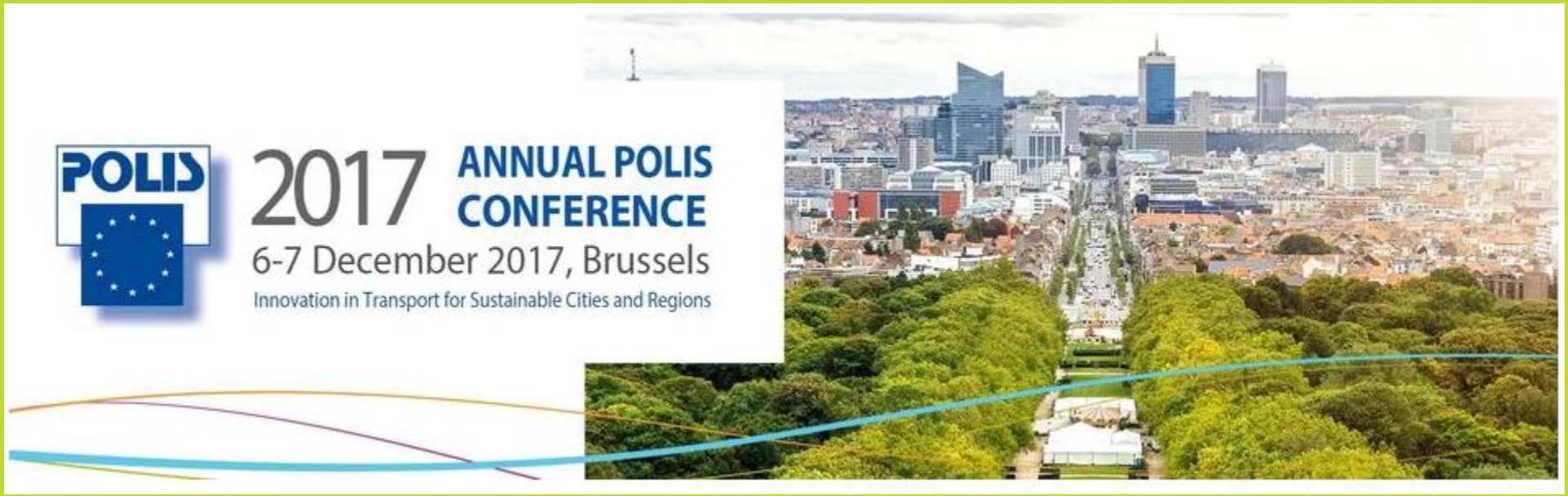

Andy Cope – Sustrans, UK

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Air Quality Crisis – The role of walking and cycling

Air Quality – the challenge

Political necessity

The UK continues to fail to meet legally binding EU targets for air quality.

The UK Government is being taken to court by Client Earth for a third time due to its latest ‘Air Quality Plan for tackling Nitrogen Dioxide’ failing to ‘tackle air quality in the fastest time possible’.

They are under legal, public and political pressure to act and are genuinely viewing cycling and walking as part of the solution.

- Clean Air Plans
- Clean Air Framework
- Clean Air Fund
- Air Quality Strategy

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Air Quality – The current opportunity

Clean Air Plans

29 local authorities in England must produce draft Clean Air Plans by March 2018 with final plans to be completed in November 2018.

The Government will release a Clean Air Framework to support local authorities.

Clean Air Fund (CAF)

£220 million available to the 29 mandated local authorities

Mitigation measures (against negative effects of traffic restraints such as charging zones) that can be funded from CAF can include **active travel,** public transport, behaviour change interventions, road building and junction improvements

Air Quality - So what actually is the problem?

Transports contribution

- Around 80% of NOx emissions in areas where the UK is exceeding NO_2 limits are due to transport.

- 60% of all particulate matter comes from transport. 15% is from exhausts but 45% is caused by tyre and brake wear[1]. Therefore a move to electric vehicles will not solve this issue. This will be particularly important in the Government's planned Clean Air Strategy for 2018 and is likely to further strengthen the case for walking and cycling. **We need fewer not just cleaner vehicles.**

1**Transport for London (2014)** *Improving the health of Londoners: Transport Action Plan* http://content.tfl.gov.uk/improving-the-health-of-londoners-transport-action-plan.pdf

Avoiding air pollution from vehicles

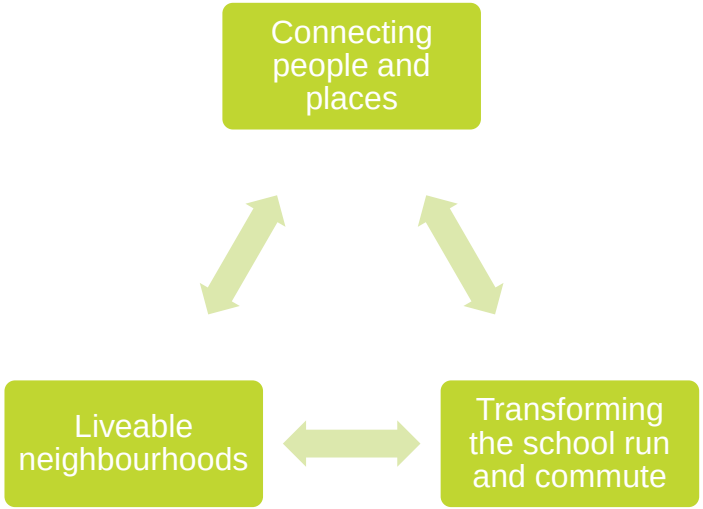
The only way to reduce air pollution from NO_X and particulate matter from vehicles is to avoid or reduce vehicle use.

