

XVII/202/83 - E

PUBLIC OPINION IN THE EUROPEAN COMMUNITY: ENERGY

OCTOBER 1982

This survey was conducted in the ten countries of the European Communities at the request of the Directorate-General for Energy of the Commission of the European Communities.

Between March and May 1982 an identical set of twenty questions was put to national representative samples of the population aged fifteen and over, the total number of people involved being 9 700. Each individual was interviewed at home by a professional interviewer.

The survey was carried out by ten specialized institutes, all members of the European Omnibus Survey, under the general coordination of H el ene Riffault, Director-General of Faits et Opinions, Paris.

The names of the institutes taking part, together with other technical details and the French and English versions of the questionnaire, are contained in the Annex.

The Commission of the European Communities disclaims all responsibility for this report, which was compiled by H el ene Riffault, with the assistance of Jean-Fran ois Tohernia.

PUBLIC OPINION IN THE EUROPEAN COMMUNITY: ENERGY

Page

THE GENERAL PICTURE

PART ONE: ENERGY TODAY

I. DAILY USE OF ENERGY

- 1. Household Equipment 2
- 2. The Propensity to Save Energy 5

II. ENERGY SUPPLIES

- 1. Are People Worried about Supplies? 9
- 2. Possible Solutions: The Public's View 16

III. INFORMATION

- 1. The Role of the European Community 22
- 2. Assessment of Media Performance 25

PART TWO: THE NUCLEAR OPTION - OPINIONS AND PRECONCEPTIONS 28

- I. THE BASIC OPTION: FOR OR AGAINST THE DEVELOPMENT OF NUCLEAR POWER** 33

- II. THE CREDIBILITY OF THE STAKES** 47

- III. RISK PERCEPTION** 50

- IV. THE IMAGE OF NUCLEAR POWER STATIONS** 53

- ANNEXES** A. Technical Details of the Survey 61

- B. Additional Technical Notes 69

PUBLIC OPINION IN THE EUROPEAN COMMUNITY: ENERGY

THE GENERAL PICTURE

This survey was conducted in the ten countries of the European Communities at the request of the Directorate-General for Energy of the Commission of the European Communities.

Between March and May 1982 an identical set of twenty questions was put to national representative samples of the population aged fifteen and over, the total number of people involved being 9 700. Each individual was interviewed at home by a professional interviewer. The survey was carried out by specialized institutes, all members of the European Omnibus Survey.

The survey was based on three objectives. In the first place, the aim was to find out what Europeans¹ thought about energy problems in general and about nuclear energy, in particular. At the same time, it would be possible to ascertain, by comparison with the results of previous surveys, whether or not public opinion had changed and, if so, what direction it had taken. Last, but not least, the intention was to discover just how well-informed the public was on energy matters. What follows is a fifteen-point summary of the most salient results of the survey.

ENERGY AND INFORMATION

1. For the past ten years energy has been a regular front-page feature: supply problems, the price of petrol, relations with producer countries, the unemployment crisis in traditionally coal-based areas, research into new energy sources, the pros and cons of nuclear power, and so on. Situations develop and may even resolve themselves; the experts do not always concur. From this jumble of information and opinion, a number of aspects will hit home to the public, though the overall picture may not be clearly defined.

2. Europeans take a rather dim view of the information on energy problems offered to them by the press, radio, television or educational bodies. This should come as no surprise as other studies have already shown that the public is inclined to blame the mass media for its own ignorance.

3. The vast majority of Europeans hold national governments, above all others, responsible for energy matters such as the safety of nuclear power stations or research into new energy sources. It would, however, be wrong to assume that they therefore think that all countries should act entirely independently in this field. Previous surveys have shown that three out of four Europeans believe it important to achieve a common energy policy.

¹The term "Europeans" is used here and throughout the report to indicate nationals of the ten Member States of the European Communities.

ENERGY SUPPLY

4. Europeans today are beset with anxieties about the future of the world and of the society in which we live. Prospects for oil and gas supplies, upon which three-quarters of our energy consumption is based, are not regarded as a major cause for concern. Nevertheless, two in three Europeans are aware that there is an energy problem, and it is generally thought that the situation will worsen over the next ten years.

5. European Community households account for the direct consumption of just over a quarter of the total amount of energy produced; one can only wonder at the very large quantities of domestic appliances and other energy-consuming goods involved.

6. Almost everyone (nine out of ten people) claims to have made at least one attempt to save energy in recent years. Such savings have been made predominantly in connection with heating and electricity, rather than petrol. Given the willingness that is apparent at present, there is still scope for encouraging further savings.

7. When it comes to solving the problem of meeting demand, by far the most popular option is that of increasing research into renewable energy sources: solar energy, the biomass, tidal power, etc. The second and third choices are the increased or renewed exploitation of traditional energy sources (coal, lignite or brown coal and peat) and energy-saving. Nuclear power takes fourth place. Only a very small proportion are in favour of buying supplies from abroad, which indicates either a more or less conscious desire for national independence as far as energy is concerned, or else considerable ignorance as to the present level of dependency.

THE DEVELOPMENT OF NUCLEAR POWER

8. Given a straight choice between developing and not developing nuclear power, the public is clearly divided: 38% are in favour of development, 37% reject it because it involves unacceptable risk and the rest either fail to see any advantage in it or "don't know".

9. Four years ago the same question prompted a more or less similar response in the Community as a whole. This apparent similarity masks, however, considerable shifts in opinion which vary from country to country. In France, Germany and the Netherlands opinion has tended to become favourable. In Luxembourg, Denmark, Italy, the United Kingdom and, above all, Ireland, the opposite is true. Belgium is the only country where there has been no apparent change.

Changes have come about as a result of two factors: (1) increased or decreased belief in the beneficial aspects of nuclear power ("it is worthwhile"); (2) increased or decreased fear of nuclear power ("the risks involved are unacceptable"). The weight carried by each of the two in the changes of opinion that have occurred since 1978 varies from one country to another. In Germany, for example, it can be seen that fear has diminished, rather than that there has been any great increase in belief in the beneficial aspects. In Luxembourg and Denmark, the trend observed is due mainly to increased fear; in the United Kingdom, Italy and Ireland, it can be explained in terms of both factors, although loss of belief in the value of nuclear development takes precedence. In France and the Netherlands public opinion has changed on the basis of both factors in equal measure.

10. Attitudes towards nuclear power vary considerably from one European country to another.

In France, which is the most advanced Community country in the nuclear field, public opinion has shifted in recent years with the result that the majority is now in favour of development.

German public opinion has also moved in this direction and fear of the dangers inherent in nuclear power has diminished. However, whilst there are now more supporters than opponents in Germany, the former are still far from being a majority because so many others are undecided.

In the United Kingdom, on the other hand, public opinion has been affected by the doubt cast on the economic benefits of nuclear power. The country is currently split evenly between those for and those against.

Belgian public opinion has hardly altered over the four years. It is predominantly hostile, less through fear of the dangers involved than because of a loss of faith in the economic benefits.

In the Netherlands and Italy, which are both countries where there is little nuclear development, public opinion is similar, i.e. predominantly anti-nuclear; however, whereas the tendency over the last four years has been favourable in the Netherlands, in Italy the opposite has been true.

Lastly, in those countries where there are no nuclear power plants, public opinion is clearly hostile and has become more markedly so over the past four years. In Ireland and in Greece, there are three times as many opponents as there are supporters of the nuclear option.

11. Leaving aside any national differences, the tendency for Europeans to adopt a right-wing or a left-wing political stance is undoubtedly the most influential factor when it comes to attitudes towards the development of nuclear power. This tendency should not, however, be interpreted as meaning that attitudes are necessarily uniform: a significant minority of left-wing supporters is shown to be in favour of the development of nuclear power, while the right includes a fair number of opponents.

PUBLIC PERCEPTION OF NUCLEAR POWER

12. In all countries the position adopted with regard to developing nuclear power stations is very closely linked with the notion that "if we don't, we shall soon be obliged to limit our electricity consumption". However, the credibility of this argument does not consistently encourage support for nuclear power stations. It would seem then that a number of Europeans would prefer restricted access to electricity to increased nuclear capacity. In recent years then, the argument has lost its edge.

13. Although Europeans see less danger in having a nuclear power plant in the neighbourhood than in living near a chemicals or explosives factory, very few people (9%) would entirely rule out the possibility of an atomic bomb-type explosion at a nuclear power station. One cannot help noticing the general lack of basic technical knowledge. As far as Europeans are concerned, the risk involved in storing radioactive waste is the most frightening aspect: it opens up visions of a distant, hazily perceived future in which dangers appear all the more horrendous for being incompletely defined.

14. The study of prevailing stereotyped notions concerning nuclear power stations would appear to reveal a certain amount of consensus, a great deal of prejudice and a strong dose of ignorance. There is considerable consensus amongst Europeans on two points: "Thanks to nuclear power stations, we shall have available extra resources of electricity" and "Nuclear power stations can be dangerous for the people that work in them". The most widespread prejudices are expressed in statements such as "The numerous systems of security precautions are a clear indication that by their very nature power stations are dangerous" and "The expansion of the number of nuclear power stations is dangerous". Opponents to nuclear power overwhelmingly agree with these statements, whereas the majority of those in favour show some concern. The greatest ignorance is apparent when it comes to the question of whether nuclear power is a clean form of energy and whether it is cheaper to produce.

15. Opponents to the development of nuclear power systematically adopt the more radical position, particularly as regards risks, rejecting the notion of economic benefits or taking refuge in abstention. Those who support nuclear power take a more balanced view: although they are aware of the economic and technical arguments in favour, they do not deny that there are risks involved.

CONCLUSION

Attitudes to energy problems in the European Community are characterized by a fairly superficial awareness of the risks of a breakdown in supply, coupled with a strong emotional response, demonstrated in the choice of solutions.

"Fairly superficial" because although a reasonable majority have heard of the energy crisis and acknowledge it to be a serious problem both now and in the long term, there is a general failure to make the connection between national- and international-scale problems and the individual consumer. In particular, high-level energy consumers and nationals of the richest countries tend to play down the energy crisis. Low-level consumers and people living in the poorer countries, on the other hand, show more awareness, but almost as if the energy crisis were merely one aspect of the difficult economic situation facing their own countries.

The emotional response to the question of possible solutions is discerned in the choice of the most romantic, but technically and economically the least readily-available solution - renewable energy sources. On the other hand, the nuclear option still evokes fear, despite the fact that it has undoubtedly been a success in those countries where it has been adopted on a large scale.

Thanks to the series of opinion polls commissioned by the European Communities, it has been possible to trace the evolution over the last ten years of European attitudes to various topical issues: consumption and consumerism, regional imbalance, social matters, unemployment or the retirement age, scientific and technical developments, etc. Energy, and more especially nuclear energy, can be seen to elicit the widest variation in response from one country to another.

Pro- or anti-nuclear attitudes depend apparently on the psychological phenomenon of critical distance: nuclear energy is only really accepted once it has been developed on a sufficient scale. When a country is committed to a nuclear policy and, more to the point, when nuclear power plants actually exist not far from home, installations of this kind appear to become more palatable. Conversely, the farther removed from the reality of nuclear power, the more the public is perturbed by it, and the greater its concern at the thought that such highly-threatening installations might actually materialize.

Any misgivings the supporters might have spring mainly from the feeling that whilst at present the production and use of nuclear energy are governed by a reasonably reliable set of conventions and conditions (i.e. the "rules of the game"), there would be a grave danger if society lost control of the situation. Such a loss of control might be occasioned by military uses, acts of terrorism or even, quite simply, an excessive proliferation of power stations. It should be stressed at

this point that the risks involved in power station operation are a cause of less concern than the storage of radioactive wastes.

It is important to understand that the pro- and anti-nuclear factions tend, on the whole, to argue from different premises: the adversaries either deny or are unaware of the inherent economic advantages; the supporters tend to play down the risks and dangers involved, without actually going so far as to deny that these exist. It is understandably difficult, therefore, to initiate a dialogue between the two sides, let alone try and reconcile them, if they are not yet convinced of the terms of the debate.

The survey reveals that the public is still not receiving adequate information and that this absence of information in itself nurtures concern because the level of ignorance on this subject is very considerable. It must, however, be stressed that the information received will only be credible in so far as it issues from authorities trusted by the public to deal with such matters. In this respect, the European Community is fairly well regarded by the public which sees it, albeit as yet indistinctly, as a potential source of action.

PART ONE: ENERGY TODAY

I. DAILY USE OF ENERGY

The most recent statistics place annual energy consumption in the ten Member States of the European Community at a level of around 700 million toe, of which 27% is accounted for by household consumption. In other words, just over a quarter of the total amount of energy consumed in the European Community is dependent on the decisions, attitudes and habits of ordinary people in their daily lives.

Macro-economic statistics show that domestic energy consumption per head of the population varies considerably from country to country within the Community. The greatest consumers are Luxembourg, the Netherlands, Denmark, Germany and Belgium; Ireland and Italy both have a low level of consumption, while Greece has the lowest of all.

I. HOUSEHOLD EQUIPMENT

Household energy consumption takes many forms: heating, lighting, vehicles, household appliances, etc. It would not be within the scope of this survey to attempt to catalogue, even approximately, all the outlets for energy consumption present in the households of interviewees. It seemed appropriate, however, to establish a few basic factors in connection with energy-consuming appliances, particularly for the purpose of the analyses (given below) of attitudes towards the energy crisis, possible savings and the future of nuclear energy. Accordingly, a list of eleven items was used to assist this research.

Thus 97% of European households can be seen to possess a refrigerator, 88% a washing machine, 74% a telephone, 73% a car, 68% a colour television, etc. These percentages vary considerably from country to country, as is shown in Table I.

**Table I - PERCENTAGE OF EUROPEAN HOUSEHOLDS IN POSSESSION OF THE FOLLOWING
PIECES OF EQUIPMENT:**

	Fridge	Wash- ing mach- ine	Tele- phone	Car	Col- our TV	Central heat- ing	Elec- tric tools	Sepa- rate water- heater	Sepa- rate freez- er	Dish- wash- er	≥ 125cc motor- bike	Average number out of 11
L	97	98	93	79	71	80	79	67	73	33	4	7.76
NL	98	91	88	68	81	69	69	82	41	10	6	7.05
D	95	90	63	70	84	74	62	38	63	30	10	6.88
DK	98	73	88	69	75	75	63	20	80	25	2	6.70
UK	98	88	82	68	83	64	65	59	44	5	9	6.67
F	98	86	82	80	60	73	58	56	37	23	5	6.58
B	93	82	50	76	78	56	58	57	52	19	3	6.30
I	98	93	74	78	46	55	44	54	20	16	14	5.92
IRL	90	77	35	71	70	39	35	46	18	7	6	5.06
GR	97	61	57	44	13	41	26	63	2	4	5	4.20
EC	97	88	74	73	68	65	57	53	41	18	9	6.46

NB. Countries are classified according to the average number of items possessed (last column)

The average number of items per country can be seen to relate very closely to the estimate of per capita domestic energy consumption based on the available macro-economic data (correlation coefficient: .891).

Since the data collected in the survey on household equipment can thus be regarded as an efficient indicator of a country's general energy consumption level, it is worth reflecting for a moment on the differences between the various countries.

The disparity between them is more or less marked according to the various types of equipment: in almost all cases, Luxembourg is the most highly-equipped: conversely, Greece is generally the least well-equipped. Overall, the differences are minimal when it comes to refrigerators (90-98%), slight in the case of washing machines (61-98%), substantial in that of colour televisions (13-83%) and considerable for dish-washers (4-33%).

The data presented thus far give an overall picture of the average situation in each country in terms of energy-consuming equipment. However, the considerable differences between countries are also reflected within the individual countries. Generally speaking, the answer distribution curve for the number of items possessed is a normal curve (Gaussian distribution); this being so, interviewees have been divided into three groups (each corresponding more or less exactly to one third of the total sample).

We should emphasise that each person is classified according to national consumption criteria. Thus, in order to be included in the "high-level consumption" bracket (top third) Luxemburgers and Germans must possess at least 9 of the 11 items listed; Greeks, on the other hand, need only possess 6 or more.¹

It will thus be possible to establish whether or not opinions on energy matters vary in relation to an individual's classification as a low- or high-level consumer in comparison with the national average.

1

Number of items possessed
(out of the 11 listed)

	low-level consumption	average consumption	high-level consumption
Luxembourg and Germany	1 - 6	7. 8	9 or more
Netherlands	1 - 6	7	8 or more
Belgium, Denmark, France, Italy, United Kingdom	1 - 5	6. 7	8 or more
Ireland	1 - 3	4. 5. 6	7 or more
Greece	1 - 3	4. 5	6 or more

II. THE PROPENSITY TO SAVE ENERGY

As a result of the disastrous oil crises in recent years, European governments have recommended that the public adopt energy-saving measures, both in the national interest and for its own benefit. How far have these measures been successful?

A high proportion of Europeans claim to have already made savings on heating, electricity and petrol in recent years. These answers should undoubtedly be regarded as indicative; they cannot give any concrete idea of the actual savings made. Nevertheless, Europeans are clearly willing to save energy.

Question: In recent years, have you personally done any of the following things?

	Overall have already done so	
Reduce heating costs by improving the insulation in your home (e.g. double glazing, improved roof insulation, adjustment of the controls of your heating equipment, etc.)	44%)	} Total > 91 by virtue of multiple answers
Reduce heating costs by reducing the temperature or amount of heat you use	55%)	
Cut down petrol used in your car (by using the car less, by driving more gently, etc.)	39%)	
Economise in lighting or the use of other electrical appliances you have in your home	53%)	
	Total of those who have taken at least one of the above measures		91%
	Those who have done none of the above	<u>9%</u> 100%

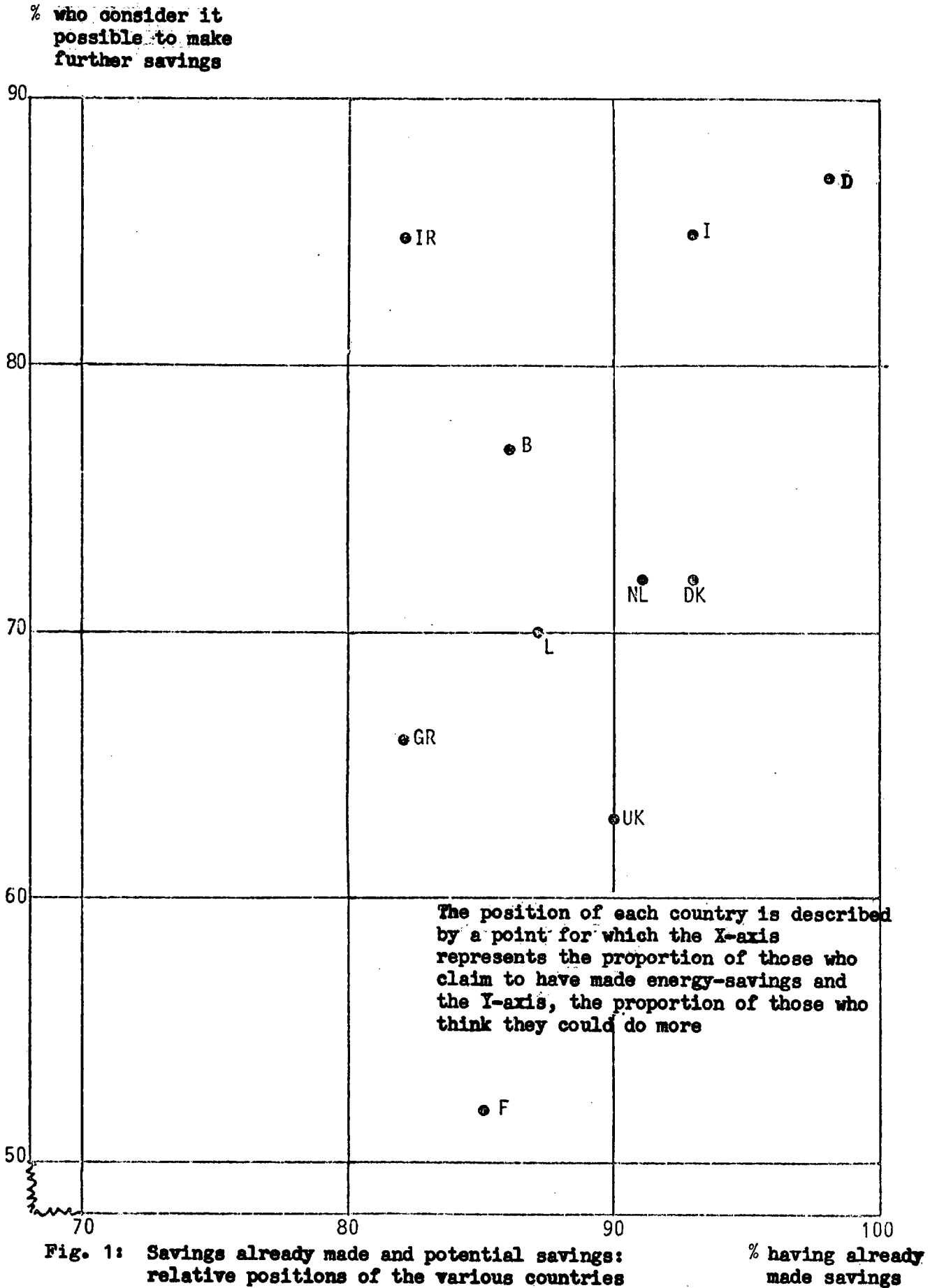
Thus nine out of ten Europeans claim to have taken energy-saving measures. This is a considerable proportion, varying little from country to country (maximum: 98% in Germany, minimum 82% in Ireland).

