COMMISSION OF THE EUROPEAN COMMUNITIES

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ENERGY SAVINGS
SHORT TERM TARGETS

(Communication and proposal by the Commission to the Council)

ENERGY SAVINGS

SHORT TERM TARGETS

0. Conservation and rational utilization of energy

Recent developments on the energy market and the economic situation of the industrialized countries mean that the consumption of energy in the Community must be reduced, particularly that of oil. In order to achieve this objective, the Community has already established a programme for the rational utilization of energy (1).

This programme which applies to the medium and long term, is intended to reduce energy consumption without threatening the aims of economic and social development. Its initial impact should be felt in 1977 with a reduction of 3% over previous estimates and its effect will increase thereafter, with a saving of 15% in 1985 and 25% by the end of the century.

It is, however, necessary to undertake, in the immediate future, action designed to reduce the consumption of energy and, above all, oil as soon as possible, without waiting for the initial effects of the programme for the rational utilization of energy.

The adoption of an energy programme in the short term is justified to begin with by the necessity of utilizing most efficiently a resource which is becoming increasingly costly. It is equally worthwhile because of the alleviation which it would bring to the balance of payments deficits, thus reacting favourably on the economic situation of the whole of the Community. Finally, it would help to contribute to a détente in the world oil market.

Similar action in the short term corresponds to the possibility to which the Council referred, in its Resolution of 17 December 1974, of fixing "some specific energy savings measures in the very short term" (2).

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(1) Cf. Doc. COM(74)1950 final/2 and Resolution approved by the Council on 17 December 1974 Doc. R 18175(ENER 2).
(2) Doc. R/3649/73 (ENER 79), 3 January 1975.

The purpose of the rational utilization of energy, while constituting a part of energy conservation, is to reduce consumption only by increasing the efficiency of known technologies and by cutting down unnecessary energy consumption(1); there remains the whole field of deliberate action by the public authorities to reduce consumption by pricing policies and by a series of measures going as far as genuine restrictions.

Energy-saving measures of this sort have the advantage of being applicable to existing patterns and means of consumption without any substantial investment; above all, they could be implemented almost immediately.

Before we consider the possibility of short term energy-savings (with or without an impact on living standards and economic growth), we must first set in perspective the recent slowdown in demand over the last twelve months in order to have a clearer idea of what may be achieved by further action.

1. Growth in demand for energy 1972-75 and the short term objective for energy savings

At 1972 market rates (3.5 $/bbl) and assuming an average growth of GNP of nearly 5% p.a., energy consumption (total requirements) during 1975 was estimated at 1,020 M toe, of which oil alone would have accounted for 595 M toe.

However, while economic development continued normally in 1973, there was a marked loss of momentum in 1974 and the same is expected for 1975 (2). This situation, together with a considerable increase in the price of crude oil (up to 10.5 $/bbl), has led to a decrease in domestic energy consumption of 1.6% for 1974 compared with the previous year; for 1975 an increase of 1.6% is generally expected, which would bring internal consumption back to the 1973 level.

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(1) Communication from the Commission on the rational utilization of energy, p. 1 of the annex to the New Strategy.
(2) GNP growth rate: 1974: + 2.0%; 1975: + 2.5%
Rate of growth of industrial production: 1974: + 1.0%; 1975: + 2.0%.

The slowdown in the growth of the demand for energy is mainly due to the fall in domestic consumption of oil products (about 6% for 1974 and estimated 5% for 1975, both figures by comparison with the preceding year). This decline in consumption of oil products resulted both from the short term economic situation and a reduction in consumption due to prices, and from the substitution of other energy sources, particularly coal.

	Consumption 1973 M toe	Estimates 1974		Estimates 1975		
		M toe	% over 1973	M toe	% over 1974	% over estimates 1972
Total energy requirements	1035	1015	- 1.9	1020	+ 0,5	- 13
Oil requirements	650	630	- 3.1	595	- 5.6	- 25
Internal consumption of energy	940	925	- 1.6	940	+ 1.6	- 11
Internal consumption of oil	560	525	- 6.3	500	- 4.8	- 27
Oil imports	640	615	- 3.9	580	- 5.7	- 26

Compared with the estimates suggested in 1972, the evolution of energy and oil supplies would show a reduction in 1975 of 13% and 25% respectively. However, the curve is flattening out and further reductions are unlikely, as the effect of prices has already "skimmed off" that part of consumption which was the most easily cut back or replaced by other sources.

