

ANNEX1

The investment required to achieve the Government's ambition to double cycling activity by 2025

May 2016

About Sustrans

Sustrans makes smarter travel choices possible, desirable and inevitable. We're a leading UK charity enabling people to travel by foot, bike or public transport for more of the journeys we make every day. We work with families, communities, policy-makers and partner organisations so that people are able to choose healthier, cleaner and cheaper journeys, with better places and spaces to move through and live in.

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Table of contents

Executive Summary	1
1 Introduction.....	2
2 Estimating the scale of change required to meet the Government’s target.....	3
3 The level of investment in cycling programmes that will be required to achieve the target	4
4 Wider economic impacts	9
Annex A – Intervention types.....	10

Executive Summary

The Government's Cycling and Walking Investment Strategy includes a target to double cycling activity by 2025. Cycling activity is measured as the estimated total number of journey stages made by bicycle each year, from 0.8 billion stages in 2013 to 1.6 billion stages in 2025. A stage may include a journey made by bicycle as part of a longer trip, for example cycling to a railway station to catch the train to work.

Sustrans have modelled the levels of investment required to achieve this target. Our model uses the outcomes achieved by previous public investment in cycling programmes to predict the levels of investment required to deliver the scale of change envisaged by the Government target.

Our modelling shows:

- Meeting the targeted levels of cycling by 2025 requires an additional **553 million** cycle stages per year in England outside of London
- Meeting this target will require investment of around **£8.2 billion**
- This level of investment is equivalent of **£17** per person per year
- This investment would provide for the development of **34,000 kilometres of new route**, and engagement with **9 million households** and **21,000 schools**
- The investment programme will result in an estimated **£61 billion** of economic benefits from the impact on cyclists and the indirect impact of improved connectivity on pedestrians
- This level of investment would result in an **overall benefit cost ratio of nearly eight to one**, a return that represents excellent value for money.

Our modelling responds to the Government Cycling and Walking Investment Strategy target to double cycling activity by 2025. It does not cover or model the other aims and objectives contained in the Cycling and Walking Investment strategy.

1 Introduction

The approach taken by Sustrans modelling is to estimate the scale of change needed to achieve a given level of cycling activity in England outside London¹, collate available cost and impact data for various different programmes designed to increase cycling activity and then determine the investment needed in each of these programmes to achieve the scale of change required. The values and assumptions within the model are based on the best available evidence. Conservative assumptions are used throughout to account for any potential optimism bias.

In February 2016 the Government began consulting on a Cycling and Walking Investment Strategy. This strategy laid out an ambition that by 2040 walking and cycling should be a normal part of everyday life, and the natural choice for shorter journeys such as going to school, college or work, travelling to the station and for simple enjoyment.

It also set a target for 2025 which was to double cycling, where cycling activity is measured as the estimated total number of cycle stages made each year, from 0.8 billion stages in 2013 to 1.6 billion stages in 2025.²

This paper summarises how we have estimated the levels of investment that will be required between now and 2025 to achieve the Government's target. The paper does not cover the investment required to achieve any of the other aims or objectives contained in the Cycling and Walking Investment Strategy.

¹ The model excludes London. It assumes that Transport for London targets for cycling in London will be met

² Counting cycle stages rather than trips allows the inclusion within cycling activity of journeys that involve a cycle but where that is not the main form of transport (for example, cycling to a railway station to catch the train to work).

2 Estimating the scale of change required to meet the Government's target

The approach taken by the model is to estimate the scale of change in cycling activity required to meet future targets and then estimate the levels of investment that will be required in the light of the cost and impact of previously delivered programmes designed to increase levels of cycling activity. This section of the report considers the scale of change required to meet the Government's target.

Whilst the Government target for cycling is expressed in stages, most evidence on the impact of cycling programmes is collected in terms of the increase in cycling trips they achieve and has to be converted to stages. The current ratio of cycling trips to stages is 1:1.06. Based on historical trends, the model assumes that this ratio will grow to 1:1.09 by 2025.

The target contained in the Cycling and Walking Investment Strategy is to double cycling activity by 2025 from the baseline year 2013. In 2013 some 823,596,986 cycling stages were made. The target requires some 1.647 billion stages required to be made by cycle in 2025.

