



# British Summer Time

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Author: Oliver Bennett, Policy Analyst  
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This Standard Note provides an overview of the pros and cons of British Summer Time and the altering of clocks, as well as details of attempts to change clock times in the UK.

In general, much of the evidence would seem to suggest that changing UK time to give an extra hour of daylight in the evening, rather than the morning, may provide a range of benefits. However, it has been suggested that a trial would probably be required to provide more definitive information on the likely impact of such a change.

Details on the *Daylight Saving Bill 2010-11*, Rebecca Harris MP's Private Member's Bill, and related information can be found in Library [Research Paper 10/78 Daylight Saving Bill 2010-11](#).

## Contents

<b>1</b>	<b>Day length and time zones</b>	<b>2</b>
1.1	Longitude effects	2
1.2	Latitude effects	3
1.3	Shifting the clocks	3
1.4	Definition of terms	3
<b>2</b>	<b>Adoption of summer time in the UK and Europe</b>	<b>4</b>
<b>3</b>	<b>Calls for changes to the UK system</b>	<b>4</b>
3.1	Current legislative proposal: The <i>Daylight Saving Bill 2010-11</i>	5
<b>4</b>	<b>Past attempts to legislate</b>	<b>5</b>
4.1	Bills in the Lords	5
	Central European Time Bill [HL] 1994	5
	Western European Time Bill [HL] 1995	5

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Lighter Evenings (Experiment) Bill 2005	5
4.2 Bills in the Commons	6
British Time (Extra Daylight) Bill 1995	6
Lighter Evenings Bill 2004	6
Energy Saving (Daylight) Bill 2006	7
Energy Saving (Daylight) Bill 2008	7
<b>5 Potential consequences of further changes to clock times</b>	<b>7</b>
5.1 Energy-related impacts	7
5.2 Accidents	8
5.3 Crime	10
5.4 Leisure and sports	10
5.5 Tourism	11
5.6 Communications, trade, transport	12
5.7 Agriculture	12
5.8 General well being and health	13
5.9 Implications for older people	14
<b>6 Past experimental changes to clock times</b>	<b>14</b>
6.1 The British Standard Time (BST) experiment, 1968-71	14
Evidence of reduced road casualties	14
The debate following the British Standard Time experiment	16
6.2 Portuguese experiment	17
<b>1 Appendix I: European time zones</b>	<b>18</b>

## **1 Day length and time zones**

### **1.1 Longitude effects**

Britain is in the Greenwich Mean Time (GMT) time zone, along with other countries at the same longitude position including West Africa, Iceland and Ireland. When it is midday in the GMT time zone it is dawn in the USA to the west, dusk in India to the east and midnight in Fiji, on the other side of the earth.

For every 15 degrees of longitude, the international time zone system changes by one hour. Much of Europe is slightly to the east of us and one hour ahead of us. This time zone, GMT+1 hour, is called the Central European Time (CET) zone. Greece, slightly further to the east again, operates on GMT+2 hours. A map of European time zones is provided in Appendix I.

## 1.2 Latitude effects

Day length changes throughout the year because the earth spins on a tilted rather than a vertical axis. In winter the northern hemisphere and UK are tilted away from the sun so nights (the time in shadow) are long and days are short. In summer it is tilted towards the sun, giving more time in the light and making days long and nights short.

At the Poles the effect is at its most extreme, causing the summer nights of the midnight sun when the sun is so high in the sky that it never sets. Consequently changes in daylight hours throughout the year are more pronounced in northern Scotland than they are in southern England.

## 1.3 Shifting the clocks

Since days are longer in the summer it is possible to shift the clocks so that the sun sets later. This already happens in the UK when clocks are put forward onto British Summer Time (BST) at the end of March (see below), putting the UK on Greenwich Mean Time plus 1 hour.

The aim of the change is to have more waking hours in daylight, when society finds it most useful. Shifting to BST gives an extra hour of daylight in the evening to be used for work or leisure, rather than in the mornings when many people are asleep. Exactly the same effect could be achieved by getting up, going to work and finishing work an hour earlier, which is common practice in Norway and Sweden.

Some have called for further changes to clock times so that even more daylight would be experienced in the evenings rather than mornings throughout the year. However, many are opposed to such a change as they value lighter mornings over lighter evenings. Lighter mornings have traditionally been supported by postal workers, the construction industry and farmers. Those living in Scotland, where there is a shorter winter day, voice particular concerns about children and adults having to travel to school and work in the dark.

Of course, altering our clocks or activity patterns has no effect whatsoever on the fact that daytime is shorter in the winter. Regardless of the time zone within which the various European countries operate, all adopt summer time to make use of the longer summer days, and shift back in the winter when days shorten.

## 1.4 Definition of terms

A number of terms are used when referring to clock changes. Greenwich Mean Time (GMT) is when the sun passes over the Greenwich Meridian at noon. The Greenwich Meridian has a longitude of 0 degrees. Currently the UK is on GMT during winter months. In summer it adopts British Summer Time, which is GMT plus 1 hour.

Country/area	Summer	Winter
UK	British Summer Time (BST)— GMT plus 1 hour	GMT
Proposed UK time	Single/Double Summer Time (SDST)—GMT plus 2 hours	GMT plus 1 hour

<b>Western Europe (excluding Portugal and Ireland)</b>	Central European Summer Time (CEST)—GMT plus 2 hours	GMT plus 1 hour
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**2 Adoption of summer time in the UK and Europe**

The 1908 *Daylight Saving Bill* was the first attempt in the UK to move clocks forward one hour in summer to BST. The idea was to provide more daylight hours after work for the training of the Territorial Army and for recreation, to reduce shunting accidents on the railways and to reduce expenditure on lighting. There were objections that the proposals would disrupt traffic with Europe, interfere with business transactions with the USA, keep children up late and cause difficulties for the agricultural community, and the attempt failed.

