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PROPOSAL FOR AN EIGHTH EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE ON SUMMER-TIME ARRANGEMENTS

(presented by the Commission)

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE
COUNCIL ON THE APPLICATION OF SUMMER TIME IN THE EUROPEAN UNION

**PROPOSAL FOR AN EIGHTH EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE
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EXPLANATORY MEMORANDUM

1. Most Member States introduced summer time in the seventies; others introduced it even earlier.

Community legislation (first Council Directive of 1980¹) entered into force in 1981. Its sole objective was the gradual harmonization of the dates on which summer time began and ended, stemming from the need to remove the obstacles to the free movement of goods and services which differing national summer-time arrangements would create.

2. This goal was partially achieved, in that the starting date was harmonized throughout the Community, but successive Directives allowed two finishing dates: the last Sunday in September for the continental Member States, and the fourth Sunday in October for Ireland and the United Kingdom. Full harmonization was finally achieved in the 7th Directive (94/21/EC of 30 May 1994²), which laid down that in 1996 and 1997 summer time would begin on the last Sunday in March and end on the last Sunday in October throughout the Union.

3. In accordance with its undertaking to Parliament and the Council when the 7th Directive was adopted, the Commission has launched several initiatives to look at the matter in greater depth. A vast study was carried out in 1995 on how applying summer time and changing the clocks twice a year affects energy consumption, public health, working conditions and lifestyles, agriculture, environmental protection, road safety and the tourism and leisure industries. Bodies representing industries affected by summer time and associations for and against summer time were also consulted. The Commission has covered the findings of the study and the observations of the various sectors in a report to Parliament and the Council. The report shows that the sectors consulted all agree on the need to aim at full harmonization and to continue to apply the summer-time arrangements introduced by the 7th Directive for 1996 and 1997.

¹ OJ L 205, 7.8.1980, p. 17.

² OJ L 164, 30.6.1994, p. 1.

4. Contacts with national experts have shown that the Member States intend to maintain the summer-time arrangements. Moreover, virtually all the other countries of Europe have introduced summer time and are applying it in step with the European Union.

The Commission therefore proposes to continue working towards harmonization and, accordingly, to fix the dates and times for the beginning and end of summer time in the Union after 1997. It also proposes to establish the dates for a four-year period so that the sectors concerned, especially transport and communications, can draw up their timetables over a sufficiently long period.

5. Since the measure is aimed at facilitating the provision of services in the transport and communications sectors, it is an area where jurisdiction is shared.

Directive 94/21/EC of 30 May 1994 already provided for harmonization in 1996 and 1997 as proposed in this draft. All Member States are concerned. At a meeting of representatives of the Member States on 16 October 1995 all the Member States said they were in favour of maintaining the harmonized Community arrangements.

Pursuant to Article 4 of the seventh Directive, the Council must adopt by 1 January 1997 the arrangements to apply from 1998 onwards.

The proposed Directive is based on Article 100a, as were the fourth, fifth, sixth and seventh Directives.

The codecision procedure referred to in Article 189b of the Treaty must therefore be used.

EIGHTH EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE ON SUMMER-TIME
ARRANGEMENTS

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 100a thereof,

Having regard to the proposal from the Commission,¹

Having regard to the opinion of the Economic and Social Committee,²

Acting in accordance with the procedure referred to in Article 189b of the Treaty,³

Whereas the seventh European Parliament and Council Directive 94/21/EC of 30 May 1994 on summer-time arrangements⁴ introduced a common date and time throughout the Community for the beginning of summer time in 1995, 1996 and 1997; whereas the seventh Directive retained two different dates for the end of summer time in 1995, one for Member States other than Ireland and the United Kingdom and one for Ireland and the United Kingdom, but nonetheless introduced a common date and time for the end of summer time in 1996 and 1997;

Whereas, given that the Member States apply summer-time arrangements, it is important for the functioning of the internal market that a common date and time for the beginning and end of the summer-time period be fixed throughout the Community;

Whereas, with due regard for subsidiarity, a Community measure is necessary to ensure complete harmonization of the timetable with a view to facilitating transport and communications;