These factors have led to a complete reversal in oil import trends: until 1973 there was an annual average rate of increase of 7% p.a., but imports fell by 4% in 1974 and will do so by nearly 6% in 1975 (each figure by comparison with the preceding year). In view of the increase in price per barrel, oil imports of 580 M toe will have a major impact upon the balance of payments positions of the Member States. At an average price of 10.50 a barrel importing ± 580 M tons of oil in 1975 will represent an expenditure of 45 billion dollar.

A further effort to reduce energy consumption, particularly of oil products, is therefore essential. The target is to achieve a reduction in the annual consumption of oil of about 7 % and a saving in energy of about 5 % seems realistic. These reductions in consumption could be achieved without a real sacrifice in consumer living standards and without affecting economic growth.

2. Energy savings in the short term

The reaction of both consumers and public authorities in the Member States to last winter's energy supply crisis and the considerable increase in the cost of energy has already led to a certain reduction in energy demand. It is possible to envisage, in the short term, a further reduction in the consumption of energy as compared to present estimates, by resort to certain constraints (for example, measures of a fiscal nature, tariffs, administrative and restrictive actions, see Annex 1 measures to implement policy and accelerating and reinforcing actions already undertaken or envisaged.

The actions to be taken with this objective ought to reflect such criteria as the ease and speed o implementation (at most three months after the decision has been taken by the public authorities) and of control in respect of the measures, the absence in the majority of cases of important investments and a substantial saving, notably of oil.

Some of the actions described above could require a delay of implementation greater than three months but should all the same, be undertaken as quickly as possible. In the same way, energy users will be encouraged to apply some of thes measures to the extent to which they are well informed of the necessity of saving energy.

In the domestic and tertiary sector, energy savings for total annual consumption, of about 8 % compared with the already lower consumption of this year may be expected, if the following measures for cutting back consumption for space-heating are systematically and compulsorily applied (for further details see Annexes 2 and 3) :

- more efficient use of heating and operation of heating installations (1);

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(1) for example, turning off the heating in temporarily-unoccupied areas (garage, bedroom), reducing the temperature in certain parts of buildings (halls, lobby and kitchen) or at certain times (night), thermostat regulation of differentiated heating for different rooms, regular servicing and cleaning of burners and furnaces, lagging of pipes in cellars, etc.

- a reduction in the heat losses (1).

In the transport sector, fuel savings could reach at least 5% through such measures as the following:

- setting certain limits to the use of individual vehicles in built-up areas, particularly during rush-hours (2);
- encouraging more widespread use of public transport and taxis (3);
- more functional regulation of traffic;
- more rational driving of vehicles.

In the industrial sector, the public authorities could bring about savings of about 4% by such measures as (4):

- more efficient heating of buildings;
- regular inspection of thermal combustion appliances (burners and furnaces);
- more efficient use of electricity for power and lighting;
- to a very limited degree, savings in the consumption of industrial heat.

In the energy industries sector, short term measures could be applied to refineries, which would reduce refinery consumption losses by 7% to 8%; this would mean savings of about 1% on refined products, by:

- eliminating certain major refinery losses (fuels, flaring-off, ancillary ener sources, processes);
- more efficient use of total refinery capacity.

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(1) for example, improving roofing and wall insulation, closing curtains or shutters at night, reducing heat losses due to absence of draught-excluders round doors and windows, to an unnecessarily high rate of air change, or to an opened chimney damper.

(2) for example, no parking or driving in city centres (cars to be towed away immediately), creation of pedestrian precincts and perimeter car parks.

(3) Facilitate the use of collective transport (including taxis), by establishing bus-lanes which speed up the service and thereby increase the capacity of collective transport.

(4) See Annexes 2 and 3.

To sum up, energy savings without a slowing down of economic growth or any real sacrifice by the consumer could amount to 50 M toe or 5% of internal consumption, and would involve savings of about 35 M toe or 7% in the internal consumption of oil.

