

# Infrastructure: prevention is better than palliation

Presentation to the TCPA  
Commission on England's Future

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# Environmental limits: global climate

Clear evidence of human caused climate change:

- Global mean temperature up  $0.8^{\circ}$  since 1900;
- 10 hottest years after 1990, inc all since 1997;
- Sea levels up .2m since 1900;
- WHO: climate change already killing 150,000/year;
- Munich Re: disaster losses up 9x since 1960s;
- Season / weather / glacier / storm anecdotes  
*individually* inconclusive-*cumulatively* unignorable;

Now irresponsible *not* to assume climate change.

## Environmental limits: global climate

IPCC: 60% GHG cut by 2050: stabilise at 550ppm.

‘Contraction and convergence’ (only long term fair and politically viable approach): 60% global cut would require UK 90% cut.

Can't persuade US, China, India unless we cut.

# Environmental limits: global climate

*IPPR Meeting the climate challenge:*

Beyond 2° C rise (400ppm), rapidly rising risk of unstoppable catastrophic changes, eg:

- Greenland ice melts
- thermohaline circulation shuts down
- forests switch from carbon sink to source
- crop yields collapse, etc ...

At current climate change rates, only 10 years to change direction to avoid rise over 2° C?

Implies faster, deeper cuts in UK.

***We need to write fossil energy out of our development story - fast.***

# Requirements for planning

*Minimum* requirement for sustainability should be *no net increase in greenhouse gas emissions* as a result of a plan, decision or project.

Also, in many places, no net increase in:

- piped water demand
- effluent loads to watercourses
- rainwater runoff / flooding impacts downstream

... or net decrease in

- biodiversity (including connectedness)
- bioproductivity

# Planning must raise its game

Sustainability Appraisal / Strategic Environmental Assessment are playing a valuable role.

But they only *predict* bad impacts, not *stop* them: decision takers are not bound to follow appraisal recommendations.

Planning must set *standards for achievement* - not only *criteria for assessment*.

*Input* requirements don't ensure *outcomes*:

# Inputs vs outcomes

Green PC

*But what if ...*

Market led

Brownfield

*High wildlife/amenity value*

*'Green desert'*

Greenfield

In urban area

*Overloads infrastructure*

*Anchors amenities*

Fringe/rural

High density

*Sparsely occupied*

*Intensively occupied*

Low density

Near amenities,  
public transport

*Residents drive to alternatives  
anyway*

Few amenities,  
poor transport

Mixed use

Owner-occupied  
monoculture

Energy efficient

*Wasteful lifestyle*  
*Fruqal lifestyle*

Energy wasteful

# Planning must raise its game

Standards must be set in outcome terms

- with monitoring of achievement
- and penalties for shortfall.

*Net* impact means substitutions OK - provided

- match benefit lost (quantity and quality)
- actually done, and genuinely additional
- within the region where the benefit matters
  - greenhouse gases: anywhere
  - water resources: in catchment
  - recreation: equally accessible to same people

# No presumption for development

If multiple substitutions too expensive, development will not happen.

Public-interest Pareto principle says if development can't afford to replace what it takes out of the public realm it *should not* happen.

(Though public *benefits* from development too.)

Why so draconian?

