

The energy requirement of holidays and household reduction options

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Abstract

Like all consumer products and services, holidays require energy. The aim of this study is to map the energy requirement for holidays of Dutch households and to suggest options to reduce this energy requirement. To examine the energy requirement for holidays, nine holiday packages are composed, each representing a large group of Dutch vacationers. The packages describe the destination, means of transport, duration, accommodation and number of vacationers.

The average energy requirement for the accommodation and transport for long summer holidays is 12.5 GJ per Dutch household, excluding the energy requirement for food and activities. About 10% of the Dutch households, the ones that travel by plane to their holiday destination, consume 70% of the total amount of energy all households require for holiday purposes. This is mainly due to the distance travelled, rather than to the chosen means of transport. If the travelled distances will be reduced by 50% and all nights are spent in a tent, the average household energy requirement would be 6.1 GJ, a reduction of more than 50%.

Introduction

Households undertake all kinds of activities, such as feeding, clothing and relaxing, for which they use household resources³ in varying amounts and combinations. The energy requirement these activities and their related expenditures entail, causes the emission of carbon dioxide (CO₂). Households require direct as well as indirect energy. Direct energy is required through the use of (fossil) energy carriers, indirect energy is required to produce, transport and trade goods and services. According to Vringer and Blok (1995) the distribution between the direct and the indirect energy requirement of a Dutch household is about fifty-fifty. One way of reducing household CO₂ emissions, is by changing the expenditure pattern and thus reducing the energy requirement.

One of the areas on which a household allocates time and money -which are assumed to be the main household resources in this area- is leisure. An average Dutch household spends almost 30% of its time and 20% of the household budget for leisure purposes. Leisure activities take up almost 20% of total household energy consumption. Holidays require almost 5% of the total household energy requirement, whereas only 3% of the time a household has available is spent during holidays (See appendix A (in Dutch)). The aim of this study is to map the energy requirement for holidays of Dutch households and to suggest options to reduce this energy requirement. Leisure time can be divided into three main areas; indoor activities, outdoor activities and holidays. Indoor leisure activities take place in and around the house. Outdoor leisure activities are activities for which one needs to transport oneself in some way, away from home.

Table 1 presents an overview of the share of leisure in proportion to total household time- and financial expenditure and energy requirement in 1990.

Figure 1 illustrates energy- and the expenditure intensities of leisure activities, indoors as well as outdoors and during holidays. The energy intensity is reflected in energy requirement per guilder and per hour, the expenditure intensity in guilder spent per hour. This figure clearly illustrates that of all leisure activities, holidays are by far the activity with the highest energy consumption per hour.

3 Groot-Marcus et al (1996) mention several household resources, such as time, money, knowledge, labour capacity, goods and space.

Table 1 Financial and time expenditure and energy requirement of an average Dutch household in 1990
(source: see appendix A (in Dutch))

	Time expenditure		Expenditure ²		Energy requirement ³	
	(Hours)	(%)	(Dfl.)	(%)	(GJ)	(%)
Total per household	19.272 ¹		40.107		240	
Of which leisure activities ⁴	5.500		7.700		42	
of which: Indoors	3.300	17	2.800	7	13	5
Outdoors	1.600	8	2.900	7	17	7
Holidays	600	3	2.000	5	12	5

1 Assuming 2.2 persons per household over twelve years old (Vringer and Blok, 2000)

2 Based on (CBS, 1992)

3 Based on (Vringer and Blok, 1995)

4 Based on (CBS, 1992), excluding the hours of sleeping, which are not assumed to be part of leisure activities and based on the classification of activities in (Vringer, 1996). Indoor leisure activities are all activities in and around the own house. Outdoor activities are all activities on other locations.

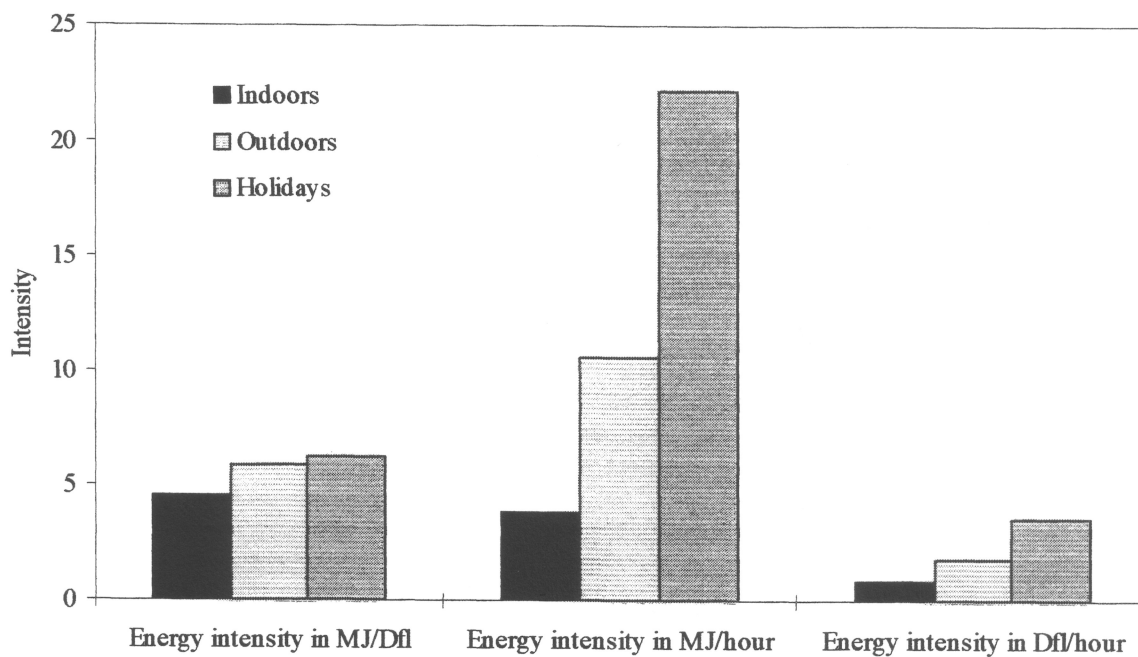


Figure 1 The energy intensity -in MJ per guilder and per hour - and expenditure intensity in guilder per hour of leisure activities indoors, outdoors and holidays.

It can be concluded that holidays take up a relatively large portion of the total household energy requirement. Added to their high energy intensity per hour, this makes holidays an interesting leisure time activity to examine on energy reduction options. For mapping the energy requirement of a holiday, the energy requirement of the various aspects that together form a holiday package (including destination, means of transport, accommodation, expenditure and duration) need to be determined.

Households compose individual holiday packages, for which they make choices regarding each of these aspects. As there is no average household, there certainly is no average holiday. For this reason some facts and figures are selected and presented. These are then used to formulate some 'standard' holiday packages, each of which can largely be seen as characteristic for a large group of Dutch vacationers. Then the energy requirement and the expenditure of these holiday packages are calculated. After this, energy reduction options are calculated and discussed.

Background

When having decided to go on a holiday⁴, households make choices regarding the various aspects of this holiday. The main choices that are made concern the season, duration, destination, means of transport and accommodation. These aspects are largely interrelated - when deciding to go to another continent for only two weeks one has to use an aeroplane- and together determine the expenditure. Within these aspects households make their individual choices, which makes it impossible to present an average holiday package. Therefore some general facts and figures are presented first, quantifying -when possible- the number of Dutch that represent these choices, including participation, duration, expenditure, means of transport, destination and accommodation. This provides insight into the preferences of Dutch households during their holidays, which forms the framework of the composition of the standard holiday packages. These packages together indicate Dutch holiday behaviour.

Participation and duration

The total holiday participation of Dutch inhabitants in 1995 was 77% (CVO, 1996). There have been only very small changes in holiday participation since 1992. Short holiday participation (one to three successive nights) has fluctuated around 35% since 1992, with a peak to 37% in 1996. Long holiday participation (at least four successive nights) has been fluctuating around 70% since 1992 (CBS, 1997a). As to total holiday participation, this has stabilised around 77% over the past five years. According to (NRIT, 1997) total holiday participation seems to have reached a limit.