Whereas the Member States consider the end of October to be the most appropriate date for the end of the summer-time period; whereas this date should therefore be maintained;

Whereas Article 4 of the seventh Directive lays down that the European Parliament and the Council must adopt by 1 January 1997 the arrangements to apply from 1998 onwards;

Whereas, for geographical reasons, common summer-time arrangements should not apply to the overseas territories of the Member States;

Whereas, for reasons of timetabling, particularly in the transport and communications sectors, a timetable of summer-time arrangements should be set for a sufficiently long period; whereas provisions ought therefore to be adopted for 1998, 1999, 2000 and 2001,

HAVE ADOPTED THIS DIRECTIVE:

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Of L 164, 30.6.1994, p. 1.

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Article 1

For the purposes of this Directive "summer-time period" shall mean the period of the year during which clocks are put forward by 60 minutes compared with the rest of the year.

Article 2

In each Member State the summer-time period for 1998, 1999, 2000 and 2001 shall begin at 1 a.m. Greenwich Mean Time on the last Sunday in March, i.e.:

- in 1998: on 29 March,
- in 1999: on 28 March,
- in 2000: on 26 March,
- in 2001: on 25 March.

Article 3

In each Member State the summer-time period for 1998, 1999, 2000 and 2001 shall end at 1 a.m. Greenwich Mean Time on the last Sunday in October, i.e.:

- in 1998: on 25 October,
- in 1999: on 31 October,
- in 2000: on 29 October,
- in 2001: on 28 October.

Article 4

The arrangements to apply from 2002 onwards shall be adopted before 1 January 2001 on a proposal from the Commission presented before 1 January 2000.

Article 5

This Directive does not apply to the overseas territories of the Member States.

Article 6

The Member States shall adopt all the laws, regulations and administrative provisions necessary to comply with this Directive by 31 December 1997 at the latest. They shall immediately inform the Commission thereof.

When Member States adopt these provisions, they shall contain a reference to this Directive and shall be accompanied by such reference at the time of their official publication. The detailed arrangements for such reference shall be adopted by Member States.

Article 7

This Directive is addressed to the Member States.

Done at Brussels,

For the European Parliament

For the Council

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE
COUNCIL ON THE APPLICATION OF SUMMER TIME IN THE EUROPEAN UNION**

Report from the Commission to the European Parliament and the Council on the application of summer time in the European Union

Introduction

When the seventh Directive 94/21/EC of 30 May 1994 on summer-time arrangements¹ was adopted, the Commission gave an undertaking to Parliament and the Council to have a detailed study made of summer time, in collaboration with those groups in society with an interest in the matter and with experts from the Member States, and to report back on its findings.

This report looks at the economic and other effects of summer time as such and of changing the clocks twice a year. It should also fuel the discussion on the proposal for an eighth directive, which should be adopted by 1 January 1997 in accordance with Article 4 of the seventh Directive.

The report draws in particular on a vast study commissioned² in the first half of 1995 on the effects of summer time, particularly in the areas of energy consumption, public health, working conditions and lifestyles, agriculture, environmental protection, road safety and the tourism and leisure industries. It includes observations from the sectors concerned and from associations for and against summer time which were consulted in writing and invited to attend a hearing on 25 September 1995 in Brussels.

I. Background

Summer time has been applied in the European Union and almost all other European countries for some twenty years now. It was first introduced in most Member States by national decision, starting with the United Kingdom and Ireland in 1916, followed by Italy in 1966 and France in 1976. Germany and Denmark were among the last countries to introduce summer time, in 1980.