3. Savings estimated for 1975 and 1976

In view of the progress of the year 1975 and the fact that certainly three to six months will be required before any decision can be effective, for the year 1975 one can estimate a saving of half the indicated results, that is energy savings of the order of 25 M toe and oil savings of about 17.5 M toe.

It would thus appear that, if recent developments which have already taken place in the energy market do bring about, through market forces and the developing economic situation, a slowing down in the growth of internal consumption for 1975, of 1.6%, and a reduction of oil consumption of 4.8% in relation to consumption in the previous year, additional savings, of about 2.7 and 3.5% respectively, could be achieved through the savings measures without requiring a considerable sacrifice from consumers or without slowing down economic growth.

The internal consumption of energy would thus show a decline of 1.1%, and that of oil a decline of 8.3% for the year 1975 as compared with 1974 (1).

For 1976, the additional savings that could be achieved for internal consumption are about 5% (energy) and 7% (oil).

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(1) In relation to estimates made "before the crisis" in 1972, these reductions are of the order of 12 and 35% respectively.

Short term energy savings

	Consumption 1975 M toe	Savings (1)		Savings for 1976		Savings in $ 1000 million (2)	
		M toe	%	M toe	%	1975	1976
Total energy requirements	1020	25	2.5	50	5		
Oil requirements	595	17.5	3.0	35	6		
Internal consumption of energy	940	25	2.7	50	5		
Internal consumption of oil	500	17.5	3.5	35	7		
Oil imports	580	17.5	3.0	35	6	1.4	2.7

(1) The total savings on annual consumption for 1975 have been estimated at only 50% of the value, on the hypothesis of implementation of the measures for the second half of 1975.

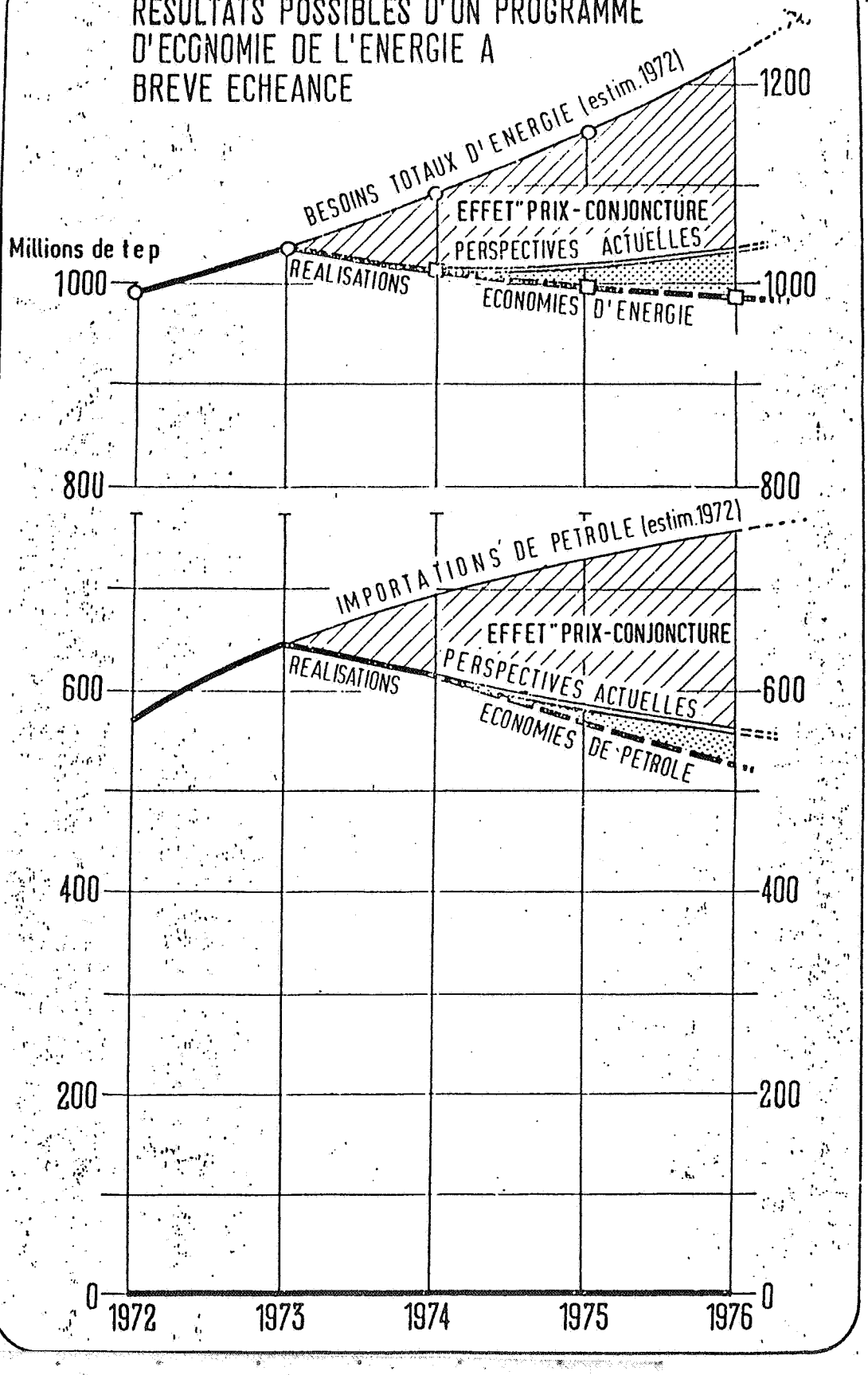
(2) At a price of 10.50 $/bbl, or 78 $/t.