There is still room for further energy-saving: 72% of Europeans think that they could save more (in particular, 33% could cut down more on lighting and the use of electrical appliances, 23% could reduce their petrol consumption, 23% could manage with less heating and 21% could further improve their insulation and re-adjust their heating controls). There is not, however, the same willingness to do these things in all the countries concerned: eight or nine out of ten in Germany, Italy and Ireland said that they could make further savings; in France only five out of ten said they could, whereas results for the remaining countries were somewhere in between.¹

From the answers received, it can be seen that an order of priority exists with regard to the areas in which savings seem possible or bearable:

- there is considerable reluctance to cut down on petrol which appears to represent an important personal need;
- making savings on the heating is more acceptable to some, although its scope is probably limited;
- voluntary reduction in electricity consumption seems to be the least painful means of saving. It is doubtful, however, whether the willingness shown in this area can be of any real use if it simply amounts to remembering to turn the light off when leaving a room or using electrical appliances somewhat less frequently. Nevertheless, this is an area in which a certain amount of cooperation could be expected if the public were better informed.

¹ The diagram on the following page illustrates the position of the various countries with regard to the two questions mentioned above. The scope for further savings, measured in terms of willingness, is all the greater in a country in which a high proportion have already taken such measures.



It should be added that the fact of having made savings in a specific area acts as an incentive to make further savings in the same area: those who have already cut down on lighting are more willing than others to go on doing so; those who have reduced their petrol consumption are more persuaded than others that it is scope for further reduction; those who have reduced their heating plan to make further cuts; those who have improved their insulation are more convinced that they could do more in this area. Actual experience thus serves to teach and to instil conviction.

To complete the picture of attitudes to energy-saving, which are based on both the financial aspect and concern for the community as a whole, there are the replies to an additional question: "Do you feel that other people in your neighbourhood could do more about energy saving than they do now and in which ways in particular of the few I have mentioned?" There is a general tendency to feel that others could do more and that petrol consumption, above all, is the area in which they should do more.

	SELF		OTHERS
	Done so <u>already</u>	Could do <u>more</u>	Could do <u>more</u>
	%	%	%
Saving on heating	55	23	32
Saving on lighting and electricity	53	33	38
Improvement of insulation and adjustment of heating controls	44	21	33
Reduction in petrol consumption	39	23	42

To what extent does belonging to the high-level or low-level energy consumption group in one's own country affect one's decisions with regard to energy-saving? Within all three groups the same proportion claimed to have made savings, but not in the same areas (with the exception of saving on heating which was frequent in all three groups). The low-level consumption group cut back mainly on lighting and electricity whereas the high-level consumption group tended rather to improve their insulation and to re-adjust their heating controls.

Have already made ...	Of those belonging to the following consumption groups:			
	OVERALL %	low-level %	average %	high-level %
savings on heating	55	52	56	57
savings on lighting and electricity	53	59	52	49
improvements in insulation and adjustment of heating controls	44	32	45	56
reduction in petrol consumption	39	27	44	45
Total of those who have already made savings	91	91	91	92

II. ENERGY SUPPLIES

1. ARE PEOPLE WORRIED ABOUT SUPPLIES?

European concern for the future of the world can take a host of forms. Where does the energy crisis figure amongst all these? Happily before energy problems were raised in the interview, subjects were able to answer a general question which throws some light on the matter.¹

¹ Eurobarometer No 17, June 1982, p. 31.

Question: Here are some kinds of fears which are sometimes expressed about the future (say the next 10 or 15 years) of the world we live in. I would like you to tell me which of the following really concern you or worry you?

	<u>Replies overall</u>	<u>Order of precedence</u>
More and more artificial things are coming into the life we lead (housing, traffic, food, etc..)	41%	4
The despoiling of natural life and the countryside by pollution of all kinds	57%	3
Increase in unemployment as a consequence of the automation of jobs	66%	2
Your country's loss of influence in Europe	14%	10
<u>A prolonged breakdown in supplies of oil and natural gas</u>	23%	8
The invasion of our country by low-priced products from the Far East	20%	9
A critical deterioration in international relations	35%	6
A rise in tensions between different groups in our society resulting in serious and lasting disorders	38%	5
A reduction in the influence of Western Europe in the world	10%	11
The risk that the use of new medical or pharmaceutical discoveries may severely affect the human personality	29%	7
Rise in crime and terrorism	71%	1

Thus it can be seen that fear of a prolonged breakdown in supplies of oil and natural gas features among Europeans' serious concerns for the future.

When interviewed specifically on the extent of the energy crisis nearly two-thirds of the public considered it to be very serious or fairly serious today; similar proportions thought that it would still be so in ten years' time.

Questions: Do you think there is an energy problem in (your country) today?
 If YES, do you think it is very serious, fairly serious or not very serious?

And in ten years' time, do you think there will be an energy problem in (your country)? If YES, do you think it will be very serious, fairly serious or not very serious?

	<u>Today</u> %		<u>In ten years</u> %
Very serious	24)		30)
	) 64		) 61
Fairly serious	40)		31)
Not very serious	15		12
No problem	15		11
?	<u>6</u>		<u>16</u>
	100		100
CONCERN INDEX ¹	2.78		2.95

The various nationalities have very different ideas as to the gravity of the energy supply problem: the Italians are by far the most aware of the problem, followed by the French. Luxemburgers, the British and, above all, the Dutch are the least concerned.

Bearing in mind the point that was made in the first chapter, i.e. that Luxemburgers and the Dutch possess the greatest proportion of energy-consuming appliances, whilst Italy is one of the least well-equipped countries, it is obvious that the fact that a country is highly equipped does not necessarily mean that its people exhibit a correspondingly high level of concern about energy problems. The diagram on the following page illustrates national differences.

¹ To simplify reading, results have been summarized in an index calculated as follows: Very serious = 4, fairly serious = 3, not very serious = 2, no problem = 1. Non-answers have been excluded from the calculation. The index may vary theoretically from one to four, the theoretical average being 2.50.

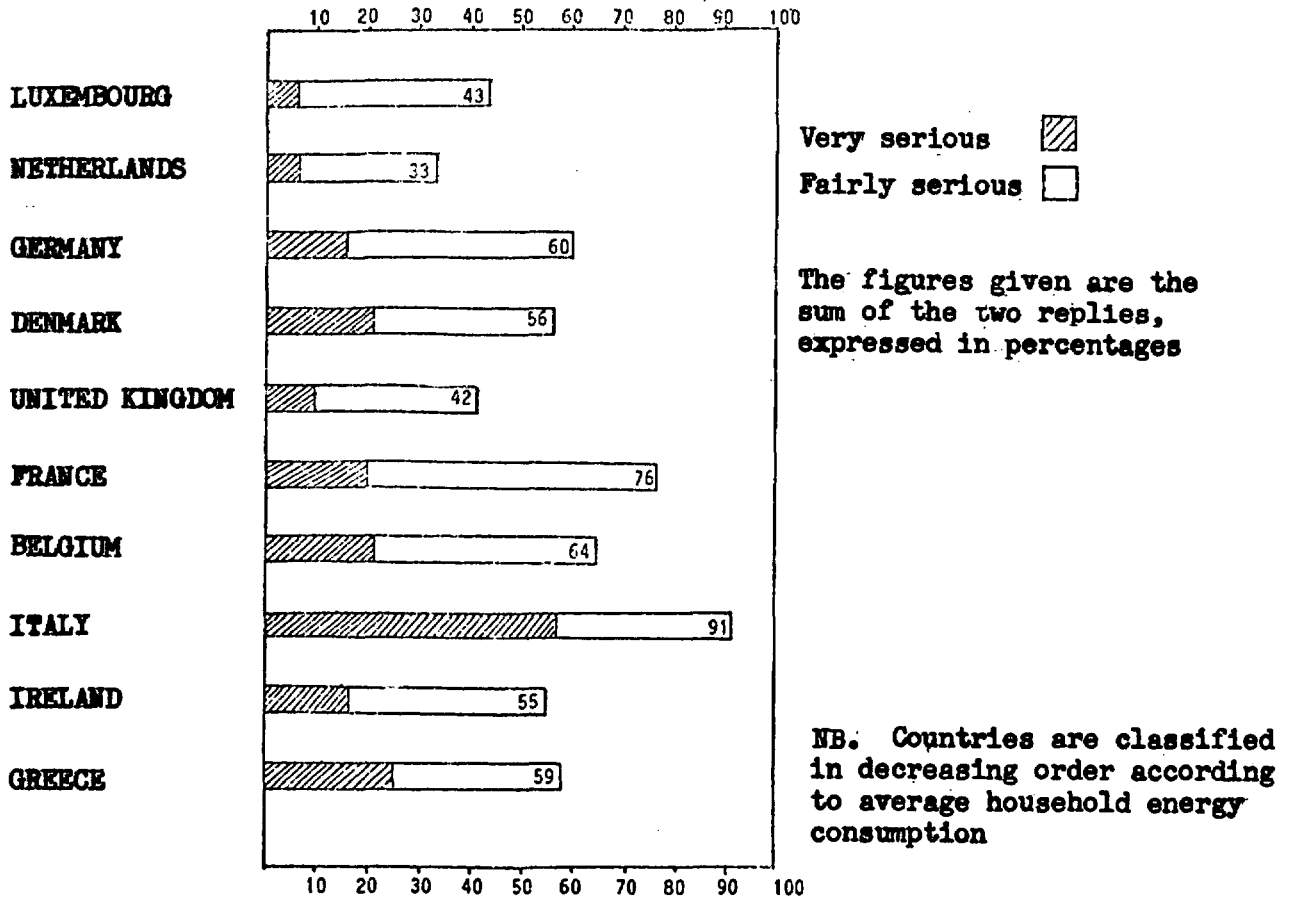


Fig. 2: Assessment of the gravity of the current energy problem

What is the picture within each individual country? Does one's opinion of the gravity of the crisis depend upon whether one is a high-level or a low-level consumer? The answer is provided in the table below: the higher the level of consumption, the lower the degree of concern (according to the definition on p. 4).

The energy problem today is...	Energy consumption level		
	low %	average %	high %
very serious	26)	24)	24)
	) 67	) 64	) 64
fairly serious	41)	40)	40)
not very serious	14	16	15
no problem	11	16	18
?	<u>8</u>	<u>4</u>	<u>3</u>
	100	100	100
CONCERN INDEX	2.88	2.75	2.71

The differences that can be observed here are not what one might expect. They reflect rather the absence of any rational pattern in opinions on the crisis.

It is reasonable to wonder whether any other factors affect this assessment of the energy crisis, e.g. age, level of education, degree of "cognitive mobilization".¹ In fact, none of these factors appears to carry any weight in the answers given, since the gravity index is more or less the same in all the groups studied. There is one exception, however: the youngest group, particularly those who are still receiving education, are manifestly more aware of the crisis, which indicates that the latter figures fairly prominently in current teaching programmes (see table on following page).

People always have difficulty in making forecasts; 16% were unable to express an opinion on the question of energy supplies in ten years' time. Those who were able to do so tended to predict a worsening of the crisis (gravity index for today: 2.78; gravity index in ten years: 2.95).

The feeling that things will get worse prevails in most countries; these do not, however, include the three countries which are currently the most concerned (Italy, France, Greece) or Denmark, where the gravity index remains stable or is slightly lower than before.

Luxembourg, the United Kingdom, the Netherlands and Ireland are those countries where it is most strongly felt that the situation will get worse. They are also amongst the least concerned today.

¹ The "leadership" or "cognitive mobilization" index is produced by combining the answers to two questions, one on frequency of political discussion, the other on the capacity to persuade others.

In this poll, therefore, the breakdown of interviewees according to their degree of cognitive mobilization (or leadership) is as follows for the Community as a whole:

Non-leaders		Leaders		Total
<u>L--</u>	<u>L-</u>	<u>L+</u>	<u>L++</u>	
23%	34%	31%	12%	100%
(n=2144)	(n=3323)	(n=3036)	(n=1164)	(N=9667)

For further details on how the index is produced, see Annex B-1.

Table II - THE GRAVITY OF THE ENERGY CRISIS (indices)¹

	<u>Today</u>	<u>In ten years</u>	<u>Trend</u>
OVERALL	2.78	2.95	+ .17
AGE : 15-19 years	2.89	3.15	+ .26
20-24 "	2.78	3.00	+ .22
25-29 "	2.78	2.94	+ .16
30-39 "	2.78	2.98	+ .20
40-49 "	2.76	2.98	+ .22
50-59 "	2.76	2.87	+ .11
60 and over	2.75	2.86	+ .11
AGE AT WHICH EDUCATION COMPLETED			
15 or under	2.79	2.93	+ .14
16-19 years	2.61	2.91	+ .30
20 and over	2.82	2.98	+ .16
still studying	2.97	3.17	+ .20
LEADERSHIP INDEX			
L++	2.83	2.89	+ .06
L+	2.79	2.98	+ .19
L-	2.76	2.96	+ .20
L--	2.74	2.94	+ .20
COUNTRY			
B	2.83	3.06	+ .23
DK	2.65	2.57	- .08
D	2.68	2.87	+ .19
F	2.94	2.91	- .03
IRL	2.67	3.06	+ .39
I	3.53	3.53	=
L	2.32	2.98	+ .66
NL	2.03	2.43	+ .40
UK	2.15	2.66	+ .51
GR	2.92	2.84	- .08

¹ See p.11 for method of calculating index with theoretical variation from 1 (no problem) to 4 (very serious).

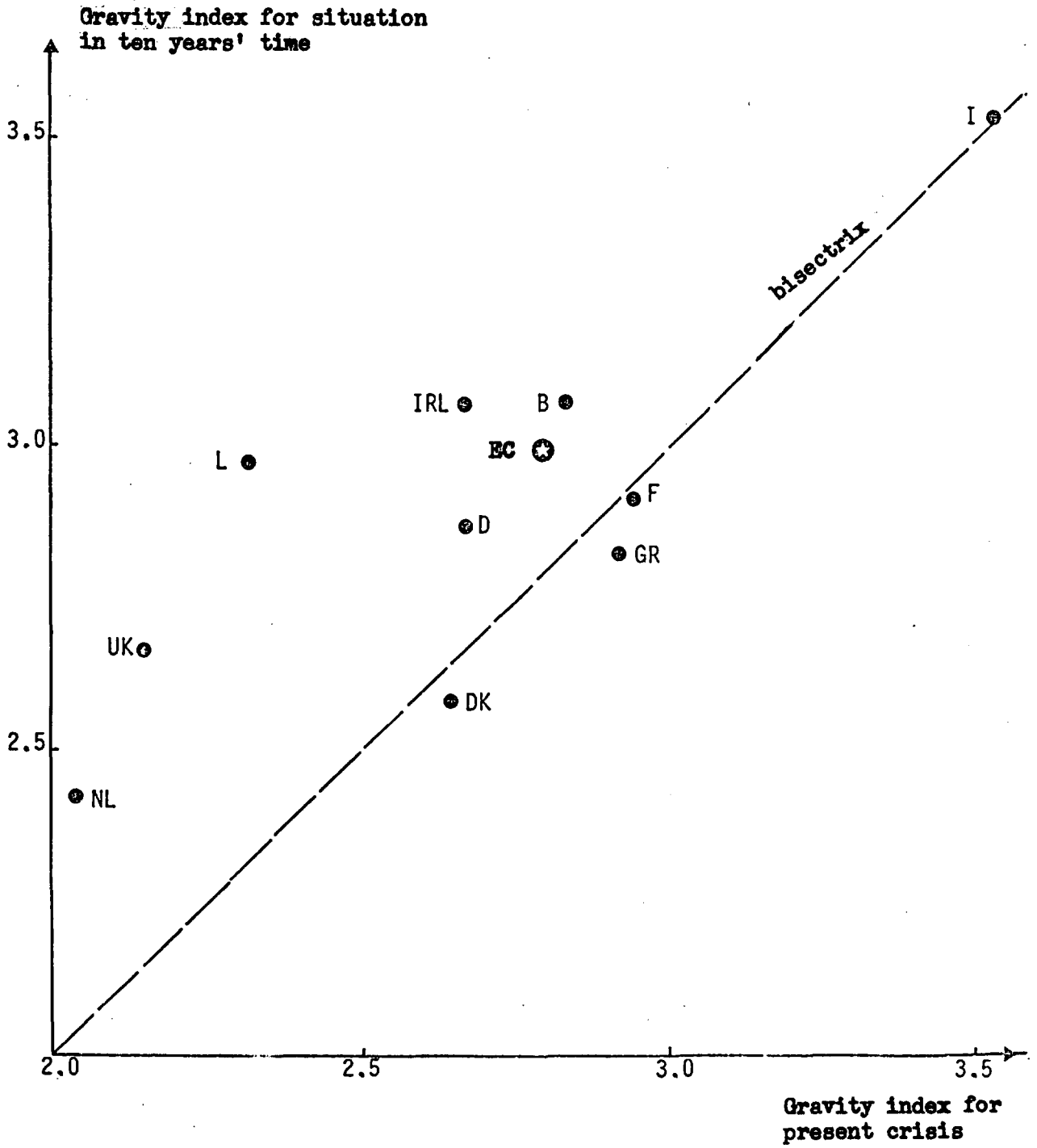


Fig. 3: Comparison of different countries' gravity indices with regard to the present crisis and the situation in ten years' time.

2. POSSIBLE SOLUTIONS: THE PUBLIC'S VIEW

Europeans have fairly clear ideas as to what should be done to solve the crisis.

Question: Different possibilities can be thought of as solutions to the problem of (your country's) energy supplies. Which solution do you feel is most appropriate? and the next?

	The most appropriate solution		
	<u>First</u> %	<u>Second</u> %	<u>TOTAL</u> %
- To buy or continue to buy from abroad to make up for any shortfall in energy supplies	6	5	11
- To encourage the research needed to solve the technical problems of, and put into practice methods of producing renewable energy (solar power, energy from biological sources, tidal power, etc.)	51	19	70
- To develop or increase production of nuclear power	10	13	23
- To increase or renew exploitation of energy from traditional sources (e.g. coal, lignite or brown coal, peat)	15	29	44
- To save energy	14	26	40
- ?	<u>4</u>	<u>8</u>	-
	100	100	

These results are remarkable for a number of reasons:

- (a) The desire for national independence as regards energy is indirectly expressed in the extremely low percentage in favour of buying energy from abroad, despite the fact that is actually what is happening in a great many countries now.
- (b) Public opinion is overwhelmingly in favour of increasing the use of renewable energy sources: one in two Europeans considers this to be the most appropriate solution, whereas none of the other options gains anything like this level of support. This is not the first time that

the attraction of new energy sources has been demonstrated. In a European survey, conducted in 1979, concerning scientific research and its most desirable orientation, the public had to select from a list of eight research areas, those that they considered to be worthwhile. The most popular choice (82%) was that of developing medical and surgical research on human organ transplants, followed by spending, "if necessary, a great deal of money to find and develop new sources of energy" (76%); the remaining six suggestions gained far less support.¹

- (c) Increasing or renewing exploitation of energy from traditional sources seems to be regarded as a back-up measure: this option is a fairly common choice, but usually in second place.
- (d) Energy-savings feature fairly low down in the order of preference; in common with traditional sources, they are regarded as a supplementary solution.
- (e) Lastly, increased production of nuclear energy is regarded as being desirable or acceptable by one in four Europeans. Attitudes to the nuclear option will be discussed at length in the following chapters.