# Resource productivity is not enough

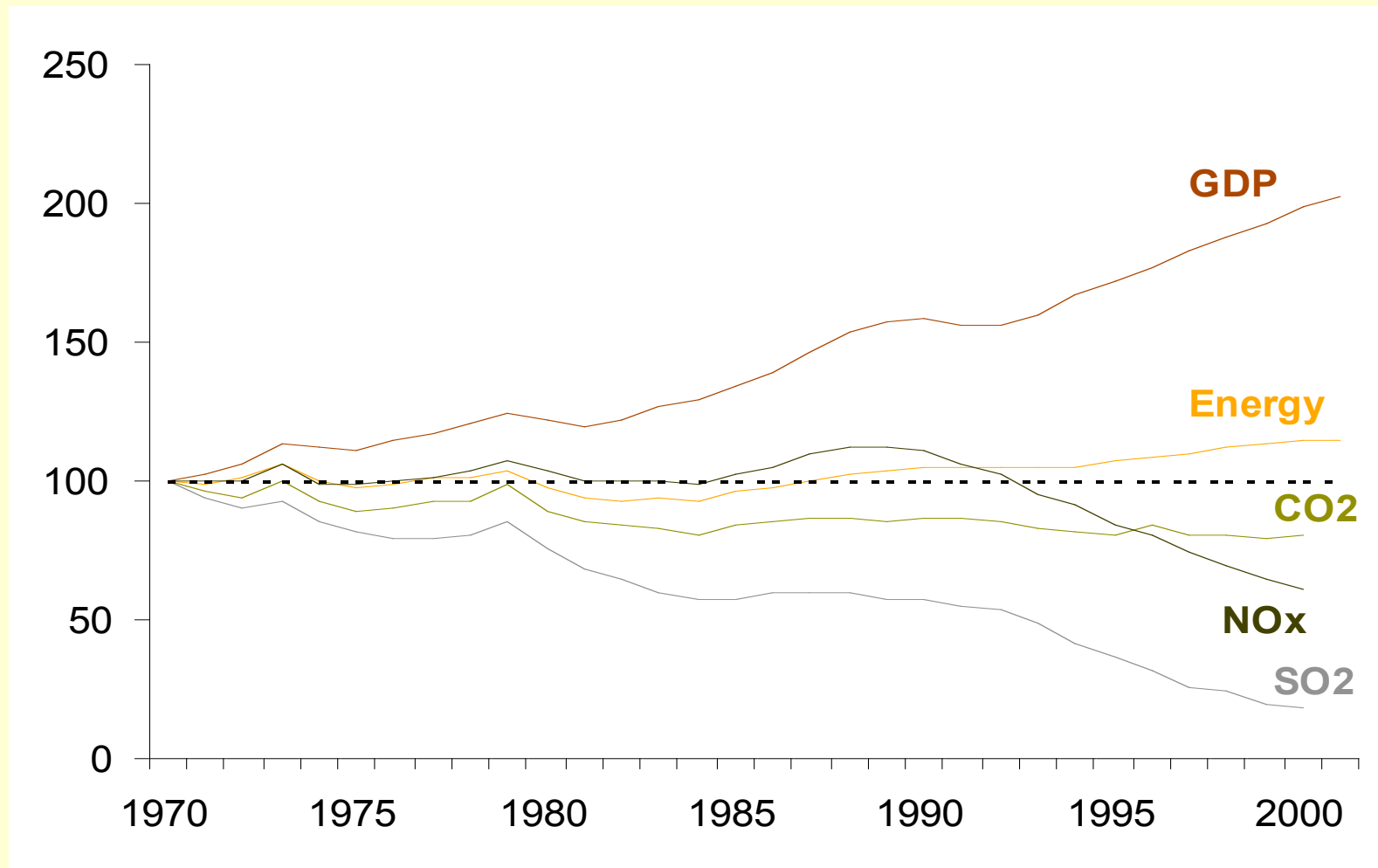
Barely keeping pace with consumption growth.

Undermined by:

- 'rebound' effects
- 'weightless' activity *added*, not *substituted*

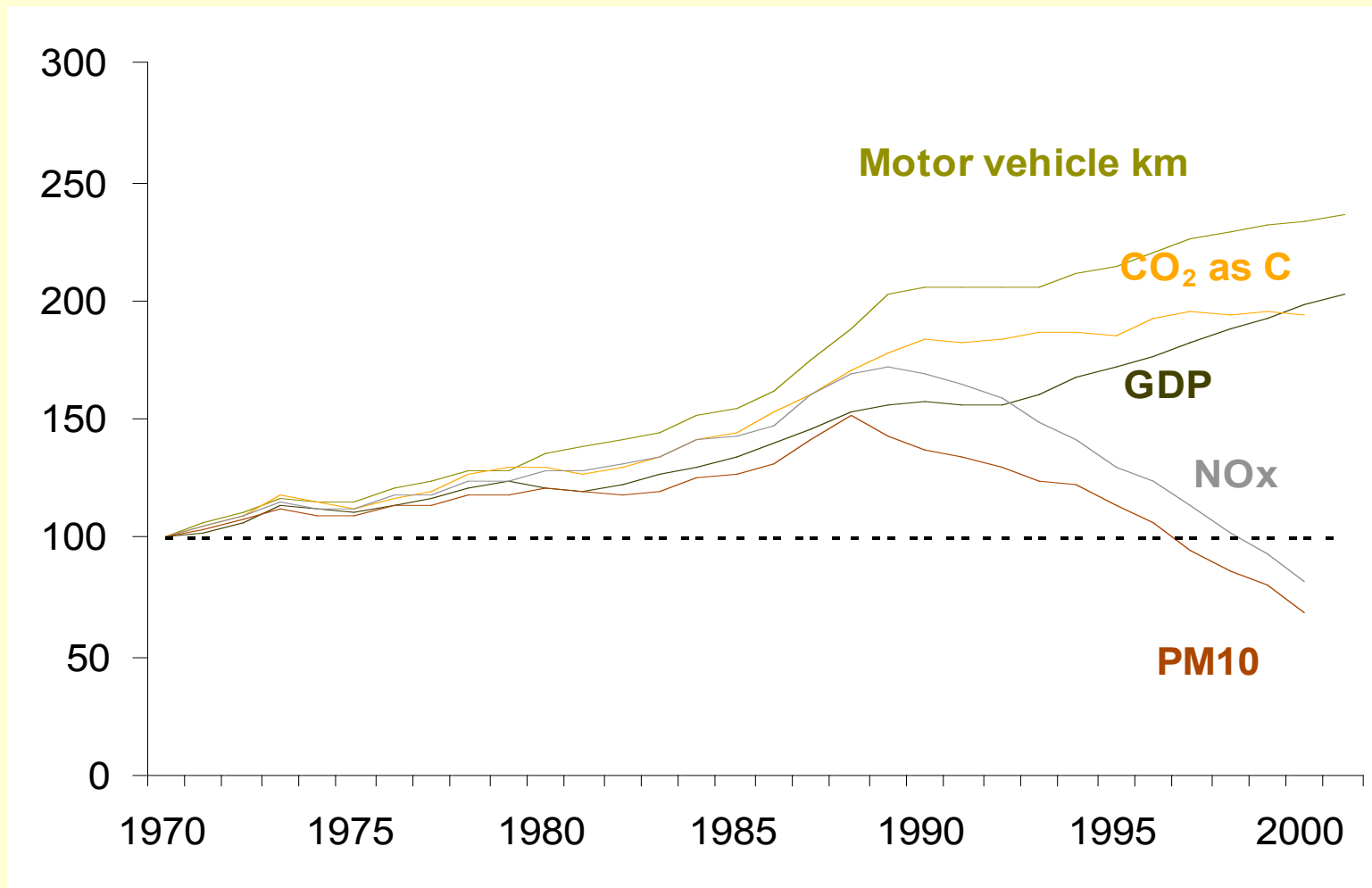
Not enough to consume *smarter*. We must consume *less*.