With regard to oil imports for the year 1975, this would represent a reduction of 3% which, added to that of 5.7% already estimated for this year, would reduce imports by 8.7% as compared to 1974.

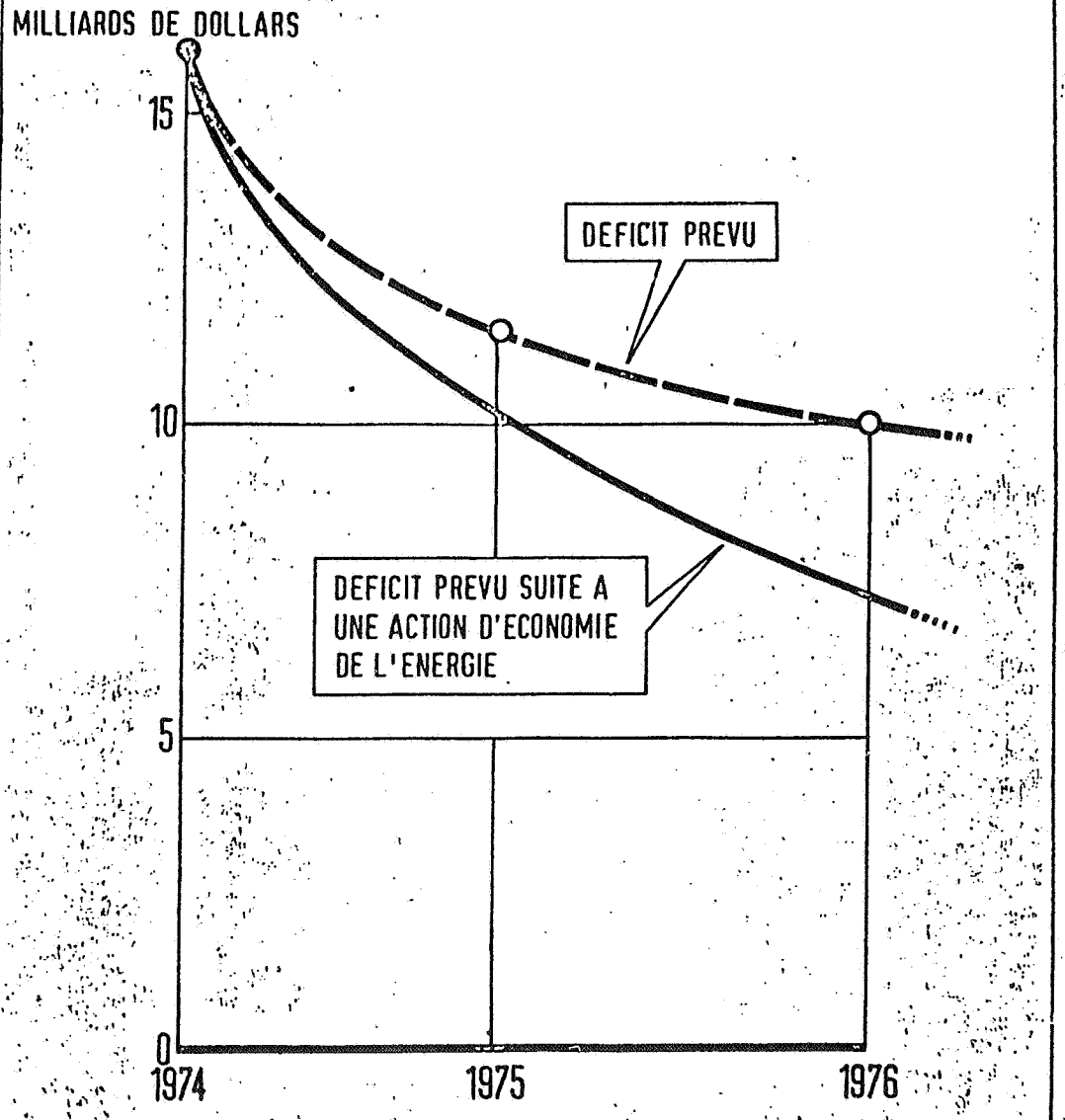
In value, the reduction of oil imports can be caloulated at 1,4 billion dollars.