It is even more instructive to study together the first and second choices made by each of the ten thousand people interviewed. Of the twenty possible combinations, the most popular were the following:

	1st SOLUTION	and	2nd SOLUTION	Percentage choosing combination
1.	Renewable energy sources		Traditional sources	21%
2.	" " "		Energy-savings	17%
3.	" " "		Nuclear energy	9%
4.	Traditional sources		Renewable energy sources	6%
5.	" "		Energy-savings	6%
6.	Energy-savings		Renewable energy sources	6%

¹ See Annex B-2.

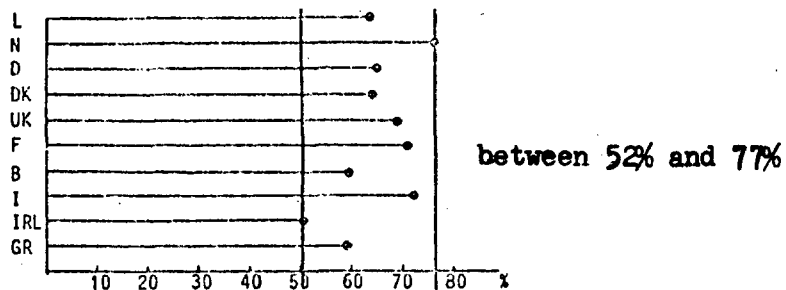
It is worth noting that the third most frequent combination is the development of nuclear power and research into renewable energy sources. Generally, those who put renewable energy sources in first place tended to choose nuclear power as the second solution and, above all, those whose first choice was nuclear energy more often than not put renewable energy sources in second place.

A fairly substantial number of Europeans do not therefore regard these two solutions as being mutually exclusive.

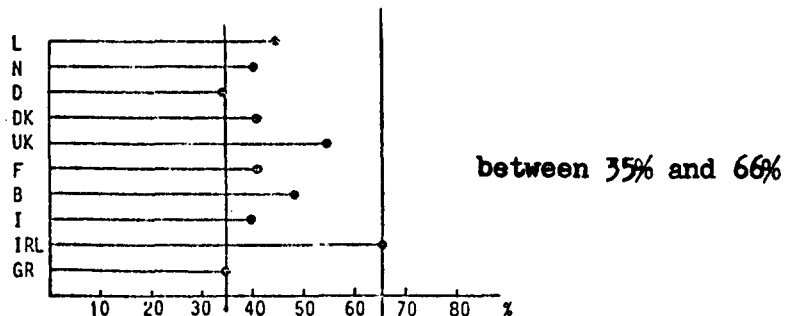
%total no. of interviewees		FIRST CHOICE						TOTAL
		Purchasing abroad	Renew. energy	Nuclear power	Exploit. trad. sources	Energy-savings	Don't know	
2nd C H O I C E	Purchasing abroad	-	3	-	1	1	-	5
	Renew. energy	2	-	5	6	6	-	19
	Nuclear power	1	9	-	1	1	1	13
	Trad. sources	1	21	3	-	4	-	29
	Energy-savings	1	17	2	6	-	-	26
	Don't know	1	1	-	1	2	3	8
	TOTAL	6	51	10	15	14	4	100

The general tendencies described above reflect a reasonably wide consensus throughout the ten Member States, with one or two variations such as the strong attachment to traditional sources in Ireland, the United Kingdom and Belgium, and the relatively high level of interest in the nuclear option in Germany, France and Italy. However, public opinion through the Community is very largely in favour of developing renewable energy sources (see graph on following page).

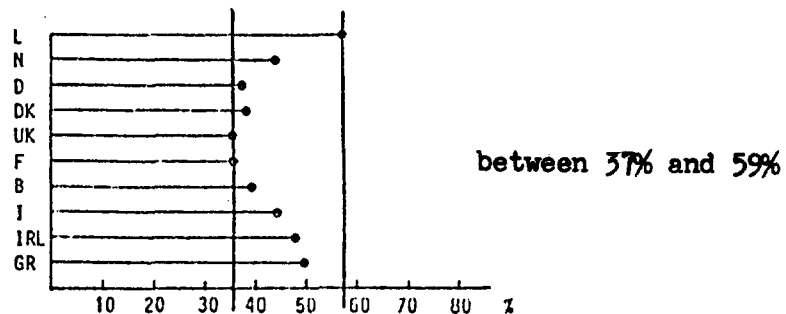
RENEWABLE ENERGY SOURCES



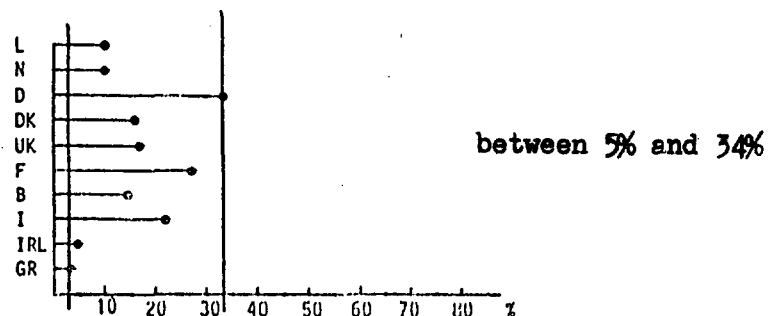
TRADITIONAL SOURCES



ENERGY-SAVINGS



NUCLEAR POWER



PURCHASING FROM ABROAD

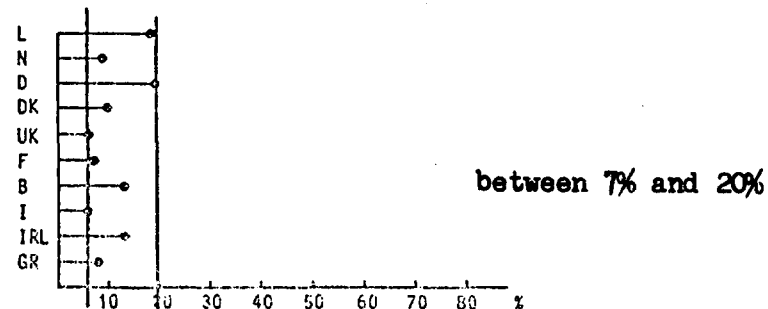


Fig. 4: The most appropriate solutions to problems of energy supply (breakdown by country)
 (Percentages having selected each solution as a first or second choice)

Most of the suggested solutions for coping with future energy requirements are controversial. Some of them have given rise to the formation of pressure groups for or against. How far is it possible to discern divisions within the various social-demographic groups?

The effect of age is particularly interesting, given that most of the solutions offered presuppose long periods of investment, taking effect only in the long term. What is remarkable is that, with few exceptions, all age groups expressed the same preferences. Elderly people tended to be somewhat more in favour of reviving traditional energy sources, whereas the youngest group was rather more attracted by the development of renewable energy sources, showing slightly greater understanding of energy-savings. The nuclear option received much the same vote all round.

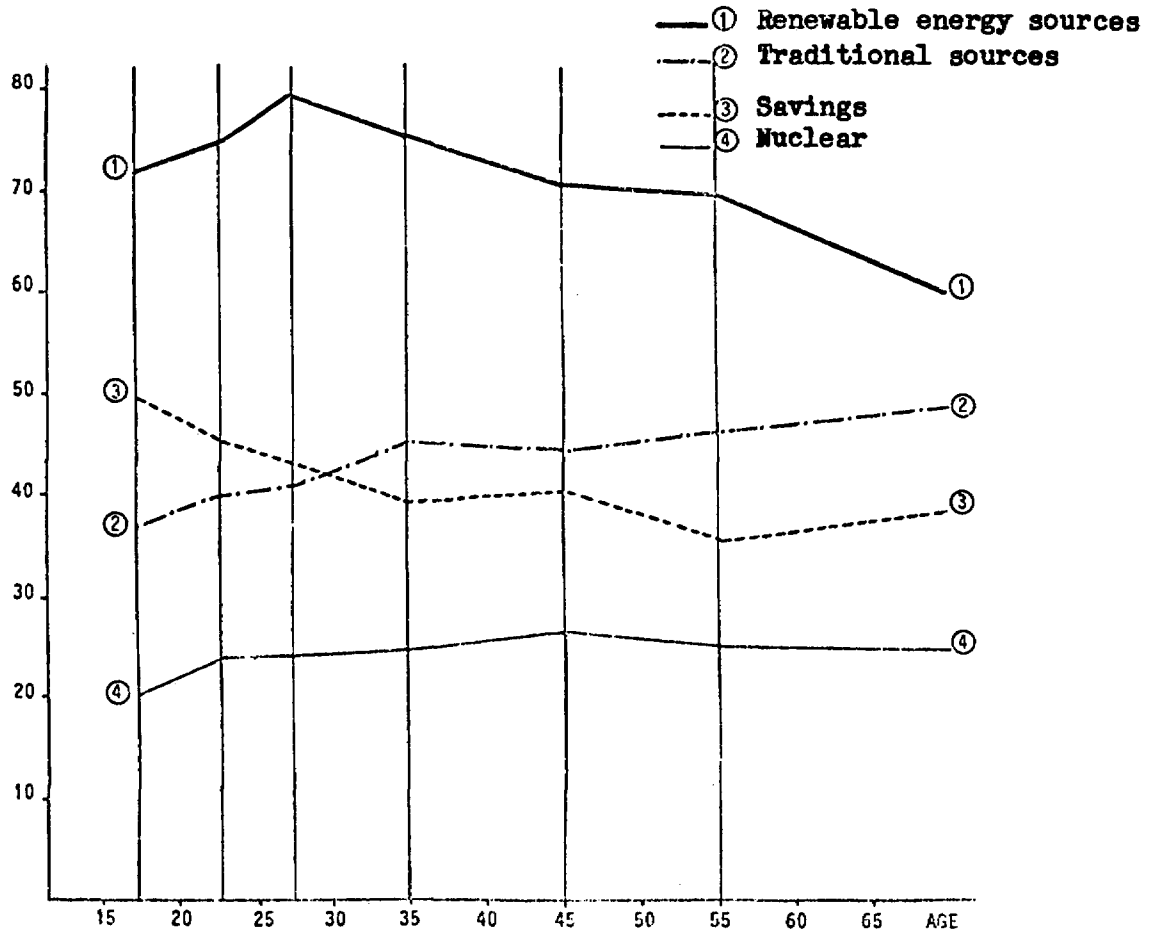


Fig. 5: The most appropriate solutions to problems of energy supply (breakdown by age)
(Percentages having selected each solution as a first or second choice)

A comparative study of other groupings, for example, by level of education, or degree of "leadership", confirms some predictable results: those who have received more education and "leaders" tend to be slightly more in favour than others of renewable energy sources and the nuclear option; those with the lowest education level, who are also the oldest, are the most in favour of a return to traditional energy sources. However, in this case too, the basic order remains unchanged.

- o -

Thus, when it comes to expressing an opinion on the range of possible solutions, one European in four is in favour of developing or increasing the production of nuclear power.¹

¹ It is worth recalling that twice in the past the principle of developing or increasing nuclear power has been put to the public in the more general context of important socio-political questions such as national defence, reducing the poverty gap, the fight against terrorism, state intervention in the economy, aid to the Third World, etc. In this context it emerges that not only are about a quarter positively in favour of developing nuclear power, but also a substantial proportion claim to be "more or less in favour".

Question: I should like to have your opinion on a number of important issues. Tell me how far you agree or disagree with each of the following statements.

There followed a list including: Nuclear power should be developed or increased to meet future energy needs.

	<u>April 1979</u>	<u>October 1981</u>
Agree entirely	20	24
Tend to agree	32	34
Tend to disagree	17	16
Disagree entirely	18	15
?	13	11
	<u>100</u>	<u>100</u>

III. INFORMATION

The reader will have to judge for himself, on the basis of the data contained in this study, whether or not there is a case for investing greater effort in our energy information policies.

Is the public sufficiently exposed to the gravity of supply problems?

It is realistic enough in its choice of solutions?

Does it receive adequate motivation from energy-saving campaigns?

Anyone specializing in opinion polls will be aware of the fact that, whilst the expression "energy crisis" undoubtedly evokes a response in the general public, it may not actually convey anything very precise. One thing is certain: consumers in the high-level bracket, be they countries or individuals, tend to play down the scale of supply problems, as if the possibility of a crisis had nothing to do with their own consumption.

It is difficult to know how to approach an information policy in this field. We are going to look first at whether or not the public envisages a role for the European Community as regards energy policy, and secondly at its response to the media's handling of the problem.

1. THE ROLE OF THE EUROPEAN COMMUNITY

As a rule, when it comes to the question of research expansion and of the protection of the environment, the general public tends to feel that it is, above all, the responsibility of national governments to lay down guidelines and to make the rules and regulations. Research into new sources of energy and the safety of nuclear power stations are no exception to this rule. Nevertheless, it must be said that a quarter of those interviewed give prominence to the responsibility of the European Community.

Question: Who do you think should have responsibility for regulating the following problems?

	Local authorities	National governments	The European Community
Nature conservation	43	48	23
Air pollution	28	57	27
Water pollution	35	50	29
Nuclear plant safety	17	66	26
Protection of endangered species	26	56	29
Siting of industrial development	38	49	17
Research for new types of energy	17	64	28

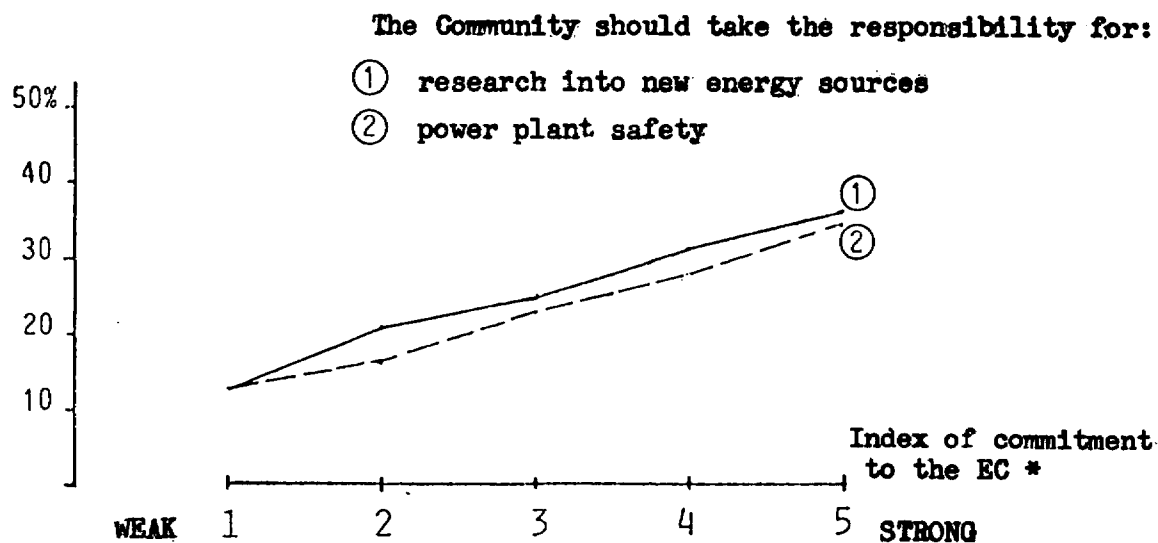
NB. Horizontal percentages. Several answers possible.

Whilst it is clear from the above figures that, in the public's view, the government should take prime responsibility for research into new energy sources (and for nuclear plant safety), it would be wrong to assume that it is expected to do so independently of other European countries. In fact, the answers to a set of questions asked immediately after the first oil crises (November 1974 and April 1975) showed quite clearly that, at the time, the achievement of a common energy policy was considered to be important or very important by three-quarters of the public in the nine European Community countries, and that, as far as energy policy was

concerned, independent action by each country was far less desirable than concerted action by the Community as a whole (in November 1974: independent action: 18%, concerted action: 74%; April 1975: independent action: 18%, concerted action: 70%).¹

Coming back to 1982, the countries most willing to accord to the European Community the responsibility for research into new energy sources were Luxembourg (60%), the Netherlands (57%), Belgium (47%) and France (42%); the other countries were far more reluctant: Ireland (6%), Italy (17%), Greece (19%), the United Kingdom (22%), Germany (26%) and Denmark (30%). The positions taken on the responsibility for nuclear plant safety form much the same pattern.

The attitudes of individual Europeans stem partly from their sympathy towards the Common Market. The extent to which they do so, however, is relatively limited, which suggests that the Community has failed to impress upon the public the importance that it attaches to joint action in this field.



* The index of commitment to the Community is calculated on the basis of the combined answers to two questions: "Generally speaking, do you think that (your country's) membership of the Common Market is a good thing, a bad thing, or neither good nor bad?" and "If you were told tomorrow that the European Community (Common Market) had been scrapped would you be very sorry about it, indifferent or relieved?" See Annex B-4 on this index.

It thus appears that far more should be done to mobilize staunch supporters of the European Community with regard to joint action on energy and nuclear safety matters.

¹Sources: Eurobarometer No 2, November 1974; Eurobarometer No 3, April 1975

2. ASSESSMENT OF MEDIA PERFORMANCE

Question: I am going to mention different ways in which we get information about energy problems in general. For each one, can you tell me whether in your opinion they keep people like yourself well-informed, badly-informed or give no information on energy problems?

	Well	Badly	Not at all	Don't Know	
Daily newspapers	43	36	6	15	100
Periodicals and magazines	31	32	10	27	100
Radio	38	36	8	18	100
Television	52	33	5	10	100
Schools and universities	22	20	12	46	100

Overall, the public would appear to take a rather dim view of the media as a source of information on energy problems, although more than half consider that television informs them well.

It must be said, though, that answers to this question merely reflect the public's general attitudes towards the various media. In fact, a more or less identical question put to Europeans in 1976 in a completely different context (consumer information) produced very similar results.¹ It follows, therefore, that the answers given on this occasion were not specifically concerned with the energy question.

¹ Question asked in 1976: "Do you think that the following information media provide good, poor or no information at all for consumers?"

	Provide:				Total
	Good information	Poor information	No information	Don't know/ no reply	
Daily newspapers	38	30	17	15	100
Magazines and periodicals	31	28	16	25	100
Radio	42	25	15	18	100
Television	50	26	12	12	100

Source: "European Consumers", Commission of the European Communities, 1976, p. 72.

The final item (schools and universities) calls for special analysis of the answers given by those more fully exposed to this source of information: those who have received some form of further education (to age 20 and over) and those still being educated.

	The information provided by schools and universities is				Total
	Good	Bad	Non-existent	Don't know	
Of those who completed their education at age 20 or over	27	26	16	31	100
Of young people still receiving education	40	35	19	6	100

Thus students are far more likely than the public in general to take the view that schools and universities do provide information on energy matters and that they do so rather well. Is this level of information reflected in their answers to questions on important issues?

	Students	Others aged 15-24	General public
The energy crisis today is			
very serious	31)	19)	24)
fairly serious	43) 74	45) 64	40) 64
In ten years' time, it will be			
very serious	38)	32)	30)
fairly serious	37) 75	30) 62	31) 61
The most appropriate solutions: (1st and 2nd reply)			
- to buy from abroad	13	10	11
- renewable energy sources	77	70	70
- the nuclear option	24	20	23
- traditional energy sources	33	41	44
- energy-savings	47	47	40

Students can thus be seen to be far more aware of the energy crisis than others. The determining factor here is education rather than age: others in the same age group who are no longer being educated show less awareness.

When it comes to choosing appropriate solutions, however, education plays a far less obvious part.

Students are clearly less drawn to traditional energy sources, but are more attracted to the exploitation of renewable sources than their contemporaries who are no longer being educated.

This shows that the education provided does not contain sufficiently realistic information as to the limitations of renewable sources in relation to overall needs. With regard to the nuclear option, whilst they are slightly more in favour of it than their contemporaries, students do not appear to have been given very convincing information on the subject.

PART TWO: THE NUCLEAR OPTION
OPINIONS AND PRECONCEPTIONS

In Part Two of this report, all the questions we will discuss mention nuclear power stations specifically, whereas those analysed in Part One referred to the more abstract concept of nuclear energy.