# Decoupling energy from GDP



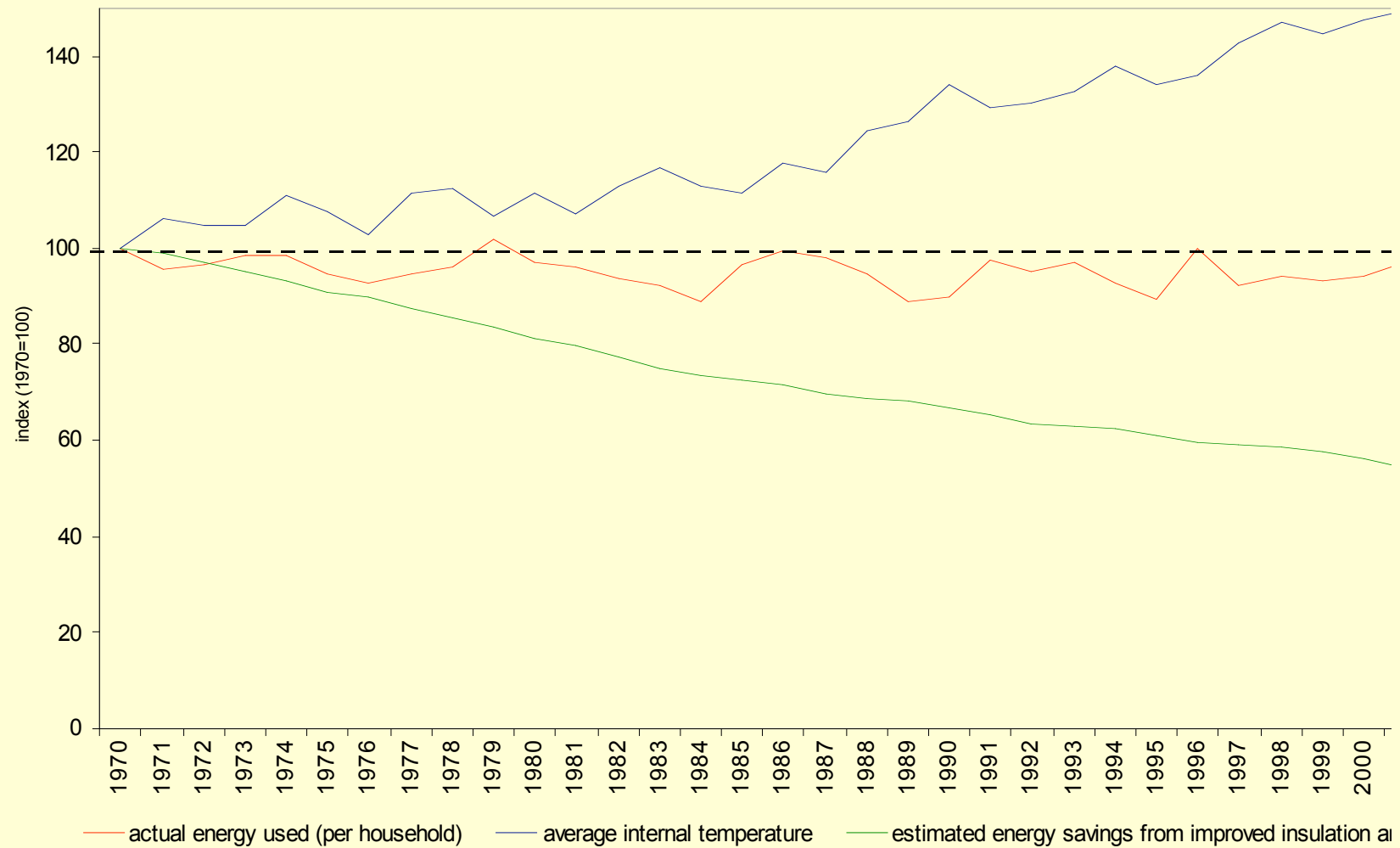
Source: DEFRA, 2004

# Traffic, emissions and GDP



Source: DEFRA, 2004

# Rebound effect: warmer homes



Source: DEFRA, 2004

# Near-zero carbon life is possible

There are *already* zero-carbon and zero-piped-water houses (Hockerton, Vales' house, BedZed, Vauban 'autonomous houses'.)

They work and are enjoyed by normal people as well as eco-freaks.