The model forecasts the level of bicycling stages in England outside of London that would be made without additional investment by 2025 assuming recent trends. This is that some 810 million cycle stages would be undertaken.

The model assumes that Transport for London targets for cycling activity in London will be met and an additional 284 million stages will be achieved by 2025.

So in order to meet the target, an intervention programme will need to result in an additional 553 million more bicycle stages in England outside of London in the year 2025. This is shown in Table 2-1.

Table 2-1 Estimating the scale of change required to meet the Government's target

In 2025	Number of Stages (million)
Target for England contained in the Cycling and Walking Investment Strategy	1,647
Less : Total number of stages achieved without further investment on basis of current growth trends	(810)
Less : Number of stages achieved in London if Transport for London targets achieved	(284)
Additional cycle stages required outside London	553

3 The level of investment in cycling programmes that will be required to achieve the target

The model includes estimates of the cost and impact of a range of different types of programme designed to increase levels of cycling activity. They are described in more detail in Annex A.

The summary outputs of the model for the purposes of estimating the levels of investment required to meet the Government’s target in the Cycling and Walking Strategy are shown in Table 3-1.

In order to achieve an increase of 553 million additional cycle stages, investment of some £8.2 billion in a large number and range of cycling programmes will be required by 2025. This is the equivalent of just over £17 per person per year.

Table 3-1 Summary outputs of the model

Delivery programme	
New cycling stages required to hit target	553,148,178
New cycling stages delivered in 2025	554,737,092
Proportion of cycling target achieved	100%
Costs for delivery programme	
Total costs	£8,243,864,463
Capital (% of total)	£6,170,081,843 (75%)
Revenue (% of total)	£2,073,782,620 (25%)
Cost per head per year	£17.35

Table 3-2 shows the number and profile of different types of cycling programme that would need to be delivered. This gives a scale of the complexity for delivering the programme. For example, to deliver high intensity behaviour change in 6,250 schools per year is likely to require 600 to 800 officers supporting those schools.

Table 3-2 also shows that general there is a slight weighting of capital intervention earlier in the programme and revenue interventions later in the programme. This was done to maximise the impact of the intervention programme under the assumption that the impacts of revenue expenditure are more immediate than of capital spending, but less long lasting. By ‘front loading’ the capital spending, impacts are maximised across the timeframe being modelled.

Revenue spending has been apportioned to fall within the 20%-40% boundary identified in *Finding the Optimum* (DfT, 2015), which suggests that a combination of capital and revenue expenditure is required to maximise the return on the investment.

Table 3-2 Intervention profile

Intervention	Unit of delivery	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	Total
City Wide Active Travel Development Programme	Medium sized urban area	0	260	0	0	0	260	0	0	0	0	520
New and improved routes	A route	550	550	550	550	550	550	550	550	550	550	5,500
Routes to schools	A route	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	0	0	10,000
Overcoming Physical Severance	A piece of infrastructure and connects to local network	125	125	125	125	125	125	125	125	0	0	1,000
Improving Cycling Facilities at Rail Stations and Bus Terminals	Station	125	125	125	125	125	125	125	125	0	0	1,000
Schools Behaviour Change - High Intensity	School	6,280	6,280	6,280	6,280	6,280	6,280	6,280	6,280	6,280	6,280	62,800
Community PTP	Zone of 10,000 households	0	0	235	235	235	235	235	235	235	235	1,880
Community Behaviour Change - Intensive Intervention	Community of 5,000	0	0	200	100	200	100	200	0	0	0	800
Workplaces Behaviour Change - High Intensity	Workplace	0	625	625	625	625	625	625	625	625	0	5,000
Workplaces Behaviour Change - Low Intensity	Employment zone of 30,000 workers	0	0	90	90	90	90	90	90	90	90	720
Access and promotion at Universities	University	0	8	8	8	8	8	8	9	8	0	65
Access and promotion at Further Education Colleges	College	0	20	20	20	20	20	20	20	20	0	160

Table 3-3 shows the number of additional cycle stages that would be delivered and the investment required during each year of the investment period. The cost per head row most clearly shows the investment profile (note that these values do factor in forecast population growth and inflation). The tail-off towards the end of the period reflects the reduction in capital investment.