Before embarking on the survey of the European public's attitudes to nuclear power stations, it is worth stressing two important factors:

- first, the degree of involvement of the ten Community Member States in the operation or construction of nuclear power stations varies widely. Scrutiny of the map on p. 32 illustrating nuclear power stations in service, under construction or at the planning stage makes it possible to distinguish between three groups of Member States:
 - those in which nuclear power is developed on a large scale:
France, the Federal Republic of Germany, United Kingdom and Belgium;
 - those in which nuclear power is developed on a small scale:
the Netherlands and Italy;
 - those in which nuclear power is not developed at all:
Luxembourg, Denmark, Ireland and Greece;
- secondly, the proportion of inhabitants living close to a nuclear power station (in service or planned) varies greatly from one country to another. Furthermore, nuclear power stations can even be sited close to the populations of countries that have no nuclear programme: for example, all the inhabitants of Luxembourg live less than 60 miles away from French nuclear power stations; on the other hand, many Frenchmen have no nuclear power station in the area where they live.

It therefore appeared worthwhile to measure the "psychological" distance and the actual distance between the people questioned and the nearest nuclear plant.

Question: Do you know if in the area where you live there is a nuclear power station, actually working, or one being built, or one in the planning stages?

YES - actually working	11%)	
- one being built	7%)	
- one in the planning stages	6%	)	24%
NO - none			55%
Don't know			21%
			<u>100%</u>

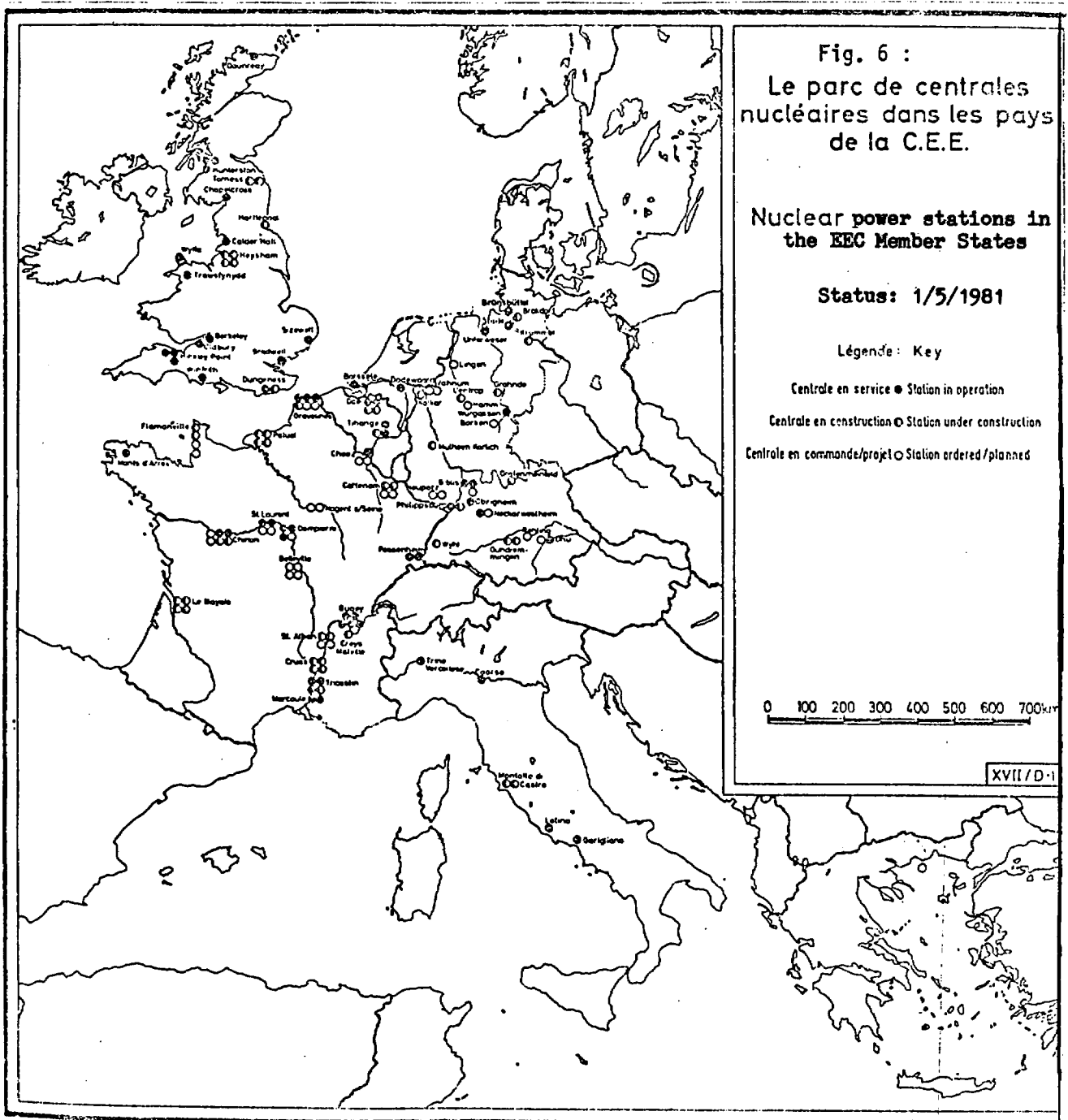
Question: How far away from your home is this actual or planned nuclear power station?

Less than 6 miles	2%)	
	)	12%
7-30 miles	10%)	
31 to 60 miles	8%	
60 or more	<u>4%</u>	
	24%	

By way of a check, the interviewer was instructed to note whether the place where the interview was held was situated more or less than 60 miles from the closest nuclear station. It is apparent from a comparison of the two sources that certain interviewees living more than 60 miles away from a nuclear power station tended to underestimate the distance. Nevertheless, the interviewees' estimates generally correspond fairly closely to the actual distances.

Table III - THE NUCLEAR GEOGRAPHY OF THE EUROPEANS

Member State	Scale on which nuclear power is developed	Percentage of the inhabitants who state that there is a nuclear power station being built or in the planning stages "close" to the place where they live	Percentage of the inhabitants who state that the power station is:	
			less than 30 miles away	31 to 60 miles away
		%	%	%
FRANCE	large	33	16	12
FEDERAL REPUBLIC OF GERMANY	"	23	16	14
UNITED KINGDOM	"	14	9	3
BELGIUM	"	30	21	7
NETHERLANDS	small	19	15	3
ITALY	"	18	7	6
LUXEMBOURG	non-existent	64	43	20
DENMARK	" "	14	11	2
IRELAND	" "	4	-	-
GREECE	" "	1	-	-
EEC TOTAL		23	12	8



I. THE BASIC OPTION: FOR OR AGAINST THE DEVELOPMENT OF NUCLEAR POWER

Question: All new development in the industrial field implies effort, time and money; it may also involve risk. Here are three opinions about the development of nuclear power stations, which use atomic energy for the production of electricity.

Which of these three statements comes closest to your own opinion on the development of nuclear power?

It is worthwhile	38%
No particular interest	10%
The risks involved are unacceptable	37%
Don't know	<u>15%</u>
	100%

In its brutal simplicity, this question forces the person interviewed to state his position on the development of nuclear power. Later on in the interview, the person will have the opportunity to clarify his opinions, attitudes and anxieties; here, he has to show his colours.

Now it is apparent that in the adult population of the Community, i.e. some 200 million people, there are two contradictory trends which are almost exactly matched in number, each having nearly 75 million supporters. Neither should it go unnoticed that 15% of Europeans were unable or unwilling to answer the question, while 10% stated that nuclear power stations were of no interest.

With regard to what was presented in Part One of this report, two remarks should be made.

- (1) More people state here that they are in favour of the development of nuclear power (38%) than those who chose nuclear power as a more appropriate solution than others to the energy crisis (27%).
- (2) The former are, on the other hand, fewer in number than the total of those who, during the opinion polls carried out in April 1979 and October 1981, declared that they agreed entirely (24% in 1981) or to a certain extent (34%) with the statement: "Nuclear energy should

be developed in order to satisfy future energy needs" (see p. 21).

Each of these different questions and statistics throws its own light on the subject. Undoubtedly, the question we are analysing here offers the advantage of placing each interviewee in a situation of conflict between the benefits of nuclear electricity production and its possible risks; it also transcends the abstract concept of nuclear energy and mentions directly the concrete existence of nuclear power stations. It is in this sense that the choice it reveals is of particular interest.

The two extreme views defined by the question are upheld by different sections of public opinion.

The favourable view ("it is worthwhile") is prevalent amongst males, citizens aged 40 or over, higher-income groups and those who have pursued their education beyond the school-leaving age.

The negative attitude ("the risks involved are unacceptable") is most common amongst females, the young, those who have the lowest educational level and lower-income groups.

Nevertheless, the two main features of the basic option are that it is both national and political.¹ To be still more precise, we can say that the favourable opinion varies mainly according to the country concerned, while the negative viewpoint varies above all according to political preferences, which are gauged here on the basis of the interviewee's own definition of his position on the left-right scale.²

¹This assertion is made in the light of the Pearson's coefficients γ (standard deviation \div average \times 100), which are as follows:

<u>Positive option</u>	\checkmark	<u>Negative option</u>	\checkmark
by age	82	by age	149
by position on the left-right scale	267	by position on the left-right scale	340
by country	349	by country	194

²See on p. 40, footnote 1, how political preferences are recorded with the aid of a left-right scale.

ATTITUDES ACCORDING TO THE MEMBER STATE CONCERNED

In 1982, a dominant trend in favour of the development of nuclear power prevailed in three Member States: France, the Federal Republic of Germany and the United Kingdom. In all the other Member States, the prevailing trend was anti-nuclear. Clearly, attitudes are at least partly connected with the scale on which nuclear power is developed in the country concerned.

Table IV - THE DEVELOPMENT OF NUCLEAR POWER

		Worth- while	No particular interest	Unacceptable risks	Don't know	TOTAL	
SCALE ON WHICH NUCLEAR POWER IS DEVELOPED	large	) FRANCE	51	4	30	15	100
		) FEDERAL REPUBLIC OF GERMANY	37	14	27	22	100
		) UNITED KINGDOM	39	17	37	7	100
	small	) BELGIUM	27	9	37	27	100
		) NETHERLANDS	34	6	48	12	100
		) ITALY	34	5	42	19	100
		) LUXEMBOURG	32	8	49	11	100
		non-existent) DENMARK	25	9	50	16	100
	) IRELAND		13	21	47	19	100
	) GREECE		15	6	49	30	100

The countries in which nuclear power is developed on the largest scale are also those in which public opinion is most favourable and the topic gives rise to the least anxiety. The countries that do not have any nuclear plant are by far those in which anxiety is greatest. Should this be seen as the result of information and familiarization, which gradually reconciles public opinion with nuclear energy?

But how do opinions vary with time? Fortunately, we have statistics dating back to 1978. At that time, the same question, which was cast in the same terms,¹ yielded results for the Community as a whole that were very similar to the current situation.

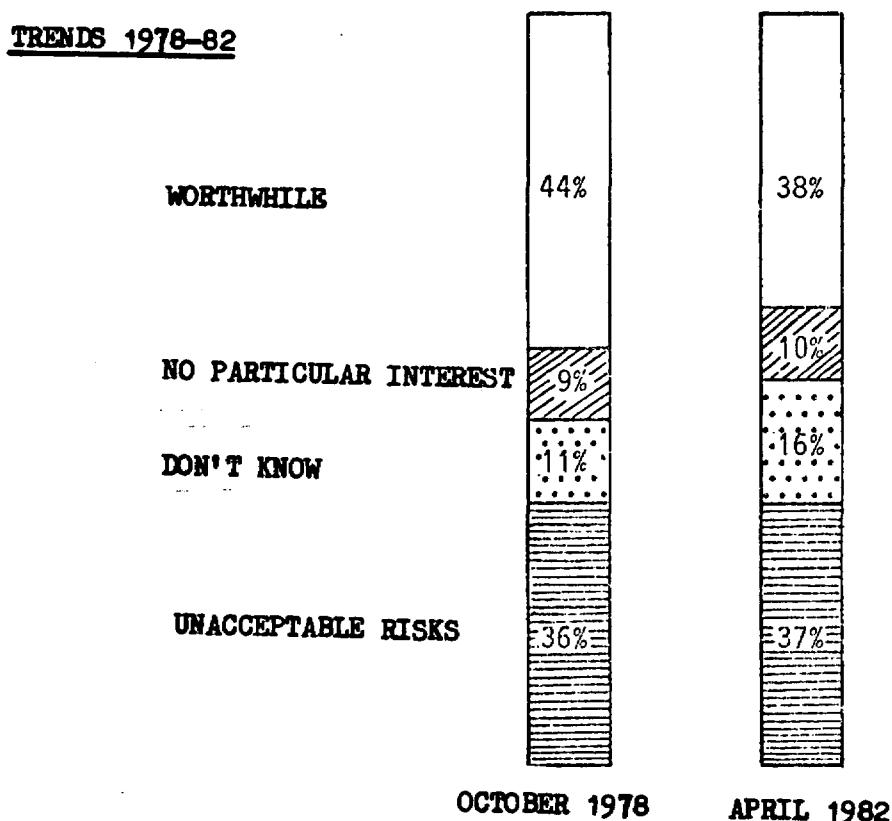


Fig. 7: The development of nuclear power

Nevertheless, this apparent stability of Community opinion conceals major changes along different lines in the various Member States.

In France, the Federal Republic of Germany and the Netherlands, public opinion has become more favourable: the number of those taking the view that the development of nuclear power "is worthwhile" has increased, while the number of those who consider that the risks involved are unacceptable has declined.

¹Source: "The European public's attitudes towards scientific and technical development", European Communities, 1979.

In Belgium, public opinion has remained virtually identical.

In the other countries, the trend is unfavourable, since interest in the issue has decreased and anxieties are on the increase: this is the case in the United Kingdom in particular, whose nuclear capacity is nevertheless large and long-established.

Close scrutiny of Table V throws interesting light on each Member State. For example, the main change in Luxembourg since 1978 has been increased anxiety; in Ireland, the most important change is the considerable drop in the interest aroused by the development of nuclear power, while in the Federal Republic of Germany, the main variation has been the alleviation of anxiety. In France, the trend is favourable on both counts, and that country is now at the top of the league table of all the Community Member States with an absolute majority (51%) of positive replies.

The graph on p. 39 (Fig. 8) illustrates the shifts in opinion between 1978 and 1982.

Table V - THE DEVELOPMENT OF NUCLEAR POWER

(trends in attitudes between October 1978 and April 1982)

	WORTHWHILE			UNACCEPTABLE RISKS		
	<u>1978</u> %	<u>1982</u> %	<u>Variation</u> %	<u>1978</u> %	<u>1982</u> %	<u>Variation</u> %
FRANCE	40	51	+ 11	42	31	- 11
FEDERAL REPUBLIC OF GERMANY	35	37	+ 2	45	30	- 15
NETHERLANDS	28	34	+ 6	54	48	- 6
BELGIUM	29	27	- 2	39	37	- 2
LUXEMBOURG	35	32	- 3	31	49	+ 18
DENMARK	37	25	- 12	34	49	+ 15
UNITED KINGDOM	57	39	- 18	25	37	+ 12
ITALY	53	34	- 19	29	43	+ 14
IRELAND	43	13	- 32	35	47	+ 12
GREECE	question not asked	15		question not asked	50	
EC		38			37	

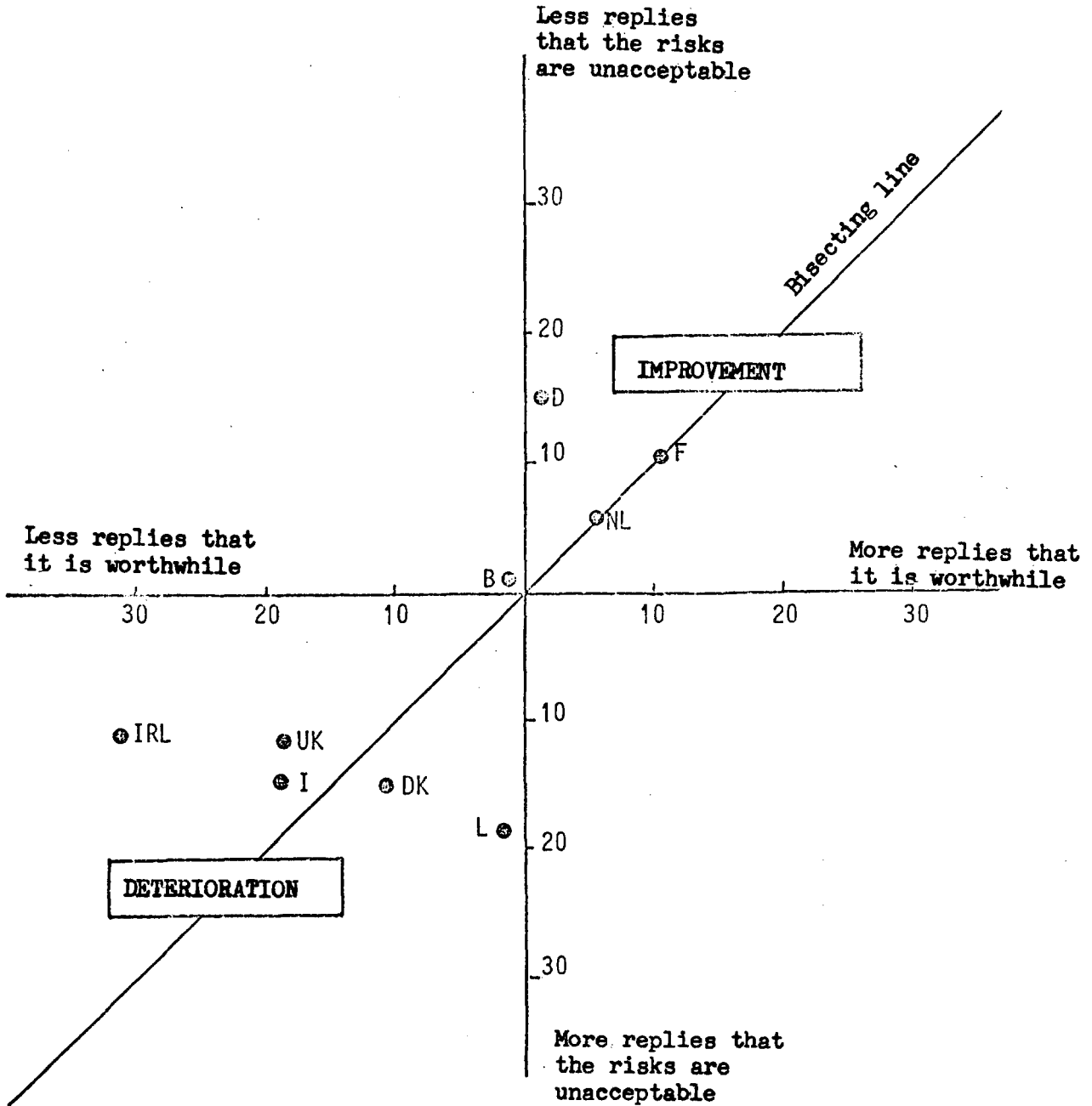


Fig. 8: Trends in public opinion on the development of nuclear power between October 1978 and April 1982.

An example of how to read the graph: in all the countries appearing in the upper right-hand quadrant, public acceptance of nuclear energy has improved; for example, in the Federal Republic of Germany, fear of nuclear hazards has decreased by 15%, while belief in the economic value of nuclear energy has varied little.

In all the countries that appear in the bottom left-hand quadrant, public acceptance has declined. For example, in Ireland, 32% less than in 1978 believe that "it is worthwhile" and 11% more take the view that the risks involved are unacceptable.

ATTITUDES ACCORDING TO POSITION ON THE LEFT-RIGHT POLITICAL SCALE¹

Leaving the national context aside, it is indisputably the Europeans' tendency to locate themselves towards the left or the right of the political spectrum that is the factor which can be most closely correlated to their attitude towards the development of nuclear power.