During the First World War Germany adopted summer time, and many other European countries followed suit. To save energy and to help the war effort, the *Summer Time Act 1916* advanced the clocks in Great Britain for one hour from 21 May until 1 October. After a year a consultation indicated that the system was very popular. Since then summer time has always been adopted in the UK, although there have been periods, notably during the Second World War, when the start and end dates have been altered or more substantial clock shifts have been made.

By the mid 1970s, most of Europe had moved into the CET zone (GMT +1). Various Member States had also adopted summer time (GMT +2), with their own dates for starting and ending. A European Commission working party proposed that the dates of summer time should be harmonised. No change was recommended on time zones—because of their longitude it was accepted that the UK and Ireland would remain one hour behind the other countries. It also recommended that the UK and Ireland kept the end of October rather than the end of September as the date of return to wintertime due to their northern latitude and their being reluctant to shorten days in September.

A series of European Directives in the 1980s incrementally harmonised summer time arrangements across Europe. Following the Sixth Directive the Commission noted that the then system of two summer time end dates was giving rise to transport and communication problems, and suggested that the end of October would be the most appropriate date for the return to wintertime, especially since a Eurobarometer survey in all Member States had revealed that public opinion was 'very much in favour of having summer time extended until the end of October'. In 1996 and 1997 the Seventh Directive harmonised the on- and offset of summer time by making the other Member States change their clocks at the same time as the UK (at the end of October, rather than September). This link was made permanent in the UK under the *Summer Time Order 2002* (SI 2002/262).

Although the clocks are now changed at the same time throughout Europe, the UK remains one hour behind most European countries throughout the year.

**3 Calls for changes to the UK system**

For a number of years there have been calls for further changes to the system in order to shift more of the working day in line with daylight hours. The following sections provide information about the proposals.

### **3.1 Current legislative proposal: The *Daylight Saving Bill 2010-11***

Rebecca Harris MP is sponsoring a Private Members Bill that would “require the Secretary of State to conduct a cross-departmental analysis of the potential costs and benefits of advancing time by one hour for all, or part of, the year; to require the Secretary of State to take certain action in the light of that analysis; and for connected purposes”.<sup>1</sup> Second Reading is on 3 December 2010.

## **4 Past attempts to legislate**

### **4.1 Bills in the Lords**

#### ***Central European Time Bill [HL] 1994***

Viscount Mountgarret introduced his *Central European Time Bill* into the House of Lords during the 1994-5 session. The Bill sought to move England, Wales and Northern Ireland, but not Scotland, into Central European Time. During the Bill's Second Reading Viscount Mountgarret pointed out that the Government had been considering the issue of whether to move to CET for some time, and Lord Jenkins agreed that there had been 'long years of procrastination, hesitation and postponement'.<sup>2</sup> However, along with several other Peers who spoke in the debate, Lord Jenkins had reservations about creating a time frontier between England and Scotland. The Bill was sent to the Commons on 20 February 1995, but made no further progress.

#### ***Western European Time Bill [HL] 1995***

Introducing his Bill for its Second Reading in the Lords on 29 November 1995, Viscount Montgomery said it covered the whole of the UK, and that even the most severe opponents of change would agree that the UK must remain in one time zone.<sup>3</sup> He said that one of his objectives was to stop the Government from sitting on the fence. The Bill sought to establish British Summer Time in winter (GMT+1) and British double summer time (GMT+2) in the summer. Although this would have effectively moved us into CET, the Bill's title was intended to reflect the geographical area comprising the UK, France, Germany, Spain, Switzerland and the Benelux countries. The Bill was passed at Third Reading on 20 December 1995 and was sent to the Commons where it failed.<sup>4</sup>

#### ***Lighter Evenings (Experiment) Bill 2005***

The *Lighter Evenings (Experiment) Bill* under Lord Tanlaw was introduced and first read in the House of Lords on 30 November 2005. Again the Bill proposed to advance time by one hour throughout the year, though this time for an experimental period. Lord Tanlaw argued that the Bill would: improve road safety and quality of life; lead to energy savings; and be beneficial to business as it would harmonise the UK with Europe.<sup>5</sup> The Bill was read a second time before failing.

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<sup>1</sup> 30 Jun 2010 : Column 866

<sup>2</sup> HL Deb 11 January 1995 cc243-84

<sup>3</sup> HL Deb 29 November 1995 cc660-90

<sup>4</sup> HL Deb 20 December 1995 c1671

<sup>5</sup> HL Deb 24 March 2006 cc459-64

## 4.2 Bills in the Commons

### ***British Time (Extra Daylight) Bill 1995***

John Butterfill came top of the Private Members Bill ballot and introduced his *British Time (Extra Daylight) Bill* in 1995. This had the same aims as Viscount Montgomery's Bill, to move the UK into line with CET, and was read in parallel.

The then Government passively supported the Bill, with the notable exception of the Scottish Office. Mr Forsyth, the Secretary of State for Scotland, came out strongly against the Bill, and was reported to have persuaded the Cabinet not actively to lend its support to or provide any extra time for the measure, saying that it was 'misguided, unnecessary and would be deeply damaging in Scotland'<sup>6</sup>

### ***Lighter Evenings Bill 2004***

On 8 June 2004 Nigel Beard's Private Members Bill, the *Lighter Evenings Bill 2004*, received its First Reading. It would have shifted the clocks from GMT to GMT +1 in winter, and GMT +1 to GMT +2 in summer, thereby increasing "accessible daylight by approximately an hour in the evenings throughout the year and postpone sunrise by about an hour".<sup>7</sup> He offered justification of the Bill:

At the moment, United Kingdom clocks are aligned with Portugal but all year round are one hour behind 16 of the 25 member states of the European Union, including France, Germany, Belgium, Denmark, the Netherlands, Spain and Sweden. The proposal would align time in England and Wales with our major continental neighbours all year round. Those countries accounted for £137 billion of Britain's trade in 2003. That is 50 per cent. of Britain's exports of goods and services, affecting 3 million United Kingdom jobs. Under the proposal, the UK working day would coincide with the working day in that huge market, with obvious benefits for UK competitiveness and business efficiency.