Electric vehicles will reduce NO_x but still produce particulate matter from wear on tyres and brake discs. They will not solve air pollution and do not have a benefit for congestion or physical activity.

A variety of measures could be used to reduce vehicle use and more and more cities across the world are actively exploring or introducing such schemes.

Our current / potential solutions

- Sustrans can deliver activities that help improve air quality through our existing and potential solutions
- Case studies are provided on the following slides to explore this in more detail
- This is not intended to be an exhaustive list



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Case Study 1: Protected bike lanes

Avoid – cars reduced by reallocation
Shift – journeys to active travel
Improve – reduce exposure by moving bikes off the carriageway

Evidence around the world clearly shows the best way to increase cycling in cities is by building protected lanes for bikes. Bike Life shows the UK public want this infrastructure even when it can mean less space for other traffic.

Sustrans needs to develop an offer around protected space for bikes (both design and community engagement are important here)

We can use projects like community links plus to support this, for example: Glasgow City Council: Woodside Mini-Holland

Case Study – Oxford/Wilmslow Road in Manchester

Oxford / Wilmslow Road Cycleway connects south Manchester with Manchester city centre and uses predominantly protected space.

It features long sections of kerbed ‘islands’, bus stop bypasses, early release traffic signals and runs behind on-street parking bays.

The Oxford Road bike lane, part of a £1bn bus priority scheme sought to reduce traffic congestion and pollution by banning cars from most of Oxford Road.

Since it opened in April 2016, cycling on the route has more than doubled and now registers over 5,000 bikes each day.

Links to Sustrans Strategy	Connecting people and places Transforming the school run and commute

Case study 2: School Streets

Avoid – cars reduced near schools
Shift – journeys to school by active travel

Edinburgh – School Streets

The award-winning ‘School Streets’ initiative has brought traffic-free streets to nine Edinburgh primary schools at school opening and closing times.

As a result, two thirds of parents and residents agree that the streets with vehicle restrictions felt safer during operating times. The project identified air quality improvements with associated reductions in Nitrogen Oxides on all tested closed streets and most surrounding streets.

The project was recognised at the 2017 Scottish Transport Awards, winning the Most Effective Road Safety, Traffic Management and Enforcement Project. It is hoped to be extended to more schools on a case by case basis.

Sustrans can deliver all elements of School Streets and councils are increasingly looking at road restrictions around schools.

We need to develop our offer that combines traffic restriction and community engagement.

Links to Sustrans Strategy	**Creating Liveable neighbourhoods** **Transforming the school run and commute**

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Case Study 3: Quietways

Shift – journeys to education and work by active travel
Improve – move journeys away from main roads

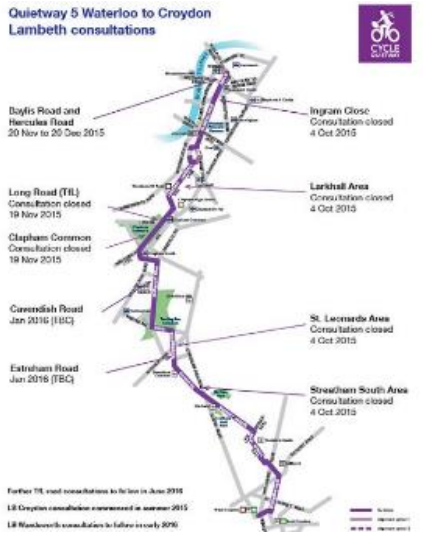
Moving people to routes with low traffic levels and off-road paths can work if designed well

Case Study: Birmingham provided a new all-weather surface on 54km of canal towpaths over the past two years, however trips by bicycle in the city have shown no increase in the same time period.

Case Study: London's Quietways

Quietways are designed to follow backstreet routes, through parks, along waterways or tree-lined streets. They offer a valuable alternative to the capitals' superhighways targeting cyclists who want to use quieter, low-traffic routes.

User numbers on Quietways since their opening have been very good but are unlikely to reach the same levels as superhighways. Cities need a network of direct, protected routes on main roads complimented by quieter routes.



Links to Sustrans Strategy	Connecting people and places Transforming the school run and commute