We don't need to wait for more pilots or technological breakthroughs (though would help.)

We need to *implement* what we already *know*.

# What could new housing achieve?

ISSUE	Scenario 1	Scenario 2	Scenario 3	Scenario 4
<b>CO<sub>2</sub> emissions from energy use in the home</b>	<b>3.057</b> tonnes/household/annum <sup>(1)</sup>	<b>2.064</b> tonnes/household/annum <sup>(1)</sup>	<b>2.064</b> tonnes/household/annum <sup>(1)</sup>	<b>0.005</b> tonnes/household/annum <sup>(1)</sup>
		<b>-32%</b>	<b>-32%</b>	<b>-99%</b>
<b>Water use</b>	<b>312</b> litres/household/day <sup>(2)</sup>	<b>191</b> litres/household/day <sup>(2)</sup>	<b>191</b> litres/household/day <sup>(2)</sup>	<b>110</b> litres/household/day <sup>(2)</sup>
		<b>-39%</b>	<b>-39%</b>	<b>-65%</b>
<b>Waste- tonnes sent to landfill</b>	<b>957</b> kg/household/year <sup>(3)</sup>	<b>920</b> kg/household/year <sup>(3)</sup>	<b>720</b> kg/household/year <sup>(3)</sup>	<b>227</b> kg/household/year <sup>(3)</sup>
		<b>-4%</b>	<b>-25%</b>	<b>-76%</b>
<b>Ecological Footprint</b>	<b>5.448</b> hectares per person <sup>(4)</sup>	<b>5.229</b> hectares per person <sup>(4)</sup>	<b>4.840</b> hectares per person <sup>(4)</sup>	<b>3.405</b> hectares per person <sup>(4)</sup>
		<b>-4%</b>	<b>-11%</b>	<b>-38%</b>

Source: WWF/Bioregional:  
*One Planet Living in the Thames Gateway*

# Easy 'factor 2's for drivers

Take a friend

- halve fuel per *passenger* km

Go half as far...

- halve fuel per *destination reached*

...half as often (eg combine errands)

- halve fuel per *errand*

Cycle or walk

- 'factor 100'?

Don't go at all

- cut fuel per *benefit gained*

Lessons:

Behaviour change makes factor 10+ realistic

Target quality of life *outcomes*

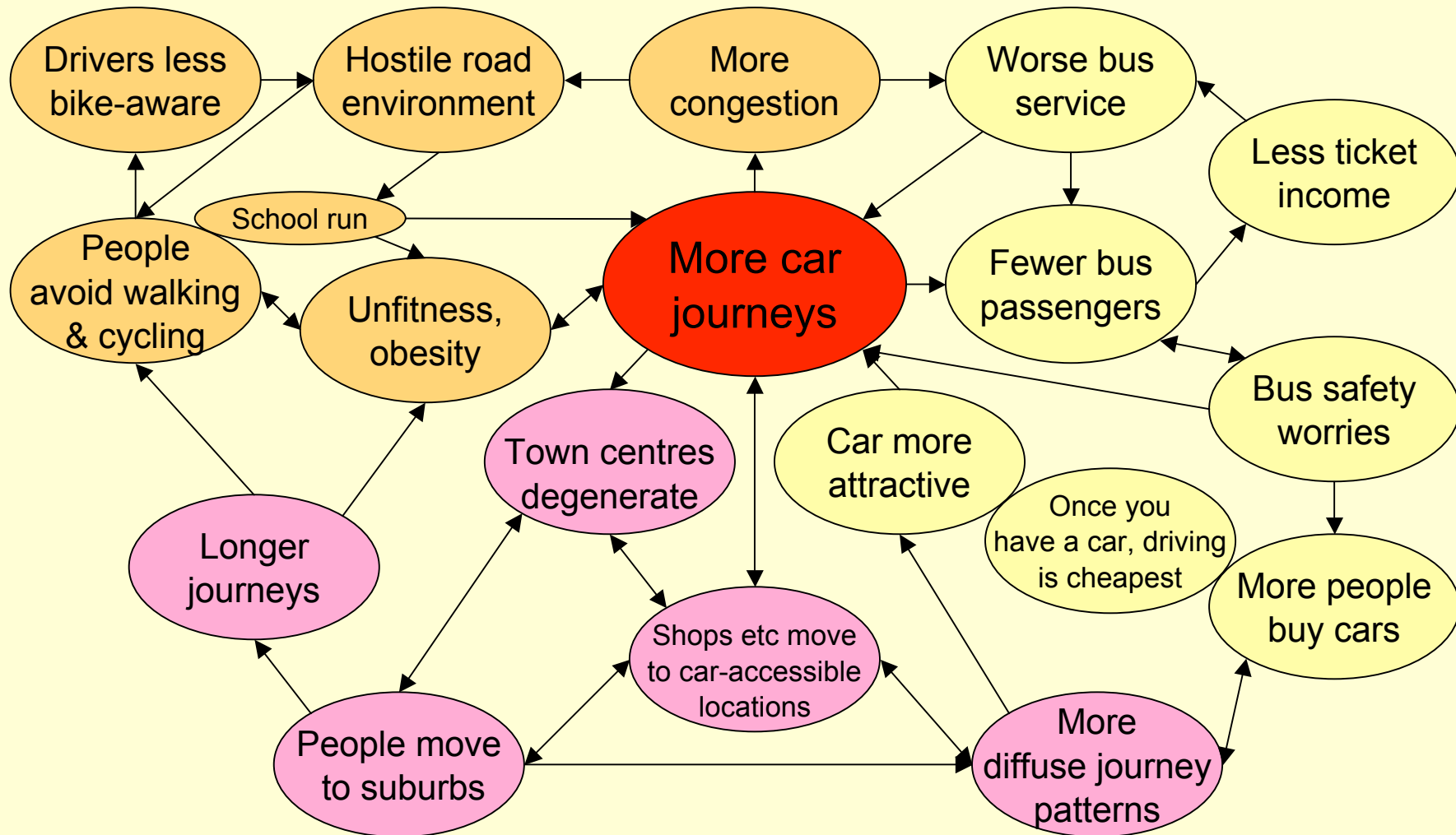
# Quality of life

Would be better if:

- people could access the *same* things with *less* expense, hassle, uncertainty
- the old, young, disabled, infirm and poor were less excluded
- streets were safer, quieter, cleaner, more sociable, less cluttered
- more people got healthy exercise in daily routine
- Thousands weren't killed on roads

*So why don't we do it?*

# Transport: locked in vicious circle



# 'Freedom' coerces?

Results of transport choice:

- Degraded inner cities
- 'Doughnut' development
- Suburbanized countryside
- 'Transport poverty'
- Higher fuel intensity

Nobody *intended* these.

Market not always Adam Smith's 'invisible hand':  
often 'invisible elbow' (Michael Jacobs)

# Choice sets

*Some* choices foreclose *others*:

Choice to drive *precludes* choice to:

- access amenities easily without a car
- access quickly, reliably by *any* means
- not exclude old, disabled, poor
- live in tranquil, safe, peopled streets
- keep urban / rural distinct

‘More choice’ not a justification:

Is it *relevant, meaningful* choice? What other choices are precluded?