The development of nuclear power:	Extreme left	Left	Centre	Right	Extreme right
	Positions 1 and 2	Positions 3 and 4	Positions 5 and 6	Positions 7 and 8	Positions 9 and 10
- worthwhile	25	32	40	52	52
- no particular interest	7	8	10	9	9
- unacceptable risks	60	47	34	25	27
- don't know	8	13	16	14	12
TOTAL	100	100	100	100	100

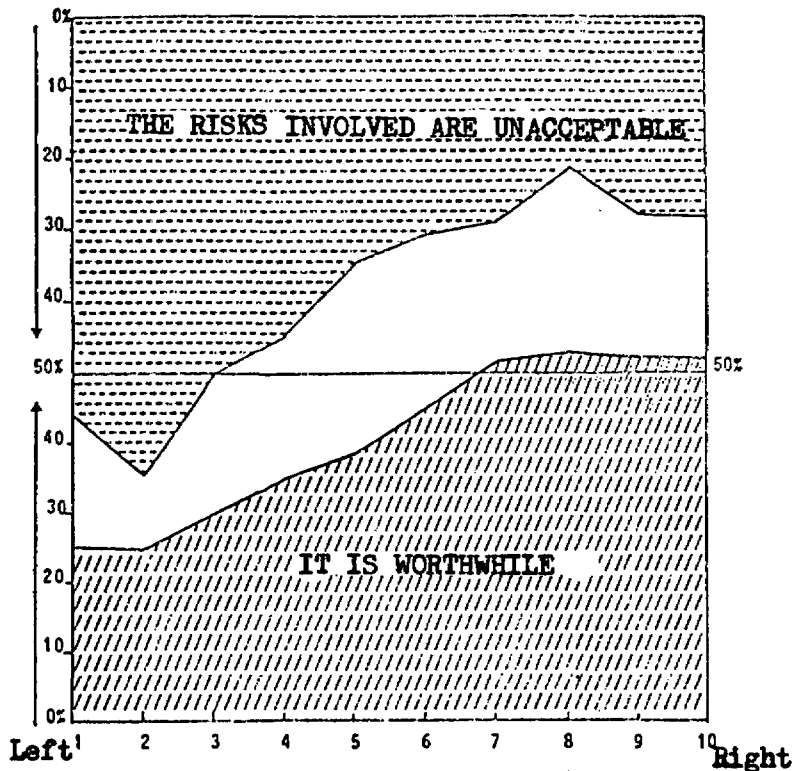


Fig. 9: Attitudes towards the development of nuclear power according to the interviewee's declared position on the left-right scale

¹ During the European surveys, each person interviewed was requested to locate himself on a left-right political scale ranging from 1 (Left) to 10 (Right). We thus have a homogeneous classification of the interviewees that enables comparisons to be drawn between countries, which would be virtually impossible to obtain if we had to use as a basis preferences for the national political parties.

ATTITUDES ACCORDING TO AGE AND EDUCATIONAL LEVEL

Below the age of forty, those interviewed expressed more often their anxiety about the hazards than their interest in the advantages of developing nuclear power. Above that age, they tend to be in favour of the benefits but - let it be repeated - the variations observed according to age are much smaller than those on the basis of political opinion that we have already described.

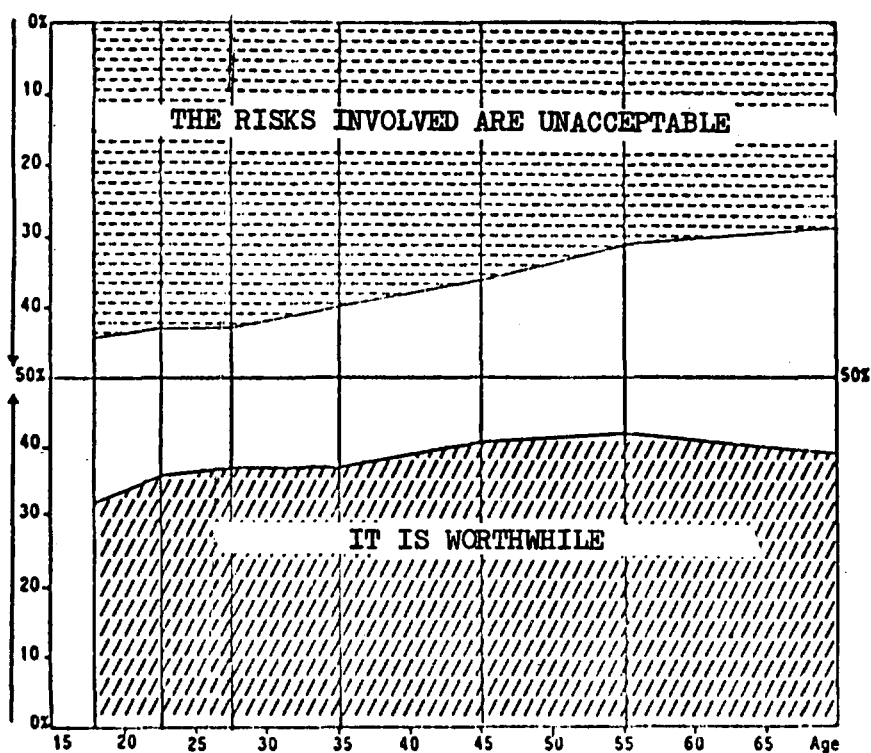


Fig. 10: Attitudes towards the development of nuclear power according to age.

Nevertheless, it is well-known that the young are on the whole more left-wing than their elders; however, they also have a higher standard of education, and the effect of the latter is marked: the higher the education level, the greater is the feeling that the development of nuclear power is promising.

The development of nuclear power stations:

Worthwhile	No particular interest	Unacceptable risks	Don't know	Total
------------	------------------------	--------------------	------------	-------

Educational level:

Low	34	11	34	21	100
Average	41	10	37	12	100
High	49	5	38	8	100

THE EFFECT OF ANXIETY ABOUT FUTURE ENERGY SUPPLIES

Paradoxically, there is no obvious link between the belief that there will be a serious energy crisis in ten years' time and the support given to the development of nuclear power. The attitudes adopted by the public do not appear to be based on any consideration of economic expediency.

The development of nuclear power stations:

	Worthwhile	No particular	Unaccept-	Don't	Total
		interest	able risks	know	

Among those who think that in ten years' time the energy crisis will be:

Very serious	38	9	42	11	100
Fairly serious	41	9	35	15	100
Not very serious	39	12	35	14	100

Nevertheless, as we will see later, those who have opted here in favour of developing nuclear power, rather than rejecting it on the grounds that the risks are unacceptable, tend to rationalise their choice by finding a posteriori economic advantages in electricity of nuclear origin.

THE EFFECT OF LIVING IN THE VICINITY OF A NUCLEAR POWER STATION

It was mentioned above that a distinction was drawn among the interviewees between those living in the vicinity of (at a distance of 30 miles or less from) a nuclear power station in service, under construction or at the planning stage: 12% stated that they belonged to this category. The opinion of this specific sector of public opinion does not differ substantially from that of the public at large. If, on the other hand, the replies given by those living close to a nuclear power station in service are compared with those given by people living in the vicinity of a planned nuclear station, it is apparent that the initial stage (the planning of the station) is above all a source of anxiety, whereas the following stages

(construction and operation) bring about a positive change in attitudes.¹

The development of nuclear power stations:

	Worthwhile	No particular interest	Unaccept- able risks	Don't know	Total
OVERALL (reminder)	38	10	37	15	100
Those living less than 60 miles from a nuclear power station:					
- in the planning stage	39	7	41	13	100
- being built	46	10	33	11	100
- actually working	45	5	39	13	100
Those living less than 30 miles from a nuclear power station in the planning stages, being built or actually working ¹	41	7	39	13	100

NB: In view of the limited number of cases, the above figures cannot be broken down.

THE IMPACT OF ANTI-NUCLEAR MOVEMENTS²

There are anti-nuclear movements in the Member States: what is their audience and their impact on the attitudes of the general public towards the option of developing nuclear power?

On the whole, nearly half the Community citizens interviewed (46%) state that they approve of these movements, while on the other hand a substantial number (39%) disapprove of them.

¹ See the similar results obtained on this topic in the United States in a series of surveys carried out in 1975 and 1976 by the Institute Louis Harris, which compared after an interval of one year the attitudes of people living near nuclear power stations with those of the public at large towards the advantages and disadvantages of nuclear power. Battelle, Human Affairs Research Center: Nuclear power and the public (Analysis of collected surveys research), November 1977.

² This section was prepared thanks to the kind cooperation of Mr Nicholas Watts, Internationales Institut für Umwelt und Gesellschaft (Berlin), who included in the same survey four questions on various protest movements has allowed us to use the findings.

Question: *There are movements and organizations that endeavour to enlist public support for their campaigns against the construction or extension of nuclear power stations. Can you tell me whether you approve of them (whole-heartedly or moderately) or whether you disapprove of them (moderately or whole-heartedly)?*

Approve whole-heartedly	24%)	
" moderately	22%	)	46%
Disapprove moderately	21%)	
" whole-heartedly	18%	)	39%
Don't know	<u>15%</u>		
	100%		
Index of support ¹	2.61		

The index obtained here, 2.61, is much lower than those obtained in favour of the movements for the protection of nature (3.53), the ecologist movements (3.04) and the peace movements (3.02) respectively.

The index of support for the anti-nuclear movements varies considerably from one country to another.

	Index of support for the anti-nuclear movements
Belgium	2.31
Federal Republic of Germany	2.37
France	2.43
United Kingdom	2.55
Netherlands	2.61
Denmark	2.74
Italy	2.84
Luxembourg	2.90
Ireland	3.18
Greece	3.50
COMMUNITY	2.61

¹ The index of support is calculated by assigning a coefficient of 4 to the answers "I approve whole-heartedly", and so on down to a coefficient of 1 to the answers "I disapprove whole-heartedly". It can therefore vary between 1 and 4.

A glance at this Table suggests that there is little public support for the anti-nuclear movements in countries in which nuclear power is highly-developed, while such support reaches a peak in countries that have not developed nuclear power at all.

The following graph (Fig. 11) highlights the link that exists between the index of support for the anti-nuclear movements and the personal feeling expressed by the public that the development of nuclear power involves unacceptable risks. This link is a strong one.

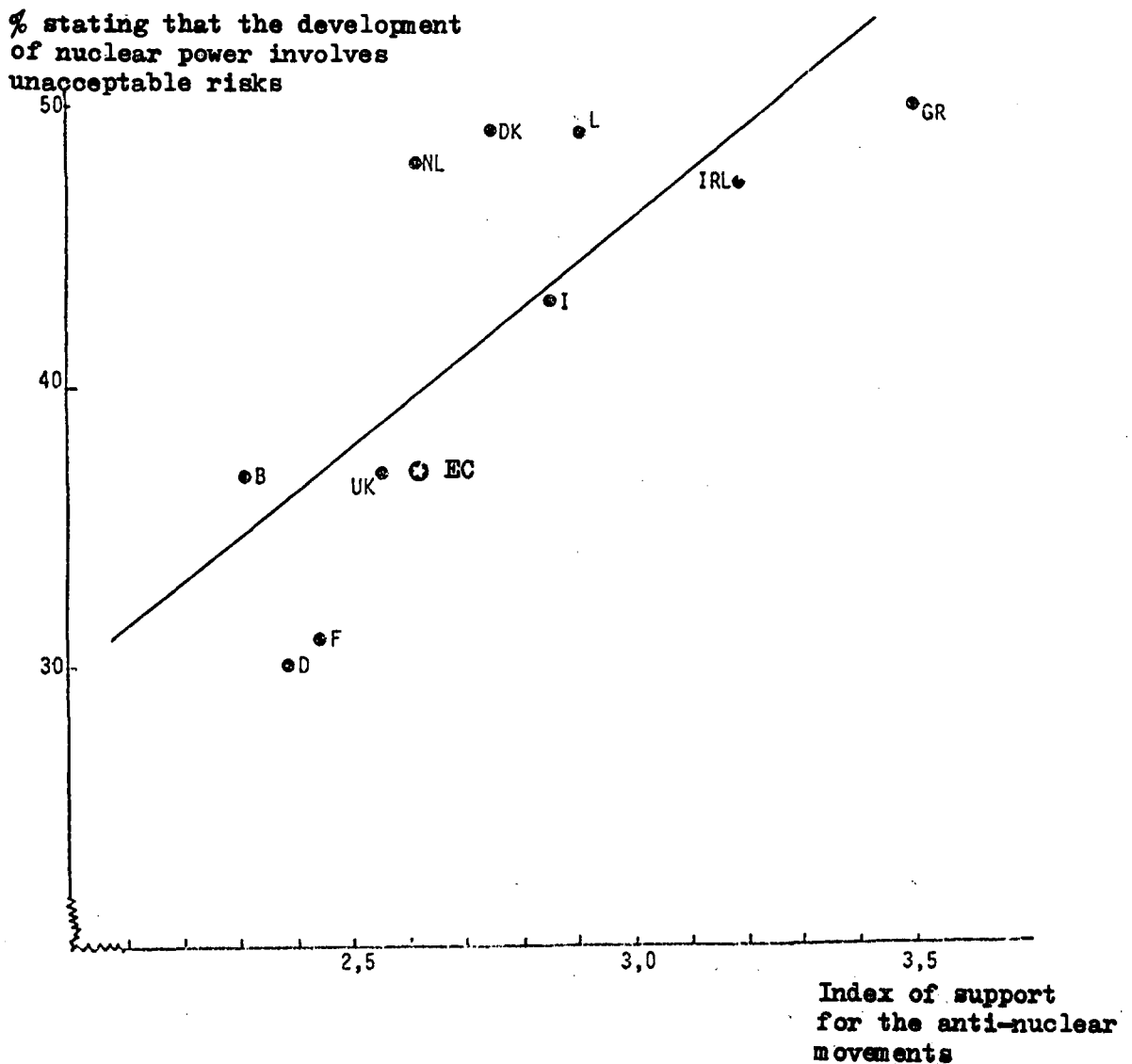


Fig. 11: Link between the index of support for the anti-nuclear movements and the percentage of the public who state that the development of nuclear power involves unacceptable risks.

Scrutiny of the position of the various Member States with respect to the regression line¹ brings out clearer the fact that in four Member States, personal fears of the risks that the development of nuclear power might involve are proportional to the support expressed for the anti-nuclear protest movements: Belgium, the United Kingdom, Italy and Ireland belong to this category.

In France and the Federal Republic of Germany, approval of the anti-nuclear movements - which is, moreover, relatively limited - reveals a tendency to protest in principle rather than a real fear; in Denmark, Luxembourg and the Netherlands on the other hand, strong feelings of fear are associated with less approval than expected for the protest movements.

¹ It should be borne in mind that the regression line was calculated on the basis of the attitudes of all the Ten.

II. THE CREDIBILITY OF THE STAKES

When faced with advanced technological and industrial developments, public opinion is more or less consciously subjected to contradictory pressures: going ahead with development involves risks, but there may also be a risk in not doing so.

Question: *Some say that if we don't continue to develop nuclear power, we shall soon have to cut down on electricity consumption. Do you think that this is true or not?*

True	46%
Not true	31%
Don't know	23%
	<hr/>
	100%

And supposing it were true, do you think this would be a very serious situation, somewhat serious, not so serious, or not at all serious?

Very serious	28	)	69%
Somewhat serious	41)	
Not so serious	13%		
Not at all serious	3%		
Don't know	15%		
	<hr/>		
	100%		

The same set of questions was asked in 1978.¹ In the space of four years, public opinion appears to have become somewhat less committed: there has been no variation in the number of those who disbelieve the claim that if nuclear power stations are not built, there will necessarily be restrictions on electricity consumption in the long term, whereas there are now many more don't knows (23% instead of 14%) and less Europeans who are convinced by this argument.

¹ See Annex B3.

Nevertheless, supposing that it proved necessary to cut down on consumption, the public is even more convinced than during the preceding survey that this would be somewhat serious or very serious (69% instead of 62% in 1978).

In the 1982 survey, it appears that nearly half (46%) of the European public as a whole accept the argument that if we do not build nuclear power stations, we render ourselves liable to restrictions on electricity consumption, whereas only 38% saw the development of nuclear power as "worthwhile".

A country-by-country scrutiny of the two sets of replies reveals that the latter are highly correlative in all the Member States and that throughout the Community - except in the United Kingdom - the credibility of the risk involved in not developing nuclear power is greater than the spontaneous support for the development of this energy source.

Credibility of the argument
"no development = restrictions
in the long term"

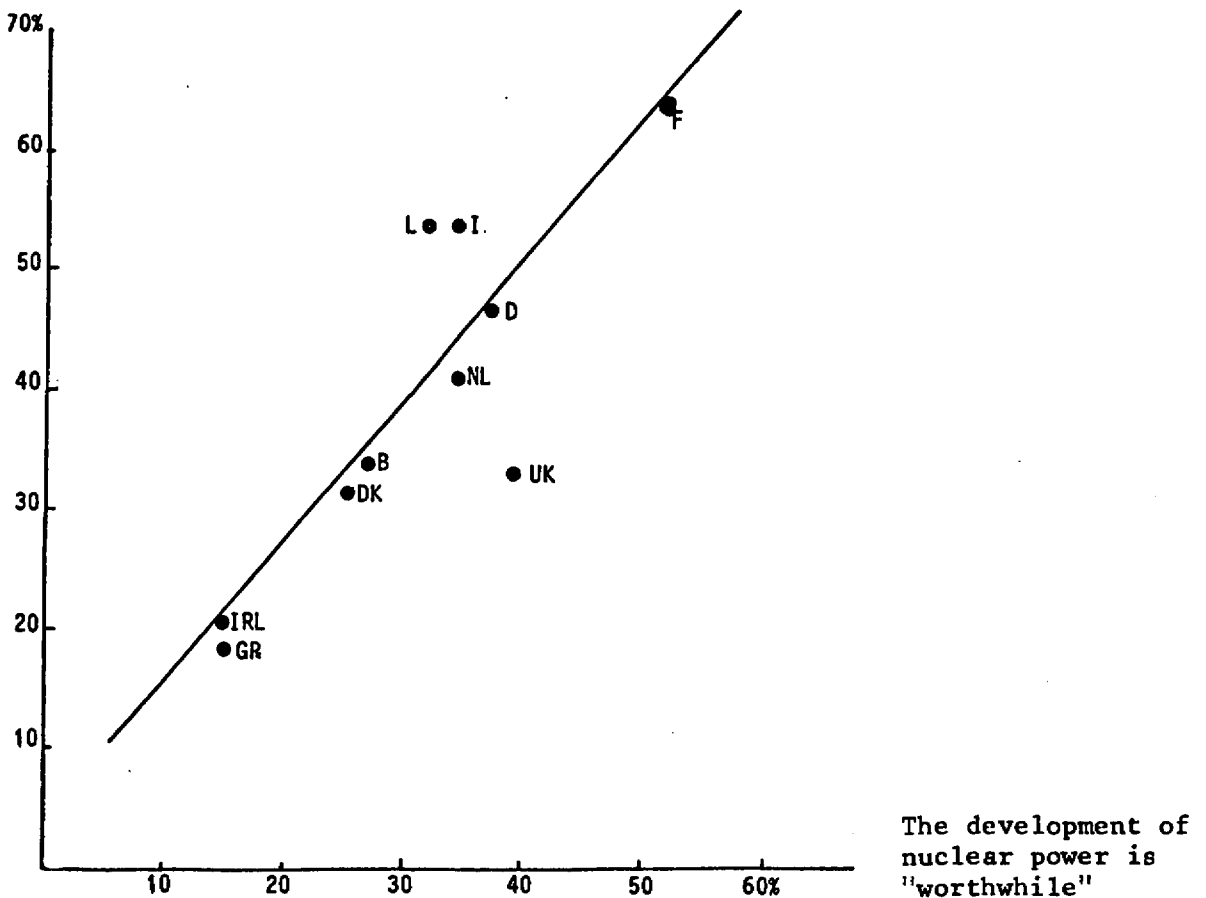


Fig. 12

The question can also be raised whether belief in this argument is connected with the fear that the country would be faced with a serious or extremely serious energy crisis in ten years' time. The link between the two replies appears to be much weaker here, and generally speaking (with the exception of France), belief in the risk involved in not developing nuclear power is appreciably less widespread than the belief in an energy crisis in ten years' time.

Table VI compares the replies from each Member State to the three questions mentioned in the foregoing.

TABLE VI - COMPARISON OF THE REPLIES TO THE THREE QUESTIONS ON THE FUTURE ENERGY SITUATION

- A - *"If we do not develop nuclear power stations, we render ourselves liable in the long term to restrictions on energy consumption"*.
- B - *"The development of nuclear power is worthwhile"*.
- C - *"In ten years' time, there will be a very serious or fairly serious energy crisis"*.