By the end of the 1970s, however, summer time was beginning and ending at different times in different countries, causing many problems in the transport and communications sectors. After a considerable worsening of the situation between 1976 and 1980, the Council asked the Commission to come up with measures to harmonize summer-time arrangements. On 22 July 1980 the Council adopted the first Directive³, setting common starting and ending dates for 1981 and 1982. However, the second Council Directive of 10 June 1982⁴ laid down a common starting date for summer time (the last Sunday in March) but two different ending dates: the last Sunday in September for the continental Member States and the end of October for the United

¹ OJ L 164, 30.6.1994

² ADAS, Consultant, Guildford, United Kingdom, 1995

³ OJ L 205, 7.8.1980, p. 17

⁴ OJ L 173, 19.6.1982, p. 16

Kingdom and Ireland. These arrangements were maintained in successive Directives until 1995, when the seventh Directive (the first to be adopted jointly by Parliament and the Council under the codecision procedure) reintroduced fully harmonized summer-time arrangements for 1996 and 1997. The 7th Directive retained the last Sunday in March as the starting date, but took the last Sunday in October as the ending date to apply throughout the Union.

II. Application of summer time in the Union

1. General

We need to distinguish between summer-time arrangements and time zones. The European Union currently extends over three time zones: West European Time (Greenwich Mean Time: GMT), Central European Time (GMT + 1 hour) and East European Time (GMT + 2 hours). However, the time in the Member States does not necessarily correspond to the time zone they are located in.

N.B. Member States alone are responsible for setting their standard time.

The full harmonization of summer time introduced by the 7th Directive will take effect from 1996 onwards, so we are as yet unable to comment on the effects it might have.

2. Economic and other effects

The study launched in the first half of 1995 set out to examine the situation on the basis of national, European and international studies of duly attested scientific value carried out by private or public bodies. The consultant in charge of the study was also asked to check the value and reliability of the collected data and to update it where necessary.

To assess the economic and other advantages and disadvantages of summer time and of changing the clock twice a year, the study looked at three working hypotheses, taking account of the current arrangements in the Member States, any drawbacks thereof and possible means of dealing with them.

The three options were:

- Option 1:** the status quo, with all Member States continuing to maintain a summer-time clock from spring to autumn,
- Option 2:** the status quo for the continental countries but with the UK and Ireland joining the Central European Time zone (GMT + 1 hour),
- Option 3:** the summer-time clock arrangement abandoned in all EU countries, and the UK and Ireland joining the Central European Time zone.

This report sets out the main conclusions of the study in each area considered, together with the particular positions of the industries and bodies consulted, where appropriate.

2.1. Energy consumption

The main reason for introducing summer time at the end of the 1970s was to reduce energy consumption, especially electric lighting in the evening.

The study shows that summer time influences energy consumption by varying the demand for lighting and heating, predominantly in the early morning in April and May. The small increase in morning demand when the clocks first go forward appears to be significantly outweighed by the net reduction in evening consumption. Moreover, the heat storage capacity of buildings keeps the increase in consumption small. It is interesting to note that domestic consumption has a greater impact on demand, especially for lighting, than do the industrial, commercial and public sectors. This is because lights in offices, shops and warehouses are often left on very late, or even all night, regardless of time arrangements. Furthermore, there are considerable energy savings in the domestic sector at the weekend owing to changes in behaviour: getting up later, outdoor activities.

The anti-summertime associations argue that any energy saving here would have little financial impact. Lighting savings - estimated by ACHE⁵ to be between 27 and 36 kWh per year per household - would be matched if not exceeded by extra demand for heating, more evening journeys, air conditioning and the still considerable use of energy-intensive incandescent lamps. The Belgian anti-summertime associations raise similar arguments without providing figures. None of the industries consulted commented on this matter.

Unlike ACHE, the study concludes that the daily reduction in domestic demand in the evenings during summer time with Option 1 significantly outweighs the small increase in demand by the few early risers. On the other hand, lighting demand in the industrial, commercial and public sectors is hardly affected, as the benefits of lighter evenings may be lost in the darker mornings in the month just after the switch to, and the month just before the switch from, summer time.

We can therefore conclude that summer time provides some benefit in terms of overall energy consumption. This benefit would be lost if Option 3 were adopted. For the same reasons, the adoption of Option 2 by the UK and Ireland would lead to further energy saving in those countries.