There has been little change in the average holiday duration of all types of holidays between 1992 and 1996. The average duration of long summer holidays in the Netherlands, for example, has been fluctuating around 11 days, the average duration of long summer holidays abroad around 16 days (CBS, 1997a). Table 2 presents figures on total number of vacation days, numbers of holidays and average duration for domestic and foreign short as well as long holidays of Dutch people in 1995. It shows that in 1995 almost 90% of vacation days (and almost 65% of all holidays) were spend during long holidays.

4 Here a holiday is defined as a stay outside the own residence, for relaxation and pleasure, for which one spends at least one night elsewhere, excluding the private address of relatives/acquaintances unless they are not at home themselves. A day trip lasts at least two hours and excludes trips made from a holiday address (CBS, 1997a). Day trips are outside the scope of this report.

Table 2 Number of vacation days, holidays and average duration for Dutch people in 1995 (NRIT, 1997)

	Short breaks (1-3 nights)	Long holidays (>3 nights)	Total
Domestic holidays			
Number of vacation days (in millions)	25.0	80.2	105.2
Number of holidays (in millions)	8.1	7.7	15.8
Average duration per person (in days)	3.1	10.4	6.7
Holidays abroad			
Number of vacation days (in millions)	6.9	148.7	155.6
Number of holidays (in millions)	2.1	10.2	12.3
Average duration per person (in days)	3.2	14.6	12.7

In 1995, 70% of all holidays was spent during the summer period⁵ (CVO, 1996). Of these, almost 40% was a long summer holiday abroad and more than 30% a long summer holiday in the Netherlands. Thereby long summer holidays form the majority of holidays.

Holiday destinations

Holiday destinations vary according to season and duration. As seen before long summer holidays (abroad as well as in the Netherlands) take up the larger part of holidays of Dutch households. Regarding long summer holidays in the Netherlands, there is no main destination to be appointed, as these are scattered all over the country. For long summer holidays abroad the top ten of holiday destinations is presented in Figure 2.

The top ten of foreign holiday destinations has contained the same countries between 1992 and 1996, but there have been some shifts in the exact order within this top ten. The Netherlands itself and France remain the favourite holiday destinations. Interest for France, however, has very slowly decreased, in favour of Spain. In 1992 around 21% of long holidays abroad was spend in France, in 1996 this figure had decreased to 18%. In 1992 around 8% of vacationers that travelled abroad went to Spain, in 1996 this figure had increased to 12% (CBS, 1997a). The interest for Austria and Switzerland is also declining, especially because of a decreasing interest for winter sports. This type of holiday, which is often a second or third holiday, is increasingly being replaced by a winter holidays to a sunny destination in the south of Europe or further away (CBS, 1997).

⁵ The summer season lasts from April 27th until September 27th (CBS, 1997a)

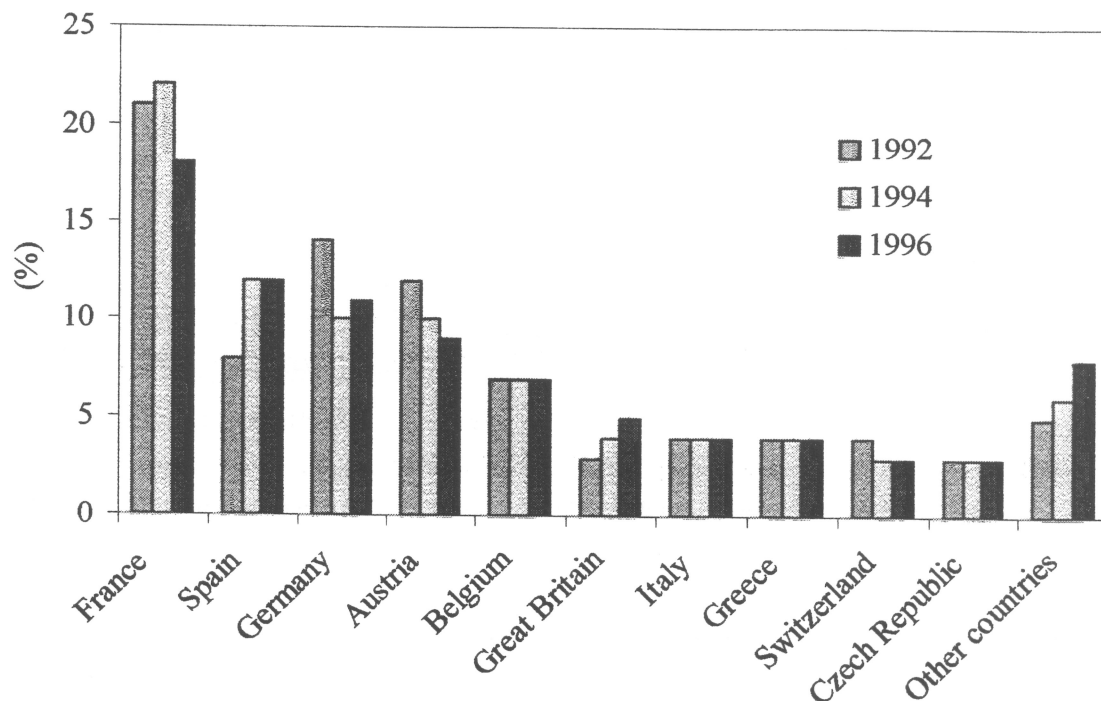


Figure 2 The top ten of destinations of Dutch long holidays and their number of Dutch visitors in 1992, 1994 and 1996, derived from (CVO,1996). The category 'other countries' includes destinations to other continents as well as to less popular European countries, e.g. Turkey.

In 1995, 9% of all vacationers spent their holidays in other continents (NIPO, 1995). Around 4% went to America, 2% to the Middle East, 1% to the Caribbean, 1% to Africa and 1% to Australia/New Zealand. The percentage of vacationer travelling to other continents has slowly been increasing since 1992. According to the summer holiday expectations of 1998 of the ANWB, no further rise in the number of summer holidays in destinations 'far away' was expected.

Holiday transport

Households can choose between various means of transport for their holiday. In Figure 3 an overview is given of the used means of transport for domestic as well as foreign long holidays in 1996.

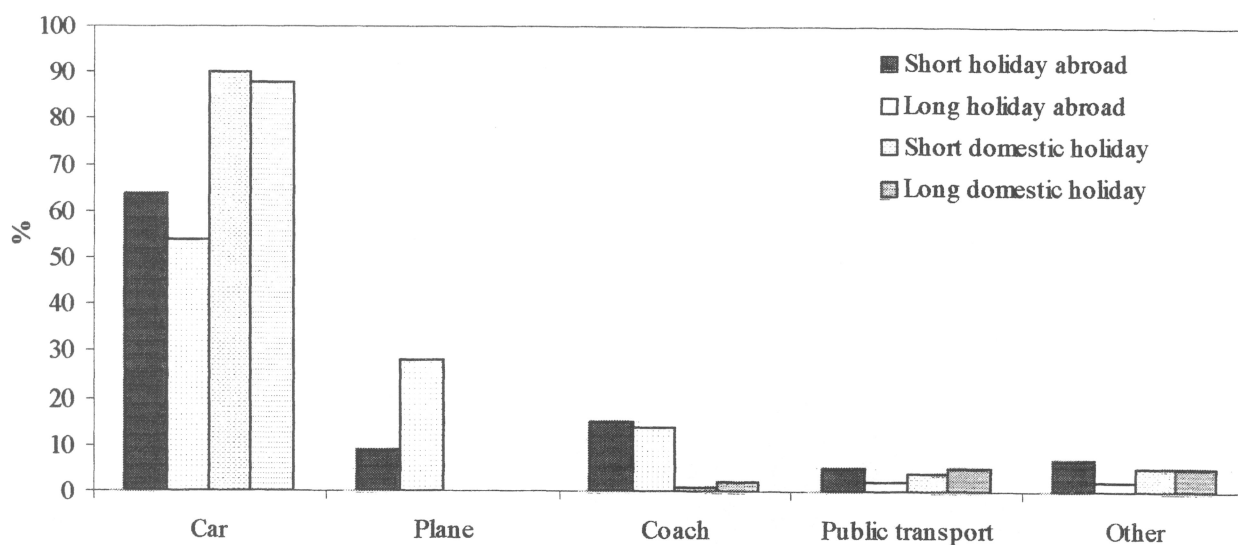


Figure 3 Means of transport for foreign and domestic long holidays of Dutch people in 1996, derived from (CVO, 1996)

It appears that for all long summer holidays (abroad as well as in the Netherlands), the favourite means of transport is the car, followed by the plane for foreign destinations. The plane is used by 14% of all vacationers going on a long summer holiday. There has been a steady growth in the number of vacationers travelling by plane to their holiday destination; in 1992 around 22% of all vacationers spending a long holiday abroad travelled by plane, in 1996 this figure had risen to 28% (CBS, 1997a).