Table 3-3 Investment profile

Intervention		2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	Total
Resulting annual cycle stages (000s)		9,611	71,996	140,299	213,284	286,029	354,973	421,346	484,189	540,857	554,737	
Costs (£000s)	Capital	444,944	698,747	718,414	738,950	754,468	770,689	787,644	805,324	366,707	84,194	6,170,082
	Revenue	43,302	105,588	214,054	228,452	249,890	263,762	269,565	266,731	254,453	177,985	2,073,783
	Total	488,246	804,335	932,468	967,402	1,004,359	1,034,452	1,057,210	1,072,055	621,160	262,179	8,243,864
£ per head		£10.55	£17.28	£19.91	£20.53	£21.19	£21.70	£22.05	£22.23	£12.81	£5.38	

Chart 3-1 illustrates the contribution made in stages by each intervention category towards the cycling target. It shows that the largest contributions will come from the city wide development programmes and interventions in schools.

Chart 3-1 Intervention impact profile

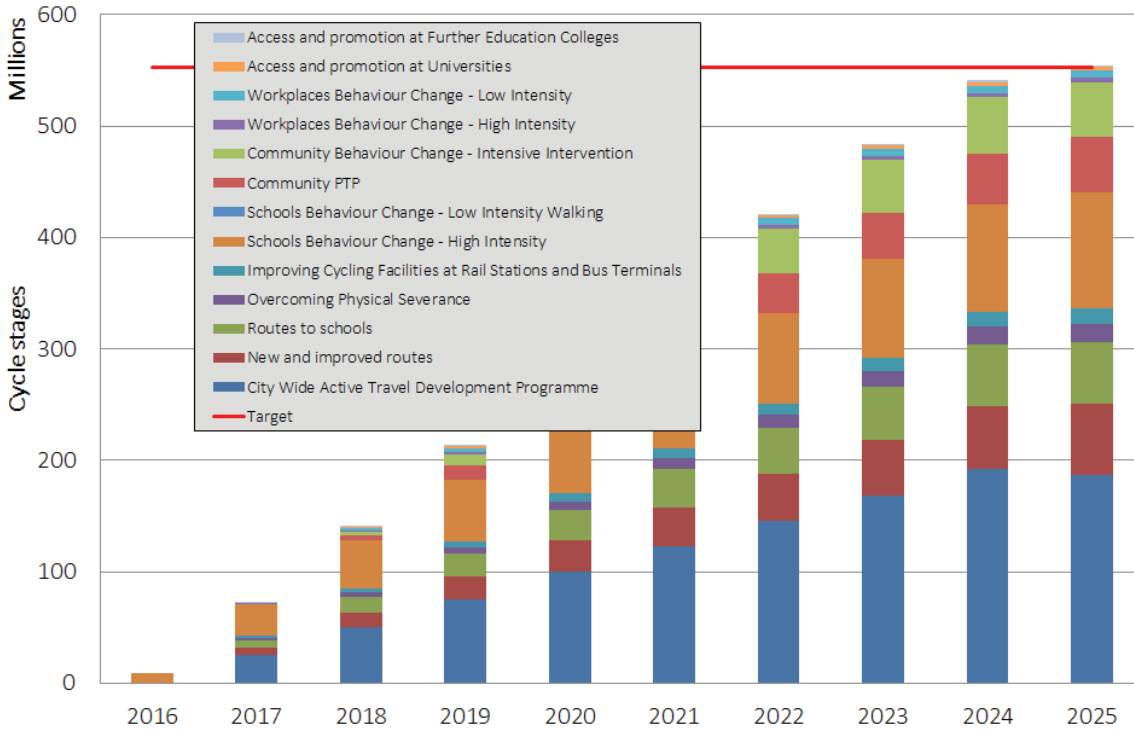
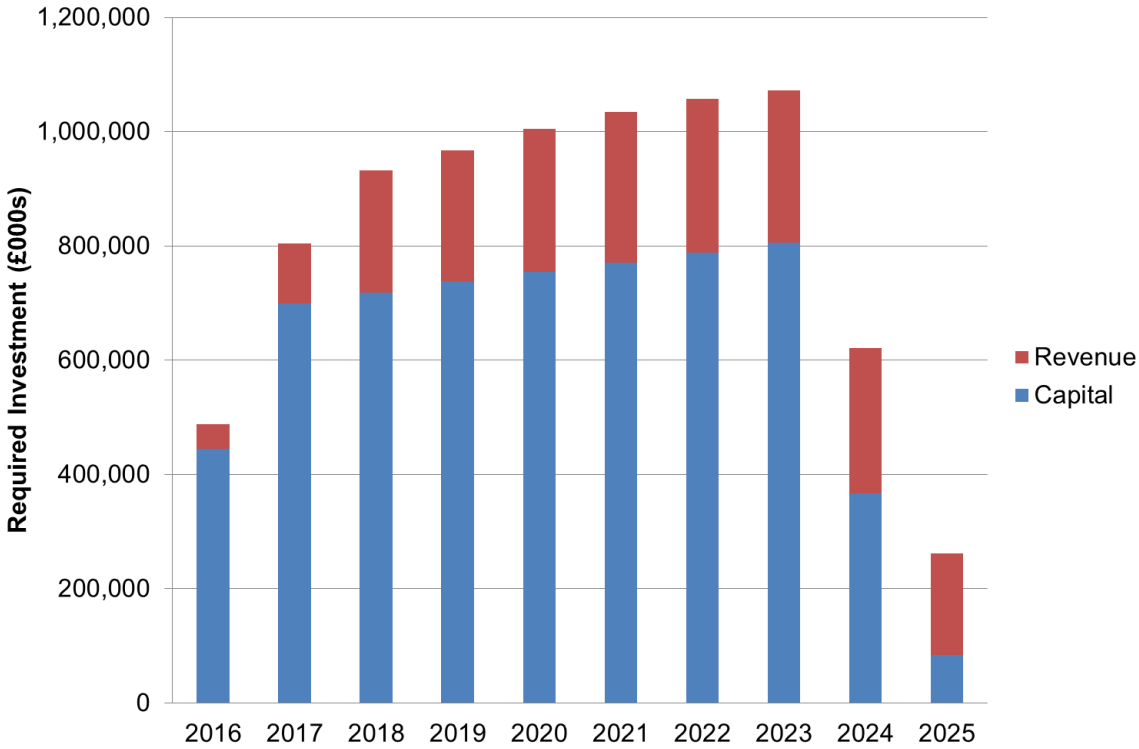