⁵ French anti-summertime association

2.2. Public health

The main health argument raised most frequently against summer time is disruption of circadian rhythms, especially when the clocks are changed, interrupting some people's sleep patterns and even causing mood changes. It would appear also that more problems arise in spring than in autumn. However, most studies agree that these effects are very temporary, lasting no more than three weeks. Moreover, they may even be due to other factors not really linked to summer time. For instance, difficulties in getting to sleep could be explained by the rapid increase in daylight hours rather than changes in the circadian cycle. Lastly, experts seem to agree that summer time has no serious consequences for health. Indeed, they point out that the lighter evenings encourage physical and sports activities, which benefit people of all ages.

The Belgian and French anti-summertime associations stress the difficulties experienced in particular by young children, the elderly and the sick, claiming that putting the clocks forward can initially cause loss of sleep, and even a reduction in intellectual capacity, while during summer time itself there may be difficulties in sleeping owing to warmer evenings. ACHE even refers to higher consumption of medicinal products when the clocks change, though no medical studies have yet attributed this phenomenon solely to the time change and other factors may be involved.

As all these adverse effects are limited, very temporary and reversible after two or three weeks, we can conclude that summer time as such and the accompanying time changes have no lasting or serious consequences for health.

2.3. Working conditions

The study looked in detail at the impact of summer time on the construction industry, trade, communications and transport. The working day in these sectors is governed by fixed or variable timetables, and activities may be indoors or outdoors. This provides a range of situations broad enough to guarantee a representative survey. Further data were gathered by reference to existing literature and from questionnaires sent to the national Ministries and to a number of companies and professional federations.

The time at which the sun rises and sets has a particular bearing on the **construction** industry, where most activities have to be carried out in daylight and above a certain ambient temperature. However, most of the industry seems willing to maintain summer time, as working hours can be geared towards the lighter evenings and thus offset the darker mornings (especially in the first weeks after the clocks go forward) and the midday heat of the summer. A distinction

should be drawn, however, between the opinion expressed on the continent in favour of the status quo (Option 1) and the situation in the United Kingdom, where a good proportion of the industry would not oppose retaining summer time and moving onto Central European Time (Option 2). The anti-summertime associations point out the disadvantages of double summer time in some continental countries, where rest periods would be set back and work would begin again when the sun is at its highest (and the day at its hottest).

Generally speaking, the **trade** and **communications** sectors encounter no difficulties and have expressed no opinion for or against summer time as such. However, all the sectors, and especially **transport**, stress the importance of harmonized dates for the beginning and end of summer time, not least to facilitate the timetabling of railway services (European timetable Conference) and aircraft slotting (IATA⁶ and ACE⁷). On the other hand, the representatives of the industries concerned generally favoured standardizing the time as this would facilitate communications and travel within the Union. For instance, the organizations representing the airlines (IATA and ACE), as well as railway companies such as European Passengers Service, which serves London, Paris and Brussels on the Eurostar line, stressed the problems encountered by travellers from the United Kingdom, who to get to an early morning meeting on the continent had to leave the day before, thus incurring extra expenses, while the same journey in the other direction is easily completed the same day.

With the exception of agriculture (see section 2.5), the other sectors did not report any major difficulties caused in this area by summer time.

The representatives of the construction industry in the continental countries all seem to favour maintaining the status quo (Option 1); the summer time arrangements make it possible to work longer or to pursue outdoor activities after work. The only slight problem comes from the darker mornings in the weeks after the clocks go forward. Representatives of the UK construction industry have mixed feelings about Option 2, even though new working practices allow more flexibility. Lastly, organizations in the trade, banking and communications sectors would prefer an option with no time difference, even if they have no particular feelings on summer time as such. These organizations would therefore prefer Options 2 or 3 on account of the benefits that would stem from harmonization of clock times throughout the Union.

2.4. Lifestyles and leisure

Major socio-cultural differences are apparent here both within and between Member States. Lifestyles and leisure activities are determined partly by climate and by seasonal variations in the number of daylight hours. People in the north of Europe have less opportunity than those in the south for outdoor recreation on weekdays in winter, but more in summer.