Airline, ferry and Eurostar schedules would be simpler. Out of 25 million inbound visitors last year, 14 million came from countries that would be in the same time zone under these proposals.

Tourism is a key British industry, accounting for 4.5 per cent. of gross domestic product and supporting just over 2 million jobs. The British Resorts Association and Visit Britain support the Bill on account of the benefits it would bring to the tourist industry. It would extend the peak summer tourist season for foreigners and encourage more domestic day trips and weekend breaks. More of those short trips are taken in March and April and September and October than in summer. For organisations such as the National Trust and English Heritage, the extra hour of daylight in the evening is advantageous for those attractions that close at dusk. Taken as a whole, it is estimated that the extra hour of accessible daylight could add £3 billion a year to an industry worth £76 billion in 2004.<sup>8</sup>

The Bill only extended to England and Wales, leaving the Northern Ireland Assembly and the Scottish Parliament to decide whether to adopt the measures. The Bill ran out of Parliamentary time.

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<sup>6</sup> 'Ministers march to Euro-time' *Guardian* 13 December 1995 p.3; 'MPs get free vote on harmonising daylight hours' *Daily Telegraph* p.12 and 'Daylight hours set for veto' *Financial Times* p.8; both 14 December 1995; 'Times may not be a-changin'' *Financial Times* 22 December 1995 p.12

<sup>7</sup> HC Deb 8 June 2004 c146

<sup>8</sup> HC Deb 8 June 2004 cc146-7

### ***Energy Saving (Daylight) Bill 2006***

Tim Yeo's Bill<sup>9</sup> had its First Reading on 13 December 2006. It would have introduced GMT +1 in winter, and GMT +2 in summer. The Scottish Parliament and Welsh Assembly would decide whether to follow the changes for their respective countries. It would also have established a "review panel" to determine the effects of the change. The Bill was supported by members of all three parties. Mr Yeo said:

According to the Royal Society for the Prevention of Accidents moving the clocks forward in this way would save over one hundred lives every year by cutting the number of road accidents.

"Recent research from Cambridge University suggests it would also save energy by reducing demand for electricity and thereby address the threat of climate change by cutting carbon emissions.

"It is ten years since the House of Commons considered this subject. I hope that Parliament will now approve a simple change which will benefit everyone by creating a safer and greener country."

The Bill will allow separate votes in the Scottish Parliament, the Welsh Assembly and the Northern Ireland Assembly to decide if the change should apply in those parts of the United Kingdom.<sup>10</sup>

The Bill ran out of Parliamentary time.

### ***Energy Saving (Daylight) Bill 2008***

Tim Yeo received a place in the private members ballot the following year and tabled a similar bill to his 2006 Bill, which also ran out of time.

## **5 Potential consequences of further changes to clock times**

### **5.1 Energy-related impacts**

A study conducted by researchers at the University of Cambridge attempted to quantify the energy-related implications of the annual move from BST (GMT+1) to GMT in winter. It found that energy consumption probably increased with the change. It indicated that keeping GMT+1 in the winter could have a range of energy benefits for Scotland, Wales and England and provided the following estimates:

- Climate change—"at least" 500,000 million tonnes of carbon dioxide saved each year;
- Security of supply—a saving of 6GWh of electricity per winter day; and,
- Fuel poverty—energy cost savings of around 0.6% over the months concerned.

The study calculated that these energy savings "are approximately equivalent to that consumed by 210,000 households or 74% of the domestic electricity consumption of Glasgow in 2008".<sup>11</sup>

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<sup>9</sup> The Bill is at

<http://www.publications.parliament.uk/pa/cm200607/cmbills/018/07018.i-i.html>

<sup>10</sup> <http://www.timyeo.org.uk/record.jsp?type=release&ID=31>

<sup>11</sup> [The Impact on Energy Consumption of Daylight Saving Clock Changes](#), University of Cambridge, 26 March 2010

In evidence to the Energy and Climate Change Select Committee, the Government referred to contradictory evidence from the Buildings Research Establishment (BRE) that indicated that energy demand might actually increase if BST was kept throughout the year due to people leaving lights on during the day after having switched them on in the morning. The Government concluded that “the evidence therefore suggests a mixed picture and [it] is not strong enough to conclude either way what the impact on [energy] demand would be”.<sup>12</sup>

However, the authors of the Cambridge study had a number of concerns about the research referred to by the Government.<sup>13</sup> Dr Garnsey, one of the authors, said:

...the data that are being used in the BRE report are simulated data. They are illustrative data—that is, invented data. When you do a simulation of that kind your outputs are going to represent the input assumptions that you made. In fact their assumptions don't reflect empirical evidence on energy use over the course of the day. So the data are not real. The assumptions don't coincide with empirical evidence, and the findings are out of line with the findings in the literature. We looked at 23 studies and only three of them had findings similar to hers, whereas in the other 20 those findings were out of line with the great weight of evidence from other studies of clock time.

But the most useful research is from the US in 2007 because they extended their Daylight Saving period by four weeks—three weeks in the spring and one week in the fall. They then had real data to compare before and after the clocks were advanced by an hour. The finding was that there was a reduction in energy use after clocks were advanced by an hour of 0.5% of the average daily demand. Interestingly, this is very similar to what was found in 1970 in this country after the trial period, where it was also found that there had been a reduction in energy use of 0.5% of daily national demand. Those methodologies are both using national statistics rather than the building based statistics of the BRE report.<sup>14</sup>

The Government also cautioned the Energy and Climate Change Committee that moving the clocks to the same time as other European countries would mean that peak demand would increasingly overlap with other countries. It stated that this could increase peak energy prices if there was particularly high demand—a situation that could increase in importance with greater integration with European energy markets.<sup>15</sup> National Grid has also recognised that if the UK is on the same time as France, a loss of capacity or severe weather could lead to higher prices than if the two countries were on different times.<sup>16</sup> However, it is not clear whether the potential increase in prices on occasions when supply is constrained would outweigh the potential overall savings.