Expenditures

In 1996 almost 18.6 billion Dutch guilders, or 4.7% of total private expenditure, was spent for holiday purposes (NRIT/NBT, 1998). Table 3 presents the distribution of these expenditures between holidays in the Netherlands and abroad in 1996. Of all holiday expenditure, 78% was spent abroad. It can also be concluded that the largest part of holiday expenditures (89%) was spent during long holidays in 1996.

Table SEQALPHABETIC3 Holiday expenditures made by Dutch people in 1996.

	Total ¹ (in 10 ⁹ Dfl.)	per person ²	per vacationer ³	Long holidays ⁴ (per vacationer)		Short holidays ⁴ (per vacationer)	
				per day	per holiday	per day	Per holiday
Domestic	4.1	263	340	34	353	43	132
Abroad	14.5	936	1208	95	1315	111	359
Total	18.6	1200	1548	-	-	-	-

1 NRIT/NBT (1998)

2 At a total population of 15.5 million in 1996 (CBS, 1997a)

3 At a participation of 77.5% in 1996 (CVO, 1996)

4 NRIT (1997)

Holiday accommodation

In 1995 more than 20% of all overnight stays of summer holidays abroad were spent at a hotel or motel. More than 20% of overnight stays were spent in a tent, almost 20% in an apartment, bungalow or rented house and almost 20% in a caravan. Another 10% were spent at the house of friends or relatives. The remaining overnight stays were spent at youth hostels, guest houses, sailing boats, second homes and so on (NIPO, 1995).

Around 35% of overnight stays of long summer holidays in the Netherlands in 1995 were spent in an apartment, bungalow or rented house. Almost 35% of overnight stays were spent in a caravan (at steady places as well as in folding trailers), 9% in a tent, 6% in a hotel or guest house and 5% at a boat. The remaining overnight stays were spent at youth hostels, rented rooms and so on (NRIT, 1997).

Holiday packages and their energy requirement

Households compose individual holidays, for which they make choices regarding destination, means of transport, duration and accommodation. These aspects together form a holiday package. The variations make it impossible to sketch an average holiday package. Therefore nine standard holiday packages are defined, each representing a large group of Dutch vacationers during their long summer holidays, since long summer holidays form, as seen before, the majority of all holidays. After having defined these holiday packages, the energy requirement and the expenditure of these packages are calculated.

For the destinations of six of these packages, the top three of long summer holiday destinations abroad (France, Spain and Germany) has been used. Another holiday package is a holiday which is spent within the Netherlands. As 9% of all vacationers spent their holidays in other continents in 1995 (CVO, 1996), two packages include destinations 'far away'. Regarding other aspects of a holiday package, such as duration, size of the touring party, means of transport and type of accommodation, NIPO holiday figures of 1995 have been used, derived from NIPO holiday research (1995). More detailed figures of this research, that together form the basis of the holiday packages, can be found in Appendix B. The various aspects of each of the nine holiday packages are presented in Table 4.

Table 4 Holiday packages, together representing long holidays of the Dutch in the summer season

Nr.	Country	Region	Example	Touring Party	Duration in days	Means of transport	Transport locally	Lodging
1	The Netherlands	All over the country	Vlissingen	4	7	car	car	Bungalow
2	France	Alps	Chamonix	2	14	car	car	Hotel
3		Mediterranean	Antibes	4	21	car	car	Tent
4	Spain	Canary Isles	Tenerife	2	7	plane	bus	Hotel
5		Costa Brava	Barcelona	2	14	coach	bus	Bungalow
6	Germany	Rijnland	Trier	2	14	car	car	Hotel
7		Westfalen	Siegen	4	7	train	bus	Bungalow
8	Indonesia	Java	Jakarta	2	14	plane	bus	Hotel
9	United States	California	Los Angeles	2	14	plane	rented car	Hotel

The energy requirement of the holiday packages

The energy requirement of a holiday is assumed to be mainly determined by transport, accommodation, activities undertaken from the holiday address and consumption. For determining the differentiation between the nine holiday packages, only the energy

requirement of accommodation and transport are taken into account⁶. The destination determines the distance that needs to be travelled. This, together with the means of transport and the distance travelled locally, determines the energy requirement of total transport that is related to the holiday. When the energy requirement of the various aspects of transport and the various types of accommodation is determined, the total energy requirement of the packages is calculated.

Transport

When determining the energy requirement of the various means of transport, several factors have to be taken into account. One of these is the direct as well as the indirect⁷ energy requirement. Per means of transport the energy requirement per traveller per kilometre and the total distance travelled determine the total energy requirement. When calculating the distance travelled, a percentage for making a detour needs to be added. This percentage differs per means of transport. In addition to this, a percentage for driving empty to/from the destination needs to be added when travelling by bus. The direct as well as the indirect energy requirement and the percentages that need to be added for the various means of transport are presented in Table 5.

When not travelling by car, vacationers need to transport themselves to and from the airport or (bus)station. The transport to the airport or station is assumed to be done by car, for which an assumed distance of 50 km is travelled⁸. This is assumed to be based on 4 persons per car. The transport from the airport or station to the holiday address is assumed to be made by a regional bus, for which a distance of 50 km is travelled. In addition to this, it is assumed that vacationers travel 25 kilometres per day locally by motorised traffic (excluding the day of arrival and the day of departure). When having travelled by car, local trips are assumed to be made by car. When having travelled by plane, coach or train this is assumed to be undertaken by regional busses.

6 The energy requirement of activities undertaken at the holiday address -apart from transport- such as visiting an amusement park or renting a bicycle, are assumed to be determined by personal preferences rather than the holiday destination. It is therefore impossible to describe an average activity- and consumption package per holiday package. For further calculations we exclude the energy requirement for activities undertaken at the holiday address (see also the discussion).

7 Here the indirect energy requirement includes the energy that is required for infrastructure (the construction of roads, railways, bridges and so on) and the manufacturing of the vehicle itself.

8 These 50 kilometres are assumed to be an average, covering all sorts of ways to travel to the station or airport. This includes a person bringing the vacationers to the airport or train- or bus station (whether this is a taxi or an acquaintance) on a distance of 25 kilometres, who will drive these 25 kilometres back as well. Another possibility is driving by own car for 50 kilometres and parking the car at the airport or station.

Table 5 The energy requirement -direct, indirect and total- of various means of transport and the percentages that need to be added for driving empty and making a detour

Means of transport	Number of Passengers ¹	Energy requirement in MJ/pkm		Driving Empty ⁴	Detour Factor ⁵	Total in MJ/pkm*
		Direct	Indirect ³			
Car 2 persons	2	1.48 ²	0.46	-	-	1.94
Car 4 persons	4	0.74 ²	0.23	-	-	0.97
Coach	32 (65%)	0.26 ²	0.17	24%	6%	0.56
Train (International train)	216 ⁶ (60%)	0.54 ⁷	0.31	-	10%	0.94
Plane (Boeing 737-400 on 3000 km)	96 ⁸ (74%)	1.62 ¹⁰	0.19	-	15%	2.08
Plane (Boeing 747-400 on 3000 km)	314 ⁹ (74%)	1.60 ¹¹	0.06	-	15%	1.91
Regional bus	13 (20%)	1.08 ²	0.33	7%	25%	1.87

* pkm = person kilometres

1 (van den Brink and van Wee, 1997). The degree of occupation is indicated between brackets.