⁶ IATA: International Air Transport Association

⁷ ACE: Association of Airline Companies of the EEC

However, with summer daytime temperatures higher in the south, the people there tend to pursue leisure activities after sundown, when it is cooler. So shifting an hour of daylight from morning to evening in the summer has a direct impact on recreational opportunities.

Public opinion surveys show that the lighter evenings provided by summer time are much appreciated, especially in the south, where night falls earlier. The extra daylight encourages people who like to be home before nightfall (especially children, women and the elderly) to get out more and pursue outdoor activities. The study surveys showed increased participation in outdoor sports and other activities throughout the Union.

The anti-summertime associations refer to certain adverse effects on leisure activities. ACHE says the arrangements discourage recreation in the morning, the early afternoon, when it is hot, in the evening where activities are subject to fixed opening times, and, lastly, at night for such events as firework displays and *son et lumière*. They also claim that individuals in whom summer time causes loss of sleep are penalized by the need to catch up on their sleep at the weekend when they could otherwise be out and about. Of course, this is opinion rather than the result of careful study. Other associations, including the Belgians (Flemish and French-speaking sections) stress that farmers use the extra daylight in the summer to continue harvesting late into the evening. So unlike the rest of the population they find their leisure opportunities curtailed rather than expanded, to the extent that they decide to use the extra daylight hour for work.

The study concludes that as far as continental Europe is concerned, Option 1 (retaining the status quo) would bring more benefits than Option 3 (abandoning the system), which would result in the loss of about a quarter of the number of evening hours of daylight from March to October, thereby decreasing the opportunity for daytime leisure activities. For the UK and Ireland Option 2 would provide an extra hour of evening daylight throughout the year. Option 3 would give those two countries more leisure opportunities than at present, but only for the five months from November to March.

2.5. Agriculture

A lot of agricultural activity is dictated, *inter alia*, by the seasons and by the time of day. For instance, the sun determines the treatment and harvesting of crops owing to its effects on the temperature and humidity of air and soil. The time also impacts on stockbreeding and dairy farming, though other activities are not time-critical.

European agriculture has changed greatly over the last thirty years. Mechanization has reduced the workforce and intensive farming has increased agricultural and dairy yields. Better work distribution and the resulting improvement in productivity have changed the way work is

organized and the time taken to accomplish it. Nonetheless, the crop workload peaks from July to October, i.e. during the summer-time period (harvesting in summer and sowing in autumn), so any time change which lengthens or shortens the working day will affect the working habits of agricultural labourers.

At the hearing the representative of COPA (Committee of Agricultural Organizations in the EEC) reported a number of concerns regarding summer time, including the possible spoiling of vegetables if work is not carried out at the right time of day and the consequences for cattle, which need to be fed and milked at regular times.

The study concludes that the application of summer time has no negative effect on most agricultural activity. Most operations which depend on solar time are carried out in summer, i.e. when days are longest (longer mornings in the south, longer evenings in the north). However, it is very hard to determine the impact of summer time as such on the working conditions and leisure activities of the agricultural population. Agricultural work, and especially harvesting, is dictated by the ripening of crops and by the weather, which means that at harvest time farmers have to work at any time of day, including nights and weekends, whatever time arrangements are in force.

In conclusion, the study indicates that relatively few agricultural activities on the continent would be affected if summer time were abandoned (Option 3), though the leisure opportunities of agricultural workers, and of workers in other sectors such as construction, would be curtailed by the loss of an hour of daylight in the evenings. Thus the continental countries would prefer Option 1. In the UK and Ireland Option 3 could cause some problems in the early morning, while Option 2 would require some change to meet the requirements of time-critical operations. However, the negative impact of adopting either of these options is small and would be offset by other advantages.

2.6. Environmental protection

While summer time has no direct impact on the environment, we still need to examine its indirect impact.

The study examined the potential impact on ozone formation and road vehicle emissions.