The Cambridge researchers also studied the implications of moving to GMT+1 in winter and GMT+2 in summer. They found that GMT+2 would also lead to energy savings, but that the savings would be smaller.<sup>17</sup>

## 5.2 Accidents

Research suggests that a move to BST throughout the year would reduce the number of people killed or injured on roads across Great Britain, including in Scotland. In 1998 the

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<sup>12</sup>

<sup>13</sup> Oral evidence

<sup>14</sup> Oral evidence

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<sup>17</sup> Oral

Transport Research Laboratory and University College London calculated that over 100 lives could be saved each year by a move to SDST.<sup>18</sup> Research based on the British Standard Time Experiment 1968-71 (see section 6), calculated that over one winter during the experiment 1120 less people were killed or seriously injured, and 2340 less were injured. This study also found that the “groups which had benefited most from the [retention of BST] were those aged 5-15, pedestrians and those living in Central England and Southern Scotland”.<sup>19</sup>

Referring to all the evidence, the National Audit Office recently stated:

There are clear seasonal patterns to collisions which injure a pedestrian, with peaks generally occurring in October and November (Figure 8). The end of British Summer Time appears to be a significant factor. On average for the years 2000 to 2007, there were 10 per cent more collisions killing or injuring a pedestrian in the four weeks following the clocks going back than in the four weeks before the clocks changed. Research has shown that the period immediately after the clocks go back is more dangerous for road travel, even compared to other dark months such as January... Child pedestrians are most at risk from 3pm until 7pm, especially during the weeks after the end of British Summer Time.<sup>20</sup>

The Public Accounts Committee published *Improving road safety for pedestrians and cyclists in Great Britain* on 20 October 2009. It said:

The Department has strong evidence that more than 80 fewer people would be killed each year on Great Britain’s roads if the Government amended the arrangements for changing the clocks in the winter and summer. But amending the practice of changing the clocks carries different considerations for different occupations such as farming, construction and postal workers.<sup>21</sup>

The Committee recommended that:

There is substantial evidence that fewer people would be killed and seriously injured on Great Britain’s roads if this country were to put the clocks forward by one hour throughout the year. The Department should take the lead in re-examining the practice of changing clocks at the end of British Summer Time with other central Government departments.<sup>22</sup>

As a move to SDST may reduce the number of people killed and injured on the roads, the Royal Society for the Prevention of Accidents (RoSPA) supported an SDST experiment:

The only way to reach a conclusion about the effects of a move to SDST in this country, to align the UK clock with that of its European neighbours, is to conduct an experiment similar to that held during 1968/71. A trial implementation of SDST over at least two years, with modern evaluation methods and all data correctly and comprehensively recorded, will result in data that is unequivocal in terms of casualty savings and could cover much wider issues also. Such an experiment would give people an opportunity to experience the change for themselves and may be useful in crystallising opinions.

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<sup>18</sup> TRL, *A New Assessment of the Likely Effects on Road Accidents of Adopting SDST*, 1998

<sup>19</sup> *The potential effects on road casualties of Double British Summer Time*, TRRL Research Report 228, DoT 1989

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<sup>21</sup> <http://www.parliament.the-stationery-office.co.uk/pa/cm200809/cmselect/cmpubacc/665/665.pdf>

<sup>22</sup> *ibid*

Since the 1968/71 experiment, the road environment and people's travel habits have changed enormously. Society is more reliant on the car, fewer children walk or cycle to school, opportunities for leisure activities are significantly greater, people take holidays more frequently and overseas travel is much more common. The advancements in communication technology have opened up the opportunities for worldwide trade even further. Even weather conditions are changing as the effects of global warming are felt. None of the research conducted to date is able to address these factors successfully, hence the need for a new trial.<sup>23</sup>

### 5.3 Crime

Some argue that lighter evenings may help to reduce crime, and may reduce the fear of crime. The Royal Society for the Prevention of Accidents said:

British Crime Surveys between 1988 and 1992 show that over half of criminal offences take place during the hours of darkness in the late afternoon or evening, and of the small proportion of offences occurring in conditions of semi-darkness, far more occur at dusk rather than dawn. The British Crime Survey 2001 found that 13% of respondents felt 'very unsafe' walking alone in their area after dark and a further 19% felt 'a bit unsafe'.

The Home Office commented in the mid nineties that 'although many crimes are committed when it is dark, definite conclusions are difficult to draw as regards the effect of darkness on overall levels of crime. Increasing daylight may for example have different effects for different crimes.' However with the rise in street crime and personal attacks, many people, particularly the elderly are fearful about going out after dark. Many parents do not allow their children to go out after sunset. The adoption of SDST would postpone this curfew by an hour.<sup>24</sup>

### 5.4 Leisure and sports

Outdoor activity can be limited by the onset of dusk. A switch to CET would give an average daily gain of 55 minutes of accessible daylight hours in the evenings.<sup>25</sup> Lighter evenings would give more time for gardening (the most common outdoor leisure activity) and for outdoor sports. The move is supported by a large number of sporting organisations including the FA and the England and Wales Cricket Board. The Central Council for Physical Recreation, representing a large number of sporting organisations, said:

Our experience as sporting organisations tells us that moving the clocks will allow more people the chance to be more active. By aligning our waking hours to the UK's sunlit hours, people will have a greater opportunity to play sport and to be more physically active all year round. The 'extra hour' would mean that sports facilities without floodlighting would be more heavily used and activities which cannot be undertaken in the dark elsewhere - on our coast, in lakes or on mountains and hillsides for example – become more viable in the evening.

We, as sports organisations, are convinced beyond doubt of the benefits this move would bring to both the grassroots of sports and the nation's health as a whole. If you're in any doubt at all, go out and speak with sports clubs and groups in your own constituency to canvass their views on the issue.