2 (van den Brink and van Wee, 1997). These figures include the energy requirement for the production of fuel and electricity.

3 Hofstetter (1992) The indirect energy requirement Hofstetter gives for the aeroplane assumes 200 passengers travelling more than 2000 km, with an average of 5000 km. This figure has been converted to respectively 96 - for the Boeing 737-400- and 314 passengers for the Boeing 747-400. Furthermore it is assumed that this indirect energy requirement accounts for all distances above 3000 km.

4 (van den Brink and van Wee, 1997)

5 (van den Brink and van Wee, 1997), except for the aeroplanes; these figures are derived from (CE, 1997)

6+7 Tensen (1996)

8+9 CE (1997)

10+11 Direct energy requirement of the aeroplanes are derived from (CE, 1997), to which an extra 12% is added for fuel and electricity production (Nieuwlaar, 1992)

Accommodation

According to Vringer et al. (1993), the energy requirement of a hotel and a tent is respectively 136 MJ and 35 MJ per person per day. The energy requirement of a bungalow is 233 MJ per day. It is assumed that these energy requirements, which are valid for the Netherlands, are similar in other countries.

9 These 50 kilometres are assumed to be an average, covering all sorts of ways to travel to the station or airport. This includes a person bringing the vacationers to the airport or train- or bus station (whether this is a taxi or an acquaintance) on a distance of 25 kilometres, who will drive these 25 kilometres back as well. Another possibility is driving by own car for 50 kilometres and parking the car at the airport or station.

Total energy requirement

The total energy requirement of each holiday package is given in Table 6. The first column of this table indicates what percentage of the Dutch is reflected in each package; these are derived from the percentages that are given per destination in Appendix B. The detailed figures on which the energy requirements are based, can be found in Appendix C.

Table 6 The energy requirement of nine holiday packages and the percentage of Dutch households each package reflects.

%	Nr.	Example	Return distance (km)	Means of Transport	Duration in days	Tour party	GJ/ pp per holiday	GJ/ pp per day
23	0	No holiday	-	-	-	-	-	-
35	1	Vlissingen	500	Car	7	4	1	0.1
9	2	Chamonix	2.040	Car	14	2	6	0.5
6	3	Antibes	2.800	Car	21	4	4	0.2
3	4	Tenerife	6.000	Plane	7	2	14	2.0
7	5	Barcelona	3.200	Coach	14	2	4	0.3
5	6	Trier	800	car	14	2	4	0.3
4	7	Siegen	700	train	7	4	2	0.2
3	8	Jakarta	24.000	Plane	14	2	49	3.5
4	9	Los Angeles	18.000	Plane	14	2	37	2.6
100		-	-	-	-	-	5	-

When combining the given percentages, assuming these indeed represent their share of the entire Dutch population, with the energy requirement per person per holiday the average energy requirement for *long summer holidays* of Dutch households amounts to be 12.5 GJ¹⁰, this is about 5% of the total energy requirement of an average Dutch household (Vringer et al., 1997). Of this 12.5 GJ 15% is required for accomodation and 85% for transport.

Assuming that table 6 gives a reliable view on the holiday behaviour of Dutch households we can conclude that about 7% of the households, which do spend their holiday in another continent, take up almost 60% of the energy requirement of the holidays of all households. When including the 3% of households that travel by plane to- for example- Tenerife, the 10% of households that travel by plane to their holiday destination, take up more than 65% of the energy requirement of all households. On the other side, almost 60% of the households (23% that do not go on a holiday at all and 35% that spend a holiday in the Netherlands) consume only 7% of the total energy requirement of all households for holiday

¹⁰ Assuming 2.46 persons per household (CBS, 1990) and excluding holiday activities.

purposes. This points at a striking unbalance in the energy requirement of different households for holiday purposes.

Holiday expenditure and energy intensity

On an individual basis, holiday expenditures would show large variations. Determining the household expenditures for each of the nine holiday packages can therefore only be based on estimations. Adding an average amount one would spend on food and drinks and holiday activities would not point at the differences in the holiday packages. Only the main aspects regarding energy requirement, being transport and accommodation, are therefore calculated. An overview of the costs of these aspect for each holiday package is presented in Table 7.

Since the duration of the packages differ, it is useless to compare the expenditures within the packages. These figures can however be combined with the energy requirement of the packages, resulting in the energy intensity in Megajoules per guilder as presented in Table 8.

It is interesting that the holiday to Antibes, besides Vlissingen the cheapest holiday package, has a much higher energy intensity than all other holiday packages, excluding Jakarta and Los Angeles. This could be attributed to the fact that it is the only holiday package in which the accommodation is a tent, which is by far the cheapest type of accommodation, resulting in a high energy intensity per guilder.

Table 7 Expenditures of the holiday packages, in Dutch Guilders

%	Nr.	Example	Transport	Transport Costs ¹ (pp)	Total accommodation Costs ² (pp)	Total costs pp/holiday	Dfl/pp/day
23	0	No holiday	-	0	0	0	0
35	1	Vlissingen	car	23	257	280	40
9	2	Chamonix	car	187	975	1162	83
6	3	Antibes	car	128	200	328	16
3	4	Tenerife	plane	1000	450	1450	207
7	5	Barcelona	coach	410	743	1158	83
5	6	Trier	car	73	975	1048	75
4	7	Siegen	train	175	350	525	75
3	8	Jakarta	plane	1950	975	2925	209
4	9	Los Angeles	plane	2000	975	2975	213
100	-	<i>Weighted Average</i>	-	-	-	632	56

- Costs of travelling by car are based on a car using 1 litre per 12 kilometres, at a fuel price of Dfl. 2.20. Extra costs, such as toll, are not included. The plane ticket prices are based on average ticket prices when comparing various airlines. The price of the train ticket is based on the prices used by Dutch Railways (NS, 1998) and the price of travelling by coach is based on the prices of the coach company Eurolines (Eurolines, 1998).
- These prices are based on estimations when comparing various holiday brochures; a hotel is assumed to cost Dfl. 75 per person per night, spending a night in a tent Dfl. 10 per person and renting an house Dfl. 800 per week for two persons and Dfl. 1200 per week for four persons.

Table 8 Energy requirement, expenditure and energy intensity for all holiday packages

%	Nr.	Example	Transport	Energy requirement (GJ/pp/holiday)	Expenditure (Dfl/pp/holiday)	Energy intensity (MJ/Dfl)	Duration (days)
23	0	No holiday	-	-	-	-	-
35	1	Vlissingen	car	1.0	280	4	7
9	2	Chamonix	car	6.4	1162	6	14
6	3	Antibes	car	3.9	328	12	21
3	4	Tenerife	plane	14.0	1450	10	7
7	5	Barcelona	coach	4.3	1158	4	14
5	6	Trier	car	4.0	1048	4	14
4	7	Siegen	train	1.6	525	3	7
3	8	Jakarta	plane	48.6	2925	17	14
4	9	Los Angeles	plane	37.1	2975	13	14
100	-	<i>Average</i>	-	5.1	632	8	-

Energy requirement reduction options

In Table 9 the reduction of the energy requirement of each holiday package is given, when energy reduction options concerning travelling and/or the accommodation would be implemented. These variations include halving the distance travelled locally, halving the return distance to the holiday destination, replacing the means of transport (when feasible) by a less energy intensive one and replacing the means of accommodation by a less energy intensive type of accommodation.

