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DOKUMENT 319/74

Report

drawn up on behalf of the Committee on Regional Policy and Transport

on permanent links across certain sea straits

Rapporteur: Mr James HILL

PE 36.642/fin.

At its sitting of 4 July 1973 the European Parliament authorized the Committee on Regional Policy and Transport to draw up a report on Permanent links across certain sea straits.

At its meeting of 12 September 1973 the committee appointed Mr James Hill rapporteur.

The committee considered the motion for a resolution and the explanatory statement at its meeting of 22 October 1974 when the motion for a resolution and the explanatory statement were adopted unanimously.

The following were present : Mr James Hill, chairman and rapporteur; Mr Mitterdorfer, vice-chairman; Mr Creed, Mr Fabbrini, Mr Flämig (deputizing for Mr Ariosto), Mr Giraud, Mr Herbert, Mr Kavanagh, Mr Marras, Mr Mursch, Mr Nybourg and Mr Pêtre.

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A

The Committee on Regional Policy and Transport hereby submits to the European Parliament the following motion for a resolution, together with explanatory statement

MOTION FOR A RESOLUTION

on

Permanent links across certain sea straits

The European Parliament,

- having regard to the report of the Committee on Regional Policy and Transport (Doc. 319/74),
- referring to the Report of the Committee on Regional Policy and Transport (Doc. 85/73) on the improvement of Traffic Infrastructures across the Alps, and to its Resolution of 5 June 1973,¹

1. Notes that certain sea straits within the Community constitute an impediment not only to the development of an inter-connected Community transport network, but also to the economic and social development of certain regions.
2. Recognizes that there are already sea and air links in existence across these straits but considers that despite such links, certain sea straits would be less of an impediment if permanent links were created whether by bridge or tunnel.
3. Considers that the creation of such links would materially reduce transport costs and time between:
 - Continental Italy and Sicily;
 - the Danish Islands, the other Community countries, and Sweden;
 - the United Kingdom and other Community countries

while facilitating in some cases in accordance with the Communities' aims the transfer of industrial growth from zones of excessive concentration to regions suffering from structural unemployment.

¹

O.J. No C.49 of 28.6.1973 , p.12

4. Recognizes that while the costs of building permanent sea strait links may be high, such ventures are likely to be commercially viable if the users pay a fair share of the cost of such traffic infrastructures.
5. Recognizes also that the social effects of new and easier links across sea straits are likely to be considerable, particularly on the out-lying areas of the Community.
6. Considers that co-ordination at Community level is necessary whenever such projects are being considered, with a view not only to assisting, if necessary, in the financing of transport networks connected to the new links, but also in planning.
7. Asks, in the light of the Council Decision of 28 February 1966, instituting a procedure for consultation in respect of transport infrastructure development, for:
 - (a) a detailed examination to be undertaken of all projects currently under consideration by Member States for the creation of permanent links across sea straits;
 - (b) consideration to be given to the probable effects of such projects not only in connection with actual transport costs but also in connection with the effects in social and economic terms not only in the areas most immediately affected but also in the Community as a whole;
 - (c) consideration to be given to the desirability of offering financial aid to certain infrastructure proposals for permanent sea links which are of priority importance both within the Community and at its borders.
8. Instructs its President to forward the resolution and the report of its committee to the Council and Commission of the European Communities.

EXPLANATORY STATEMENTI. INTRODUCTORY

1. This report completes the present study by the Committee on Regional Policy and Transport of the main natural obstacles to traffic in the European Community. In a previous report,¹ the Committee analysed in particular the infrastructure problems created by the Alps, reserving for a separate report the consideration of bridges or tunnels across sea straits. In this report the Committee re-examine the question with particular reference to the Channel Tunnel proposal linking France and the United Kingdom, the proposal for a link between Sicily and Calabria and the various proposals for linking the Danish islands both with one another and with Sweden and Germany.
2. If all the projects under consideration here come to fruition, there would be direct transport in Europe running from the north of Scotland to Sicily on a north/west/south/east axis, and from Sweden to Sicily on a north/south axis. One of the Member States (the United Kingdom) would no longer be physically separated from the European mainland, and the Scandinavian countries would be in direct contact, through Denmark, with the Community (see Annex 1.).
3. These three areas of investigation cover (a) internal links within an individual Member State; (b) links between Member States and (c) links between a Member State and a non-Community country.
4. The Committee have adopted the same criteria in this report as in their report on Alpine transport; that is to say they have considered most carefully traffic barriers necessitating particularly high expenditure on transport infrastructures in order to achieve the Community's aims as set out in the Preamble to, and Article 2 of, the EEC Treaty: namely balanced trade, harmonious development of the economies, the reduction of differences existing between

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Report drawn up on behalf of the Committee on Regional Policy and Transport on the Improvement of Traffic Infrastructure across the Alps. Rapporteur Mr Luigi Noé, 4 June 1973. Doc. 85/73 of the Working Documents of the European Parliament 1973-1974.

the various regions and of the backwardness of the less favoured regions (Preamble), the harmonious development of economic activities within the Community, balanced economic expansion and closer relations between the Member States (Article 2).