Ozone formation depends on a number of factors, including weather conditions and population density in a given area, i.e. urban or rural. Moreover, ozone concentration at a given place and time will depend, *inter alia*, on the horizontal and vertical travel of the ozone, spatial variations in the intensity of solar radiation and the force of decomposition processes. Concentrations thus vary widely in space and time, and the values for a city like Paris cannot be extrapolated to other regions of France or Europe. In view of the complex chemistry involved, the study concludes that too many questions are still unanswered and that, ultimately, significant

reductions in ozone formation are far more likely to be achieved by reducing emissions of primary pollutants at source than through clock arrangements.

Two things need to be considered with regard to the environmental impact of cars during summer time: catalytic converters and the increase in road traffic as more people travel to their leisure activities. With regard to catalytic converters, ambient air temperature plays an important role when the engine is first started as it affects the length of time needed for the engine and the converter to reach peak performance. So during summer time, when the time change means mornings are colder, it takes the converter longer to warm up, with the consequences described above. If we then add up all early morning journeys, a time difference of one hour in early April can result in increased pollutant emissions, though this problem should be significantly reduced once the new generation of catalytic converters is introduced.

It might also be argued that the extra summer-time daylight can affect the organization of leisure activities, causing, for example, an increase in car journeys at the end of the afternoon, and thus an increase in emissions. A study by the Université Libre de Bruxelles on the effects of the time change on energy consumption and photo-oxidizing vehicle pollution in Belgium appears to show certain increases which vary considerably from year to year. In fact, these variations suggest that weather conditions have a bigger impact than summer time on the increase in traffic at certain times of the day (caused by journeys whose purposes and impact are looked at in sections 2.2, 2.4 and 2.8).

2.7. Road safety

A statistical model was created for the study to examine the effects of summer time on the number of road accidents in the light of the three options.

The experimental introduction of "British Standard Time" (GMT + 1) in the United Kingdom between 1968 and 1971 showed the potential for reducing road accidents by shifting daylight (the adoption of summer time all year round gave an extra hour of evening light at the cost of an hour of morning light). The number of morning accidents rose, but the overall number of accidents fell. The fact is that more accidents occur in the dark than in the daytime, so by shifting daylight to the evening, when accidents are more common, the overall number goes down. On the other hand, some people object that secondary factors such as the presence of ice on the roads during the morning rush hour and the extra traffic generated by the light evenings could offset the benefits of the time change. The study shows such effects to have no significant impact, the British experiment having resulted in an overall reduction in accident numbers.

For the purposes of the study, a statistical model was developed to simulate the effects of adjusting the clock in other EU countries on the basis of the results of the British experiment. The model used figures showing the number of accidents in each of the countries which provided information, plus the findings of studies of the day/night ratio of accidents. It showed that Option 3 (abandonment of summer time) would have no significant effect on the number of

accidents in Denmark, Norway and Spain, the only countries which provided full information on numbers and times of accidents. For the United Kingdom it showed that Option 2 would lead to 0.75% fewer people being injured and 1.73% fewer being seriously injured or killed, while Option 3 would achieve around half that level of casualty reduction.

2.8. Tourism and leisure industries

In view of the lack of specific study in this area a survey was conducted in all the Member States, though with a poor rate of response.

Lighter evenings of course encourage more outdoor sport. The French Ministry of Physical Education and Sport reports increased sports activity after the clocks go forward in spring. This opinion is shared by a number of British sports bodies, which feel an extra hour of daylight could only benefit outdoor sport. Summer time benefits other outdoor activities, too.

Cultural tourism (visits to galleries, museums, etc.) does not depend on daylight, and these institutions generally apply a fixed timetable all year round. However, certain historic monuments, theme parks and gardens open to the public generally close at sundown, so an extra hour of daylight ought to be of benefit to them. On the other hand, theatres, cinemas and libraries lose business over the summer.

Lastly, the lighter evenings appear to encourage the elderly to get out and about, as they are able to get back home before dark. The same applies for children and adolescents.

The study concludes that extra daylight in the evenings benefits tourism and outdoor activities. The continental tourism and leisure industries benefit from the status quo (Option 1) and would lose out if summer time were abandoned (Option 3). The Irish and UK industries overwhelmingly favour Option 2 for the same reasons.