Table 9 Energy reduction options and their expected energy reduction within the nine holiday packages

Package number	1	2	3	4	5	6	7	8	9
No change (in GJ/pp/holiday)	1.0	6.4	3.9	13.9	4.3	4.0	1.6	48.6	37.1
Halving distances locally	6%	5%	6%	0%	7%	7%	7%	0%	1%
Reducing travel distance with 10%	5%	6%	7%	9%	9%	4%	4%	9%	9%
Reducing travel distance with 20%	10%	12%	14%	18%	8%	8%	8%	19%	19%
Halving all distances	30%	35%	41%	46%	28%	26%	28%	48%	47%
Travelling by train (locally by bus)	+10%	32%	+9%	-	+28%	20%	*	-	-
Acc. tent instead of hotel or rented house	16%	22%	*	5%	27%	35%	10%	3%	4%
Acc. rented house instead of hotel or tent	*	4%	+13%	1%	*	7%	*	1%	1%
Travelling by train and acc. tent	6%	54%	+9%	-	+2%	55%	*	-	-
Halving all distances and acc. tent	46%	57%	*	51%	54%	61%	38%	51%	51%
After implementing highest reduction									
Option (in GJ/pp/holiday)	0.5	2.8	2.3	6.9	2.0	1.6	1.0	24.0	18.1

+ points at an increase in the energy requirement instead of a reduction

* this option is (partially) similar to this specific content in the original package

- this option is not feasible

Assuming all households are reflected in these packages (including the 23% of households that stay at home), the energy requirement, when combining the most intensive energy reduction options, would amount to 6.1 GJ per household, a reduction of more than 50%. In all cases the most intensive energy reduction option would be halving the distances travelled and changing the accommodation to a tent, whether this originally was a hotel or a rented house. For Antibes, package number 3, the most intensive energy reduction option includes only halving the distance travelled, as the accommodation already was a tent.

Discussion

Before drawing the conclusions several comments have to be made concerning the data and assumptions which are made in this study:

1. Although it seems impossible to describe an average holiday (among other things due to lack of data), the in this report described nine packages seem to apply - in broad lines - for the average Dutch vacationer during his summer holidays. The average energy requirement for a holiday that has been calculated here is 12.5 GJ per household. This figure resembles the 12 GJ, based on rough estimations according to Vringer and Blok (1995). This 12 GJ, however, represents an average for *whole 1990* and includes activities and other consumption, whereas the here calculated 12.5 GJ is an average *per long summer holiday*, excluding activities (but including the transport required for these) and other consumption.
2. We assumed that the energy requirements for hotels and bungalows, valid for the Netherlands, are also valid for other countries. In reality the energy requirements could be lower, as Vringer et al. based these figures on averages, including energy requirement for space heating in wintertime. Most holidays are spent in warmer countries and/or in summertime. Than the energy requirement of the accommodation will be smaller which makes the total energy requirement per long summer holiday of 12.5 GJ smaller. But, the accommodation requires only about 15% of the average energy requirement for holidays, so the effect on the here calculated average energy requirement of holidays will be small.
3. The energy requirement of the food- and drink consumption and activities undertaken are not taken into account because these aspects are of minor importance when comparing holiday packages, and can be similar or vary largely for each vacationer or holiday package. To estimate the importance of the energy requirement of activities, we assumed that the energy intensity of these expenditures is equal to the energy intensity of the admission fee of concerts or theatre (2 MJ/Dfl, Vringer and Blok, 1995). We also assumed that Dfl 20 per person per day is spent on these activities. Than the total energy requirement for the activities undertaken varies between 1 and about 25%, depending on the holiday package. The energy requirement of the activities undertaken is relatively high for the low-energy holidays but neglectable for the high-energy holidays.
4. The costs of the holiday packages are based on rough estimations and include only transport and accommodation. It is assumed that the destination and accommodation, as well as the means of transport, do not determine the spending pattern on other aspects. Therefore the costs of the holiday packages would show large variations when

calculated on an individual basis. Also extra costs that are allied to the chosen means of transport, such as toll, are not included in the costs of transport.

5. Since transport takes up the larger part of the energy requirement of a holiday, it seems for the required energy to be of minor importance where exactly a household spend its holiday, as long as the distance and the means of transport are known. It needs to be stressed that the energy requirements of the various means of transport are based on averages. The occupation degree of the various means of transport determines to a large extent the energy requirement of an individual passenger (CE, 1997).
6. The energy reduction options presented here are only focussed on transport and accommodation. Other options, connected with other kind of activities or food are not discussed in this study. Also, the feasibility of the options is not discussed here.

Conclusions

The average energy requirement for the accommodation and transport for long summer holidays is 12.5 GJ per Dutch household. This is about 5% of the total average household energy requirement of 1995. If the travelled distances (including the distances travelled from the holiday address) will be reduced by 50% and all nights are spent in a tent, the average household energy requirement would be 6.1 GJ, a reduction of more than 50%.

The energy requirement of the nine holiday packages vary largely, mainly caused by the differences in the distance travelled and not by the means of transport or accommodation type. The percentage of the total energy requirement that is taken up by transport varies per package. For the holiday packages in which a car is used as means of transport, for example, this varies between 50% and 80% (the further away the destination, the larger this share). For the vacationers that travel by plane to their holiday destination, transport takes up even more than 90% of the total energy requirement. Again, this share is larger for destinations further away.

When comparing the energy requirement of the various holiday packages, it is striking that 10% of the households, the ones that travel by plane to their holiday destination, consume 70% of the total amount of energy all households require for holiday purposes. This is, as mentioned before, mainly due to the distance travelled, rather than to the chosen means of transport.

Determining the exact average household energy requirement for holidays, more extensive research would be necessary. Then, activities and consumption should be included. As these aspects are excluded in the determination of long summer holiday energy requirement, the energy requirement of holidays will be higher than 12.5 GJ per Dutch household.

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Appendix A De activiteit Vrijtijdsbesteding (in Dutch)

This appendix contains an extended note in Dutch about financial expenditures on leisure and the spend of leisure time of Dutch households in 1995.

By Maaïke van den Berg, NW&S-UU, June 1998.

DE ACTIVITEIT 'VRIJETIJDSEBESTEDING'

Inleiding

Voorliggende notitie is onderdeel van het project 'GreenHouse'. In dit project wordt voor verschillende activiteiten binnen een huishouden in kaart gebracht hoeveel energie (direct en indirect) hier voor nodig is. Deze notitie is gericht op de activiteit 'vrijtijdsbesteding'.

Een activiteit is gedefinieerd als een deel terrein of zorgsector van de huishouding op een bepaald gebied. Tot deze activiteit behoren alle handelingen, acties, afwegingen en beslissingen die voor dit deel terrein of deze zorgsector worden uitgevoerd en nodig zijn [Groot-Marcus et al., 1996]. Om in kaart te brengen welke hulpbronnen nodig zijn voor de activiteit 'vrijtijdsbesteding', wordt deze definitie geoperationaliseerd.

Volgens [CBS, 1997e] is vrije tijd de tijdsbesteding die anders wordt gebruikt dan voor beroepsarbeid, het volgen van onderwijs, huishoudelijke arbeid of persoonlijke verzorging. Deze definitie wordt in voorliggende notitie gehanteerd, met de aanvulling dat 'onderwijs' en 'boodschappen doen' niet geheel buiten beschouwing worden gelaten¹¹. Ook wordt het verplaatsen van en naar de vrijetijdsactiviteit aan vrijetijdsbesteding toegerekend. Enkele vrijetijdsactiviteiten zijn bijvoorbeeld sporten, logeren, theaterbezoek en vakanties, allen inclusief het verplaatsen van en naar deze activiteiten. Maar ook het lezen van een boek, televisie kijken en het praten met huisgenoten zijn vrijetijdsactiviteiten.

In voorliggende notitie wordt een kwantitatief overzicht gegeven van de belangrijkste huishoudelijke hulpbronnen, zijnde financiën en tijdsbesteding¹², alsmede het energiebeslag van de activiteit 'vrijtijdsbesteding' voor een gemiddeld huishouden in 1990. Op basis van dit overzicht kan het bestedingsveld welke het meest interessant lijkt om nader te analyseren op opties om het energiebeslag te reduceren geïdentificeerd worden.