# Choice is a lobster pot

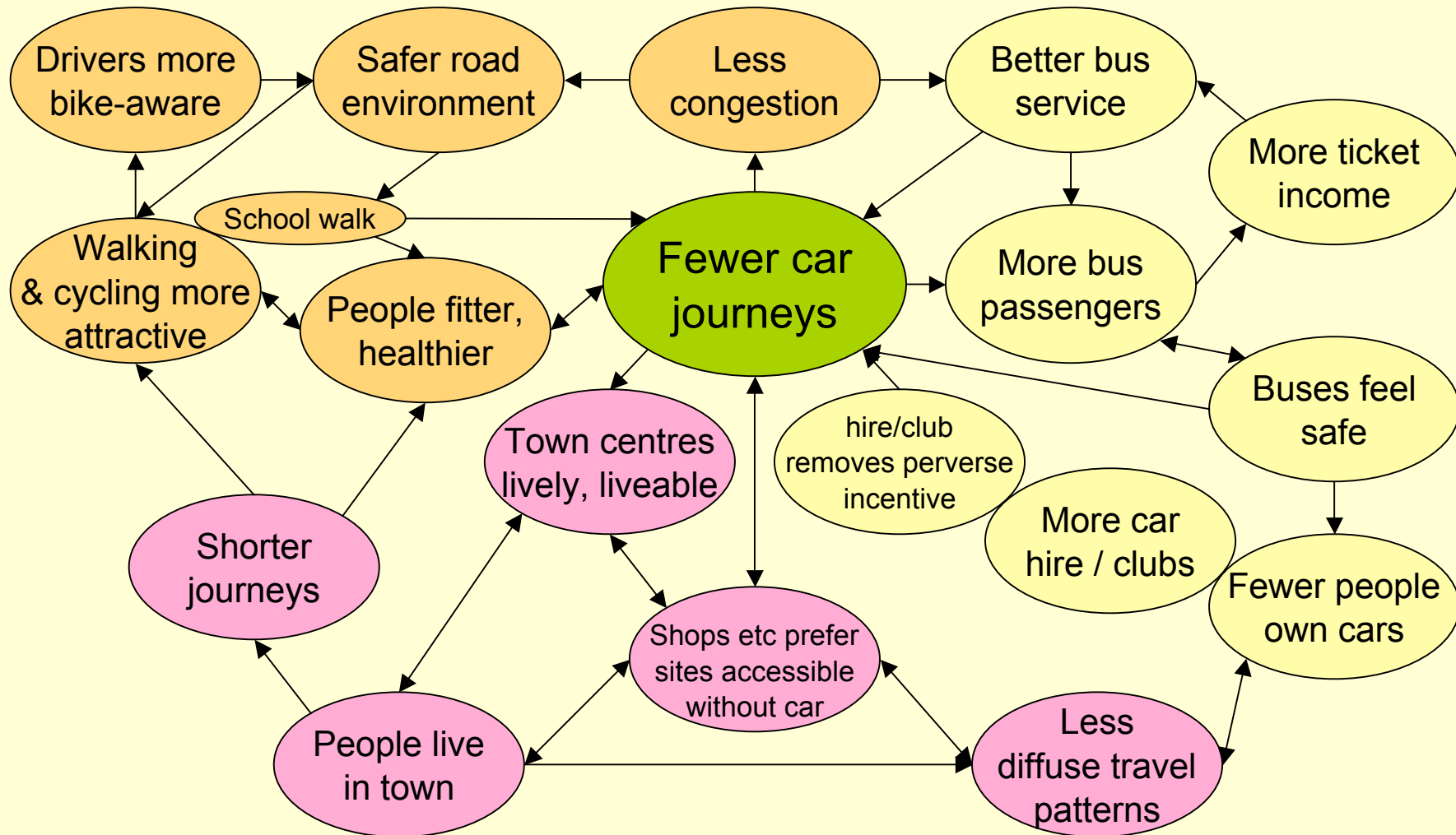
Individual choice got us *into* our transport predicament. But it can't get us *out* again.

Feedback loops obstruct/neutralise piecemeal actions. Hard to drive less because:

- local shops aren't there any more;
- you're splashed at the bus stop by the cars ...
- which are delaying your bus.

So *systemic* interventions needed.

# Possible virtuous circle



## Multiple interventions needed

- Spatial patterns that reduce distances *and*
- Local services good enough to obviate choice *and*
- Good public transport *and*
- Good walking / cycling environment *and*
- Charges / restrictions on car use *and*
- Changes in attitudes, habits, expectations!