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<sup>23</sup> RoSPA, *Single/Double Summer Time Policy Paper*, October 2006:  
[http://www.rospa.com/roadsafety/info/summertime\\_paper2006v2.pdf](http://www.rospa.com/roadsafety/info/summertime_paper2006v2.pdf)

<sup>24</sup> [http://www.rospa.com/roadsafety/info/summertime\\_paper.pdf](http://www.rospa.com/roadsafety/info/summertime_paper.pdf)

<sup>25</sup> PSI study

Whilst we believe that sport in itself is a good thing, we also think it is worth highlighting some of the wider public policy benefits that an extra hour of sport and recreation can deliver. These include:

- Improved levels of physical and mental health. For example, people involved in sport or physical activity are up to 50% less likely to develop major chronic medical conditions
- Improved social cohesion within communities
- Improved skills. Sport increases educational attainment
- Reductions in crime and anti-social behaviour. Sport and physical activity schemes involving 20,000 13-17 year olds have returned a 36% reduction in burglary and an 18% reduction in youth crime
- Increased levels of 'social capital' which helps to build strong communities. Sport and exercise are the single greatest contributors to social participation.
- A significant contribution to the nation's economy.

Changing the clocks would undoubtedly be a bold move but we believe that the benefits far outweigh the risks... Giving people an extra hour of sunlight in their waking lives will allow them to lead more active lifestyles and that activity can make people healthier and happier.<sup>26</sup>

## 5.5 Tourism

The British Association of Leisure Parks, Piers and Attractions (BALPPA) said it would support the experimental move to SDST proposed in the *Lighter Evenings (Experiment) Bill* (see above).<sup>27</sup> It claimed that a change would have the following economic benefits:

- Tourism earnings growth of between £2.5bn and £3.5bn;
- 60,000 to 80,000 more tourism jobs;
- Government would benefit from additional taxation; and
- Contribution to UK balance of payments from taxes drawn from overseas visitors.<sup>28</sup>

In 2008 the Select Committee on Culture, Media and Sport considered the possible benefits of moving to lighter evenings:

169. The Tourism Alliance, the British Association of Leisure Parks, Piers and Attractions, and the Association of Leading Visitor Attractions all argued that Double British Summer Time would lead to environmental benefits [.]

171. However, we are aware that there is some opposition to the proposal. For instance, VisitScotland told the Committee that it would be unlikely to give the proposal its support. Putting the clocks forward in England and Wales would create a one hour time difference with Scotland, which VisitScotland claimed would cause problems for other industries. It argued that the finance sector in Scotland would not want to be in a

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<sup>26</sup> Lighter later campaign

<sup>27</sup> HL Deb 24 March 2006 c460.

<sup>28</sup> [www.balppa.org/admin/downloads/BALPPA%20Manifesto.pdf](http://www.balppa.org/admin/downloads/BALPPA%20Manifesto.pdf)

different time zone to London. Nevertheless, the Confederation of British Industry (CBI) is supportive of the proposal.

**172. The Committee recognises that the introduction of Double British Summer Time does not have universal support. However, there is a growing body of convincing evidence demonstrating the benefits of the proposal, not least in terms of energy savings, road safety and increased tourism revenue. On the other hand, there are objections that different time zones within the UK would not be feasible nor desirable. We call on the Government therefore to consult widely on this matter to see if a consensus could be reached.<sup>29</sup>**

## 5.6 Communications, trade, transport

Bringing the UK into line with CET could aid communication with most of the EU since more of the working day would coincide. Europe is the UK's main trading partner.<sup>30</sup> Harmonisation with CET may make life easier for travel industries (ferries, airlines and rail operators), which currently have to consider local time differences in their scheduling.

More widely, the time overlap with the Middle and Far East would be increased but the overlap of the working day with North America would decrease by an hour; the New York opening of the market would move to 3pm London time:

At present a 9-5 working day in the UK and Paris/Frankfurt only overlaps by 5 hours (assuming a one hour lunch break from 13:00-14:00 in both the UK and Paris/Frankfurt). Aligning the time would raise this to 7 hours or by 40 per cent. For items of services trade that rely on 'real time' two-way voice or video communication, that would be a major benefit. An example would be a London-based fund manager who is advising a Swiss client, or a London-based lawyer who is advising a French company on an acquisition, or a London-based actuary who is advising a Dutch pension fund...

The overlap with Asia in London's morning time would also increase by an hour: at present someone who works for the branch of an Australian bank in London who calls his/her head office in Sydney at 8am on a Monday morning would most likely not get an answer (it would be 7pm on Monday evening there). If SDST was adopted, it would be 6pm instead, giving more chance of the phone being answered.

The London afternoon overlap with New York would be reduced by an hour. Currently the overlap is from around 2pm London time to 6pm; this would move to 3pm to 6pm. However this loss would be small, set against the gains to the Europe and Asia overlaps.<sup>31</sup>

## 5.7 Agriculture

There was concern that adoption of SDST may impact on farmers that have to get up early in the morning to work. Under SDST a number of early morning tasks may have to be performed in darkness, although the impact of a clock change would very much depend on the type of farm, and some farms may benefit from a change.<sup>32</sup>

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<sup>30</sup> [Single/Double Summer Time: The time is right for London](#), Greater London Authority, October 2010

<sup>31</sup> [Single/Double Summer Time: The time is right for London](#), Greater London Authority, October 2010

<sup>32</sup> Policy Studies Institute, *Time for Change*, Mayer Hillman, 1993 [www.psi.org](http://www.psi.org)

The NFU now has a neutral line on the issue—and a narrow majority of NFU members recently supported a change.<sup>33</sup> A spokesperson from the NFU said that:

"The benefit of an extra hour of morning daylight for farmers is no longer really an issue—before modern-day machinery and lighting, daylight was crucial, but now farmers have the technology to deal with it."<sup>34</sup>

A 2010 report by the Policy Studies Institute said:

Though the wider opportunities for work later in the day in other mainly outdoor industries such as agriculture were recognised during the 1968 to 1971 experiment with BST, similar problems to those of the construction industries have been raised. Livestock farmers, particularly in the north of Scotland claimed in the past that they were unable to get their animals to early markets before daylight and that the dairy farmers had to spend longer rounding up grazing cows in the dark in time to get their milk on the first morning train to town.