	A	B	C	Ratio	Ratio
	<u>%</u>	<u>%</u>	<u>%</u>	<u>$\frac{A}{B}$</u>	<u>$\frac{A}{C}$</u>
B	34	27	62	1.26	.55
DK	32	25	44	1.28	.72
D	47	37	61	1.27	.77
F	62	51	57	1.20	1.08
IRL	21	13	56	1.62	.38
I	54	34	78	1.59	.69
L	54	32	60	1.69	.90
NL	42	34	43	1.24	.98
UK	33	39	56	.85	.59
GR	18	15	39	1.20	.46
EEC	46	38	61	1.21	.75

III - RISK PERCEPTION

THE RISK INHERENT IN NUCLEAR POWER STATIONS AS COMPARED WITH OTHER INDUSTRIAL PLANT

The following question was introduced in the interview after the questions about the energy crisis and before tackling the specific questions about nuclear power stations. It was aimed at making the interviewee assess in relative terms the risk involved in living near a nuclear power station in comparison with other types of installation. The list was deliberately long and included installations that are deemed to be free of danger.

Question: *On this list you will find a number of different kinds of industrial installations. Among these could you select three which in your opinion, create the greatest risk for people living nearby?*

	<u>%</u>	<u>Rank</u>
- An oil refinery	23	
- A coal-fired power station	2	
- A large airfield or airport	16	
- A food factory	2	
- <u>A nuclear power station which uses atomic energy to produce electricity</u>	60	3
- A chemical factory (producing sulphuric acid, ammonia, chlorine, etc.)	71	1
- An explosive factory	64	2
- A factory for processing natural gas	15	
- A furniture factory	1	
- A dam producing hydro-electric power	6	
- Don't know	5	
	<hr/>	
	1	

¹ Total greater than 100 as a result of multiple replies.

In 1982, therefore, three types of industrial installation were considered to present a high degree of risk. Nuclear power stations were ranked third, after chemical plants and explosive factories. Oil refineries, large airfields or airports and natural-gas processing plants were placed far behind.

CAN A NUCLEAR POWER STATION EXPLODE LIKE A BOMB?

Question: *People have been talking about the possibility of accidents taking place in nuclear power plants. What about a nuclear explosion like that of a bomb used in Japan in World War II; would you say that an explosion of this type in one of the nuclear power plants now operating is very likely, somewhat likely, not very likely, or technically impossible?*¹

	%	
Very likely	10)
Somewhat likely	28)
Not very likely	38)
Technically impossible	9)
Don't know	<u>15</u>)
	100	

As can be seen from these figures, the prevailing opinion is that an explosion is not very likely or even impossible, but large minorities take the view that such an explosion is somewhat or even very likely, and the latter opinions are expressed in all walks of life.²

The fear of explosion decreases as people become more familiar with and live closer to nuclear power stations: those who live in the vicinity of (less than 30 miles away from) a nuclear power station tend to believe that an explosion is less likely. Furthermore, the fear is much less widespread in countries where nuclear power is highly-developed than in those that have no nuclear plant.

¹ This question has been taken from a survey carried out in September 1980 by the Survey Research Center, Institute for Social Research at the University of Michigan. The results obtained at that time in the United States are remarkably similar to the European results given above: explosion very likely: 12%; somewhat likely: 28%; not very likely: 46%; technically impossible: 8%; and don't know: 6%.

² For example, among Europeans who have received the longest education, 9% think that an explosion is very likely, 23% that it is somewhat likely, 46% that it is not very likely and only 13% consider that it is impossible.

Proportion of those interviewed who take the view that an explosion is very or somewhat likely:

France	31%	Netherlands	41%
Federal Republic of Germany	29%	Italy	41%
United Kingdom	42%	Luxembourg	53%
Belgium	46%	Denmark	35%
Those living near a nuclear power station (30 miles or less)	33%	Ireland	56%
		Greece	65%

THE LEAGUE TABLE OF RISKS INHERENT IN NUCLEAR POWER STATIONS

Question: *Again, about dangers, I am going to mention certain dangers which people sometimes mention when talking about nuclear power stations. Which of these dangers do you believe one may have reason to seriously worry about?*

	%
The explosion of the power station	23
The radioactive gaseous emissions whilst the power station is working	51
The danger of storage of radioactive waste	57
Don't know	<u>13</u>
	1

¹ Total greater than 100 as a result of multiple replies.

The public is therefore worried most of all about the storage of radioactive waste, "the idea of this radiation which seems to last for all eternity ...".

HUMAN ERROR OR TECHNICAL BREAKDOWN?

Question: *If such a thing was to happen, in your opinion what could be the reason for this: a technical breakdown or a human error?*

A technical breakdown	22%
A human error	27%
Both	37%
Don't know	<u>40%</u>
	100%

IV - THE IMAGE OF NUCLEAR POWER STATIONS

Over and above the crucial questions we have just described, the European survey has provided additional information about the image nuclear power stations have in the public eye. The people interviewed had to say whether they agreed or disagreed with eleven statements about the advantages or drawbacks attributed to nuclear power stations. This gives us a picture of the most frequent commonplaces.

As far as the positive commonplaces are concerned, there is a broad consensus on the statement that nuclear power stations can provide extra electricity resources and that nuclear power production has a favourable effect on the general economy of the country. Admittedly, agreement on these two points is more or less widespread according to the country concerned (the French being by far the most positive), but even in the least enthusiastic countries, few people disagreed with these two arguments; the latter generally preferred to abstain.

Two statements of a technical or economic nature are held to be true by large minorities, while large parts of the public admit to not knowing anything about them: these are that nuclear power is a clean form of energy and that electricity from nuclear power is cheaper to produce. Many people were unable to give any reply about the latter statement in particular, even in those countries that are in favour of nuclear energy (40% of don't know in France, 29% in the Federal Republic of Germany, 43% in Italy and 46% in the United Kingdom).

Lastly, European opinion on safety is divided. When faced with the assertion that "the safety measures taken at nuclear power stations are so strict that they eliminate nearly all the danger", 41% agree and 37% disagree. The answers to this question make it possible to understand one of the main divisions in public opinion with regard to nuclear energy: we will come back to this later.

As regards the negative commonplaces, a wide-ranging consensus can be observed on three statements, namely that nuclear power stations can be dangerous for the people who work in them, the numerous safety precautions are a clear indication that by their very nature power stations are dangerous, and the proliferation in the number of nuclear power stations is dangerous.

The idea put forward in certain quarters that any nuclear installation can be secretly put to use for military purposes encounters some sympathy among the public, as well as the fear that atomic materials could be stolen by terrorists.

Lastly, the assertion that "taking everything into account, producing electricity by nuclear power is not really worthwhile" is supported by only 30% of those interviewed. Ireland is the only country in which it clearly dominates among those who expressed an opinion.

Strictly speaking, the study of the salient points of the image nuclear power stations have in the public eye is highly revealing when opinions are compared against the basic option concerning the development of nuclear power. The large table on p. 57, which presents the results of this analysis, merits detailed scrutiny.

This table shows that in general, opponents of nuclear power adopt the most radical stances, in particular on aspects concerning risks, and repudiate the economic advantages of nuclear energy or take refuge in abstention (37% of opponents go as far as not replying to the statement that thanks to nuclear power stations, we shall have available extra resources of electricity). The replies are highly emotional.

On the other hand, those in favour of the development of nuclear power adopt more subtle positions: they are sensitive to the economic and technical arguments (extra source of energy, favourable effect on the general economy of the country, cheaper energy to produce and clean form of energy), but they do not deny that certain hazards and risks exist (for the people who work in nuclear power stations in particular). They acknowledge the idea

that the numerous safety precautions are a clear indication that by their very nature power stations are dangerous, while at the same time the majority of them are convinced that the safety measures taken are so strict that they eliminate nearly all the dangers. Their replies are of a more rational nature.¹

The following pages contain conventional analyses of the answers given on the various points.

The authors of this report have endeavoured to take this research even further, with a view to constructing a structural diagram of the attitudes to nuclear power and their component parts. The technique used is that of factor analysis of correspondences. The results are shown in Annex B6 (p. 74).

¹ See on this topic the article by Maurice Tubiana in *Information et Reflexions*, July 1979, No 2: For an approach to the study of the public's reactions to nuclear energy. " ... It is therefore apparent that while hostility to nuclear energy is based mainly on myths and fears, the active opponents and supporters of nuclear energy do not speak the same language. The information given by pro-nuclear circles is based on factual data and an objective analysis of the advantages and disadvantages. It is not on its own able to enlist public support: it is necessary, but sufficient ... ".

TABLE VII - THE IMAGE OF NUCLEAR POWER STATIONS (salient points in decreasing order of frequency)

NEGATIVE POINTS

POSITIVE POINTS

	OVERALL	According to the basic option: the development of nuclear power:		OVERALL	According to the basic option: the development of nuclear power:				
		is worthwhile	involves unacceptable risks		is worthwhile	involves unacceptable risks			
Nuclear power stations can be dangerous for the people who work in them	Agree	73	<u>61</u>	<u>90</u>	Thanks to nuclear power stations, we shall have available extra resources of electricity	Agree	72	<u>93</u>	<u>56</u>
	Disagree	14	28	4		Disagree	15	4	7
	Don't know	<u>13</u>	11	6		Don't know	<u>13</u>	3	37
		100					100		
The numerous safety precautions are a clear indication that by their very nature nuclear power stations are dangerous	Agree	67	<u>56</u>	<u>86</u>	Nuclear Power production has a favourable effect on the general economy of the country	Agree	55	<u>79</u>	40
	Disagree	18	33	6		Disagree	19	9	33
	Don't know	<u>15</u>	11	8		Don't know	<u>26</u>	12	27
		100					100		
The increase in the number of nuclear power stations is dangerous	Agree	67	46	<u>93</u>	Nuclear power is a clean form of energy	Agree	44	<u>65</u>	27
	Disagree	20	43	3		Disagree	30	20	<u>49</u>
	Don't know	<u>13</u>	11	4		Don't know	<u>26</u>	15	24
		100					100		
Any nuclear installation can be secretly put to use for military purposes	Agree	55	<u>50</u>	<u>69</u>	Electricity from nuclear power is cheaper to produce	Agree	41	<u>61</u>	27
	Disagree	21	31	14		Disagree	20	13	32
	Don't know	<u>24</u>	19	17		Don't know	<u>39</u>	26	<u>41</u>
		100					100		
Atomic materials used in these stations could be stolen by terrorists	Agree	47	38	<u>59</u>	The safety measures taken at nuclear power stations are so strict that they eliminate nearly all the danger	Agree	41	<u>67</u>	20
	Disagree	33	47	26		Disagree	37	21	<u>60</u>
	Don't know	<u>20</u>	14	15		Don't know	<u>22</u>	12	20
		100					100		
Taking everything into account, producing electricity by nuclear power is not really worthwhile	Agree	30	12	<u>54</u>					
	Disagree	45	<u>76</u>	24					
	Don't know	<u>25</u>	12	22					
		100							

In the final analysis, the complexity of the attitudes can be summarized by the extent to which two main considerations are taken into account:

- the economic argument: if we do not develop nuclear power, we shall have to cut down on electricity consumption;
- the safety argument: the safety measures taken at nuclear power stations are so strict that they eliminate nearly all the danger.

In the European public as a whole, similar proportions - approximately four people in ten - accept each of these two arguments, the economic argument enlisting a little more support (46%) than the argument that safety measures are effective (41%). Sex, age, education level and even the degree of cognitive mobilization only marginally affect these figures. On the other hand, two variables influence the results considerably: position on the left-right political scale and nationality.

As we move from left to right, belief in the economic argument increases (from 44% on the left up to 59% on the right); the difference is much greater in the case of the safety argument (25% on the left and 60% on the right) (Fig. 13).

Let us now turn to the positions adopted by the individual Member States with respect to these two arguments (Fig. 14):

- only one country, France, adopts a favourable position on both arguments;
- three countries adopt a negative stance on both lines: Denmark, Ireland and especially Greece;
- two countries are very close to the central position: the Federal Republic of Germany and the Netherlands;
- two countries tend to accept the economic argument while casting doubt on the safety of nuclear power stations: Luxembourg and Italy;
- lastly, two countries tend to accept that the safety measures taken eliminate nearly all danger, but are not convinced of the economic value of developing nuclear power: Belgium and the United Kingdom.

The graph on p. 59 illustrates the position of the ten Member States of the Community. The table on p. 60 presents all the statistical results that have just been mentioned.

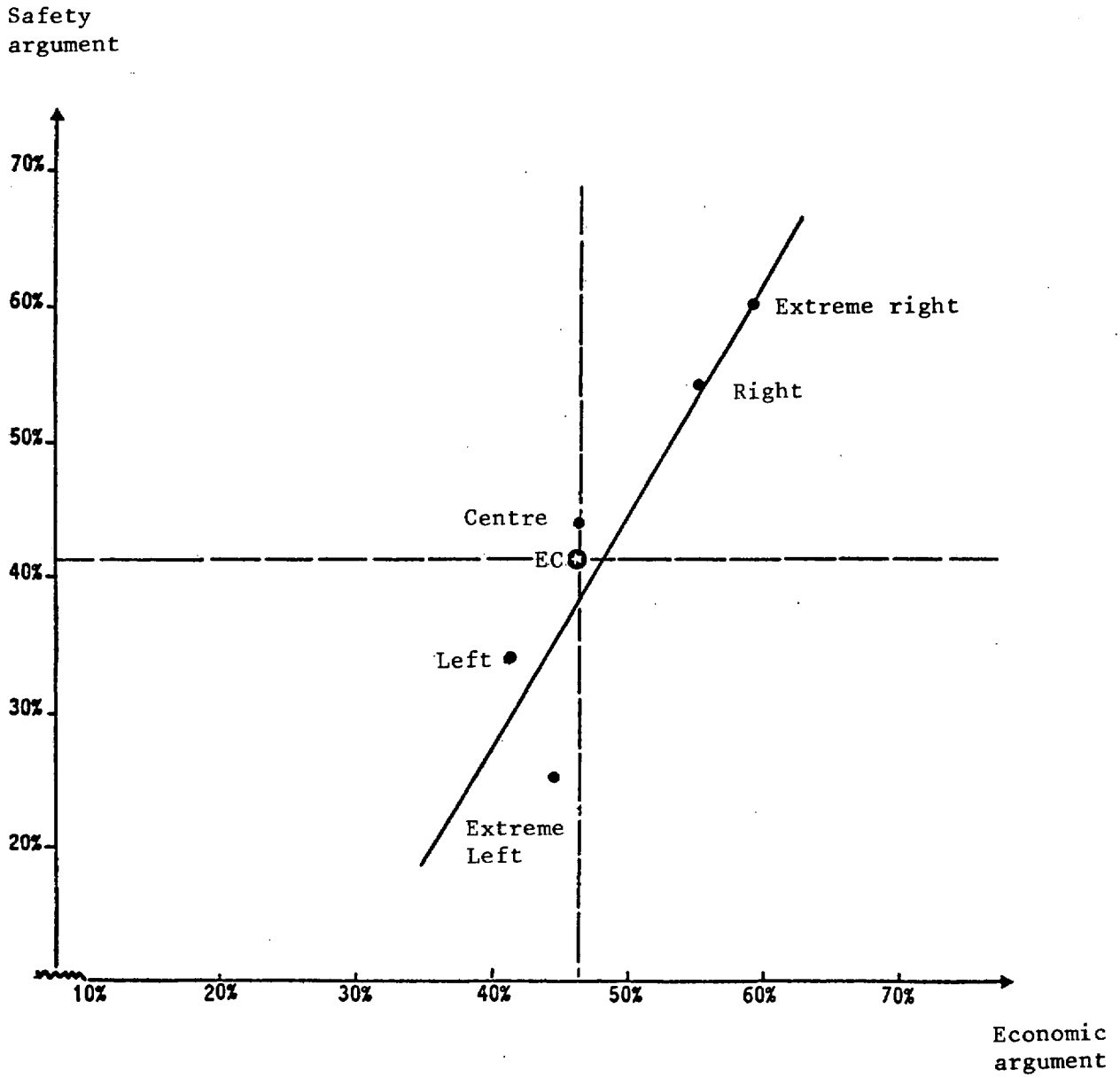


Fig. 13: Position of the different political groupings according to their attitude towards the economic argument and the safety argument.

Safety argument:
the safety measures taken
are so strict that they
eliminate nearly all the
danger

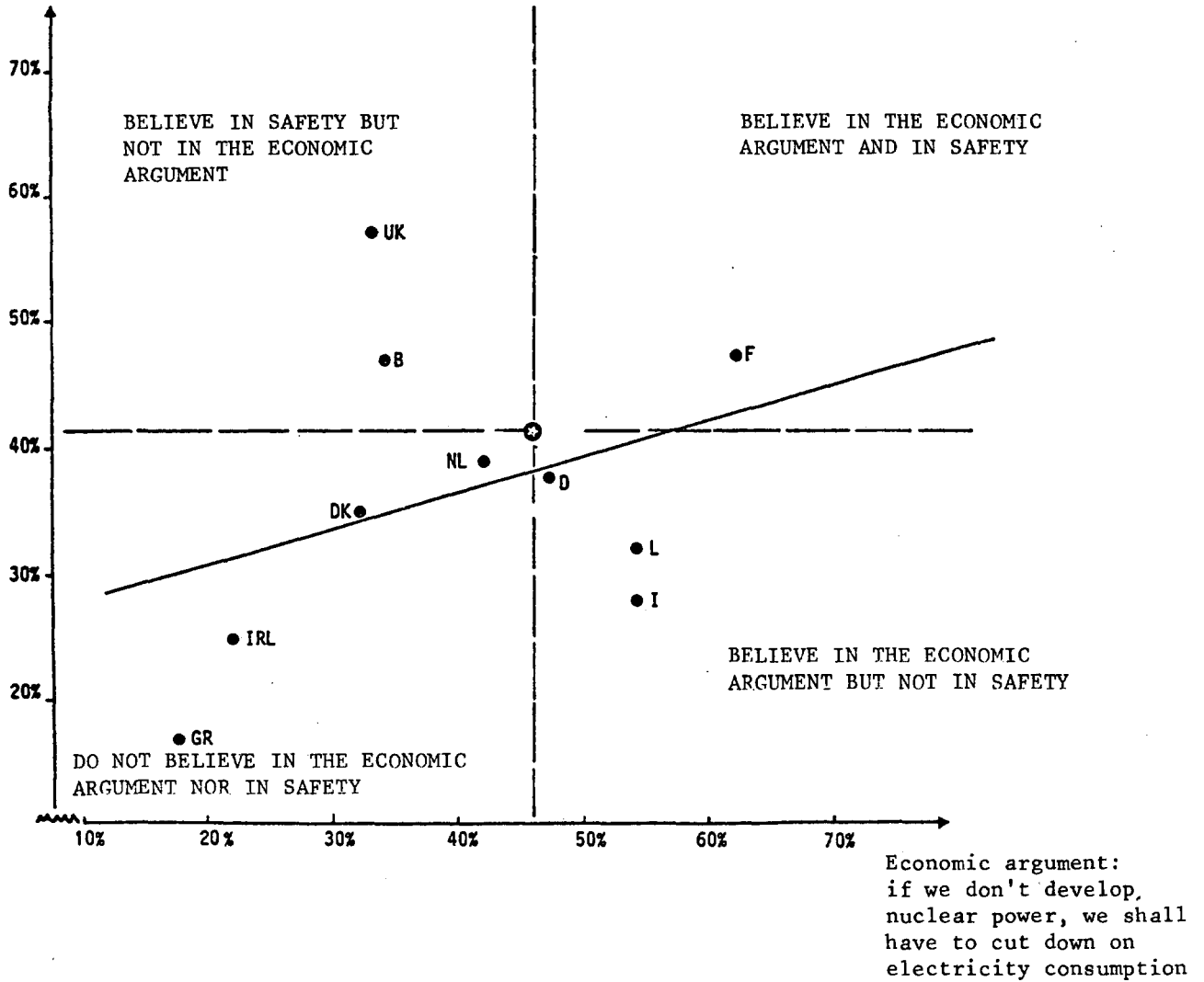


Fig. 14: Position of the individual Member States according to their attitude towards the economic argument and the safety argument.