5. The Committee stress at the outset the point made in the NOE¹ report about the need for joint planning for transport projects requiring major investment.
6. Any project for creating new links across sea straits must be considered not only on the basis of a cost-benefit analysis and in the framework of a plan for an European traffic infrastructure network but also against the following background:
 - (i) Whether there are existing sea links in the form of sea or air services - and if so what is the likely economic and practical result of the creation of a bridge or tunnel on the existing links
 - (ii) The probable social and economic consequences of the creation of a bridge or tunnel on the Member State or States directly concerned or on the Community as a whole.
7. In this report the Committee have confined themselves to the projects outlined in paragraph (1) above; projects involving heavy expenditure and which prima facie would appear to be advantageous both socially and economically. They have not considered the possibility of permanent road or rail links with the islands of Ireland, Corsica or Sardinia since at the moment there appears to be no practical possibility for such links being constructed. The committee are however fully aware of the problems of communication that arise in connection with these islands and they are prepared, in a later report, to consider the question of improving the sea and air links between them and the rest of the Community.
8. In some cases, the Committee are aware that the existence of a sea strait isolating an island or a piece of land may in itself be desirable both economically and socially. The particular character of a locality may depend on its comparative isolation and this in turn may give rise to advantages concerning tourism or to the quality of life of the inhabitants. Examples that might be cited where the construction of bridges or tunnels

could adversely affect a community, by placing too heavy a strain on transport and holiday resources for instances, are afforded by the Isle of Wight in the United Kingdom, or Elba in the case of Italy.

9. Community action in the field of traffic infrastructure investments is not yet based firmly in Community legislation. As a result of the Council Decision of 28 February 1966 ¹ there is little more scope in this field than for a procedure for consultation; Article 1 of the Decision only requires Member States to notify the Commission of "investment projects of Community interest particularly where regional policy is concerned." Article 2 provides that when considering such projects account shall be taken of their effects "on the development of one or more regions of the Community". In the committee's view, it is essential that the Commission should keep itself constantly informed of the developments that are taking place in this field and should consider the economic and social consequences that such developments will create and their effect not only regionally but in the Community as a whole. ²
10. To take the Channel Tunnel as an example, not only will its construction lead to a through rail connection which will be capable of linking industrial areas in the United Kingdom with industrial areas in Germany but also it is likely to have profound effects upon road traffic. The Committee have noted with interest the proposals of the "Interconsular and Interdepartmental Centre of Action for the improvement of the Calais-Bayonne axis through the R.N. 138." This association which was created three years ago is seeking to improve the Route Nationale 138 in an effort to provide a North-South road link which would take heavy traffic and would avoid Paris. The association feel that such a link which would help to reinvigorate some of the mid-west regions of France will "become indispensable as one of the most important continental openings for the coming tunnel under the Channel." ³
11. The Commission consider that Common Transport Policy must take into account the co-ordination of investment in transport infra-

¹ OJ 42, 8 March 1966, p. 583

² In its recent Communication on the Development of the Common Transport Policy (Doc. 226/73), the Commission has stressed the need for such projects as the Channel Tunnel Scheme to be placed "within the framework of general infrastructure programmes and examined from the standpoint of the Community's transport needs."

³ *Axe Calais-Bayonne, Chambre de Commerce et d'Industrie d'Alençon.*

structures.

12. The formal notification required under the 1966 procedure has only been received by the Commission in the case of the Channel Tunnel project in November 1973. No information concerning the Danish or Italian projects has so far been received by the Commission. The Commission has informed the other Member States of this notification and has asked the French and United Kingdom Governments for further technical information concerning:

- (a) the technical compatibility of the proposed transport system under the channel with existing systems;
- (b) the financial profitability of the scheme;
- (c) the economic profitability in the wider framework of the economies of the Member States, and the economic consequences on ports and air traffic;
- (d) the access routes, both road and rail, to the tunnel.