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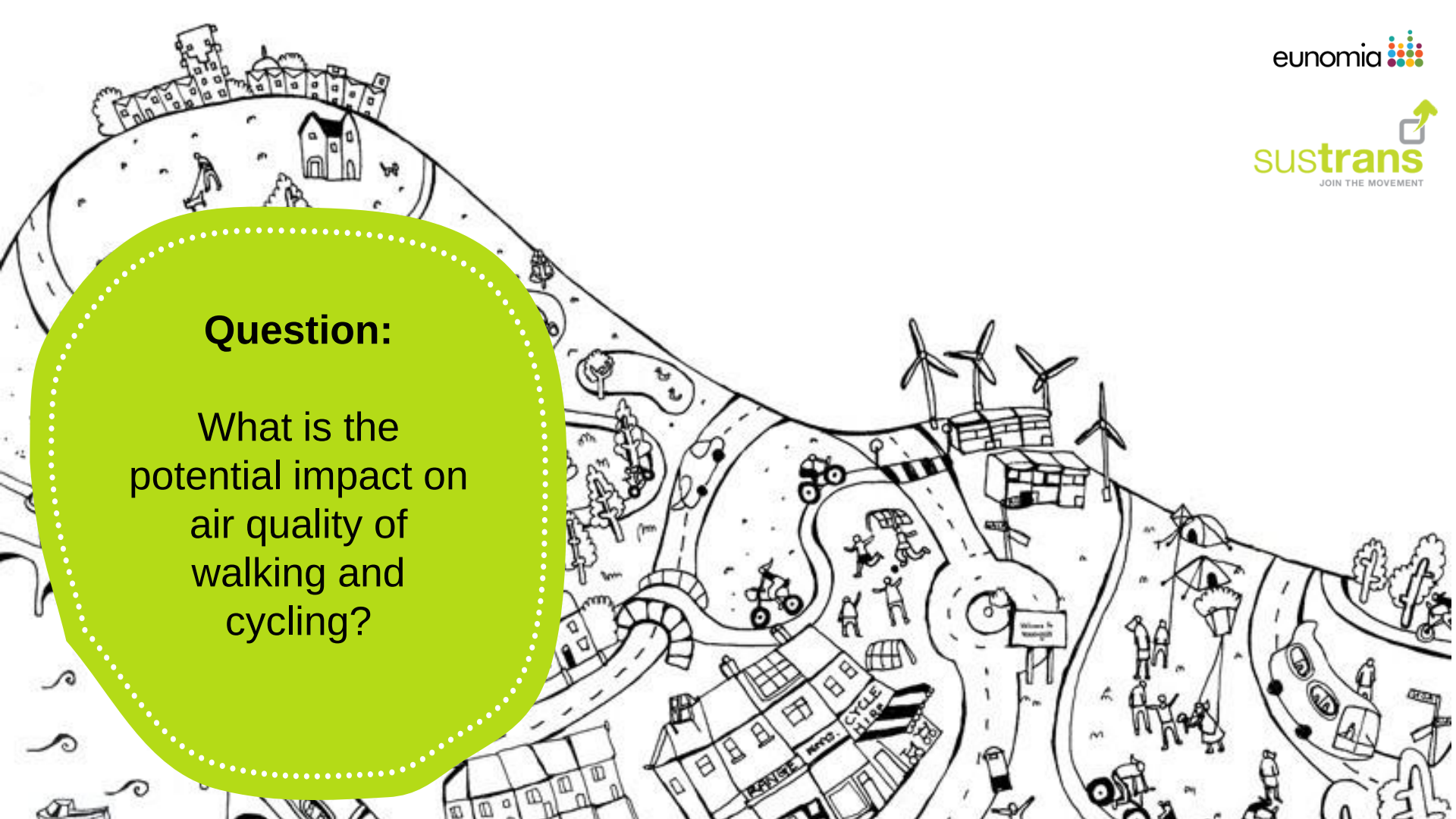

Question:

What is the potential impact on air quality of walking and cycling?

What does the new model that you've developed tell us?

Cycling and walking can have a positive impact in improving air quality when a reduction in motorised transport is achieved through modal shift

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What makes this model unique?

The model estimates the potential benefits from differences in levels of personal exposure to air pollution from switching to an active journey

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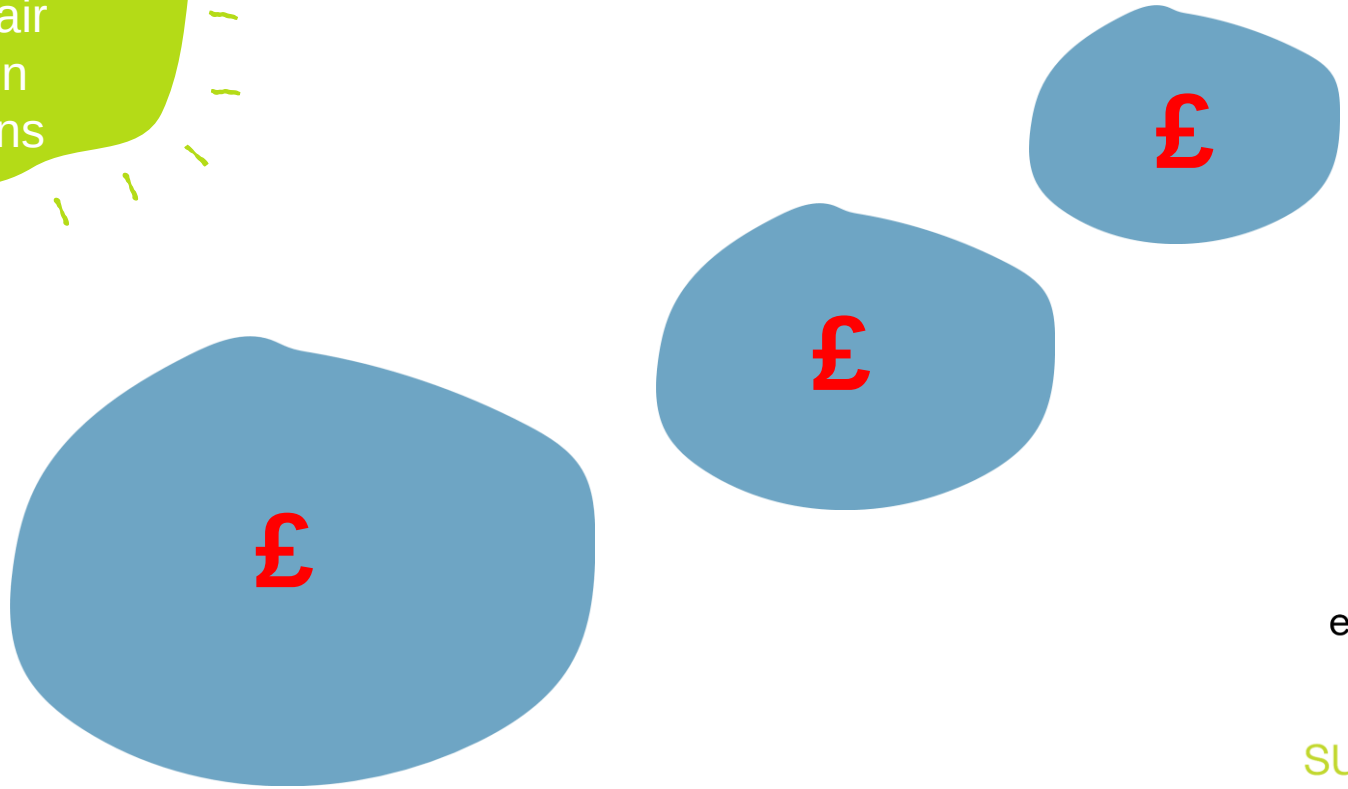
Standard approach to valuing air pollution emissions