For the year 1976, the full effect of these actions will double the savings and will reduce oil imports by about 3 billion dollars".

RESULTATS POSSIBLES D'UN PROGRAMME D'ECONOMIE DE L'ENERGIE A BREVE ECHEANCE



"REDUCTION IN THE DEFICIT ON THE CURRENT BALANCE OF PAYMENTS OF THE COMMUNITY BY ENERGY SAVINGS".



MEASURES TO IMPLEMENT POLICY

There are many kinds of measures to be used to achieve the objectives fixed for energy saving, such as :

- financial instruments : prices (progressive tariff structures for gas and electricity consumption, special prices for the consumption of oil products over and above a "normal" level, tariff structures for public transport, taxis etc.), taxes (tax relief, tax impositions etc.), specially preferential loans or aids (subsidies) etc. ;
- local administrative powers concerning the determination of priority traffic lanes for public transport, the prohibition of parking in central areas and of private transport in certain commercial areas in the centre, the setting-up of alternative parking around peripheral terminals for public transport etc. ;
- the introduction of minimum standards for consumption and efficiency in use, and measures to supervise them: thermal combustion (heating with oil products or gas), thermal insulation (as a function of a minimum standard of heat loss), background temperatures in buildings etc. ;
- the systematic and massive use of all ways of informing : mass media, academic journals, training programmes ;
- the rapid training (2 to 3 months) of technicians and other personal for all the services contributing to energy saving (maintenance burners, control of combustion etc.) ;
- and possibly, measures restricting consumption (1) : reduced deliveries from producers, distributors of energy, moderate rationing etc.

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(1) Reducing deliveries of oil products for heating limiting at the same time the increase in consumption of gas or electricity, to avoid a simple substitution between fuels. A reduction in deliveries for heating of the order of 10% compared to a period of comparable climatic conditions (mean temperatures) and chosen from the winter 1973/74 (where certain voluntary savings were already in operation) seems bearable by the consumer without a reduction in his comfort (for example the background temperature) simply by the elimination of losses. (see annex 2).

The choice between these different methods will depend upon the situation in each of the member States, and the circumstances specific to each kind of consumption.

ACTIONS FOR ENERGY SAVING IN THE SHORT TERM

0. Criteria for the choice of action

Possible actions along the lines indicated in Annex 1 should reflect the following criteria :

- ease and speed of implementation (at the most 3 months after the decision of the public authority),
- supervision of the observance of measures,
- no need for large investment expenditures,
- resulting in a substantial saving, especially in oil,
- no impact on economic growth or the standard of living.