II. THE CHANNEL TUNNEL ¹

13. Since Mathieu's project in 1802 there have been various schemes for constructing a tunnel under the Channel between France and the United Kingdom. The idea of a bridge rather than a tunnel has also received support. As long ago as 1875, an Anglo-French consortium actually bored lengths of trial tunnel at Dover and Sangatte. In 1938 M. Baschwart proposed a road tunnel, changing this scheme to a road and rail tunnel in 1939. However, despite the fact that the geology of the area posed comparatively few problems, even to the technology of a hundred years ago, the various projects came to nothing largely for military reasons, the United Kingdom in particular seeing the advantages of preserving the Channel as a defensive barrier of great value particularly when coupled with a strong naval force. Throughout the nineteenth century the volume of traffic across the channel continued to grow rapidly.

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Much of the information in this section is derived from the United Kingdom Command Paper 5430 "The Channel Tunnel"; the statistics in that document are mainly based on Anglo-French cooperation.

14. It was not however until 1955 that the United Kingdom government announced that earlier considerations against a tunnel were no longer valid and shortly after this serious Anglo-French explorations of the possibility of constructing a tunnel or a bridge started. In 1963 a Working Group of British and French officials reported on these proposals ¹. This body concluded that either a bridge or tunnel was technically feasible, but for reasons of price, danger to navigation and legal difficulties it considered that a tunnel was preferable. The Working Group also recommended, for reasons of cost, that the tunnel should be for railway only and, for technical and legal reasons, should be bored rather than constructed as an immersed tube.
15. In 1964 the French and British Governments announced their agreement in principle to the construction of a rail Channel Tunnel, subject to further discussion of the legal and financial problems involved. In 1966 the two governments announced details about the financing of the construction of the Tunnel and in 1972 parallel agreements between the governments and the members of the Anglo-French group chosen to finance and construct the Tunnel were signed.

The completed tunnel will be 32 miles long and 23 of the miles will be under the sea. With completion of the tunnel envisaged for 1980, the programme has been divided into three Phases :

Phase I covering the main financial, economic and technical studies;

Phase II the initial works;

Phase III the main construction of the Tunnel.

Allowance has been made for the abandonment of the project at any time and by any party, and detailed arrangements have been worked out to cover the consequences of such abandonment according to various circumstances. The project is now in the second Phase.

¹ "Proposals for a Fixed Channel Link": 1963 Cmnd. 2137 HMSO

Channel Traffic and Financial Viability

16. Reference has already been made to the ever increasing volume of cross-Channel traffic. Between 1962 and 1971, for example, the number of road vehicles (which for the most part comprised private cars) has nearly tripled, representing an annual increase of 13.4%; in 1971 the total passenger traffic between the United Kingdom and the Continent amounted to some 24 million. This figure is expected to double between 1971 and 1980 and again from 1980 to 1990, whether a tunnel is built or not. It has been estimated that about 15 million passengers might use the tunnel in 1980, this figure again doubling by 1990.
17. Freight traffic between the United Kingdom and the Continent is increasing at about 8% a year and by 1980 it is estimated that it will amount to some 13 million tons, rising to over 25 million tons by 1990.
18. Bearing in mind this volume of traffic and assuming that the Tunnel is to be operated as a viable commercial undertaking in competition with existing means of transport, and assuming also, at 1973 prices, that the total cost of the tunnel will be £464¹ million, of which each country will pay half, provisional forecasts show a return of about 17% (see below para. 24).

Technical Details

19. The "Tunnel" would in fact consist of three tunnels, two single track rail tunnels separated by a service tunnel which would be linked to the main tunnels at intervals of about 250 yards. These cross passages would not only provide access to the main tunnels and serve the evacuation of passengers in emergencies, but they would also serve for ventilation and nullify the "piston effect" caused by the passage of trains through a tunnel at speeds of up to 140 km/h. In addition, the main tunnels would be linked by a number of crossovers so that in the event of a breakdown the traffic could still continue in both directions. The tunnel would be built to continental loading gauge which is

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The estimated tunnel cost, allowing for inflation, is however £846 million.

wider than that of the United Kingdom, and the traction system used would be the continental 25kV overhead system. In the United Kingdom a new railway route using 25 kV overhead and the continental loading gauge would be constructed to a new terminal in London. For ferry trains, the total time for the journey between one port and the other would be about one hour, of which 35 minutes would be spent in travelling.

20. Initially, Inter-City train services would become possible from London to Paris and Brussels but this could be readily extended to Germany and other countries. The Railway administrations have proposed an initial freight container train network that would stretch from Glasgow to points as distant as Madrid, Milan and Vienna.