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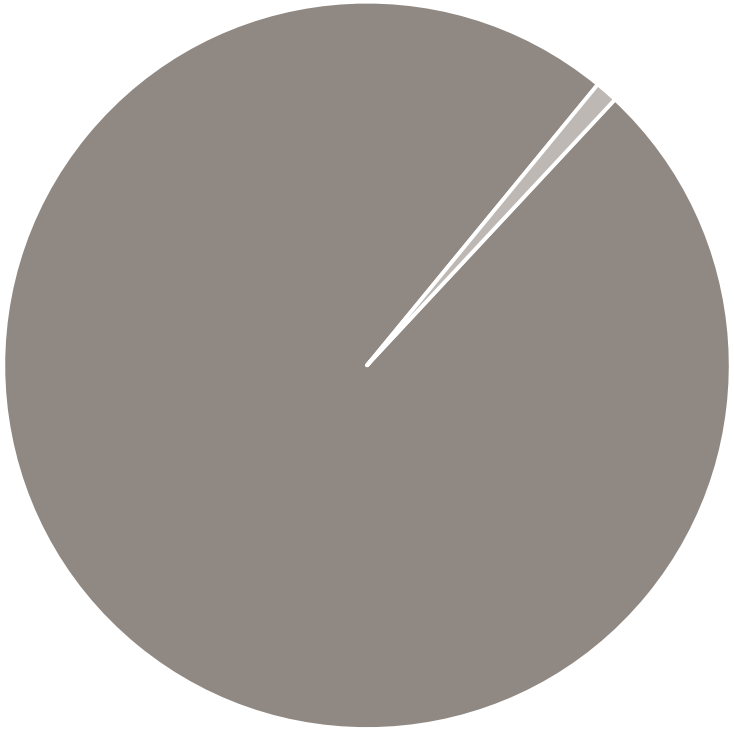
All scheme benefits



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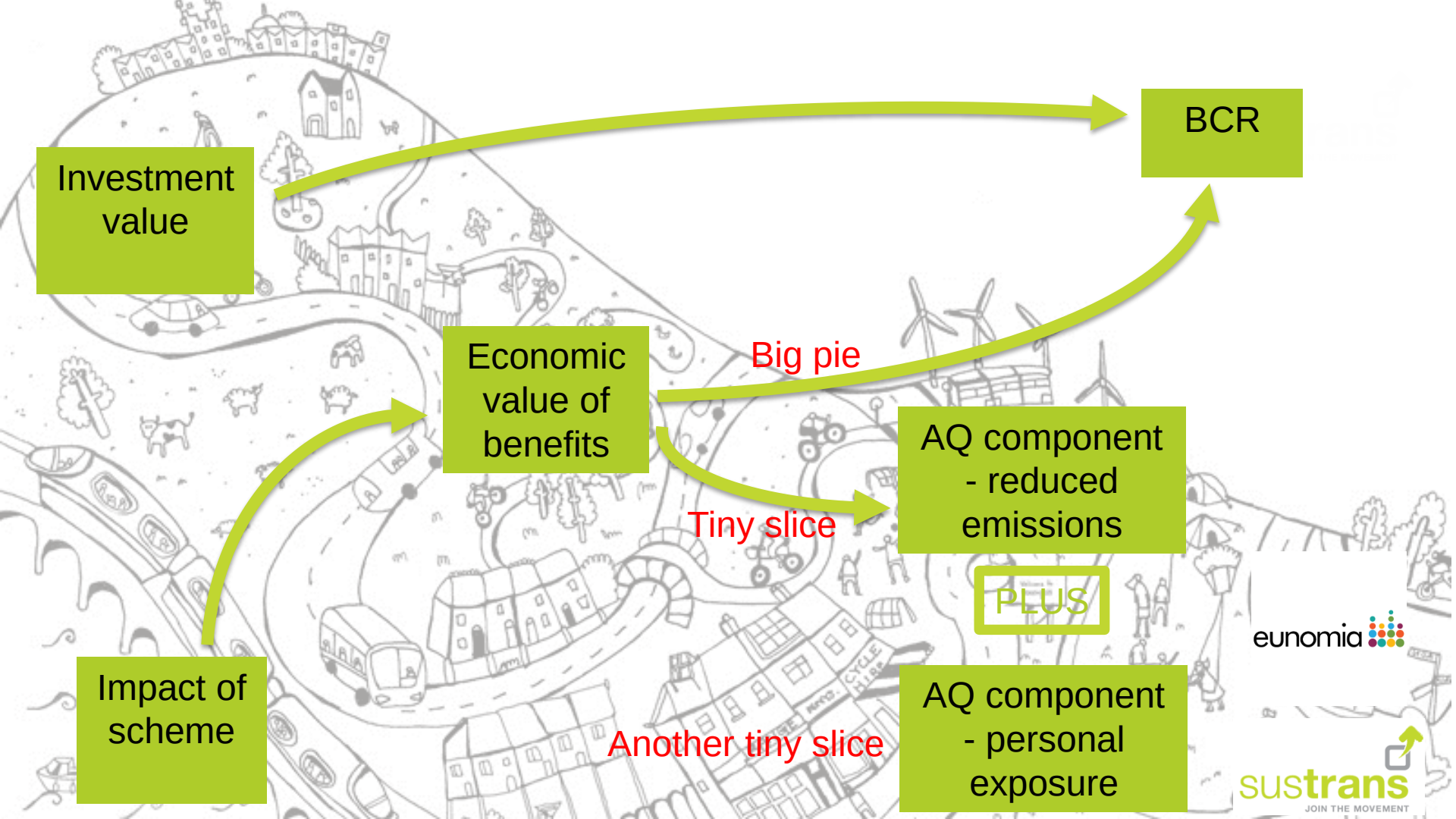
Composition of air pollution benefit