However, many of these problems have had declining relevance in recent decades as the character of farming has changed. Nearly two thirds of agricultural land is now used for rough grazing where the relationship with daylight and the hour of day is of little significance. The more widespread application of mechanisation and affordability of new farming equipment, use of artificial lighting, better farming practices, and the development of new technologies enabling, for instance, developments in the use of refrigerated vehicles and plant, and in extending shelf life through new food processing techniques, have reduced the need for early collection and speedy delivery of produce. Nearly all cattle, including dairy cows, are now kept indoors for at least six months from October to April, and most cows are milked in artificially-lit automated parlours. These changes have clearly altered attitudes to the proposal to put clocks forward. For arable farmers an extra hour of daylight in the latter part of the day is considered desirable, particularly at harvest time and for ploughing and sowing in spring.

[W]hilst acknowledging that the proposed clock change would now cause fewer problems for the industry than in the past, NFU Scotland maintains its preference for the status quo. It has however indicated that it would welcome detailed studies on a sample of farms across Scotland to measure the likely effects of the proposed clock change.<sup>35</sup>

## 5.8 General well being and health

It is difficult to say whether a clock change would lead to health benefits, although some commentators claim that it may:

- increase opportunities outdoor activity that would lead to an improvement in health;
- increase vitamin D synthesis in the body; and,<sup>36</sup>
- reduce the incidence of Seasonal Affective Disorder (SAD), a form of depression. It has been estimated that around 7% of the population suffer from SAD.<sup>37</sup> SAD may be related to exposure to light.<sup>38</sup>

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<sup>33</sup> [www.nfuonline.com/News/Should-we-change-the-clocks/](http://www.nfuonline.com/News/Should-we-change-the-clocks/)

<sup>34</sup> 'Get England in sync with Europe, says MP, but Scots can lag behind', *Scotsman*, 13 December 2006

<sup>35</sup> [Making the most of daylight hours: The implications for Scotland](#), Policy Studies Institute, October 2010

<sup>36</sup> Policy Studies Institute, *Time for Change*, Mayer Hillman, 1993 [www.psi.org](http://www.psi.org)

<sup>37</sup> <http://www.nhs.uk/conditions/Seasonal-affective-disorder/Pages/Introduction.aspx>

## 5.9 Implications for older people

Saga stated that the current UK system was detrimental to older people and provided the following information:

The effect of the clocks changing causes many problems for older citizens, for example:

- Two-thirds go out less in the evenings
- 1 in 5 (20%) have to rely more on friends and family to take them places
- 13% need to spend out on taxis instead.

These findings are compounded by longer term reactions to the prolonged winter and dark nights as two thirds of people over 50 find their feelings change in winter with almost half (41%) feeling more depressed and a quarter (24%) feel grumpier. Interestingly it is the younger over 50s who feel the effects of winter more, two thirds of people aged 50-54 saying their feelings change, compared to under half of those aged 75 and over.<sup>39</sup>

Age UK supported a change to SDST. It said:

There seems to be clear benefits of this for people in later life. We know that many older people will not go out once it is dark, so having lighter evenings would mean that more of them could spend longer hours out of their homes and be more involved in the civic life of their communities – if they want to. With millions of older households struggling to pay their energy bills, the potential reduction of heating costs is a further consideration.<sup>40</sup>

## 6 Past experimental changes to clock times

### 6.1 The British Standard Time (BST) experiment, 1968-71

In the 1960s, the Government decided to test the support for continuous summer time. A three year experiment was introduced from 1968-1971 when summer time (GMT+1) applied throughout the year. This was given the name British Standard Time (BST). The Government gave an undertaking that a comprehensive review would be carried out before any decision was taken at the end of the BST experiment. The White Paper which followed in 1970 said that it was impossible to quantify advantages and disadvantages and that a final decision would need to rest largely on a qualitative decision.

#### ***Evidence of reduced road casualties***

The Department of Transport's Transport and Road Research Laboratory (TRRL) initial calculations made after the BST experiment indicated that more people were injured in the darker mornings, but fewer people overall were injured in the lighter afternoons. The initial 1970 estimates used data from earlier winters for comparison and were, over two winters, an

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<sup>38</sup> [http://www.mind.org.uk/help/diagnoses\\_and\\_conditions/seasonal\\_affective\\_disorder](http://www.mind.org.uk/help/diagnoses_and_conditions/seasonal_affective_disorder)

<sup>39</sup>

<sup>40</sup> <http://www.thisisgloucestershire.co.uk/news/summer-time/article-2822794-detail/article.html>

increase of 900 people killed or seriously injured (KSI) in the morning, but a decrease of 3600 KSI in the evenings, giving a net reduction of 2700 KSI.<sup>41</sup>

At the time it was pointed out that such calculations did not take into account the fact that drink/drive legislation was passed in 1967. The TRRL itself acknowledged that the basis of the initial 1970 calculations was not precisely known, and it carried out a more sophisticated reanalyses of the data in 1989, allowing for the new drink/drive legislation.<sup>42</sup>

The TRRL's re-analysis agreed broadly with the earlier estimates although the morning increase in KSI was slightly higher, giving for one winter (1969-70) a net reduction of 1120 KSI and of 2340 injured.

The new analysis provided some important extra information. A detailed analysis of fatalities was included for the first time and the net reduction in these for all ages was 230 over one winter. This represented a reduction of 8% compared with the total number of fatalities for that winter (2960). Since the reduction in the number of KSI was 3% and 2% for all casualties, the benefits of the BST experiment were greatest for the most serious accidents.

