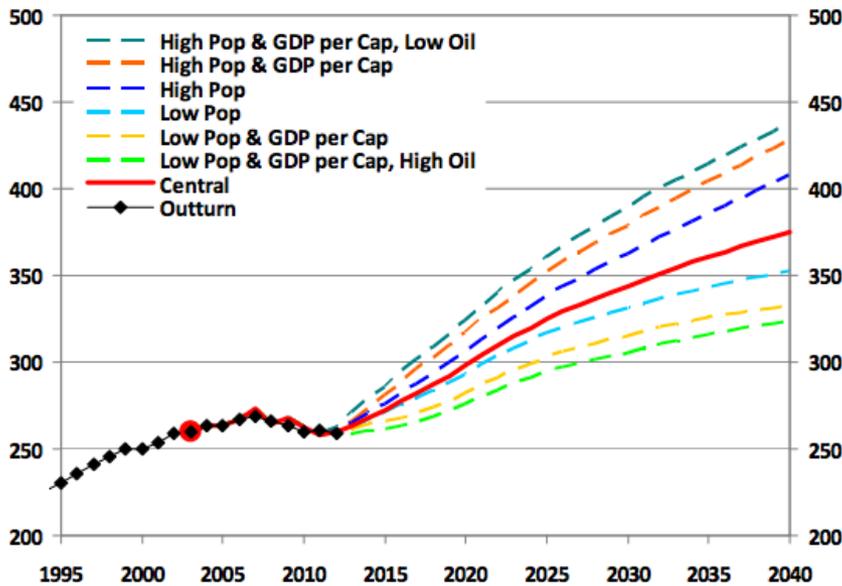
Strong planning
emphasis on better future with
willingness to entertain and be and
agent of potential change



Concealed uncertainty
 misplaced confidence in
 and reliance on historic
 cause-effect relations
 and forward assumptions

Exposed uncertainty

lack of confidence in historic cause-effect relations with an acknowledged need to accommodate unknowns into decision making



Justified decisions
information sought to
legitimise decisions



"I'M SORRY. WHAT OTHER OPTIONS ARE THERE?"

Guided decisions
information sought to
explore different decisions
and policy paths



Cost-Benefit Analysis

predicted assessment of a one-shot
long-term decision

Real Options Analysis

assessment of plausible policy
pathways

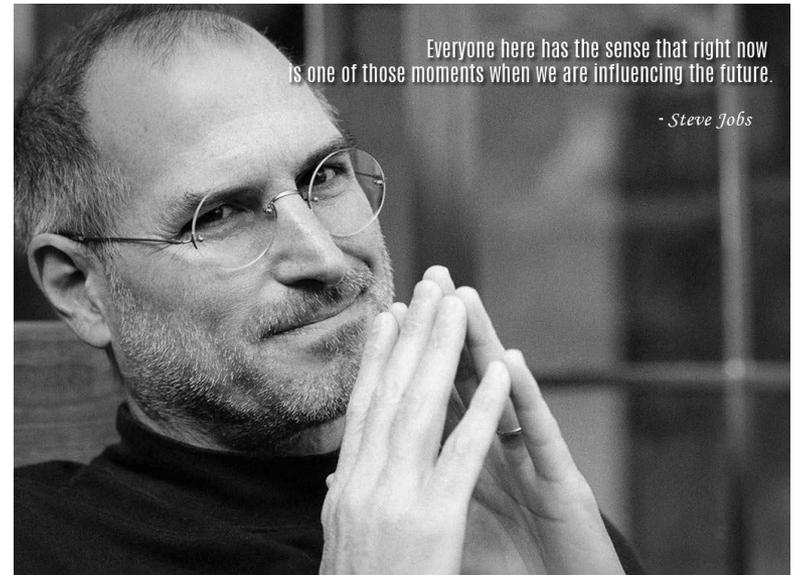


Predict and provide

reactive policymaking vulnerable to policy failure due to unanticipated change

Decide and provide

proactive policymaking that helps guard against policy failure through adaptability to unanticipated change



Everyone here has the sense that right now is one of those moments when we are influencing the future.