Investment value
BCR
Economic value of benefits
Big pie
AQ component - reduced emissions
Tiny slice
PLUS
Impact of scheme
Another tiny slice
AQ component - personal exposure
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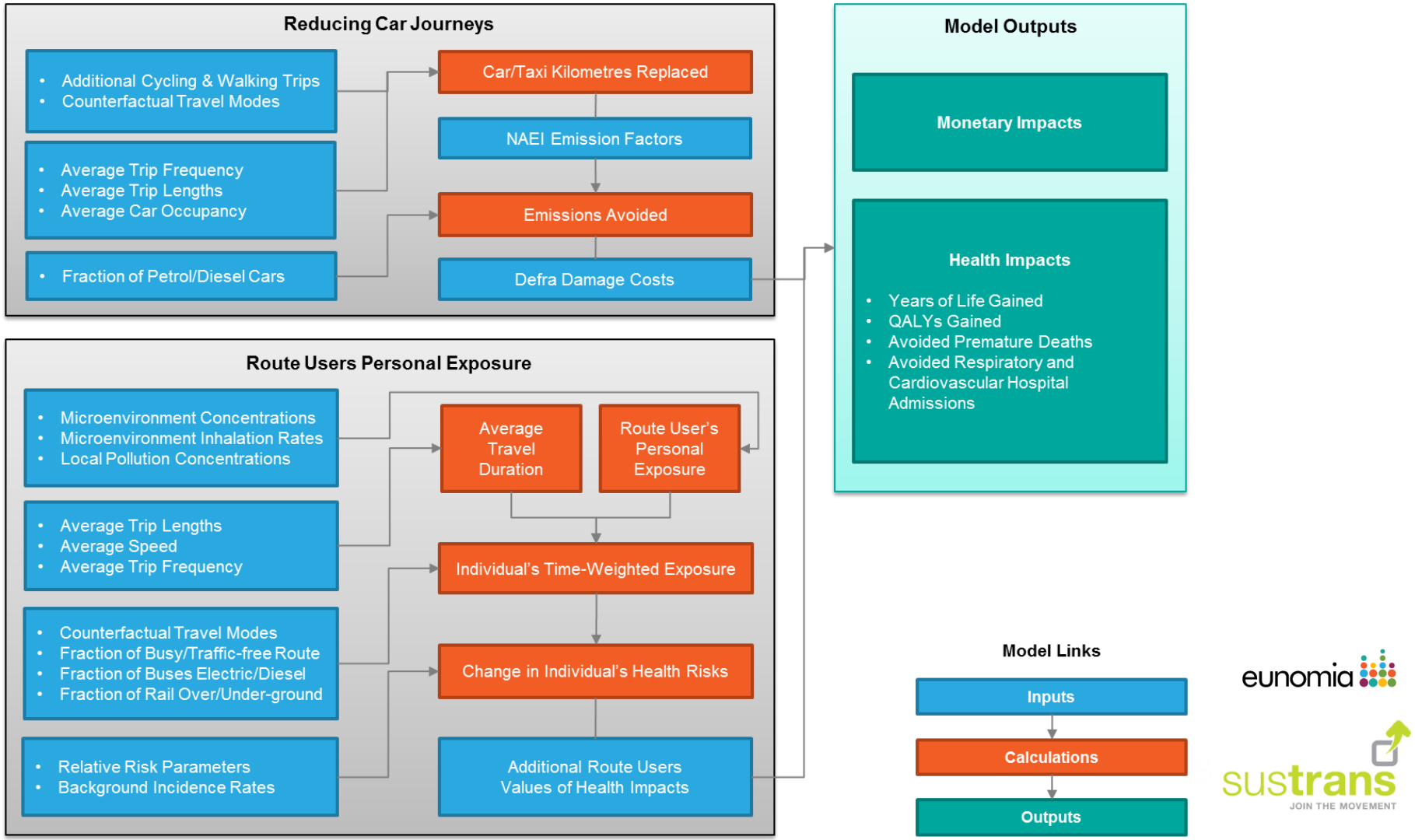
Reducing Car Journeys
Additional Cycling & Walking Trips
Counterfactual Travel Modes
Average Trip Frequency
Average Trip Lengths
Average Car Occupancy
Fraction of Petrol/Diesel Cars
Car/Taxi Kilometres Replaced
NAEI Emission Factors
Emissions Avoided
Defra Damage Costs
Model Outputs
Monetary Impacts
Health Impacts
Years of Life Gained
QALYs Gained
Avoided Premature Deaths
Avoided Respiratory and Cardiovascular Hospital Admissions