11 Zowel winkelen als het volgen van onderwijs bezitten deels een recreatief karakter. De inschatting is dat 10% van het winkelen en 25% van onderwijsactiviteiten (waar deze niet volledig aan vrijetijdsbesteding zijn toe te wijzen, zoals muzieklessen) aan vrijetijdsbesteding kunnen worden toegerekend.

12 [Groot-Marcus et al., 1996] noemen meerdere huishoudelijke hulpbronnen, zoals financiën, tijd, kennis, ervaring, ruimte en arbeid. 'Tijd' en 'financiën' worden geacht de belangrijkste hulpbronnen te zijn voor de activiteit 'vrijtijdsbesteding'.

Aanpak

De basis van voorliggende notitie wordt gevormd door het Budgetonderzoek [CBS, 1992a] voor de huishoudelijke financiële vrijetijdsbestedingen en het Tijdsbestedingsonderzoek [SCP, 1990] voor tijdsbesteding ten behoeve van vrije tijd. De energetische gegevens zijn gebaseerd op [Vringer en Blok, 1995] en de indelingscriteria volgens [Vringer, 1996] worden gehanteerd¹³. Met behulp van deze financiële, tijds- en energetische gegevens wordt een indeling gemaakt naar activiteiten die buitenshuis en activiteiten die binnenshuis plaats vinden. Onder activiteiten binnenshuis worden activiteiten verstaan die in of om het huis plaats vinden, zoals spelletjes doen, visite ontvangen en lezen. Onder activiteiten buitenshuis worden activiteiten verstaan die niet in of om het huis plaats vinden (zoals sporten, logeren en filmbezoek). Activiteiten die niet specifiek zijn toe te delen (zoals musiceren en fotograferen), worden voor 50% aan binnenshuis en 50% aan buitenshuis toegerekend. Vervoer ten behoeve van vrijetijdsbesteding, inclusief verplaatsingen die plaats vinden voor activiteiten binnenshuis (zoals het kopen van een boek), en vakanties worden aan activiteiten buitenshuis toegerekend. Deze twee categorieën verdienen echter enige nadere specificatie.

Volgens de definitie van 'vrije tijd' die hiervoor gegeven werd, valt onder de activiteiten die aan vrijetijdsbesteding zijn toe te rekenen ook het verplaatsen van en naar deze activiteiten. Het Budgetonderzoek geeft de categorie 'verkeer en vervoer' echter als één uitgavenpost weer, ongeacht het motief van de verplaatsing, terwijl het Tijdsbestedings-onderzoek wel een onderverdeling kent. Het deel van de uitgaven binnen deze categorie dat aan vrijetijdsbesteding kan worden toegerekend dient daarom nader gespecificeerd te worden. De tijdsbesteding aan vakanties dient eveneens nader gespecificeerd te worden; in het Budgetonderzoek zijn wel de uitgaven aan vakanties opgenomen, terwijl de tijdsbesteding aan vakanties niet in het Tijdsbestedingsonderzoek is opgenomen.

Resultaten

Omdat het Budgetonderzoek geen specificatie geeft voor het motief van de verplaatsingen binnen de categorie 'verkeer en vervoer', wordt eerst berekend welk deel van de verplaatsingen met de diverse vervoermiddelen ten behoeve van vrijetijdsbesteding plaats vindt. Omdat het Tijdsbestedingsonderzoek geen vakanties meerekent, wordt vervolgens de tijdsbesteding aan vakanties berekend. De financiële, energetische en tijdsbesteding van de totale categorie 'vrijetijdsbesteding', wordt met behulp van deze gegevens opgedeeld in activiteiten binnenshuis en activiteiten buitenshuis. Deze verdeling wordt gebruikt om de meest energie intensieve vrijetijdsactiviteit te bepalen.

¹³ Aanpassing in de indeling van [Vringer, 1996]: vervoer van activiteit 7 in het TBO (kerken, politiek etc.) wordt niet meegerekend, omdat de activiteiten zelf naar [Vringer, 1996] geen vrijetijdsactiviteiten zijn. Dit geldt ook voor activiteit 2 (huishoudelijk werk e.d.), uitgezonderd onderhoud van auto en bromfiets en huisdieren verzorgen. De categorieën v555000 (feestartikelen) en v556 (roken) uit het BO worden niet als vrijetijdsbestedingen gerekend; de eerste kan aan woninginrichting toegerekend worden en roken wordt niet als vrijetijdsactiviteit gezien, evenmin als het nuttigen van drank en andere genotmiddelen.

Financiële bestedingen verkeer en vervoer

In 1996 legden Nederlanders per persoon gemiddeld 34,9 kilometer¹⁴ per dag af, exclusief vakantiemobiliteit [CBS, 1997e]. Geschat wordt dat respectievelijk 10% en 25% van de activiteiten 'winkelen' en 'onderwijs' aan vrijetijdsbesteding kan worden toegerekend. Ook wordt aangenomen dat een kwart van de categorie 'overigen' aan vrijetijdsactiviteiten is toe te rekenen. Tabel 1 geeft een overzicht van deze toedeling. Hieruit blijkt dat men 17 kilometer per dag aflegt voor vrijetijdsactiviteiten, bijna 50% van de totale afstand.

Tabel 1 Afgelegde afstand per persoon per dag, gespecificeerd voor vrijetijdsbesteding

MOTIEF	AFSTAND in km/dag ¹		VRIJETIJDSEBESTEDING		
	1990	1996	PERCENTAGE	AFSTAND in km/dag	
	1990	1996		1990	1996
van en naar het werk	8,4	9,4	0%	-	-
visite/logeren	8,6	8,0	100%	8,6	8,0
winkelen	3,9	4,1	ca. 10%	ca. 0,4	ca. 0,4
onderwijs	2,0	1,9	ca. 25%	ca. 0,5	ca. 0,5
ontspanning/sport	4,0	4,9	100%	4,0	4,9
toeren/wandelen	2,2	1,4	100%	2,2	1,4
overigen	4,0	5,2	ca. 25%	ca. 1,0	ca. 1,3
TOTAAL	33,1	34,9	50%	ca. 17	ca. 17

1 CBS, 1997e (exclusief personen jonger dan 12 jaar, tehuisbewoners en vakantiemobiliteit)

Het percentage van de totaal afgelegde afstand per vervoermiddel dat aan vrijetijdsbesteding kan worden toegerekend, wordt weergegeven in tabel 2.

Tabel 2 Afgelegde afstand in kilometer per persoon per dag naar motief, 1996

	auto ¹		openbaar vervoer		anders ²		totaal	
totale afstand³	25,1		5,0		4,9		34,9	
waarvan voor vrijetijdsbesteding	12,1	(48%)	2,1	(42%)	2,3	(46%)	16,5	(47%)
<i>motief:</i> visite/logeren	6,5		1,0		0,5		8,0	
winkelen	0,3		0,0		0,1		0,4	
onderwijs	0,1		0,3		0,1		0,5	
ontspanning/sport	3,6		0,6		0,7		4,9	
toeren/wandelen	0,6		0,1		0,7		1,4	
overigen	1,0		0,1		0,2		1,3	

1 Omvat zowel het 'actieve' als het 'passieve' autogebruik (als bestuurder en als passagier)

2 Verplaatsingen per (brom)fiets, lopend en met overige vervoermiddelen

3 Naar CBS, 1997e; exclusief zakelijk verkeer, inclusief woon-werkverkeer

Het blijkt dat van de totale afstand die voor vrijetijdsactiviteiten wordt afgelegd, 48% per auto, 42% met het openbaar vervoer en 46% met andere vervoermiddelen wordt afgelegd.

14 Exclusief 'zakelijk bezoek in werksfeer' (3,2 km), wat hier buiten beschouwing wordt gelaten.

Ook wordt voor 75% van de verplaatsingen voor vrijetijdsactiviteiten (12 kilometer), de auto gebruikt. Hiervan is 50% aan de activiteit visite/logeren toe te rekenen.