TABLE VIII - BELIEF IN THE ARGUMENTS IN FAVOUR OF THE DEVELOPMENT OF NUCLEAR POWER

	<u>ECONOMIC ARGUMENT</u>	<u>SAFETY ARGUMENT</u>
	If we don't develop nuclear power, we shall have to cut down on electricity consumption	Safety measures are so strict that they eliminate nearly all danger
	%	%
<u>TOTAL</u>	46	41
Men	50	46
Women	42	36
<u>Age: 15-19</u>	47	38
20-24	41	37
25-29	41	37
30-39	44	41
40-49	50	44
50-59	49	43
60 and over	46	42
<u>Age on completion of full-time education:</u>		
15 and under	43	39
16-19	47	43
20 and over	53	46
<u>Leadership:</u>		
L --	37	37
L -	48	40
L +	49	44
L ++	48	42
<u>Position on the left-right scale</u>		
Left 1-2	44	25
3-4	41	34
5-6	46	44
7-8	55	54
Right 9-10	59	60
<u>Scale on which nuclear power is developed:</u>		
Large (France	62	47
(Federal Republic of		
Germany	47	38
(United Kingdom	33	57
(Belgium	34	47
Small (Netherlands	42	39
(Italy	54	28
Non-existent (Luxembourg	54	32
(Denmark	32	35
(Ireland	21	25
(Greece	18	17

See in Annex B5 the variance study, which establishes the relative importance of the different variables examined in this table and of some other variables.

A N N E X E S

A. FEATURE OF THE SURVEY

DESCRIPTION OF THE SURVEY

TECHNICAL DETAILS

QUESTIONNAIRE

B. REFERENCE MATERIAL TAKEN FROM

EARLIER STUDIES

ANNEX A-1

DESCRIPTION OF THE SURVEY

The study was carried out by the association, European Omnibus Survey, in conjunction with work on Eurobarometer No 17. It was based on a questionnaire consisting of twenty questions, the French and English version of which are listed in this Annex.

The questionnaire was submitted to representative national samples of people aged 15 and over in the ten Community countries, the total number of interviewees being 9 700. All interviews were conducted at home by professional interviewers between March and May 1982.

The table on the following page lists those institutes taking part in the research, together with the number of interviews carried out in each country. The results presented in the report for the Community as a whole are based on a weighting of the national samples, each country being represented in the total in direct proportion to the size of its population.

SAMPLING

The object of the sampling method is to achieve a representative cross-section of the entire population of the ten Community countries, aged 15 and over.

Each national sample is constituted at two levels:

1 - Areas in which survey taken

European Community statistics divide the whole area into 129 regions. The survey was carried out in 126 of these (the exception being Corsica, Greenland and Val d'Aosta).

ANNEX A-1 (cont'd)

- 1 - Each country assembled on a random basis a master sample for the localities in which the survey was to be conducted. This was done in such a way that all types of residential area were represented in proportion to their respective population.

In total, the interviews for the European Omnibus Survey took place in about 1 150 survey areas.

- 2 - Choice of interviewees

Different interviewees are used for each survey. The random master sample mentioned above gives the number of people to be interviewed in each survey area. At the next stage the interviewees are selected:

- by taking names at random from lists in countries in which it is possible to have access to exhaustive lists of individuals or households: Belgium, the Netherlands, Denmark and Luxembourg;
- by means of stratified sampling on the basis of census statistics, the sample being compiled on the basis of sex, age and occupation: France, Italy, the United Kingdom, Ireland and Germany;
- by a method combining the two described above (systematic progression): Greece.

ANNEX A-2

TECHNICAL DETAILS OF THE ENERGY SURVEY

COUNTRY	INSTITUTE CARRYING OUT SURVEY	DATES OF SURVEY	NUMBER OF INTERVIEWS
BELGIUM	DIMARSO	23 March - 8 April 1982	1006
DENMARK	GALLUP MARKEDANALYSE	3-18 April 1982	1063
GERMANY	EMNID	29 March - 16 April 1982	1063
FRANCE	INSTITUT DE SONDAGE LAVIALLE	8 April - 3 May 1982	999
IRELAND	IRISH MARKETING SURVEYS	8-21 April 1982	983
ITALY	DOXA	30 March - 22 April 1982	1084
LUXEMBOURG	ILRES	25 March - 22 April 1982	299
NETHERLANDS	NIPO	1-16 April 1982	1028
UNITED KINGDOM	SOCIAL SURVEYS (GALLUP POLL) LTD	31 March - 10 April 1982	1259
GREECE	ICAP-HELLAS	22 March - 16 April 1982	999

ANNEX A-3

QUESTIONS 228 A 258 POUR TOUS LES PAYS.

228. Estimez-vous qu'il y a aujourd'hui (en France) en problème de l'énergie ?
SI OUI, Estimez-vous que c'est un problème très grave, assez grave ou pas très grave ?

229. Et dans dix ans, estimez-vous qu'il y aura (en France) un problème de l'énergie ?
SI OUI : Estimez-vous que ce sera un problème très grave, assez grave ou pas très grave ?

Aujourd'hui	Dans dix ans	
1	1	Très grave
2	2	Assez grave
3	3	Pas très grave
4	4	Pas de problème
0	0	?

230/Différentes solutions sont envisageables pour répondre
231 aux problèmes d'approvisionnement de (la France) en énergie. Dans la liste suivante, quelle est celle qui vous paraît la plus appropriée ? Et en second lieu ?
230 231 (MONTRER LA CARTE J)
en en
ler 2è

- | | | |
|---|---|--|
| 1 | 1 | Acheter ou continuer à acheter à l'étranger ce qui nous manque comme énergie. |
| 2 | 2 | Pousser les recherches nécessaires pour mettre au point et développer l'utilisation des énergies renouvelables (solaire, biomasse, énergie des marées, etc...) |
| 3 | 3 | Développer la production d'énergie nucléaire |
| 4 | 4 | Intensifier ou remettre en exploitation les ressources énergétiques traditionnelles (par exemple : charbon, lignite, tourbe) |
| 5 | 5 | Economiser l'énergie |
| 0 | 0 | ? |

232. Depuis quelques années, avez-vous personnellement fait l'une ou l'autre des choses suivantes ? (Montrer la carte K)

232 233 234

- | | | | |
|---|---|---|--|
| 1 | 1 | 1 | Diminué vos dépenses de chauffages en améliorant l'isolation de votre maison (par exemple double vitrages, meilleure isolation du toit, réglage de vos appareils de chauffage, etc...) |
| 2 | 2 | 2 | Diminué vos dépenses de chauffage en chauffant un peu moins. |
| 3 | 3 | 3 | Diminué vos dépenses d'essence pour la voiture (en circulant moins avec la voiture, en conduisant plus calmement etc...) |
| 4 | 4 | 4 | Economisé sur l'éclairage ou le fonctionnement de vos appareils électriques. |

233. Sur ces différents points, (carte K) avez-vous l'impression que vous personnellement vous pourriez faire plus d'économie que vous n'en faites actuellement ?

234. Et les gens autour de vous, pensez-vous qu'ils pourraient faire plus d'économies qu'ils n'en font et sur quels points ? (Carte K)

QUESTIONS 228 TO 258 FOR ALL COUNTRIES.

228. Do you think there is an energy problem in (your country) today ?
IF YES, Do you think it is very serious, fairly serious or not very serious ?

229. And in ten year's time, do you think there will be an energy problem in (your country) ?
IF YES, Do you think it will be very serious, fairly serious or not very serious ?

Today	In ten years	
1	1	Very serious
2	2	Fairly serious
3	3	Not very serious
4	4	No problem
0	0	?

230/ Different possibilities can be thought of as solutions to the
231. problem of Britain's energy supplies. Which solution do you feel is most appropriate ? and the next ? (SHOW CARD J).

230 231
First Second

- | | | |
|---|---|--|
| 1 | 1 | To Buy or continue to buy from abroad to make up for any shortfall in energy supplies. |
| 2 | 2 | To Encourage the research needed to solve the technical problems of, and put into practice methods of producing renewable energy. (Solar power, energy from biological sources, tidal power, etc...) |
| 3 | 3 | To Develop or increase production of nuclear power. |
| 4 | 4 | To increase or renew exploitation of energy from traditional sources (e.g. coal, lignite or brown coal, peat). |
| 5 | 5 | To save energy |
| 0 | 0 | ? |

232. In recent years, have you personally done any of the following things ? (Show card K)

232 233 234

- | | | | |
|---|---|---|---|
| 1 | 1 | 1 | Reduce heating costs by improving the insulation in your home (e.g. double glazing, improved roof insulation, adjustment of the controls of your heating equipment, etc...) |
| 2 | 2 | 2 | Reduce heating costs by reducing the temperature or amount of heat you use. |
| 3 | 3 | 3 | Cut down petrol used in your car (by using the car less, by driving more gently etc...) |
| 4 | 4 | 4 | Economise in lighting or the use of other electrical appliances you have in your home. |

233. On these different points (Show card K), do you feel that you could personally make more savings than you do now ?

234. Do you feel that other people in your neighbourhood could do more about energy saving than they do now and in which ways in particular of the few I have mentioned ? (Show card K)

ANNEX A-3

235. Sur cette liste se trouvent un certain nombre d'installations industrielles, (Montrer liste). Veuillez me dire quelles sont les trois qui, selon vous, font courir le plus grand risque aux populations avoisinantes ?
(3 REPONSES)

- 1 Une raffinerie de pétrole
- 2 Une centrale électrique fonctionnant au charbon
- 3 Un grand aérodrome
- 4 Une usine de produits alimentaires
- 5 Une centrale électrique nucléaire, c'est-à-dire qui utilise l'énergie atomique pour produire l'électricité
- 6 Une usine chimique : acide sulfurique, chlore, ammoniac, etc...
- 7 Une usine fabriquant des explosifs
- 8 Une usine de traitement de gaz naturel
- 9 Une manufacture de meuble
- X Un barrage faisant fonctionner une centrale électrique
- 0 ?

235. On this list you will find a number of different kinds of industrial installations (Show card). Among these could you select 3 which in your opinion, create the greatest risks for people living nearby ?
(3 ANSWERS)

- 1 Petrol refinery
- 2 A coal-fired power station
- 3 A large airfield or airport
- 4 A food factory
- 5 A nuclear power, station which uses atomic energy to produce electricity.
- 6 A chemical factory (producing sulfuric acid, ammonia, chlorine, etc...)
- 7 An explosives factory
- 8 A factory for processing natural gas
- 9 A furniture factory
- X A dam producing hydro electric power
- 0 ?

236. Savez-vous s'il y a une centrale nucléaire en activité, en construction ou en projet près de l'endroit où vous habitez ?

- 1 Centrale en activité
- 2 Centrale en construction
- 3 Centrale en projet
- 4 Pas de centrale
- 0 ?

236. Do you know if in the area where you live there is a nuclear power station, actually working, or one being built, or one in the planning stages ?

- 1 Actually working
- 2 One being built
- 3 One in the planning stages
- 4 None
- 0 ?

237. (SI OUI AUX CODES 1, 2 OU 3 EN 236).

A quelle distance de votre domicile se trouve cette centrale nucléaire en activité ou en construction ou en projet ? (Si plusieurs, demander la plus proche).

- 1 Moins de 5 km
- 2 5 à 10 km
- 3 10 à 50 km
- 4 50 à 100 km
- 5 Plus de 100 km
- 0 ?

237. (IF CODE 1, 2 OR 3 IN 236).

How far away from your home is this actual or planned nuclear power station ? (If more than one take the nearest)

- 1 Less than 3 miles
- 2 3 to 6 miles
- 3 7 to 30 miles
- 4 31 to 60 miles
- 5 More than 60 miles
- 0 ?

238. Tout développement industriel demande des efforts, du temps et de l'argent ; il peut comporter aussi certains risques.

Voici trois opinions au sujet du développement des centrales nucléaires, c'est-à-dire des installations qui utilisent l'énergie atomique pour produire l'électricité. Pouvez-vous me dire laquelle est la plus proche de votre opinion personnelle à ce sujet ?

- 1 Cela vaut le coup
- 2 C'est sans intérêt
- 3 Cela présente des dangers inacceptables
- 0 ?

238. All new development in the industrial field implies effort, time and money, it may also involve risk.

Here are 3 opinions about the development of nuclear power stations, which use atomic energy for the production of electricity. Which of these 3 statements comes closest to your own opinion on the development of nuclear power ?

- 1 It is worthwhile
- 2 No particular interest
- 3 The risks involved are unacceptable
- 0 ?

TREND PARTIAL BARO. 10.A - Q. 148

239. On dit aussi que si nous ne développons pas les centrales nucléaires, nous serons bientôt obligés de restreindre notre consommation d'électricité. Croyez-vous que c'est vrai ou non ?

- 1 C'est vrai
- 2 Ce n'est pas vrai
- 0 ?

239. Some say that if we don't continue to develop nuclear power, we shall soon have to cut down on electricity consumption. Do you think this is true or not ?

- 1 True
- 2 Not true
- 0 ?

TREND PARTIAL BARO. 10.A - Q. 160

240. Et à supposer que cela soit vrai, est-ce que ce serait très grave, assez grave, peu grave, pas grave du tout ?

- 1 Très grave
- 2 Assez grave
- 3 Peu grave
- 4 Pas grave du tout
- 0 ?

240. And supposing it were true ; do you think this would be a very serious situation, somewhat serious, not so serious, or not at all serious ?

- 1 Very serious
- 2 Somewhat serious
- 3 Not so serious
- 4 Not at all serious
- 0 ?

TREND PARTIAL BARO. 10.A - Q. 161

ANNEX A-3

<p>241. On a parlé de possibilités d'accidents dans les centrales électriques nucléaires. Pensant à une explosion nucléaire semblable à celle des bombes utilisées au Japon au cours de la seconde guerre mondiale, diriez-vous qu'une explosion de ce genre dans l'une ou l'autre des centrales électriques nucléaires qui sont actuellement en activité est très probable, assez probable, peu probable ou matériellement impossible ?</p> <p>1 Très probable 2 Assez probable 3 Peu probable 4 Matériellement impossible 0 ?</p>	<p>241. People have been talking about the possibility of accidents taking place in nuclear power plants. What about a nuclear explosion like that of the bomb used in Japan in World War II, would you say that an explosion of this type in one of the nuclear power plants now operating is very likely, somewhat likely, not very likely, or technically impossible?</p> <p>1 Very likely 2 Somewhat likely 3 Not very likely 4 Technically impossible 0 ?</p>
<p>242. A propos des dangers, voici une liste des dangers dont on entend parfois parler à propos de l'énergie nucléaire. Quels sont ceux, dans cette liste dont vous pensez qu'on peut les craindre sérieusement ? (Plusieurs réponses possibles).</p> <p>1 L'explosion de la centrale 2 Les rejets radioactifs pendant le fonctionnement courant de la centrale 3 Les dangers du stockage des déchets radioactifs 0 ?</p>	<p>242. Again, about dangers, I am going to mention certain dangers which people sometimes mention when talking about nuclear power stations. Which of these dangers do you believe one may have reason to seriously worry about ? (SEVERAL ANSWERS POSSIBLE).</p> <p>1 The explosion of the power station 2 The radioactive gaseous emissions whilst the power station is working 3 Danger of storage of radioactive waste 0 ?</p>
<p>243. Si quelque chose de ce genre se produisait, à votre avis, quelle pourrait en être la cause : une panne technique ou une défaillance humaine ?</p> <p>1 Une panne technique 2 Une défaillance humaine 3 Les deux (ne pas suggérer) 0 ?</p>	<p>243. If such a thing was to happen, in your opinion what could be the reason for this : a technical breakdown or a human error ?</p> <p>1 A technical breakdown 2 An human error 3 Both (don't suggest) 0 ?</p>
<p>244/ On dit aussi d'autres choses sur les centrales nucléaires. Pour chaque opinion que je vais vous citer, pourriez-vous me dire si vous êtes plutôt d'accord ou plutôt pas d'accord ? (ENQUÊTEUR : UNE REPONSE POUR CHAQUE PHRASE).</p> <p>Plus-Plus-tôt tôt d'ac-pas cord d'ac-cord ?</p> <p>244 245 246</p> <p>1 1 1 Grâce aux centrales nucléaires, on peut disposer de ressources électriques supplémentaires.</p> <p>2 2 2 Les matières atomiques utilisées par les centrales peuvent être volées par des terroristes.</p> <p>3 3 3 L'électricité des centrales nucléaires coûte moins cher à produire.</p> <p>4 4 4 Toute installation nucléaire peut être utilisée secrètement à des fins militaires.</p> <p>5 5 5 La production nucléaire de l'électricité a un effet favorable sur l'économie générale du pays.</p> <p>6 6 6 Tout bien compté, l'énergie électrique nucléaire n'est pas vraiment intéressante.</p> <p>7 7 7 La multiplication du nombre de centrales nucléaires est dangereuse.</p> <p>8 8 8 Les mesures de sécurité dans les centrales nucléaires sont si rigoureuses qu'elles éliminent pratiquement tout danger.</p> <p>9 9 9 Les multiples mesures de sécurité montrent bien que les centrales sont dangereuses par nature.</p> <p>X X X L'énergie nucléaire est une énergie propre.</p> <p>Y Y Y Les centrales nucléaires peuvent être dangereuses pour ceux qui y travaillent.</p>	<p>244/ A number of other things are said about nuclear power stations. 246. For each statement I read to you, could you tell me whether you tend to agree or disagree ? (Interviewer : one answer for each statement).</p> <p>Tend Tend to to agree disagree ?</p> <p>244 245 246</p> <p>1 1 1 Thanks to nuclear power stations, we shall have available extra resources of electricity.</p> <p>2 2 2 Atomic materials used in these stations could be stolen by terrorists.</p> <p>3 3 3 Electricity from nuclear power is cheaper to produce.</p> <p>4 4 4 Any nuclear installation can be secretly put to use for military purposes.</p> <p>5 5 5 Nuclear power production has a favourable effect on the general economy of the country.</p> <p>6 6 6 Taking everything into account, producing electricity by nuclear power is not really worthwhile.</p> <p>7 7 7 The expansion of the number of nuclear power stations is dangerous.</p> <p>8 8 8 The safety measures taken at nuclear power stations are so strict that they eliminate nearly all the danger.</p> <p>9 9 9 The numerous systems of security precautions are a clear indication that by their very nature power stations are dangerous.</p> <p>X X X Nuclear power is a clean form of energy.</p> <p>Y Y Y Nuclear power stations can be dangerous for the people that work in them.</p>

ANNEX A-3

17/ Est-ce qu'à votre avis les différents moyens d'information que je vais vous citer informent bien les gens comme vous sur les problèmes de l'énergie en général, les informent mal ou ne les informent pas du tout sur les problèmes de l'énergie ?

	bien	mal	Pas du tout ?	
	247	248	249	250
1	1	1	1	1 Les journaux quotidiens
2	2	2	2	2 Les hebdomadaires et les revues
3	3	3	3	3 La radio
4	4	4	4	4 La télévision
5	5	5	5	5 Les écoles et les universités.

18/ En regardant cette liste (Montrer liste) pourriez-vous me dire laquelle ou lesquelles de ces autorités devrait (ent) avoir la responsabilité pour déterminer les orientations et les règles de la réglementation dans chacun des domaines suivants ? (Enquêteur : plusieurs réponses possibles pour chaque ligne).

Auto- Gou- Commu-
rités verne-nauté
loca- ment euro-
les (Fr.) péenne ?

	1	2	3	0	
i1	1	2	3	0	Conservation de la nature
i2	1	2	3	0	Pollution de l'air
i3	1	2	3	0	Pollution de l'eau
i4	1	2	3	0	La sécurité des centrales nucléaires
i5	1	2	3	0	La protection des espèces menacées
i6	1	2	3	0	La localisation des nouvelles installations industrielles
i7	1	2	3	0	La recherche de nouvelles formes d'énergie.

18. Votre foyer possède-t-il l'un ou l'autre des équipements suivants ?

- 1 Une ou plusieurs automobiles
- 2 Une moto d'au moins 125 cm³
- 3 Le chauffage central
- 4 Une machine pour laver le linge
- 5 Une machine à laver la vaisselle
- 6 Un chauffe-eau électrique ou au gaz indépendant du système général du chauffage
- 7 Un réfrigérateur
- 8 Un congélateur indépendant du réfrigérateur
- 9 Des outils de bricolages électriques
- X Une télévision en couleur
- Y Un téléphone
- 0 ?