Further details may be summarized under the following heads:-

Finance

21. The British Channel Tunnel Company Limited and the Société Française du Tunnel sous la Manche would raise all the capital required - about 90% through the issue of fixed-interest bonds, guaranteed by the two Governments and the remainder by the issue of shares in the Companies. For the first 50 years the profits of the Tunnel would be shared by the Companies and by the two Governments. After 50 years the profits would go entirely to the two Governments.

Organization

22. The responsibility for raising the necessary finance and constructing the Tunnel will rest with the two companies mentioned above. On completion, the Companies will hand over the Tunnel to the two Governments who will in turn transfer it to an Anglo-French authority for management as a commercial enterprise competing with other means of cross-channel transport.

The cost

23. The total cost of building the Tunnel, as mentioned in para. 18 above, is estimated at 1973 prices at £464 million - to be borne equally between the United Kingdom and France; the outturn costs, which allow for inflation, interest and financing charges, are currently estimated at £846 million.

The return

24. The rate of return in real terms on the project as a whole should be between 14% and 17% and in 1973 the then UK Government believed that the higher figure was the more likely¹.

The benefits

25. It has been estimated that the revenues from the Tunnel would result in the high initial costs of the tunnel being covered by 1989², and the benefit to UK passengers alone is estimated at £18 million in 1980 rising to £33 million in 1990. Freight traffic through the tunnel should benefit the UK economy by some £3.3 million in 1980 rising to £6.6 million by 1990.

The effects of the Tunnel on passengers

26. The Tunnel should benefit passengers both in journey time and in charges. The following table based on the most recent studies shows the effect that the Tunnel may be expected to have on certain journey times, with and without high speed trains :

Journey	1973	1980 (tunnel)	tunnel + very high speed
London - Cologne	10h 16'	5h 29'	3h 35'
London - Amsterdam	9h 28'	5h 37'	3h 35'
London - Brussels	7h 04'	3h 18'	2h 15'
London - Paris	7h 05'	3h 47'	2h 40'

27. The effects of the Tunnel on Ferry Operations

The Tunnel will certainly exercise a profound effect upon ferry operations. It is expected for example that Hovercraft Services between Dover/Folkestone-Calais/Boulogne will cease entirely, and that by 1980 the number of accompanied vehicles for the French Straits with the Tunnel will be some 300,000 whereas without the Tunnel it would amount to about 1,500,000- the figure for 1971 being 700,000. The most dramatic reduction expressed in percentages is for the French Straits, but other crossings such as Harwich-Hook will be affected to a greater or lesser degree - sometimes as in the case of Harwich-Hook by as much as 63% by 1990. The crossing which will suffer least for passengers and vehicles is Southampton-Le Havre/Cherbourg which

¹ "The Channel Tunnel", September 1973, Command 5430, London HMSO

² The Channel Tunnel: a United Kingdom Transport Cost Benefit Study, HMSO 1973

is expected to maintain an absolute increase in passenger numbers.

28. Air passenger traffic is expected to suffer a 14% reduction by 1980.

The effects of the Tunnel on Freight Traffic

29. The position here too is similar. For both roll-on/roll -off and container freight there will be either a diminished rate of increase or an absolute decline (Dover/Folkstone for example will handle, it is estimated, 1,630,000 tons in 1980 without the tunnel but only 640,000 with it. By 1990 these figures would be respectively near 3,000,000 and 1,000,000.

Social Effects

30. As far as employment is concerned Dover and Calais are likely to suffer from some cut back in ferry and port employment. The effect of opening the tunnel will be to reduce the number so employed by 1,000 in the case of Dover. By 1991 there are likely to be 4,000 less jobs available in Dover than there would be if the Tunnel is not built. Equally the natural development likely at other ports will remain in check from the construction of the Channel Tunnel. On the other hand the tunnel will itself create a number of new jobs though a considerable proportion of these might not be suitable for those leaving shipping or port employment.¹ The committee are hopeful that the eventual benefits arising from the construction of the Tunnel will outweigh, in terms of employment, any initial disadvantages.
31. Roll-on/roll-off freight traffic is expected to increase at all ports but the rate of increase will be slowed down by the Tunnel.
32. Passenger ferry fleets on the short French Straits crossings will probably not need to be increased in size between now and 1980 and it is likely that once the Tunnel is opened there will be smaller fleets, possibly operating larger ships.

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The Channel Tunnel, Cmnd. 5430, p. 65

III. TRANSPORT LINKS WITH THE DANISH ISLANDS

33. Permanent transport links between the many islands of Denmark are of the greatest importance to the economic development of that country and for the development of some of its regions.
34. A number of these transport links are also of great importance to traffic between Denmark and the rest of the Community and also between Denmark and Sweden. What is known as the 'Vogelfluglinie' (Beeline), as well as the links between Jutland and Sweden via Fünen and Seeland are of importance to all of Europe, as they provide the link between the Scandinavian peninsula and the Western European continent. In the context of European travel Denmark plays an important bridging function for all the other countries concerned.