These are interdependent: *each* is often impracticable / ineffective / unacceptable without the *others*.

Coordinated multiple interventions needed.

Planning must make things happen, not just set conditions and wait hopefully.

## Option hierarchy

## Waste

Avoid / obviate

Reduce at source  
Less packaging

Best method

Reuse/refill/  
recycle/recover material  
recover energy

Location

Proximity principle

Implementation  
/ timing

Coordinate recycle.  
collection, processing, sale  
Avoid panic rush  
Don't lock in to incineration

## Option hierarchy

## Energy

Avoid / obviate

Natural ventilation, cooling, daylight, passive solar heating

Insulation, draughtproofing

Controls easy to turn off

Best method

Efficient appliances

Renewables (biomass, waste)

CHP, 'Embedded generation'

Location

Local sourcing

Implementation / timing

Incentivise small scale generators (guaranteed premium payment?)

Ensure resilience

Option  
hierarchy

Transport

Development pattern and service  
quality to reduce need to travel

Avoid / obviate

walk, cycle, best  
public transport better than  
car better than air

Best method

strengthen centres

Location

Sustainable options before  
unsustainable habits can establish  
(Vienna trams)

Implementation  
/ timing

Option  
hierarchy

Housing

Ease/incentivize up/down-sizing,  
subletting

Avoid / obviate

Household formation is an  
influenceable policy variable

Best method

Flexible, reconfigurable: long life  
loose fit

Green construction

Location

InTERregional split: cheaper to put jobs  
where everything else already supports  
living?

Implementation  
/ timing

Large new sustainable settlements:  
bubbles of virtuous feedback?

# A successful example

Vauban (Freiburg, S Germany):

- car free: 5 year olds safe to walk to school
- parking space (at edge) costs £10,000
- oversubscribed by young families: 2nd nursery
- high water, energy standards, and detailed design requirements, in masterplan
- must buy power from on-site CHP system (required by the utility which built it)
- has on-site shops, clinic etc which residents normally use (on foot).

# Why does Vauban succeed?

Context is supportive: eg giving up the car is only a small, easy incremental step because:

- city centre is 15 mins by tram, 20 by car
- most journeys already tram/bus/bike/foot
- no shame using public transport
- it's good, so people use it, so it stays good) - virtuous circle

## How does Vauban do it?

Dedicated agency (LIFE funded) produced the masterplan, negotiated deals (eg CHP) and rule changes (eg parking waiver)

Groups of intending residents commission apartment blocks from architects / builders: no role for commercial developer

City Council would have to remit any development profit to federal government - so takes a 'policy dividend' instead

# Edinburgh was first

Aristocratic speculators:

- bought and remediated derelict land;
- commissioned swanky masterplan from trophy architect
- set detailed, intrusive, restrictive standards:
  - facadism
  - no shit
  - wash houses: distance, timing

Guarantee that neighbours would be held to same standards was selling point.

## Stronger planning needed to:

- Require benefits to exceed costs
- Enforce standards, not balance criteria
- Define and enforce substitutions
- Make coherent inTERregional decisions ...
- ... Reflecting environmental reality
- Support 'social democratic' delivery vehicles.

# Political bottle required to ...

- Reassert the social contract: the whole purpose and justification of government is to restrict individual choices to secure public benefits;
- Sell the idea of places where *public* goods are secured through constraining *consumer* choices. (Eg London congestion charge);
- Make choice to escape bad public services unnecessary;
- Get over the hump of unpopularity / lead times.

# Conclusion

Human security requires 'developed' countries to cut resource use dramatically.

We already know how.

This can *improve* quality of life ...

... provided we stop assuming growth and quality of life are the same thing ...

... and give some *collective* choices priority over *individual* ones.

Sustainability requires *increased* reach of public policy, planning and intervention.