Route Users Personal Exposure
Microenvironment Concentrations
Microenvironment Inhalation Rates
Local Pollution Concentrations
Average Trip Lengths
Average Speed
Average Trip Frequency
Counterfactual Travel Modes
Fraction of Busy/Traffic-free Route
Fraction of Buses Electric/Diesel
Fraction of Rail Over/Under-ground
Relative Risk Parameters
Background Incidence Rates
Average Travel Duration
Route User's Personal Exposure
Individual's Time-Weighted Exposure
Change in Individual's Health Risks
Additional Route Users Values of Health Impacts
Model Links
Inputs
Calculations
Outputs
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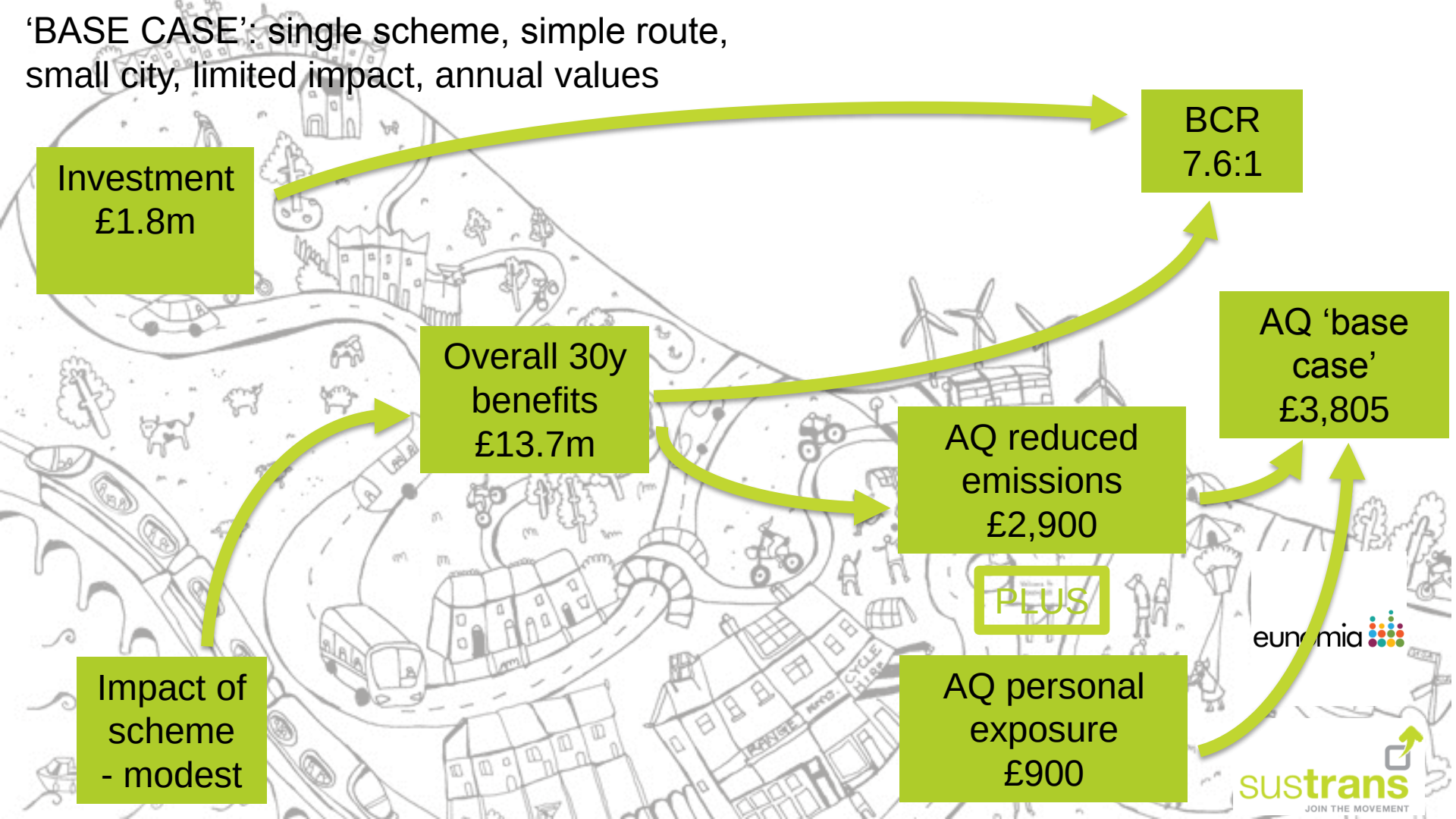
Air quality benefit values (annual figures)