Existing Bridges and Tunnels

35. At present there are 14 important bridges over inlets of the sea in Denmark and one tunnel, as shown in the following table:

Existing permanent transport links across inlets of
the sea in Denmark

Number on attached map.	Name	Number of traffic lanes	Number of railway tracks	Length in metres	Year opened
1.	Oddesund Bridge	2	-	532	1938
2.	Vildsund Bridge	2	-	308	1939
3.	Limfjord Railway Bridge	-	1	403	1938
4.	Limfjord Road Bridge	4	-	640	1933
5.	Limfjord Tunnel	6	-	510	1969
6.	New bridge over the Little Belt	6	-	1700	1970
7.	Old bridge over the Little Belt	2	2	1177	1935
8.	Sonderburg Bridge	2	1	324	1930
9.	Svendborg Bridge	4	-	947	1966
10.	Siösund Bridge	2	-	540	1957
11.	Langeland Bridge	2	-	704	1962
12.	Lange Bridge	6	-	380	1954
13.	Ulv sund Bridge	2	-	696	1943
14.	Storström Bridge	2	1	3199	1937
15.	Nyköbing Bridge	2	-	310	1962

SOURCE: Ministeriet for offentlige Arbejder (Trafikministeriet) (Ministry of Transport) Information issued on 22 March 1974

36. Some of the bridges and tunnels listed in the first table are only of regional importance. The following, however, are of national and European importance:

- the Vildsund Bridge (2) and the railway (3) and road (4) bridges over the Limfjord form part of the link between Central Europe and the ferryports of Frederikshavn and Hirtshals with their ferries to Sweden and Norway (European Highway 3).
- the new (6) and old (7) bridges over the Little Belt form part of the most important links between the east and west of Denmark itself and consequently are part of the link between Central Europe and the Scandinavian peninsula via Jutland, Fünen and Seeland (European Highway 66).
- The Storström Bridge (14) forms part of the so-called 'Vogel-fluglinie' (Beeline), the shortest link between Central Europe and the Scandinavian peninsula (European Highway 4.)

Projected Bridges and Tunnels

37. While no permanent link is planned at present between the Danish island of Laaland and the German island of Fehmarn over the Fehmarn Sound, the eight projects listed in the following table are either being built or planned:

Permanent transport links over sea inlets in Denmark and between Denmark and Sweden being built or planned

Number on attached map		Number of traffic lanes	Number of railway tracks	Length in metres	Projected year of opening
16.	Sallingsund Bridge	4	-	1700	1977
17.	Vejle-Fjord Bridge	4	-	1700	1979
18.	Als-Sund Bridge	4	-	850	1980
19.	Bridge over the Great Belt	6	2	11500	1982
20.	Guldborgsund Bridge	4	-	1220	1983
21.	Farö Bridges	4	-	2280	1983
22.	Railway Tunnel Helsingör-Helsingborg	-	1	8900	1985
23.	Motorway tunnel and Motorway bridge from Copenhagen to Malmö	6	-	1500	1985
		6	-	6400	1985

SOURCE: Ministeriet for offentlige Arbejder (Trafikministeriet) (Ministry of Transport) Information issued on 22 March 1974

38. Of the projects listed in the second table, the first (16) is being built, while the others are in various stages of planning. While two of the projects are of more local importance (16 and 18), the others are of great national and European significance.
- The Vejle-Fjorde-Bridge (17) is part of the planned motorway which is to replace European Highway 3 and will bring the entire north of Jütland and the ferryports of Hirtshals and Frederikshavn with their ferries to Norway and Sweden closer to Central and Western Europe.
 - The bridge over the Great Belt will completely change the most important link between east and west in Denmark and will bring about a significant improvement in the links between Central Europe and Sweden, via Jütland, Fünen and Seeland (European Highway 66).
 - The Guldborgsun Bridge (20) and the Farö Bridges (21) are part of the motorway being planned to replace the existing European Highway 4; part of this motorway is already in use and part is still being built. These bridges and the motorway will bring about a significant improvement in the 'Vogelfluglinie' (Beeline) between Central Europe and Denmark and the Scandinavian Peninsula.
 - The permanent links now planned over the Oresund will carry traffic on the "Vogelfluglinie" as well as on the link between Central Europe and the Scandinavian Peninsula via Jütland, Fünen and Seeland. It has now been decided to build a railway tunnel at the northern end of the Oresund (22) as well as a tunnel between the islands of Amager and Saltholm and a bridge from Saltholm to the Swedish mainland (23), all of which will carry a six-lane motorway from Copenhagen to Malmö. The Oresund links will bring the future vision of an integrated centre of economic activity on both sides of the Oresund one step closer to reality.