Chart 3-2 provides a graphical representation of the investment profile given in Table 3-3. It clearly shows the split between capital and revenue investment and the drop-off in capital in year 10 of the programme. It should be noted that the capital investment in the model covers only the building/upgrading of routes and not their on-going maintenance. Funding for maintenance will be required to make sure that the impacts of the infrastructure investments are fully realised.

Towards the end of the programme the Government should consider future aspirations. If there is a desire to build on the impact of the proposed investment programme then allowing this drop-off to occur may harm attainment of future targets or see a reversal of progress.

Chart 3-2 Investment profile by capital and revenue split



4 Wider economic impacts

This part of the report considers the wider economic benefits of achieving the Cycling and Walking Investment Strategy target of doubling cycling activity by 2025.

In order to calculate the monetised benefits of the levels of adult cycling activity achieved we have used the Department for Transport's webTAG and the World Health Organisation's HEAT tools.³ They show that the economic benefit of implementing the investment required to meet the target would be £61 billion over thirty years (based on adult cycling only). Since the investment programme costs £7.8billion⁴, the benefit cost ratio is 7.8:1.

Table 4-1 shows how these monetised values are broken down by different types of benefit. The majority of benefits come from the impact on health (as calculated by the World Health Organisation's HEAT tool). Substantial amenity benefits are also realised (assuming 34,116km of new route is built as per the intervention model).

It is important to note that nearly two thirds of the total benefits come from the indirect impact of the programmes on pedestrians. This is because many of the cycling programmes, especially those delivering improved infrastructure and connectivity, also benefit pedestrians.