The TRRL was also able to split the data into road user groups, age groups and geographical regions. The number of injured cyclists rose, but the 5-15 year old age group, pedestrians and those living in central England and southern Scotland particularly benefited from the experiment. The only region in which the number of injuries rose was northern Scotland (a net increase of 29 KSI in northern Scotland although there was still a net decrease of 57 casualties; see table below). Unfortunately the area of the regions used was large, presumably because smaller areas would have provided insufficiently large numbers for analysis, so northern Scotland as defined included much of the country. However, by these large regions, the casualty reductions associated with the retention of BST in the winter of 1969-70 were as follows (net reductions; there is only one increase):

	Fatalities	KSI	All casualties
SE England	-54	-339	-1006
SW England	-	-77	-225
Midlands	-26	-342	-450
Wales	-	-51	-30
N England	-78	-222	-251
S Scotland	-	-136	-333
N Scotland	-	29	-57

Where the casualty data were insufficient to complete the calculations, a blank is shown.

The TRRL report concluded that:

In summary, the retention of BST during the winter of 1969-70 led to a reduction of about 230 in the number of fatalities, 1100 in the number killed or seriously injured, and 2350 in the number injured ... BST was especially effective in reducing the number of fatalities. The groups which benefited most from the change were those aged 5-15, pedestrians and those living in Central England and Southern Scotland.

<sup>41</sup> *The potential effects on road casualties of Double British Summer Time*, TRRL Research Report 228, DoT 1989 p.2

<sup>42</sup> *The potential effects on road casualties of Double British Summer Time*, TRRL Research Report 228, DoT 1989 p.2

The decision to terminate the experiment led to increased fatalities and casualties, especially among those groups which had benefited most from the retention of BST during the winter...<sup>43</sup>

The TRRL went on to simulate the effects of introducing Central European Time in the UK by considering changes in casualty totals under the altered lighting conditions that would occur. The TRRL concluded that had CET been applied in 1987:

- 160 fewer people would have been killed (3.1% of the national total)
- 810 fewer people would have been killed or seriously injured (1.2%)
- 2060 fewer people would have been injured (0.7%).<sup>44</sup>

### ***The debate following the British Standard Time experiment***

The experiment was debated in the Commons on 2 December 1970<sup>45</sup> and by a vote of 366 to 81 the British Standard Time experiment was discontinued. This overwhelming rejection was perhaps surprising since at the beginning of the debate, the then Home Secretary, Reginald Maudling quoted polls carried out 'over the whole country' which showed that in mid-winter 50% of the population had favoured staying on BST and 41% wanted to return to GMT; in the spring these figures were 51% and 39% respectively. However, the Commons vote probably reflected in part fears about the safety of children on their way to school. Little faith was placed in the accident figures available which showed a net decrease in road accidents. In addition, the poll figures for Scotland alone were 61% of people favouring a return to GMT and only 34% wanting to stay on BST.

Hamish Gray, Member for Ross and Cromarty, making his maiden speech, summed up many of the objections to the BST experiment:

I have had a vast amount of correspondence on the subject and, with the exception of one solitary letter, it has been entirely against B.S.T. My correspondents represent a wide cross-section of my constituents. Unions and employers' associations alike have protested, and their views are fairly represented by the General Secretary of the National Union of Agricultural and Allied Workers, who wrote to me: Our union is overwhelmingly opposed to the continuation of B.S.T. The difficulties which have been created are immense. They include the care of animals; farm vehicles using unlit country roads, frequently in bad weather conditions; getting stock to market, with the impossibility of loading before daylight and the subsequent disorganisation of transport; the intense cold before sunrise; the hopeless situation on building sites even where the site is lit—and many are not. Men face dangers because of shadows and icy conditions, and many building operations which are relatively easy in daylight become impossible in artificial light. Postmen, Post Office engineers, municipal workers and delivery men all suffer a marked decline in their working conditions. B.S.T. causes hazards for children on their way to school, and for the elderly. Housewives who go early to shop or to work suffer difficulties.<sup>46</sup>

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<sup>43</sup> *The potential effects on road casualties of Double British Summer Time*, TRRL Research Report 228, DoT 1989 p.2

<sup>44</sup>

<sup>45</sup> HC Deb 2 December 1970 vol 807 cc1331-1422

<sup>46</sup> HC Deb 2 December 1970 vol 807 cc1342-1343

A Policy Studies Institute document published in the mid 1990s indicated that the small increase in children being injured in the morning was important in the decision to abandon the experiment, even though overall injuries are thought to have declined:

The small increase in the road accidents on the darker winter mornings, especially among children on their way to school, which occurred during the experimental period of 1968 to 1971 of maintaining BST throughout the year seems to have been so imprinted on the public memory that the far more substantial decrease stemming from the lighter late afternoons in the winter and evenings in the summer has been overlooked. The number of deaths and serious injuries and of damage-only accidents on the roads would now be reduced by over 600 a year, with an estimated saving of over £200 million. All the main organisations concerned with safety have indicated their support for the adoption of [CET].<sup>47</sup>

## 6.2 Portuguese experiment

Portugal, which is in the same time zone as the UK and Ireland, converted to CET in 1966–76 and 1992–96. It was hoped that during the 1992-96 experiment there would be increased tourism from Spain, that traffic accidents would be reduced and that there would be energy savings. However, Portugal reverted to Western European Time after the experiment. While the Portuguese example has been used to oppose clock change in the UK, there are questions about its relevance to the debate. As Portugal naturally has longer days than the UK the impact of any clock changes is different.