National and European priorities

39. In all projects in Denmark a clear distinction must be drawn between regional aspects and the aspects of European through-travel. It is true that in making cost benefit analyses of all projects, the two aspects may be grouped together on the credit side; however, the priorities are different for each of the two aspects. For Denmark itself, for instance, the link over the Great Belt is more important by far than the link provided by the 'Vogelfluglinie,' whereas

Germany and Sweden are clearly much more interested in the 'Vogelfluglinie'. The planned bridge over the Vejlefjord is also more important for Denmark than the motorway bridges of the 'Vogelfluglinie'.

40. The Vejle project is, in fact, at a very advanced stage already: in March 1974 all the documentation for the call for tenders had been prepared. The bridge is to be ready by 1979.

The timing of the other projects is also in line with their importance to the Danish economy: the bridge over the Great Belt is to be ready by 1982, the decision to build it having recently been taken in the Folketing.

Construction work is now in progress on the motorway bridges on the 'Vogelfluglinie' - the Guldborgsund Bridge and the Farø Bridges; both bridges are to be ready at the same time, that is, by 1983.

41. According to present plans the Øresund bridges and tunnel will not be ready until two years later (1985). An agreement has already been signed between the Danish and Swedish governments. This agreement has meanwhile been ratified by the Swedish parliament, but not as yet by the Danish parliament.

Position in Danish Infrastructure Planning

42. The Danish projects for new bridges and tunnels are incorporated into an overall plan for the extension of major highways, which is to give the country an H-shaped motorway network. From the German border into the south to Limfjord near Aalborg in the north, a north-south motorway is planned: it will run mainly along the east coast (with the greatest concentration of population and industry). The plan for a Central Jutland motorway has been finally turned down. The 'Vogelfluglinie' will form a second north-south axis in the east of the country and run from the ferryport of Rødbyhavn to Copenhagen by way of the islands of Laaland, Falster and Seeland. The 'crossbar of the H' will run from the Kolding/Fredericia area via the Little Belt bridges, Fünen and the new bridges over the Great Belt to Seeland, linking up with the 'Vogelfluglinie' near the east coast in the vicinity of Køge.
43. Apart from access ramps, no additional work needs to be done on the railways in connection with the new bridges and tunnels.

Position in European Infrastructure Planning

44. The Oresund bridge and tunnel projects will require some infrastructure planning in Sweden; bilateral negotiations are in progress between Denmark and Sweden.
45. The German Federal Republic is the other country principally concerned. It would be highly desirable for the corresponding connections in the Federal Republic to be completed when the various tunnels and bridges in Denmark are opened.
46. As far as road construction is concerned there is close co-operation between the Danish and German authorities. According to existing plans it can be expected that the highways on both sides of the frontier will be ready by 1978.

The German motorway, which is to be a continuation of the E 4, should be ready at the same time as the Farö Bridges and the Guldborg Bridge as well as the Danish motorway from Rödbyhavn to Copenhagen. Unfortunately, however, an extension of the E 4 motorway in Germany seems only to be planned as far as the vicinity of Oldenburg in Holstein and not as far as Puttgarde (the ferryport of the 'Vogelfluglinie').

47. A further extension of the German Federal railway to the north of Hamburg does not seem to be planned at present.
48. The Community institutions should obviously play a coordinating role in this matter.

IV. The Messina Link

49. The idea of bridging the Straits of Messina, thus establishing a permanent link between Sicily and the mainland of Italy, has been under consideration for over a hundred years and in 1971 the Italian Parliament passed an enabling bill ¹ which makes

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Legge 17 dicembre 1971, n. 1158, Collegamento viario e ferroviario fra la Sicilia ed il continente.

detailed provision for the financing, construction and control of a road and rail link between Sicily and the mainland, though it does not lay down whether this should be effected by means of a bridge or a tunnel. This Act established a company, the majority sharehold of which is the Institute for Industrial Reconstruction (IRI), who are charged with carrying out the preliminary studies and construction of such a link, which is described in Article 1 of the Act as "opera di prevalente interesse nazionale" - a work of outstanding national importance. Despite the urgency implied by this expression and despite the fact that it is now more than two years since the Act was passed, no steps have been taken to give it effect. ¹