1. Actions in the area "Domestic and Tertiary"

The above criteria limit short term actions in the area "Domestic and Tertiary" to the following types :

a) Improving the distribution of heat

- stop heating in rooms permanently or temporarily unoccupied,
- reduced air currents or the period of ventilation (avoid excessive ventilation cooling rooms noticeably),
- ensure the proper air humidity,
- reduce the temperature in rooms where peoples' presence is temporary or during the temporary absence of the occupants (work-place, schools),
- install individual thermostats in each room, regulate them differently according to the exposure to sunshine or the presence of occupants, reduce the temperature at night.

b) Improving the working of the heating systems

- cleaning and adjustment of the heating installation (at least once a a year and before the heating season),
- replacing defective parts, reducing the normal rate of heat generation.

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c) Reducing heat loss

- improving the thermal insulation (roof, timbers, roofing, wall paper), insulating window frames, windows and doors and blocking them up where appropriate, insulation of pipes, elimination of other losses such as those caused by open chimneys.

Time taken to implement them : immediate (apart from the installation of thermostats which requires several weeks). To be undertaken principally by the consumer himself.

2. Actions in the area of transport (1)

a) Restrict private motoring in towns

- more severe restrictions on the parking of private cars in urban central areas with the immediate removal of vehicles in breach of the law;
- interdiction to circulate in certain streets in urban central areas;
- encourage the use of public transport by creating alternative parking areas, and exclusive traffic lanes (which amongst other things, increase the speed very significantly and attracting passengers to public transport, and by adapting the capacity of public transport to the needs;
- balance the need for public transport by staggered working hours.

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(1) Measures to prohibit traffic on certain days do not seem adviseable. First of all the effect is very limited since the consumer will so organise himself as to make his journeys on other days. In addition the true waste of fuel does not take place during journeys at the weekends since the vehicles are twice as much occupied as during the week, and the petrol consumption is less than half that experienced during the rush hours. Taking account of the different levels of occupation, consumption on holidays is around a quarter to a third of that of rush hour traffic, and can be less than that of a train. Lastly this type of measure may have too much risks for car production and tourism, while making for problems in social life (hospital visits) . It is important, above all, in the transport sector, to take measures to reduce traffic congestion in towns and reduce the rush-hours where efficiency is low and the waste enormous.

b) Better organisation of traffic flow (one-way systems linked to rush-hour and traffic entering or leaving town)

6) Adjusting lights and carburettors (at least once a year when visiting the garage for other reasons)

d) Car Pooling

Encouragement from the employer by simplifying the exchange of information (circulating lists, posting boards etc.), giving certain privileges (for example, reserved parking) ; encouraging - in town - hitch-hiking and creating the necessary insurance conditions, etc.

e) Proper car driving

Recommend more "reasonable" behaviour.

3. Industry

- more efficient heating of buildings,
- control of thermal combustion (burners and heat exchangers),
- better use of electricity for motive power and for lighting,
- savings in the use of industrial heat (the possibilities for action here seem limited, at least in the short term).

4. The Energy Industry

- the elimination of certain important losses in refining,
- the better use of the totality of the refinery capacity.

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Energy Savings — Summary of actions

	Affected Consumption 1975			Effectiveness of actions to save energy				Savings in annual consumption according to the degree of restriction					
	% total	Mtoe	of which oil Mt	% total sector		Mtoe	of which oil Mt	none (2)		medium (3)		severe (4)	
								Mtoe	Mt	Mtoe	Mt	Mtoe	Mt
ESTIC AND TERTIARY		320	135										
ting : cons. 75%		240	135										
1. Improving the distribution of heat													
- unused rooms	3	7	4	100	3	7,2	4,0						
- adjustment thermostat	30	70	40	5	1,5	3,6	2,0						
- drop in night temperature	30	70	40	3	1	2,4	1,4						
- reduction in ventilation	100	240	135	10	10	24,0	13,5						
2. Better working of systems													
- regular cleaning and adjustment	40	100	55	10	4	9,6	5,4						
3. Reduction in heat loss													
- thermal insulation	10	25	14	15	1,5	3,6	2,0						
- shutting off (see 1.1)	-	-	-	-	-	-	-						
action in sector 1	100	240	135	19	14,6	46,7 (1)	24,8 (1)	5 1,5	2 1,5	25 7,8	14 10,3	47 15	25 18,5
Reduce temperature 2°C (21-19)	80			8	6,4	20	8						