Lord Sainsbury, the then Parliamentary Under-Secretary of State for the Department of Trade and Industry, stated that Portugal abandoned the move as the energy savings were too small in comparison to the inconvenience it caused:

The noble Lord, Lord Tanlaw, tried to explain away the situation in Portugal, but the point is that it did in fact move to Central European Time in 1992, but reverted to Greenwich Mean Time in 1996. It was concluded that the small energy savings could not justify the inconvenience the change created. It caused particular inconvenience through its impact on school children, which became a big issue in Portugal. The change had a very disturbing effect on children's sleeping habits as it would not get dark until 10 or 10.30 in the evening. It was difficult for children to go to bed early enough to have sufficient sleep. This had inevitable repercussions on standards of learning and school performance. Difficulties were also encountered with children leaving for school in complete darkness. Moreover, insurance companies in Portugal reported a rise in the number of accidents.<sup>48</sup>

However, Lord Tanlaw (sponsor of the Lighter Evenings Bill), stated that:

... Portugal did not do that to save daylight. Lisbon is at latitude 37 degrees north and its citizens enjoy at least 10.5 hours of brilliant daylight during the Christmas period, so they do not need daylight saving. I believe the reason Portugal stays in Western European Time has something to do with working hours but nothing to do with daylight saving.<sup>49</sup>

Dr Elizabeth Garnsey, in giving evidence to the Energy and Climate Change Committee, indicated that the Portuguese example was not relevant to the debate in the UK as the

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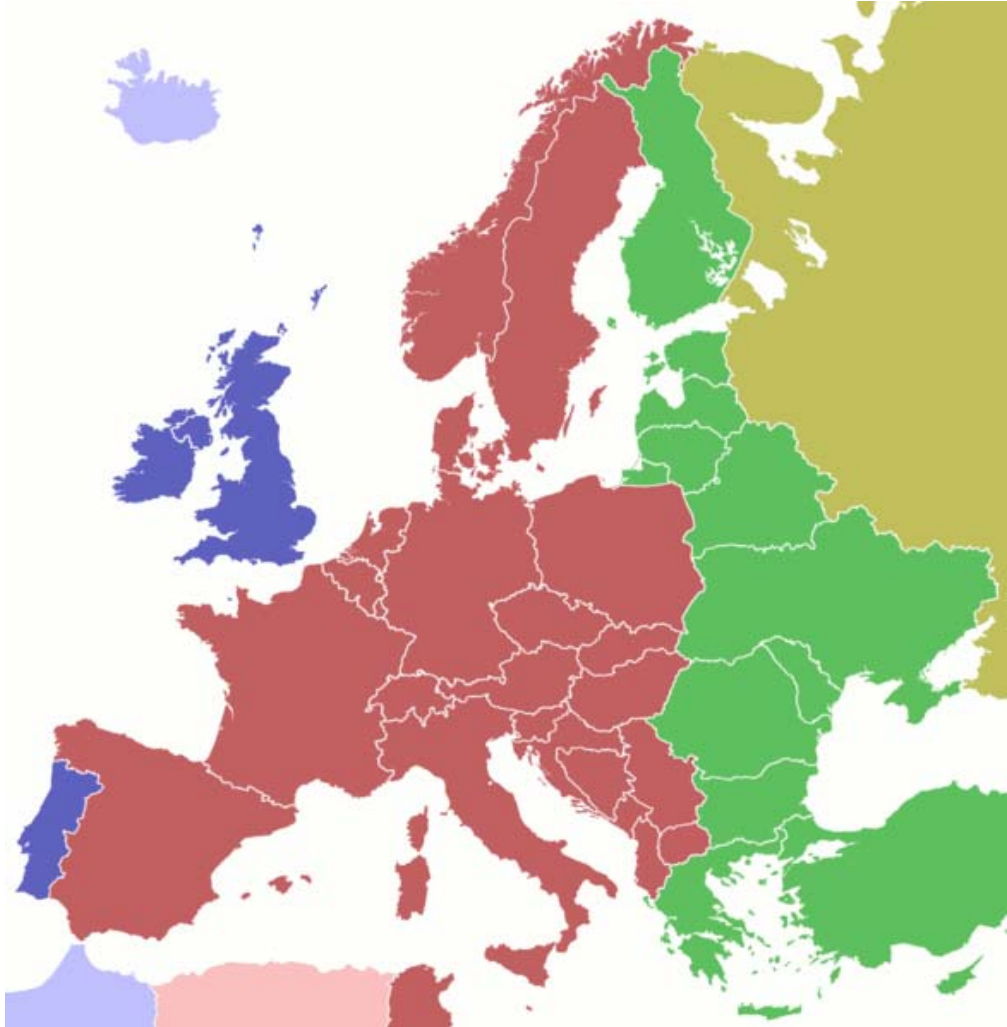
<sup>47</sup> *Time for Change: Setting clocks forward by one hour throughout the year: A new review of the evidence*, Mayer Hillman, PSI 1993.

<sup>48</sup> HL Deb 24 Mar 2006 c479

<sup>49</sup> HL Deb 24 Mar 2006 c462

country is “so much further south that they already have the advantage of that extra hour of daylight at peak time... even without putting the clocks forward”. Dr Garnsey thought that it was “a good illustration of how there is always more vocal objection to change than there is support for it, because when the change was made in Portugal everyone who didn’t like it protested, whereas those who did like it didn’t lobby”.<sup>50</sup>

**1 Appendix I: European time zones**



Colour	Time zone during the winter	Time zone during the summer
	<a href="#">GMT</a> / <a href="#">WET</a> (UTC)	
	<a href="#">GMT</a> / <a href="#">WET</a> (UTC)	<a href="#">BST</a> / <a href="#">IST</a> / <a href="#">WEST</a> (UTC+1)
	<a href="#">CET</a> (UTC+1)	
	<a href="#">CET</a> (UTC+1)	<a href="#">CEST</a> (UTC+2)
	<a href="#">EET</a> (UTC+2)	<a href="#">EEST</a> (UTC+3)
	<a href="#">MSK</a> (UTC+3)	<a href="#">MSD</a> (UTC+4)

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<sup>50</sup> Oral evidence

<sup>51</sup> [http://commons.wikimedia.org/wiki/Commons:GNU\\_Free\\_Documentation\\_License](http://commons.wikimedia.org/wiki/Commons:GNU_Free_Documentation_License)

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<sup>52</sup> [http://en.wikipedia.org/wiki/Image:Time\\_zones\\_of\\_Europe.png](http://en.wikipedia.org/wiki/Image:Time_zones_of_Europe.png)