	Reduction in car journeys	Impacts from route user's changed exposure to pollution				Overall impact
		Commuting	Education	Others	Total	
Connect 2 Norwich	**£3,186**	**£739**	**£115**	**-£234**	**£619**	**£3,805**

‘BASE CASE’: single scheme, simple route, small city, limited impact, annual values



What if…

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£
£
£
£
£
SCALE UP
All three measures
More users
More commuters
'Base case'
Reduced exposure to roads
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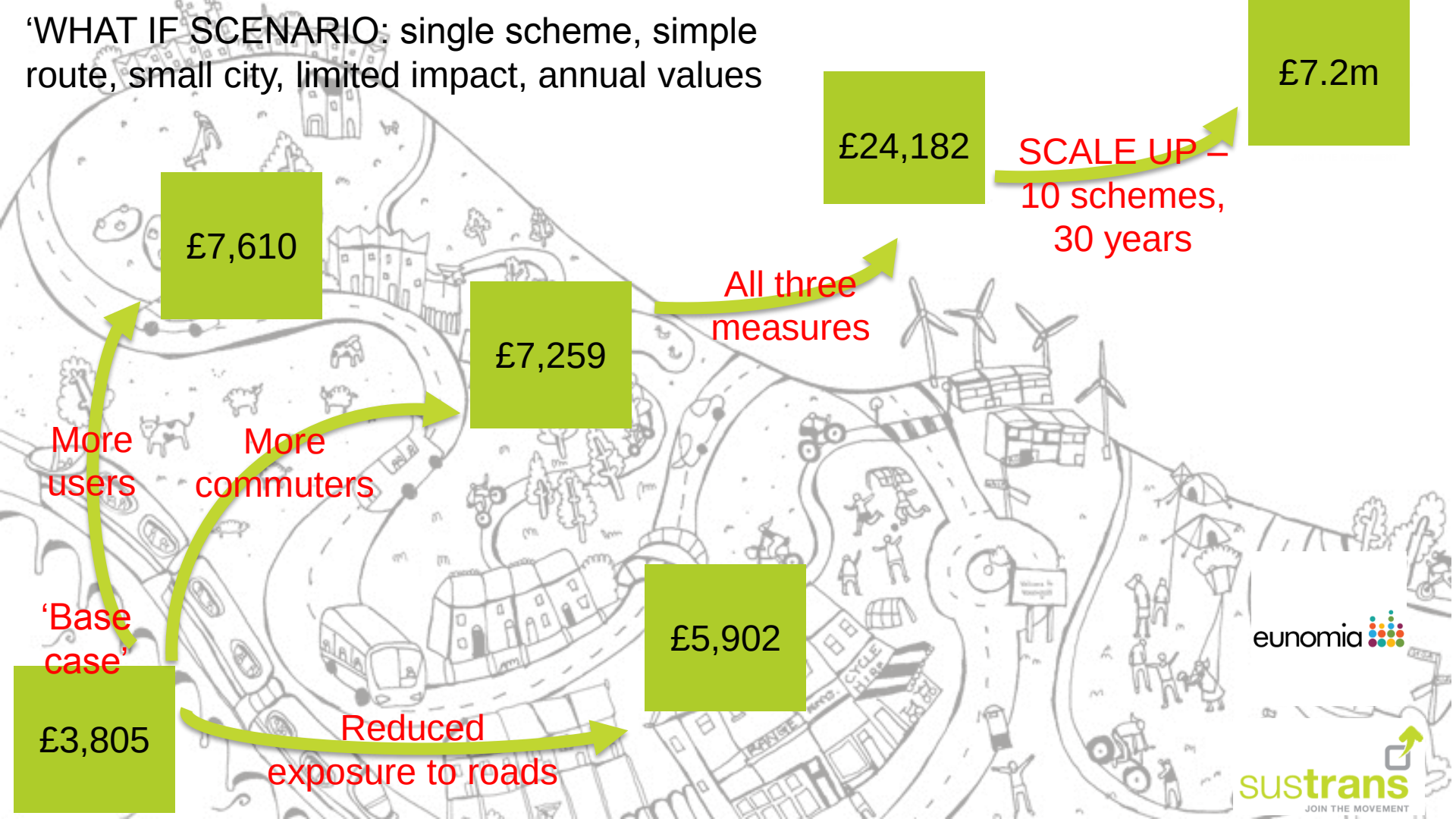
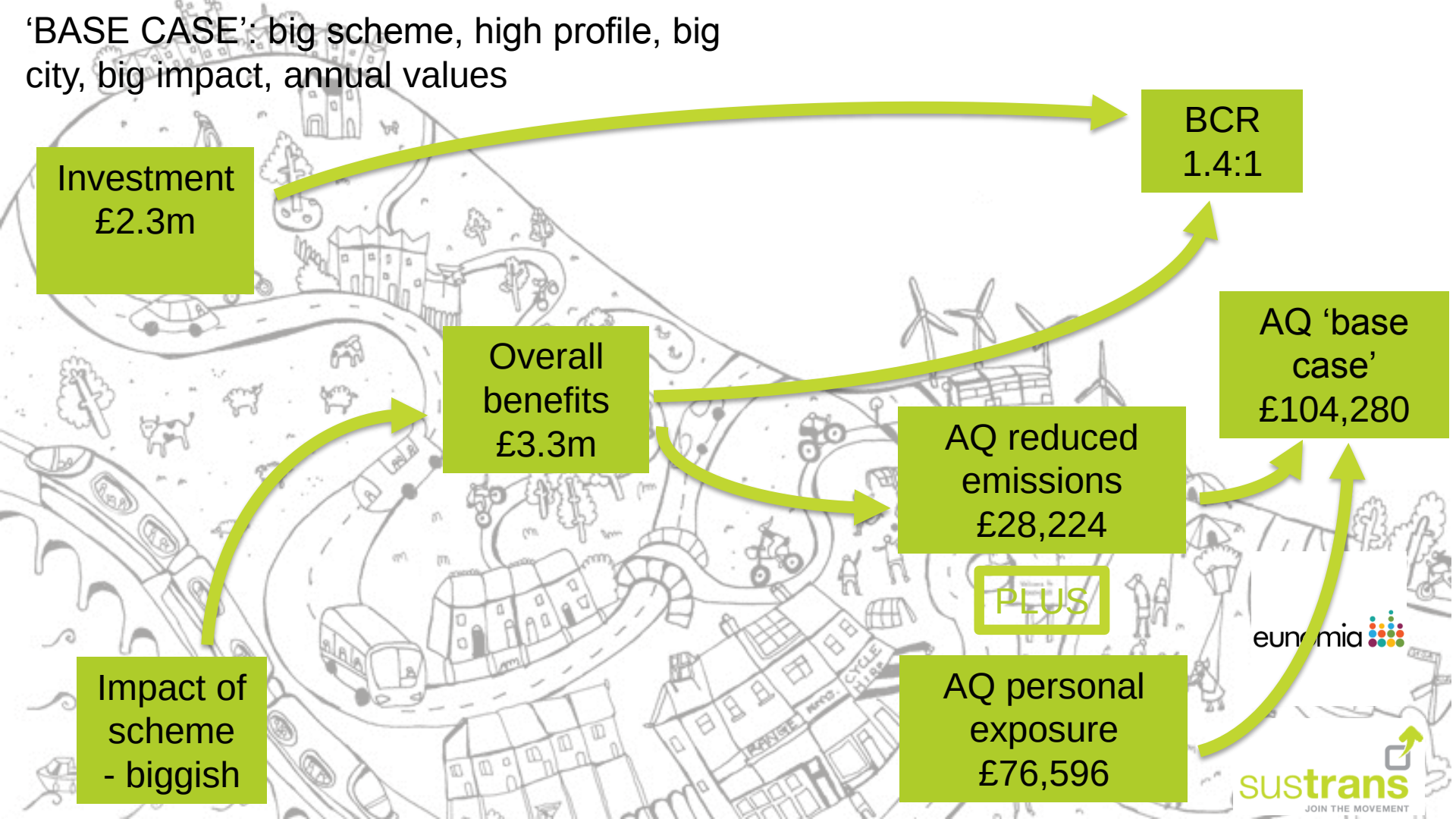
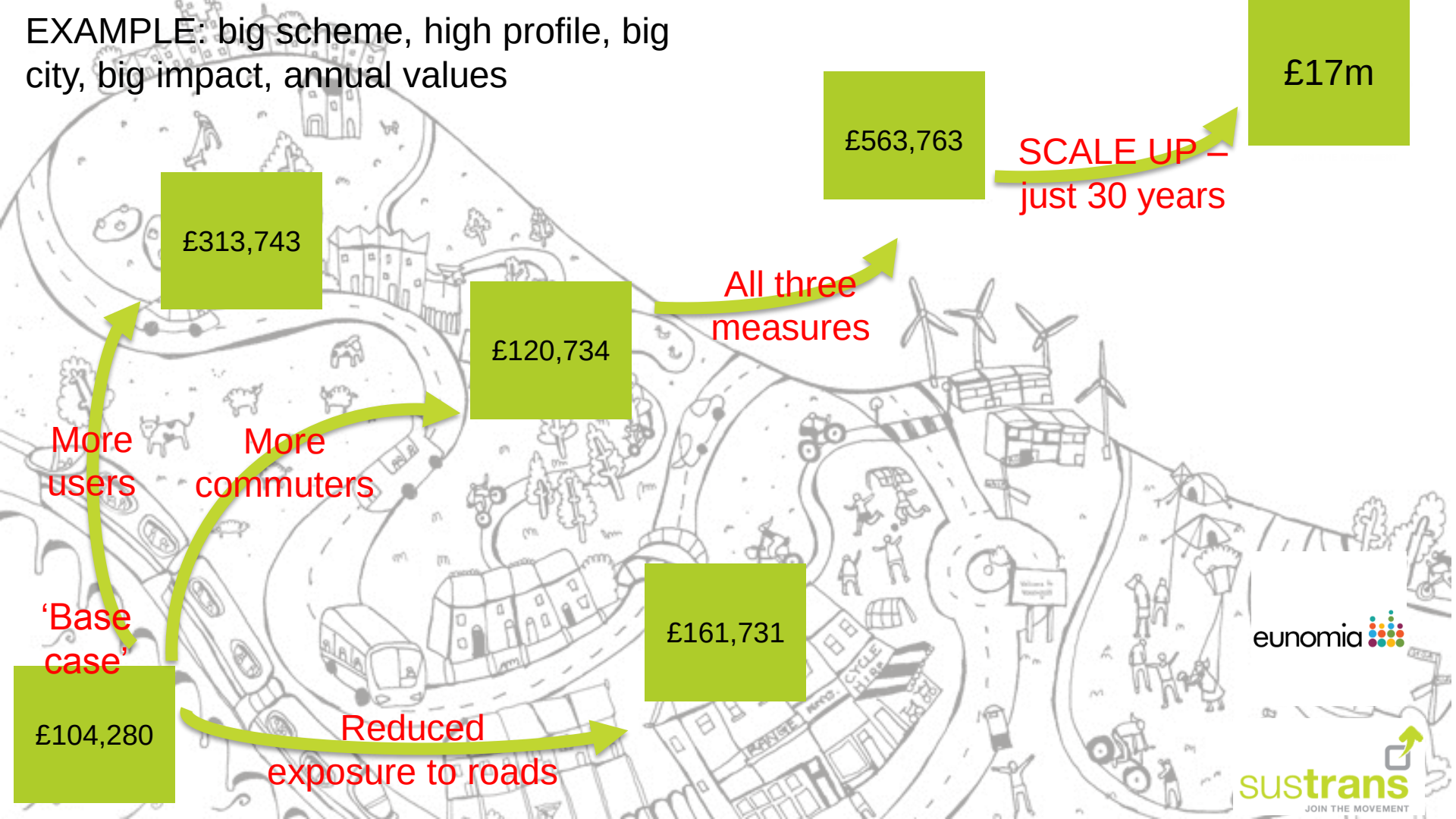
‘WHAT IF SCENARIO: single scheme, simple route, small city, limited impact, annual values



‘BASE CASE’: big scheme, high profile, big city, big impact, annual values




EXAMPLE: big scheme, high profile, big city, big impact, annual values
£17m
£563,763
SCALE UP – just 30 years
£313,743
£120,734
All three measures
More users
More commuters
‘Base case’
£104,280
£161,731
Reduced exposure to roads
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How do we achieve these levels of effect…

Refining delivery

…build routes away from heavily trafficked corridors?

…or reduce traffic in heavily trafficked corridors?

…traffic restraint, roadspace reallocation, supporting behaviour change

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