247/ I am going to mention different ways in which we get information about energy problems in general. For each one, can you tell me whether in your opinion they keep people like yourself well informed, badly informed or give no information on energy problems ?

	well	badly	Not at all ?	
	247	248	249	250
1	1	1	1	1 Daily newspapers
2	2	2	2	2 Periodicals and magazines
3	3	3	3	3 Radio
4	4	4	4	4 Television
5	5	5	5	5 Schools and universities

251/ Who do you think should have responsibility for regulating the following problems : the European Community, (respondent's) national government, or (respondent's) local authorities ? (Several answers possible on each line)(Show card)

Local Natio- The Eu-
autho- nal ropean ?
rities gover- commu-
ment nity

	1	2	3	0	
251	1	2	3	0	Nature conservation
252	1	2	3	0	Air pollution
253	1	2	3	0	Water pollution
254	1	2	3	0	Nuclear plant safety
255	1	2	3	0	Protection of endangered species
256	1	2	3	0	Siting of industrial development
257	1	2	3	0	Research for new types of energies

258. Do you have any of the following appliances or vehicles at home ?

- 1 A car or cars
- 2 A motorbike (125 cc or more)
- 3 Central heating
- 4 A washing machine
- 5 A dishwasher
- 6 An independant electric or gas water-heater
- 7 A refrigerator
- 8 A deep-freeze separate from refrigerator
- 9 Electric power tools
- X A colour television
- Y Telephone
- 0 ?

1. ALL COUNTRIES EXCEPT DENMARK, GREECE, IRELAND.

QUESTION TO THE INTERVIEWER : Please take the map showing the actual situation of the nuclear power plants in Europe, and look at the area where you are interviewing. As far as you can see, is the nearest nuclear plant shown on the map at a distance of less than 100 km (or 60 miles) or about that distance or more distant ? Or can't you tell ?

- 1 Less than 100 km/60 miles
- 2 About that distance
- 3 More than 100 km/60 miles
- 0 Can't tell

ANNEX B-1

THE LEADERSHIP INDEX

What is an opinion leader? It is someone who, in carrying out certain social functions, generally exerts on the opinions of others more influence than the others exert on him. If all the members of a social group were equivalent and interchangeable in the formation of the opinions, attitudes and behaviours in the group, the group would continue to function in some way even if a certain member disappeared. The leader is the person who changes things: he influences the others more than he is himself influenced by them, and not only occasionally but in a relatively constant and foreseeable fashion.

One of the aims of market research, opinion polls and more generally research on social psychology is to pinpoint leaders. Only three ways of doing this are known:

- 1 - The sociometric study of the respective influences in a given group, but this method is really only practicable in a laboratory or in small groups.
- 2 - The interrogation of informants who identify those who, in their opinion, are leaders in a given group. This method has the same limitation as the previous one and in addition may pinpoint "persons of distinction", i.e. people occupying a social situation regarded as important, rather than "leaders" genuinely involved in the life of the group.
- 3 - Automatic selection of leaders by means of a survey; this method consists of defining leaders as individuals having certain characteristics giving them what is generally accepted to be an attitude of leadership: interest in certain problems, scope and intensity of activity in the life of the group.

The last method was adopted because it appeared the only one that could be used in practical fashion in opinion polls on representative samples of numerous and diverse populations.

The analysis of the results gathered in previous polls showed that it was statistically significant to construct a leadership index on the basis of the replies given by all those interviewed to two questions concerning their inclination to discuss politics with friends and their tendency to persuade others of an opinion that they hold strongly themselves.

This index was constructed with four degrees, the highest degree corresponding to those whom we regard as being opinion leaders (approximately 15% of the European population), and the lowest degree corresponding to non-leaders (approximately 25%); the two intermediate degrees correspond to individuals who have slightly more and slightly less leadership qualities than the average member of the general public.

The following table shows how the leadership index was constructed:

	Persuade others ...				
	<u>often</u>	<u>sometimes</u>	<u>rarely</u>	<u>never</u>	<u>don't know</u>
Discuss politics ...					
often	++	++	+	+	+
sometimes	+	+	-	-	-
never	-	-	--	--	--
don't know	-	-	--	--	--

ANNEX B-2

EXTRACT FROM "THE EUROPEAN PUBLIC'S ATTITUDES TO SCIENTIFIC AND TECHNICAL DEVELOPMENT", COMMISSION OF THE EUROPEAN COMMUNITIES, FEBRUARY 1979

Question asked in October 1978: *Now I am going to ask your opinion about a number of possible scientific research projects, or aims to which scientific research can be directed towards. Naturally, the research that is needed to succeed in these different areas requires effort, time and money. It may also involve some risks. In each case I am going to ask you if you, yourself, would say that this project is either worthwhile, of no particular interest, or whether it carries with it unacceptable risks.*

	<u>Worth- while</u>	<u>No par- ticular interest</u>	<u>Unaccept- able risks</u>	<u>Don't know</u>
To increase the number of observation satellites which will circle the earth to gather and re-transmit information (for telecommunications, detection of the resources on and under the earth, etc.)	55	20	13	12
To develop medical and surgical research on human organ transplants	82	6	7	5
To collect together by computer the greatest possible amount of information on each person in Britain so that it is possible, if it's needed, to know all that can be required on each person	22	24	45	9
To speed up research into synthetic food so as to be able to produce food on an industrial scale which is not made from farm animals or farm products	23	21	49	7
To develop nuclear power stations that will use atomic energy for the production of electricity	44	9	36	11
To carry out experiments on the transmission of hereditary characteristics which could make it possible to improve the qualities of living species	33	19	35	13
To spend, if necessary, a great deal of money to find and develop new sources of energy	76	12	5	7
To develop synthetic materials to replace natural raw materials such as wood, iron, copper. etc.	54	24	12	10

ANNEX B-3

THE CREDIBILITY OF THE STAKES

1978-1982

SOME SAY THAT IF WE DON'T CONTINUE TO ...	<u>1978</u> ¹	<u>1982</u>
	EC 9	EC 9
DEVELOP NUCLEAR POWER, WE SHALL SOON HAVE TO CUT DOWN ON ELECTRICITY CONSUMPTION.		
TRUE	56	47
NOT TRUE	30	31
DON'T KNOW	14	22
	<u>100</u>	<u>100</u>

AND SUPPOSING IT WERE TRUE, DO YOU THINK

THIS WOULD BE ...

VERY SERIOUS	32)	28)	
	62	70	
SOMEWHAT SERIOUS	30)	42)	
NOT SO SERIOUS	) 21	) 13	16
NOT AT ALL SERIOUS	) 21	) 3	
DON'T KNOW	17	14	
	<u>100</u>	<u>100</u>	

¹ Source: "The European Public's Attitudes to Scientific and Technical Development", Commission of the European Communities, 1979.

ANNEX B-4

EXTRACT FROM EUROBAROMETER No. 15 (pp. 34-35)

COMMUNITY POPULARITY RATING

An index should be constructed in such a way as to provide more refined and more sensitive information than is conveyed in the replies to the questions making up the index.

The index used here has five levels ranging from 5 - very "pro" - to 1 - very "anti". The central point on the scale - don't care or don't know - is therefore 3. It was constructed on the basis of the answers to two questions as follows:

	Community membership:		
	A good thing	Neither good nor bad (or don't know)	A bad thing
If it were scrapped:			
. regret	5	4	3
. indifference (or don't knows)	4	3	2
. relief	3	2	1

The sensitivity of the index produces some interesting conclusions:

1. The proportion of interviewees at level 1 on the scale (very "anti") is generally very low. Even in Denmark and the United Kingdom, where at times it was as high as 25% to 30%, extreme opposition does not seem very stable. In both countries, and to a lesser extent in Ireland, there is a certain fluidity among the Community's opponents, who tend to vacillate depending on the circumstances between hostile indifference (or a prejudice against) and out-and-out hostility.
2. At the other end of the scale the percentage at level 5 ("very pro") remained fairly stable between 1973 and 1977, peaking in most countries in 1975, but dropped substantially between 1977 and 1981, especially in Belgium (from 39% to 21%) and in Ireland (from 43% to 28%). Only in Luxembourg, the Netherlands and Italy has the ardent support remained constantly high: four to six in every ten interviewed.
3. This decline in support in a number of countries has a curious effect which has hitherto passed unnoticed owing to the absence of a satisfactory indicator. The proportion of ardent supporters is now the same in countries with as different a Community history as Belgium and Denmark (21% and 19%) or France and Ireland (28%); Greece also belongs to this group (24%).
4. There is less to be said about those at the intermediate points on the scale (from 2 to 4). The factors involved are fairly diverse; indifference is definitely a dominant factor at level 3 and probably a contributory factor at levels 2 (fairly "anti") and 4 (fairly "pro").

ANNEX B-5

VARIANCE ANALYSIS OF TWO MAJOR ARGUMENTS FOR AND AGAINST NUCLEAR POWER STATIONS

(Cramer coefficient V, i.e. square root of $\frac{\chi^2}{\text{no. of persons}}$)

	<u>ECONOMIC ARGUMENT</u>	<u>SAFETY ARGUMENT</u>
Variables in Table on p. 60	If we don't continue to develop nuclear power, we shall have to cut down on electricity consump- tion (True/Not true) Cramer V	The safety measures taken at nuclear power stations are so strict that they eliminate nearly all the danger (Tend to agree/Tend to disagree) Cramer V
Sex	.161	.131
Age	.072	.101
Age on completion of full-time education	.099	.110
Leadership rating	.144	.134
Position on the left/ right scale	.153	.185
Nationality	.206	.175
Other variables ¹		
Occupation	.109	.111
Size of residential area	.029	.055
Attitudes towards movements:		
- anti-nuclear	.231	.283
- anti-pollution	.141	.125
- ecology	.173	.188
- nuclear disarmament	.094	.092
Religious concern		
System of values (materialist/ post-materialist)	.137	.143

¹ The variance study has been applied to different variables, of basic interest, which also appeared in the Eurobarometer questionnaire.

ANNEX B-6

ATTEMPT TO EVOLVE A STRUCTURAL PATTERN FROM THE ATTITUDES TOWARDS NUCLEAR ENERGY

One of the most striking things to have emerged from this report about attitudes towards nuclear power stations is their diversity. It was this that prompted an attempt to discern the main factors behind them. Some indications have already been given: the uncertainty of some Europeans, the considerable degree to which the opponents or supporters of nuclear power stations may be mobilized or the existence of a certain amount of consensus as regards the economic benefits and dangers inherent in any loss of control. Since such indications do not, as they stand, provide an overall picture, a more systematic analysis of the component parts of attitudes towards nuclear power stations seemed appropriate.

This analysis was based on the following question which takes full account of the range of attitudes.¹

Question: *A number of other things are said about nuclear power stations. For each statement I read to you, could you tell me whether you tend to agree or disagree?*

	<u>Tend to agree</u>	<u>Tend to disagree</u>	<u>Don't know</u>
Thanks to nuclear power stations, we shall have available extra resources of electricity.	1	1	1
Atomic materials used in these stations could be stolen by terrorists.	2	2	2
Electricity from nuclear power is cheaper to produce.	3	3	3
Any nuclear installation can be secretly put to use for military purposes.	4	4	4
Nuclear power production has a favourable effect on the general economy of the country.	5	5	5
Taking everything into account, producing electricity by nuclear power is not really worthwhile.	6	6	6
The expansion of the number of nuclear power stations is dangerous.	7	7	7
The safety measures taken at nuclear power stations are so strict that they eliminate nearly all the dangers.	8	8	8
The numerous systems of security precautions are a clear indication that by their very nature power stations are dangerous.	9	9	9
Nuclear power is a clean form of energy.	X	X	X
Nuclear power stations can be dangerous for the people that work in them.	Y	Y	Y

¹ See Part IV of this report: The Image of Nuclear Power Stations.

The interviewee was given a choice of three responses to each of the eleven statements: tend to agree, tend to disagree or don't know. A total of 33 attitudes were thus covered by this one question. The object of the analyses was to identify the main axes synthesizing as far as possible all 33 attitudes.

The most appropriate solution was a procedure known as factor analysis of correspondence. The results of this analysis are given below.¹

Three main axes were identified. The first runs from perplexity to certainty: on the one hand, the don't knows, on the other, those with the most decisive views. This axis represents the formation of opinion.

A second axis indicates polarisation of attitude: support of or opposition to nuclear energy.

The third and last axis describes the degree of mobilisation associated with each attitude: from the most strongly held attitudes, be they for or against nuclear power, to the most weakly motivated.

For each of the 33 attitudes there is a point on the three axes. For example, disagreeing with the idea that the atomic materials used in power stations could be stolen by terrorists indicates certainty with regard to nuclear matters, support for nuclear energy and considerable mobilisation on this subject.

The other attitudes studied can be characterised in the same way.

(See Table A).

¹ For the sake of clarity, we have not gone into the details of this complex method of analysis. Anyone interested in the subject will, however, find further details at the end of this Annex.

TABLE A - POSITIONS OF THE 33 ATTITUDES STUDIED ON THE THREE FACTOR ANALYSIS AXES¹

	Axis 1 Formation of opinion			Axis 2 Polarisation			Axis 3 Mobilisation		
	Perplexity	Tendency	Certainty	Opposition	Neutrality	Support	weak	moderate	strong
<u>Extra supplies of electricity thanks to nuclear power stations</u>									
2. Tend to agree			•			•		•	
3. Tend to disagree			•	•					•
1. Don't know	•				•			•	
<u>Risk of terrorists' stealing atomic materials from power stations</u>									
5. Tend to agree		•		•			•		
6. Tend to disagree			•			•			•
4. Don't know	•					•			•
<u>Electricity from nuclear power is cheaper</u>									
8. Tend to agree			•	•		•		•	
9. Tend to disagree			•		•				•
7. Don't know	•				•		•		
<u>Secret use of nuclear power stations for military purposes</u>									
11. Tend to agree		•		•			•		
12. Tend to disagree			•		•				•
10. Don't know	•					•			•
<u>Nuclear power production has a favourable effect on the economy</u>									
14. Tend to agree			•			•		•	
15. Tend to disagree			•	•					•
13. Don't know	•				•			•	
<u>Nuclear power is not worthwhile</u>									
17. Tend to agree			•	•				•	
18. Tend to disagree			•		•				•
16. Don't know	•				•		•		•
<u>Expansion of the number of nuclear power stations is dangerous</u>									
20. Tend to agree		•		•			•		
21. Tend to disagree			•			•			•
19. Don't know	•					•			•
<u>Safety measures eliminate nearly all the danger</u>									
23. Tend to agree			•	•		•		•	
24. Tend to disagree			•		•				•
22. Don't know	•				•		•		•
<u>The numerous security precautions show that power stations are dangerous</u>									
26. Tend to agree		•		•			•		
27. Tend to disagree			•		•				•
25. Don't know	•				•		•		•
<u>Nuclear power is a clean form of energy</u>									
29. Tend to agree			•	•		•		•	
30. Tend to disagree			•		•				•
28. Don't know	•				•		•		•
<u>Nuclear power stations can be dangerous for those who work there</u>									
32. Tend to agree		•		•			•		
33. Tend to disagree			•		•				•
31. Don't know	•				•		•		•

¹ The number assigned to each attitude serves to identify it in the table of results given below.

A comparison of the relative positions makes it possible to distinguish seven homogenous, well-characterised attitude groups (Table B).

TABLE B - DIAGRAM OF ATTITUDES TOWARDS NUCLEAR POWER STATIONS

AXIS 1	AXIS 2	AXIS 3	Type of attitude	Attitudes observed
Certainty	Support	Strong	Active support	Denial of loss of control
Certainty	Support	Moderate	Qualified support	Assertion of economic and technical benefits
Perplexity	Support	Strong	Favourable uncertainty	Perplexity vis-a-vis risks
Perplexity	Neutrality	Moderate	Perplexity	Perplexity vis-a-vis technical and economic aspects
Tendency	Opposition	Weak	Hostile tendency	Fear of loss of control
Certainty	Opposition	Moderate	Qualified opposition	Assertion of risks
Certainty	Opposition	Strong	Strong opposition	Denial of economic and technical benefits

The final result of the analysis, this diagram, is highly instructive.

Four points, in particular, are worth emphasizing:

- those who adopt a strong position on the question of nuclear power do so by disputing the arguments advanced by the opposition: the supporters - the dangers inherent in any loss of control, the opponents - the economic and technical benefits;
- those whose position is qualified tend to assert a single aspect: the supporters - the economic advantages, the opponents - the risks;

- perplexity can take two forms: neutral perplexity in the face of the technicalities of nuclear power and perplexity tending towards a favourable stance, which is more concerned with risks;
- those who exhibit a "tendency", i.e. the beginnings of an opinion, are generally hostile towards nuclear power.

Finally, for those who are interested in the subject, we have provided some technical details of the analysis.

Variables having the greatest absolute effect on Axis 1 (Percentage of explicit variance=19.7)

Negative Coordinates				Positive Coordinates			
Name	Absolute effect	Reliability Coefficient	Coordinate	Name	Absolute Effect	Reliability Coefficient	Coordinate
18	0.0251	0.1970	-0.4946	1	0.0810	0.4054	1.6101
21	0.0238	0.1300	-0.7102	16	0.0798	0.4655	1.1653
12	0.0193	0.1053	-0.6377	22	0.0775	0.4335	1.2266
14	0.0190	0.1819	-0.3887	25	0.0746	0.3825	1.4554
23	0.0190	0.1400	-0.4483	13	0.0718	0.4220	1.0919
27	0.0186	0.0984	-0.6702	28	0.0713	0.4162	1.1003
33	0.0185	0.0933	-0.7641	19	0.0662	0.3299	1.4939
6	0.0181	0.1173	-0.4873	4	0.0612	0.3322	1.1525
8	0.0177	0.1297	-0.4357	10	0.0582	0.3326	1.0243
29	0.0162	0.1260	-0.4001	31	0.0580	0.2895	1.3880
9	0.0104	0.0571	-0.4705	7	0.0439	0.3136	0.6987

Variables having the greatest absolute effect on Axis 2 (Percentage of explicit variance=15.4)

Negative Coordinates				Positive Coordinates			
Name	Absolute Effect	Reliability Coefficient	Coordinate	Name	Absolute Effect	Reliability Coefficient	Coordinate
21	0.0788	0.3345	-1.1392	17	0.0789	0.3808	0.9414
27	0.3579	0.2385	-1.0432	24	0.0669	0.3570	0.7837
33	0.0571	0.2236	-1.1830	3	0.0630	0.2509	1.1818
23	0.0462	0.2645	-0.6162	15	0.0614	0.2573	1.0343
18	0.0443	0.2704	-0.5794	30	0.0498	0.2423	0.7422
29	0.0337	0.2035	-0.5084	20	0.0449	0.4548	0.4765
8	0.0305	0.1736	-0.5041	9	0.0403	0.1713	0.8154
14	0.0274	0.2037	-0.4113	26	0.0314	0.3194	0.3984
12	0.0230	0.0978	-0.6145	32	0.0256	0.3229	0.3436
31	0.0179	0.0696	-0.6804	5	0.0244	0.1563	0.4186
6	0.0172	0.0870	-0.4196	11	0.0215	0.1636	0.3419
19	0.0165	0.0639	-0.6574	7	0.0011	0.0059	0.0959
2	0.0133	0.1582	-0.2504	13	0.0007	0.0030	0.0922

Variables having the greatest absolute effect on Axis 3 (Percentage of explicit variance=6.5)

Negative Coordinates				Positive Coordinates			
Name	Absolute Effect	Reliability Coefficient	Coordinate	Name	Absolute Effect	Reliability Coefficient	Coordinate
15	0.1340	0.2370	-0.9926	5	0.0445	0.1201	0.3671
3	0.1085	0.1824	-1.0076	11	0.0431	0.1383	0.3328
9	0.1054	0.1891	-0.8565	14	0.0394	0.1239	0.3207
12	0.0717	0.1287	-0.7050	2	0.0353	0.1774	0.2651
27	0.0574	0.0997	-0.6746	26	0.0304	0.1304	0.2545
33	0.0517	0.0856	-0.7318	32	0.0281	0.1497	0.2339
6	0.0314	0.0669	-0.3682	20	0.0210	0.0898	0.2117
21	0.0312	0.0559	-0.4658	8	0.0156	0.0375	0.2342
31	0.0270	0.0442	-0.5423	7	0.0117	0.0273	0.2062
30	0.0228	0.0467	-0.3260	29	0.0116	0.0296	0.1939
17	0.0220	0.0449	-0.3233	18	0.0073	0.0188	0.1528
19	0.0115	0.0189	-0.3575	16	0.0023	0.0045	0.1142
25	0.0110	0.0186	-0.3209	23	0.0011	0.0026	0.0606
4	0.0092	0.0164	-0.2557	13	0.0008	0.0015	0.0662
1	0.0071	0.0117	-0.2773	28	0.0006	0.0011	0.0562