.B. The total effect of these actions cannot be arrived at by simple addition but must take account of the fact that savings will
e less to the extent that consumption is reduced by the savings made
5% efficiency (measures : information, promotion, financial (tax) incentives)
0% on measures
rationing at 15%

ANNEX 3

	Affected Consumption 1975		Effectiveness of actions to save energy		Savings in annual consumption according to the degree of restriction		
	% total Mtoe	of which oil Mt	% of total sector Mtoe	of which oil Mt	none (2) Mtoe Mt	medium (3) Mtoe Mt	severe (4) Mtoe Mt
2. TRANSPORT	130	115					
2.1. Limiting private transport in towns	40	52					
- prohibition of parking and circulation - encouraging the use of public transport	40	52	20 8	4,2			
2.2. adjustment to traffic flow	40	52	5 2	1,0			
2.3. Adjustment to lights and carburettor	100	115	5 5	5,8			
2.4. Car pooling	40	52	8 3	1,6			
2.5. Better driving of the vehicle	100	115	5 5	5,8			
Total actions in sector 2	130	115	12,2 10,8	14,0(1)	1,4 1,1	7,0 5,4	14 10,8

(1) see preceeding table
(2)(3) see preceeding table
(4) overall and strict application, even rationing at 15%

ANNEX 3

	Affected Consumption 1975			Effectiveness of actions to save energy				Savings in annual consumption according to the degree of restriction					
	%	total Mtoe	of which oil Mt	%	of total sector Mtoe		of which oil Mt	none (2) Mtoe	Mt	medium (3) Mtoe	Mt	severe (4) Mtoe	Mt
3. INDUSTRY		385	165										
energy consumption		315	110										
3.1. Better heating of buildings	15	47	17	15	2,3	7,2	2,5						
3.2. Control of thermal combustion	80	250	100	5	4,0	12,5	5,0						
3.3. Better use of active force/ lighting	10	39	13(a)	2	0,2	0,8	0,3						
3.4. Better use of industrial heat	75	240	80	2	1,5	4,7	1,6						
Total sector 3		385	165		6,5	25(1) 8%	9(1) 7%	2,5	0,8	13 3%	9 5%	25	9(5)
4. ENERGY INDUSTRY													
- Refineries (reduced losses	100	38	37	13	13	5	5						
- Power stations and others	-	-	-	-	-	-	-	-	-	-	-	-	-
Total sector 4	100	38	37	13	13	5	5	5		5		5	
Total inland consumption with actions 1 - 4		940	500			90,7 110,7	52,8 60,8	14	9	50	35	91	53

(a) Consumption of oil in electricity
(1) see table 1
(2) (3) (4) see table 1
(5) The "severe" consumption was not considered for oil used in industry

Summary table

of savings realised by actions to save energy

Savings / Sectors	SAVINGS 12 months				CONSUMPTION 1975			
	Energy		Oil		Present forecast		with energy savings (2)	
	% of consumption of sector	Mtoe	% of consumption of sector	Mt	Mtoe	Mt (1)	Mtoe	Mt
1. Domestic & Tertiary	8	25	10	14	320	135	307	128
2. Transport	5	7	5	7	130	115	127	111
3. Industry	3	13	5	9	385	165	378	161
- energy cons.					315	110		
- non energy cons.					70	55		
4. Energy industry	5	5	6	5	100	80	98	78
5. Losses & statist. adjustments	-	-	-	-	5	5	5	5
Total: inland consumption	5	50	7	35	940	500	915	483
Bunkering & exports	-	-	-	-	80	75	80	75
Total needs	5	50	6	35	1020	575	995	558

(1) These tonnages do not include oil consumption through the intermediary of electricity.

(2) Savings for the 2nd half-year of 1975, therefore around half the value of annual savings.