2.9. Economic analysis

As well as analysing the advantages and disadvantages of summer time, the study tried to assess its economic impact on the industries under consideration and to highlight the advantages of one or other option for all the countries. Of course, this is necessarily based on a number of hypotheses, and the study's figures are purely indicative.

A number of areas derive overall benefit from the summer-time arrangements, principally leisure and tourism and the related industries, public health and road safety. For agriculture,

energy and the environment, however, the advantages and disadvantages either balance out or are not very significant.

In the area of **leisure** activity, the study calculated the number of extra daylight hours offered by each option and tried to put a figure on the financial benefit this would bring. Thus for Ireland and the United Kingdom Option 2 would provide the equivalent of three extra weeks of daytime leisure compared with Option 1. Working on the basis of ECU 1 per hour per household, this represents an annual economic gain of ECU 6 716 million in the UK and ECU 332 million for Ireland. Option 3 would bring a lesser benefit of ECU 1 655 million for the UK and ECU 107 million for Ireland. Option 3 would be a worse option for the continental countries than Option 2. For instance, Paris would lose 214 daylight hours a year (after 5 p.m.), representing an economic loss of ECU 4 817 million. The same calculation indicates that Option 3 would mean a loss of ECU 21 033 million for the 13 continental countries.

Option 2 would bring the **tourism and leisure industries** in Ireland and the UK substantial benefits, estimated in the Hillman report at ECU 1 200 million per year, i.e. around 4% of their current revenue. On the other hand, Option 3 would bring annual losses of ECU 6 240 million for these industries in the thirteen continental countries.

The **standardization of time** would benefit travellers. The countries of Central and Western Europe already have standardized time and would derive no additional benefit from Options 2 or 3. The main beneficiaries would be the United Kingdom and Ireland, as either option would favour journeys to and trade with the continent. The study estimated the resulting financial gain at anything from zero for people making no journeys, to several hundred ecus for a person travelling regularly in Europe, to tens of millions of ecus for large companies. It also calculated that standardization could bring financial gain of ECU 626 million for the UK and Ireland and ECU 308 million for the other Member States, i.e. a total gain of ECU 934 million for the 15 EU States.

For **public health** the study calculated that the increased opportunity to pursue physical activities and sport under Option 2 would produce a 5% reduction in the risk of cardio-vascular disease and allow savings of ECU 335 million in the UK, while Option 3 would allow savings of only 1%. The same calculation showed that for the 13 continental countries Option 3 would increase health costs by an estimated ECU 1 410 million.

For **road safety** the study estimated that the cost of accidents in the UK would be reduced by ECU 180 million under Option 2 and by ECU 100 million under Option 3. Lack of comparable statistics meant no precise figures could be given for the financial impact in the other Member States, though Option 3 would presumably entail increased accident-related costs.

Conclusion

All the study's findings and the observations made to the Commission indicate an overwhelming preference for maintaining a summer-time regime in the European Union and neighbouring countries.

The study shows that putting the clocks forward and back causes no great problems, though some people may experience certain discomforts.

For continental Europe Option 1, the status quo, is a satisfactory arrangement, preserving the substantial economic benefits summer time brings to leisure activities, tourism, public health and road safety. By comparison, Option 3 would bring economic drawbacks in all these areas.

The study shows that Ireland and the United Kingdom would benefit greatly by harmonizing their clocks with the 13 other Member States. They would enjoy the same benefits those countries already enjoy, as described above. At the same time this standardization would also benefit the 13 continental Member States.

All the sectors consulted, notably at the hearing organized by the Commission, agreed on the need for full harmonization of dates and times for the beginning and end of summer time throughout the Union. This is particularly important in the transport, tourism and communications sectors. It is important therefore that we maintain harmonization and continue to apply the summer-time timetable introduced by the 7th Directive, viz. a single starting date in March and a single ending date in October throughout the EU.

Lastly, it should be remembered that the Commission's task as regards time is aimed essentially at harmonizing the summer-time timetable, provided the Member States agree to keep on applying the system. Any decision to alter other time arrangements in the Member States falls to them alone.

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