- Steve Jobs



Regime compliance dominates
Accountability versus responsibility
Concerns over professional impotence
Strong appetite for regime-testing

Insights from the transport profession - uncertainty

- A collective voice of rather deep uncertainty about the future
- Giving a voice to different generations helps to guard against decision bias (cognitive fluency and confirmation bias)
- A sense of professional impotence arises from being on the back foot, lacking a national transport strategy and a lack of skills within the profession to confront the uncertainty faced

Professional
Comfort Formula

$$C_{psdf} \propto \frac{1}{C_{pfdj}}$$

psdf – plausibility of significantly different futures

pfdj - processes followed in the day job

Insights from the transport profession

- concerns

- Election imperatives, fashionable ideas and reactive funding stand in the way of a professional approach to long-term planning and a strategy to deliver outcomes
- The transport sector is subject to vested interests, risk aversion and a 'rearview mirror' mentality that results in inertia to change



The sector needs to challenge its professional models and broaden its field of view

Insights from the transport profession - engagement

- A need for further events that can foster collaborative exchange of thinking and help individuals to learn and develop – across professions and including decision makers
- Silent support is overshadowed by vocal opposition – more creative approaches to public engagement are called for



A need for public^s engagement to replace the vocal minority of usual suspects in consultation

I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail

Abraham Maslow, 1966



Wicked problems call for interdisciplinary, collaborative approaches amongst analysts

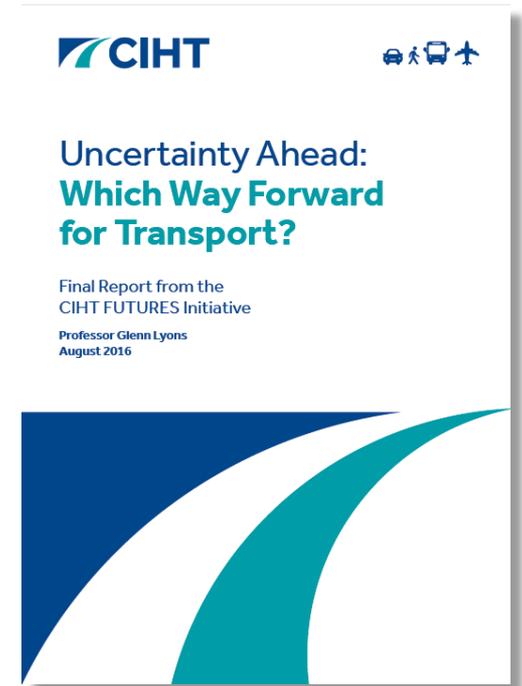
Summary

- Transport analysis concerns the transport system and the behaviour of its users
- Yet the behaviour of analysts themselves and the system of decision making in which they operate are key
- Faced with deep uncertainty, attitudes and behaviours of analysts and the pathway of policymaking need to change
- Analysis must focus upon accessibility not (only) mobility
- **Embracing uncertainty is an opportunity to take greater responsibility over shaping the future**
- To do so requires our own limitations to be acknowledged and overcome through interdisciplinary collaboration

Further reading



<http://www.transport.govt.nz/ourwork/keystrategiesandplans/strategic-policy-programme/future-demand/>



<http://www.ciht.org.uk/en/knowledge/futures/>

Lyons, G. (2015). Transport's Digital Age Transition. *Journal of Transport and Land Use*, 8(2), 1-19. <http://dx.doi.org/10.5198/jtlu.v0i0.751>

Lyons, G. and Davidson, C. (2016). Guidance for transport planning and policymaking in the face of an uncertain future. *Transportation Research Part A: Policy and Practice*, 88, 104-116. <http://dx.doi.org/10.1016/j.tra.2016.03.012>