50. The Committee on Regional Policy and Transport agree with the Italian Parliament's estimate of the importance of this work, which in their opinion should be started without delay. From a technical point of view, there do not appear to be any overwhelming difficulties in the construction of either a bridge or tunnel. A bridge would not need to be of great length, the distance for example between Punta Pezzo in Calabria and Punta Faro in Sicily, which are suitable locations, being only some 2780 metres. One of the engineers who worked on the Bosphorous bridge which was opened on 20 October last and which is some 1560 metres long, has stated that such a bridge is not only technically possible but that it does not create any particular problems. ²

51. The cost of such a bridge (or tunnel) would be high. One recent estimate ³ has put it in the region of 1000 milliard lire, or perhaps 2000 milliard lire when the necessary supporting road and rail links are taken into account. But however high these costs, it would seem that there are various financial groups who would be prepared to underwrite the cost of whatever project is finally selected in return for a concessionary interest for a number of years. The Committee would also point out that the project, if financially viable, could also be financed in the manner described in para. 21 above for the Channel Tunnel by a

¹ A detailed account of the various projects, their cost, etc. has been provided by Senator Oscar Ando', who has long been a keen proponent of the Messina link, in his 1971 publication "Le più Recente Vicende del "Ponte Sullo Stretto".

² Corriere della Sera, 12 Nov. 1973 Compare with this statement the Danish bridges of 3.2 km constructed in 1937 and of 11.5 km planned for 1982.

³ Estimate by Prof. Vincenzo Correnti, Director of the Transport Institute of the University of Palermo.

mixture of risk capital and government secured loans.

Financial Viability

52. The Committee, for reasons that will be discussed below (see para. 54) do not consider that this is a question which should be discussed solely in terms of financial viability, but they recognise fully the importance of this aspect.
53. At the moment, all goods and passengers moving between Sicily and the mainland have to use either sea or air and the volume of traffic is constantly increasing. Sicilian ports handled a total tonnage of more than 40 million tons in 1965, by 1972 this figure had risen to over 60 million tons. For the same period, passenger traffic through the ports rose from over 600,000 to over 1 million per year. If the actual minimum distance between Sicily and the mainland is 3 km, this distance can be expressed in terms of time lost as a minimum distance of 150 kms, and of course it is correspondingly longer when ports other than Messina are considered. Port facilities in Sicily are becoming increasingly congested and there would seem to be no doubt that a road and rail link would not only relieve this congestion but would greatly reduce transport costs to the benefit of the Sicilian economy whether imports or exports are being considered.

Social Necessity

54. The delegation of the Committee on Regional Policy and Transport which visited Sicily in 1973 were convinced of the need for a permanent link between Sicily and the rest of Italy for reasons other than purely financial. They noted a very real sense of social isolation in Sicily, a sense of "apartness" which to some extent can be explained by physical isolation, though of course more in terms of economic backwardness. This economic backwardness could be alleviated by an improvement of the physical contacts between Island and mainland, but the delegation were also impressed by the present inadequacy of the Sicilian transport infrastructure which in itself is a serious impediment to the economic and social development of the island.
55. The inadequate road structure and the docking and rail system would seem in any case to demand improvement, but if a permanent link is constructed this will become imperative.

It has already been proposed ¹ that there should be two motorway rings constructed - an external coast-line road, with frequent links to a parallel internal motorway. Such a scheme has obvious attractions. It would help avoid excessive industrial concentration on Sicily's coast-line with consequential damage to Sicilian tourist potential, while at the same time it would help to develop the depopulated interior both industrially and agriculturally. But in the Committee's opinion it would be disastrous if such plans were developed without reference to a bridge or tunnel from Messina to Reggio Calabria, only in this way will potential traffic duplication between road and rail be avoided, or both, and expensive alteration become necessary when the link is, as the Committee is convinced it will be, finally built. For this reason alone, a firm decision and a start on the project is, in our opinion, necessary without delay.