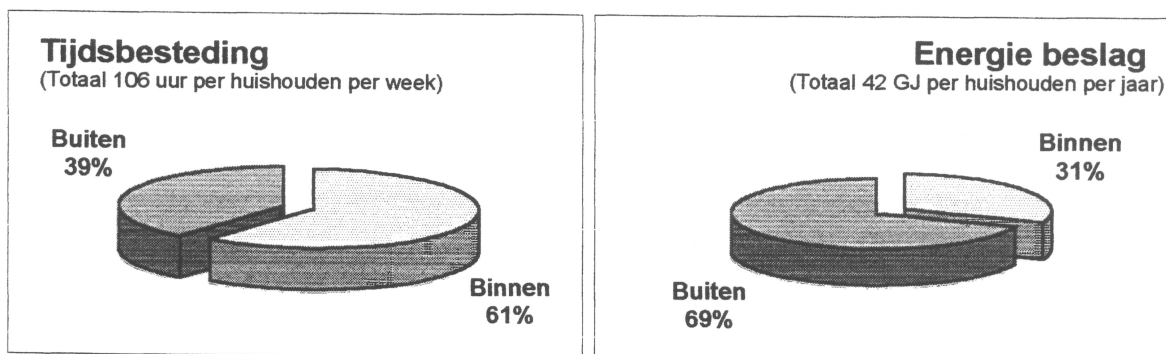
Tijdsbesteding vakanties

In 1990 ging de Nederlander gemiddeld 15,9 dagen op vakantie¹⁵. Dit is 560 uur per huishouden per jaar¹⁶, uitgaande van 2,2 personen per huishouden, ouder dan 12 jaar [Vringer en Blok, 1998].

Vrijetijdsbesteding binnenshuis versus buitenshuis

Gebruik makend van het vervoerspercentage dat aan vrijetijdsbesteding wordt besteed¹⁷ en de tijdsbesteding voor vakanties, wordt een inschatting gemaakt van financiële, tijds- en energetische bestedingen ten behoeve van vrije tijd.

Figuur 1 illustreert de verdeling in energiebeslag en tijdsbesteding voor vrijetijds-activiteiten binnenshuis versus buitenshuis. Opvallend is dat slechts 39% van de totale tijdsbesteding aan vrijetijdsactiviteiten, inclusief vakanties, buitenshuis plaatsvindt, terwijl 69% van het energiebeslag aan vrijetijdsactiviteiten buitenshuis is toe te rekenen. Voor de financiële bestedingen is de verhouding binnenshuis/buitenshuis overigens respectievelijk 27% en 63%.



Figuur 1 Energetische- en tijdsbesteding vrijetijdsactiviteiten binnenshuis en buitenshuis voor een gemiddeld huishouden in 1990

Tabel 3 geeft een overzicht van de totale huishoudelijke bestedingen en het aandeel van vrijetijdsbesteding hierin.

¹⁵ 236,9 milj. vakantiedagen in Nederland (CBS, 1996) bij 14,9 milj. inwoners (CBS, 1992b) in 1990

¹⁶ Dit is exclusief slapen, wat volgens de indeling van [Vringer, 1996] onder persoonlijke verzorging valt

¹⁷ Aangenomen wordt dat percentages van de afstanden die voor vrijetijdsbesteding afgelegd worden voor financiële en energetische bestedingen hetzelfde zijn (48% auto, 42% openbaar vervoer en 46% anders)

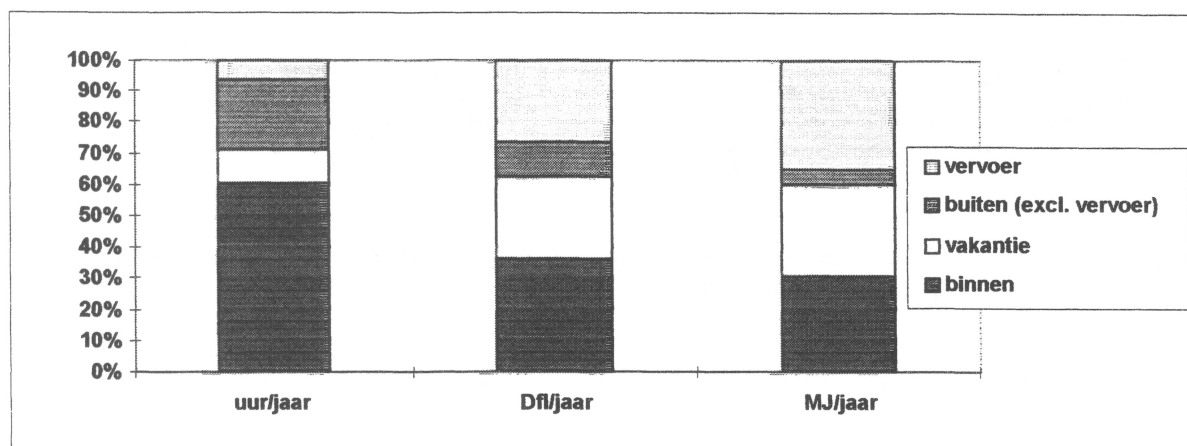
Tabel 3 Financiële, energetische- en tijdsbestedingen van een gemiddeld huishouden in 1990

	Tijdsbesteding in uren / jaar		Uitgaven in Dfl / jaar		Energie- beslag in GJ / jaar		MJ/Df l	MJ/uur	Dfl/uur
		% van totaal		% van totaal		% van totaal			
Totaal per huishouden¹	19272		40.107		240		6	12	2
Aandeel vrijetijdsbesteding²	5491		7.722		42		5	8	1
waarvan: binnenshuis	3334	17%	2.831	7%	13	5%	5	4	1
vakanties	560	3%	1.999	5%	12	5%	6	22	4
buitenshuis	1597	8%	2.892	7%	17	7%	6	11	2
waarvan: vervoer	340		2.039		15		7	44	6
overig	1257		853		2		2	2	1

1 Uitgaande van 2,2 personen per huishouden ouder dan 12 jaar (Vringer en Blok, 1998), inclusief slapen

2 Exclusief slapen

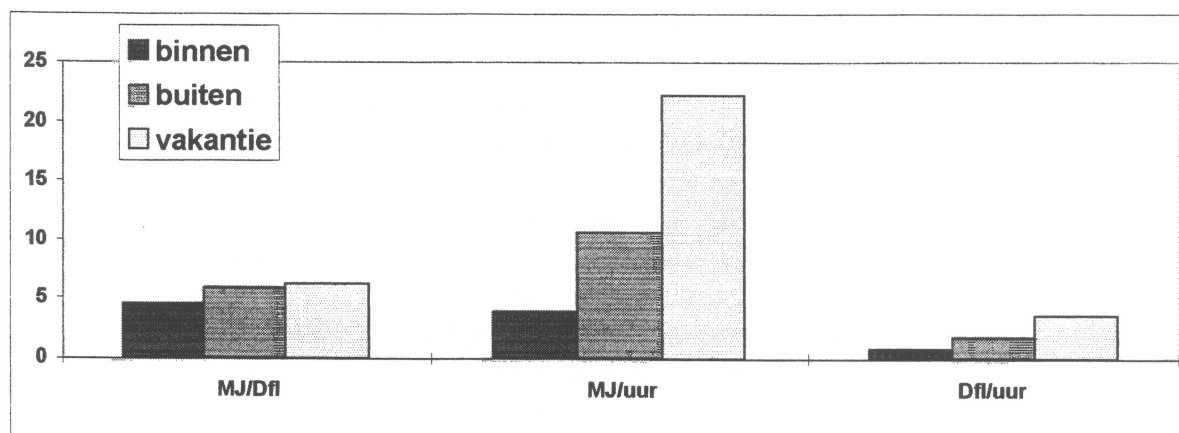
Het blijkt dat van de vrijetijdsactiviteiten die buitenshuis plaats vinden, het grootste deel van het energiebeslag aan vakanties (ruim 40%) en verkeer en vervoer (ruim 50%) is toe te rekenen. Wat betreft tijdsbesteding wordt echter slechts 25% van de tijdsbesteding aan activiteiten buitenshuis aan vakanties besteed en 15% aan verkeer en vervoer. De activiteiten buitenshuis zijn dus met name energie intensief door het vervoersaspect en vakanties. In figuur 2 wordt dit geïllustreerd.