Table 4-1 Economic benefits of achieving national targets for cycling

Benefit	Value (£, total over thirty year appraisal period)		
	Cyclists	Pedestrians	Total
Health	£9,644,539,000	£25,219,271,000	£34,863,810,000
Absenteeism	£1,120,529,501	£840,263,789	£1,960,793,291
Amenity	£9,925,344,702	£13,369,147,806	£23,294,492,508
GHGs	£129,289,588	£20,283,090	£149,572,678
Accidents	£209,208,555	£32,831,332	£242,039,887
Decongestion	£1,083,808,164	£170,006,487	£1,253,814,652
Air quality	£10,033,932	£1,574,134	£11,608,067
Noise	£20,067,865	£3,148,268	£23,216,133
Infrastructure	£10,035,261	£1,574,134	£11,609,395
Indirect Taxation	-£541,904,082	-£85,003,244	-£626,907,326
Total	£21,610,952,487	£39,573,096,797	£61,184,049,284

³ These tools have been developed to calculate the economic impacts of adult cycling only. To account for this, it is assumed that the proportion of cycle activity undertaken by adults is equivalent to the proportion of adults in the population of England outside of London (82% in both 2016 and 2025). It is worth noting that the economic benefits of all cycling activity that results from achieving the 'doubling' target are estimated to be £74.6 billion, with a benefit cost ratio of 9.5:1.

⁴ Note, this is lower than the value shown in Table 3-1 as a result of the amortisation of some of the investments where the life span of the infrastructure being delivered is longer than normally assumed (eg bridges, tunnels).

Annex A – Intervention types

Table A-1 below gives information on each type of intervention included in the model. All costs are in 2010 prices.

Table A-1

Intervention	Data	Delivery Unit	Delivery period (years)	Capital costs (£000's)	Revenue costs (£000's)	Total costs (£000's)	Average cycling trips increase	Average walking trips increase
City Wide Active Travel Development Programme	The estimated impacts for this category are based on the evaluations of the Sustainable Travel Towns (Sloman <i>et al.</i> , 2010), the Cycling Demonstration Towns (Sloman <i>et al.</i> , 2009) and the Cycling Cities and Towns (Sloman <i>et al.</i> , 2012).	Medium sized urban area	4	£2,391	£735	£3,126	358,232	972,724
New and improved routes	Usage data taken from 21 Community Links or Linking Communities route developments was used to create the average impacts for this category.	A route	1	£99	£-	£99	11,826	15,657
Routes to schools	Data on 72 Links to Schools schemes was reviewed to construct the intervention category impact.	A route to a school	1	£190	£-	£190	5,096	15,310
Overcoming Physical Severance	Change in usage data from 78 Connect2 schemes were used to construct the intervention category impact.	A bridge or tunnel	1.5	£1,388	£-	£1,388	15,081	52,501
Improving Cycling Facilities at Rail Stations and Bus Terminals	Bike 'n' Ride Evaluation (MVA Consultancy, 2011) forms the basis for estimated costs and impacts for this intervention category.	Stations	1	£25	£-	£25	12,319	
Schools Behaviour Change - high Intensity Cycling	This intervention category is constructed using data from hands up surveys conducted at schools where a Sustrans' Schools Officer has been engaged.	School	1	£-	£7	£7	2,875	3,345
Community PTP	Pre- and post-intervention beneficiary surveys from six interventions monitored by Sustrans are used as the basis for the estimated impact of this intervention category.	Zone of 10,000 households	1	£-	£268	£268	35,700	244,800

Intervention	Data	Delivery Unit	Delivery period (years)	Capital costs (£000's)	Revenue costs (£000's)	Total costs (£000's)	Average cycling trips increase	Average walking trips increase
Community Behaviour Change - Intensive Intervention	The impacts of this intervention are calculated from three multi-project programmes: Living Streets' Fitter for Walking and Step Out in London programmes, and Travel Actively funded Sustrans' Active Travel projects (a programme of 10 projects).	Community of 5,000	4	£-	£282	£282	71,339	98,566
Workplaces Behaviour Change - High Intensity	An LSTF funded community and workplace project in East Sussex became the basis for estimating the impacts of this intervention category.	Workplace	2	£-	£16	£16	1,084	1,744
Workplaces Behaviour Change - Low Intensity	Data from Living Streets' Walk to Work and Sustrans' Workplace Challenge have been used as the basis for this intervention package.	Employment zone of 30,000 workers	1	£-	£152	£152	26,928	1,891,899
Access and promotion at Universities	The evaluation of the UCycle project in Nottingham is the main basis for assessing the impact of these two intervention categories.	University	3	£839	£269	£1,107	78,812	56,886
Access and promotion at Further Education Colleges		College	3	£419	£134	£554	15,388	2,602