Figuur 2 Aandeel van vier hoofdcategorieën vrijetijdsactiviteiten in de totale financiële-energetische- en tijdsbesteding voor vrije tijd van een gemiddeld huishouden in 1990

Hieruit blijkt dat het totale energiebeslag van vakanties op jaarbasis vrijwel gelijk is aan het totale energiebeslag van vrijetijdsactiviteiten binnenshuis, terwijl de tijdsbesteding respectievelijk 10% en ruim 60% is. Het energiebeslag van activiteiten buitenshuis wordt voor bijna 90% door het vervoersaspect veroorzaakt. Vervoer is echter inherent aan activiteiten buitenshuis. Vrijetijdsbesteding is hier dan ook in drie hoofdcategorieën opgedeeld; activiteiten binnenshuis, activiteiten buitenshuis (inclusief vervoer) en vakanties.

Figuur 3 geeft een overzicht van de bestedingen in Megajoule per gulden en per uur en in guldens per uur van deze drie categorieën.



Figuur 3 Energiebeslag per gulden en per uur in Megajoule per gulden en per uur en uitgaven in guldens per uur voor de drie hoofdcategorieën vrijetijdsactiviteiten

Het blijkt dat het energiebeslag van vrijetijdsactiviteiten per uur veruit het hoogst is tijdens vakanties. Hetzelfde geldt, zij het in mindere mate, voor de uitgaven per uur en het energiebeslag per gulden.

Conclusie

Uit bovenstaande kan geconcludeerd worden dat vrijetijdsactiviteiten binnenshuis per uur het minst energie intensief zijn. Hier wordt ook de meeste tijd doorgebracht; ruim 60% van de totale vrijetijdsbesteding. Vrijetijdsactiviteiten buitenshuis zouden echter minder energie intensief zijn dan activiteiten binnenshuis, indien 'vervoer' buiten beschouwing zou worden gelaten. Veel winst zou dan ook behaald kunnen worden met het aangeven van reductie-opties binnen de categorie vervoer voor vrijetijdsactiviteiten. Daarbij dient de meeste aandacht uit te gaan naar het autogebruik, wat 75% van de totale verplaatsingen voor vrijetijdsbesteding inneemt. Daarbinnen nemen 'op visite gaan' en logeren ruim 50% in. Dit lijkt dan ook een interessant veld om nader te analyseren op reductie-opties.

De meest energie intensieve activiteit, in Megajoules per uur gerekend, wordt echter gevormd door de categorie 'vakanties'. Dit is opmerkelijk omdat vakanties in Megajoule per gulden niet opvallend veel energie intensiever zijn dan de overige vrijetijdsactiviteiten. Omdat slechts 10% van de totale vrijetijdsbesteding aan vakanties wordt besteed, terwijl 30% van het totale energiebeslag ten behoeve van vrijetijdsbesteding aan vakanties kan worden toegeschreven, lijken vakanties het interessantste bestedingsveld om nader te analyseren op reductie-opties.

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Appendix B Characteristics of long summer holidays

For the construction of the holiday packages the following facts and figures are used, based on NIPO holiday research (NIPO, 1995).

Holidays in the Netherlands

Long summer holidays in the Netherlands in 1995 included the following characteristics:

- The average **touring party** (28%) consisted of four persons, followed by touring parties of two persons (26%).
- The average **duration** (29%) was one week, followed by two weeks (19%), four days (15%) or five to six days (11%).
- The favourite means of **transport** (84%) was the car
- Favourite **accommodation** was an apartment/ bungalow/ rented house (38%) followed by an apartment/ bungalow/ rented house in a holiday resort (28%) and a caravan (26%).
- The **destinations** were scattered all over the Netherlands
- The main **reason** for staying in the Netherlands were its cheapness, the occurrence of a nice summer, the fact that the Netherlands "also has a lot to offer" or private circumstances such as the birth of a child or a move.

Holidays abroad

Long summer holidays in **France** in 1995 included the following characteristics:

- The average **touring party** (36%) consisted of two persons, followed by touring parties of four persons (24%);
- Average **duration** (23%) was around three weeks, followed by 1 week (17%) or two weeks (16%);
- The favourite means of **transport** (81%) was the car
- Favourite **accommodation** was the tent (26%) followed by a hotel or motel (24%), a caravan (19%) and an apartment/ bungalow/ rented house (16%);
- Main **destinations**¹⁸ were the Alps (20%) and the Mediterranean coast (13%)
- The main **reason** for going to France was the weather, followed by a change of scenery.

Long summer holidays in **Spain** in 1995 included the following characteristics:

- The average **touring party** (43%) consisted of two persons, followed by touring parties of four persons (19%);

¹⁸ These figures are derived from (CBS, 1997)

- Average **duration** (23%) was around two weeks, followed by 1 week (18%) or three weeks (15%);
- The favourite means of **transport** (54%) was the aeroplane, followed by coach (26%) and car (18%);
- Favourite **accommodation** was a hotel or motel (41%) followed by an apartment/ bungalow/ rented house (39%);
- Main **destinations**⁸ were Costa Brava/Costa Dorada (40%) and the Canary Isles (25%);
- The main **reason** for going to Spain was the weather and a change of scenery.

Long summer holidays in **Germany** in 1995 included the following characteristics:

- The average **touring party** (38%) consisted of two persons, followed by touring parties of four persons (20%);
- Average **duration** (32%) was around one week, followed by 2 weeks (16%) or five to six days (15%);
- The favourite means of **transport** (79%) was the car;
- Favourite **accommodation** was an apartment/ bungalow/ rented house (28%), followed by a hotel or motel (25%) and a caravan (13%);
- Main **destinations**⁸ were Rijnland, Palts, Saarland (34%) and Westfalen (24%);
- Main **reason** for going to Germany was a change of scenery and the nature.

Other continents

Besides going to European destinations, 9% of all vacationers spent their holidays in other continents in 1995. Of these 9%, 4% went to America, 2% to the East, 1% to the Caribbean, 1% to Africa and 1% to Australia/New Zealand. Of all people who spent their vacation in America or the Caribbean area, 52% went to some part of the United States, 17% went to the Dutch Antilles, 15% went to Canada. Of all people who spent their holiday in the middle or far east 27% went to Indonesia, 16% to Israel and 11% to Thailand.

Appendix C Detailed figures

More detailed figures on the calculations of the energy requirement of the holiday packages are given in table C.

Table C Detailed figures for the nine holiday packages.

EXAMPLE	Means of transport	MJ/pkm	Distance in Km (return)	MJ/pp and from airport/station	Means of transport locally	Distance in Km travelled locally	MJ/pkm locally	MJ/pp for all transport	Touring party	Duration in days	Accommodation in MJ/pp/night	MJ/pp/holiday	%
No holiday	-	-	-	-	-	-	-	-	-	-	-	-	23%
Viissingen	car	0.97	500	0	car	125	0.97	605	4	7	58.25	1013	35%
Chamonix	car	1.94	2040	0	car	300	1.94	4529	2	14	136	6433	9%
Antibes	car	0.97	2800	0	car	475	0.97	3170	4	21	35	3905	6%
Tenerife	plane	2.08	6000	284	bus	125	1.87	12998	2	7	136	13950	3%
Barcelona	coach	0.56	3200	284	bus	300	1.87	2637	2	14	116.5	4268	7%
Trier	car	1.94	800	0	car	300	1.94	2130	2	14	136	4034	5%
Siegen	train	0.94	700	284	bus	125	1.87	1176	4	7	58.25	1584	4%
Jakarta	plane	1.91	24000	284	bus	300	1.87	46685	2	14	136	48589	3%
Los Angeles	plane	1.91	18000	97	car	350	1.94	35156	2	14	136	37060	4%
Average	-	-	-	-	-	-	-	-	-	-	-	5090	100%