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Vincenzo Correnti, Director of the Transport Institute, Engineering Faculty, University of Palermo. 2/3 March-May 1973

A CASE HISTORY

V. THE SEVERN BRIDGE

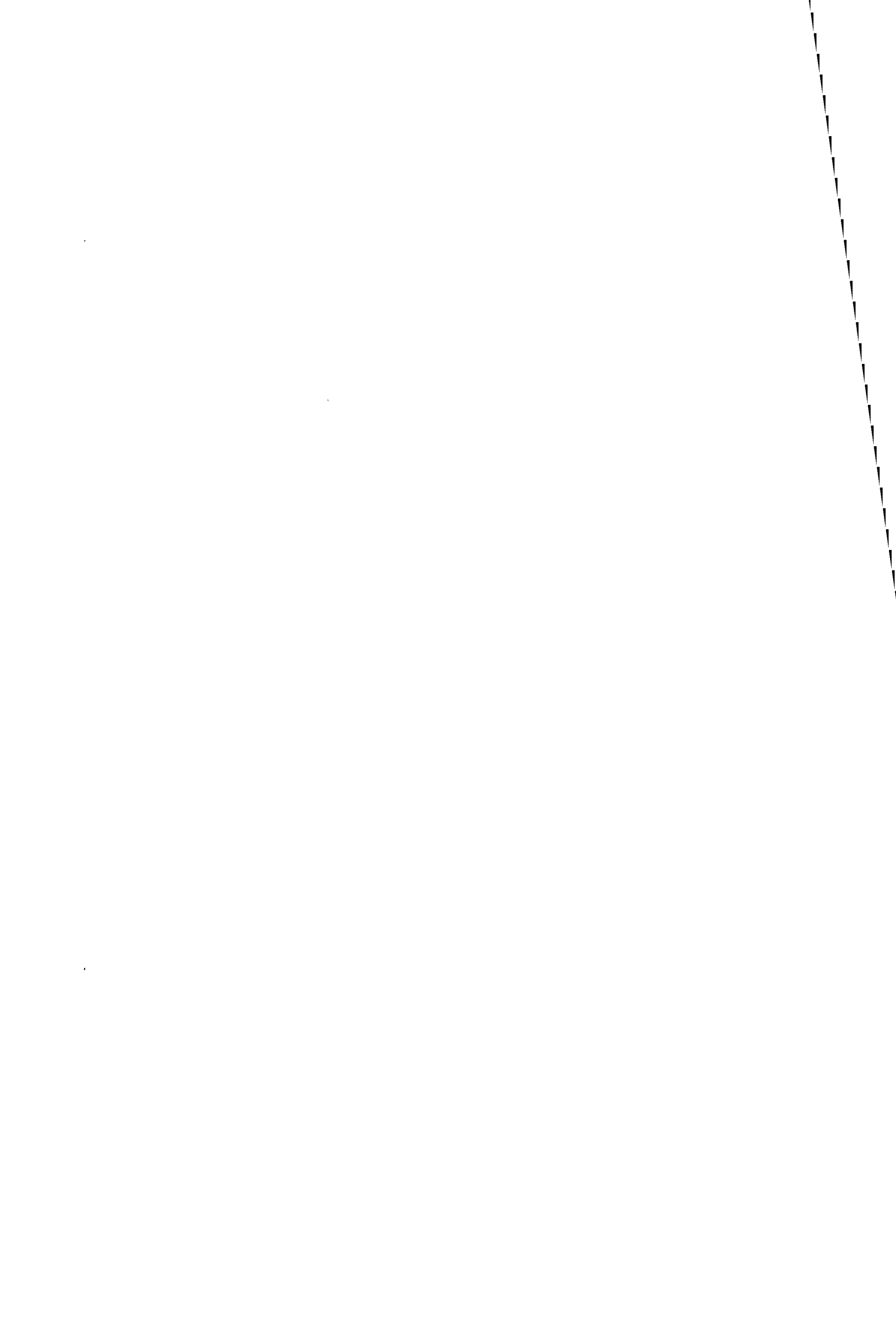
56. A recent example of a link between two communities is afforded by the Severn Bridge which since 1966 has connected the South West of England with South Wales. While there had been plans for such a bridge from 1810 onwards, it was not finally opened until 1966 though a rail tunnel has been in operation since 1886. The bridge, a toll bridge, which carries only road traffic can save nearly 50 miles in travelling distance and its effect on the two communities it links has been considerable. A research project on the effects of the bridge was commissioned by the Department of Economic Affairs in association with the Welsh Office. ¹
57. This study made possible a comparison between estimates of the effect that the bridge would have and the actual outcome. It is perhaps significant that the main effect was in fact in the sector of the private motorist, particularly at first. Industry - particularly the manufacturing industry, was not heavily affected, although there was a considerable change in the pattern of the distributory trades. At the same time the construction of the bridge enabled a number of firms to employ staff from significantly greater distances than had been possible before.
58. An anticipated switch from rail freight occurred but it is hard to assess the significance of this in view of the railways own wish to "hive off" certain less attractive traffic. The railway certainly retained its traffic in steel products.
59. If the most obvious impact of the bridge has so far been in the social sphere - weekend trips, a greater facility for returning home in the case of those working on the other side of the Bristol

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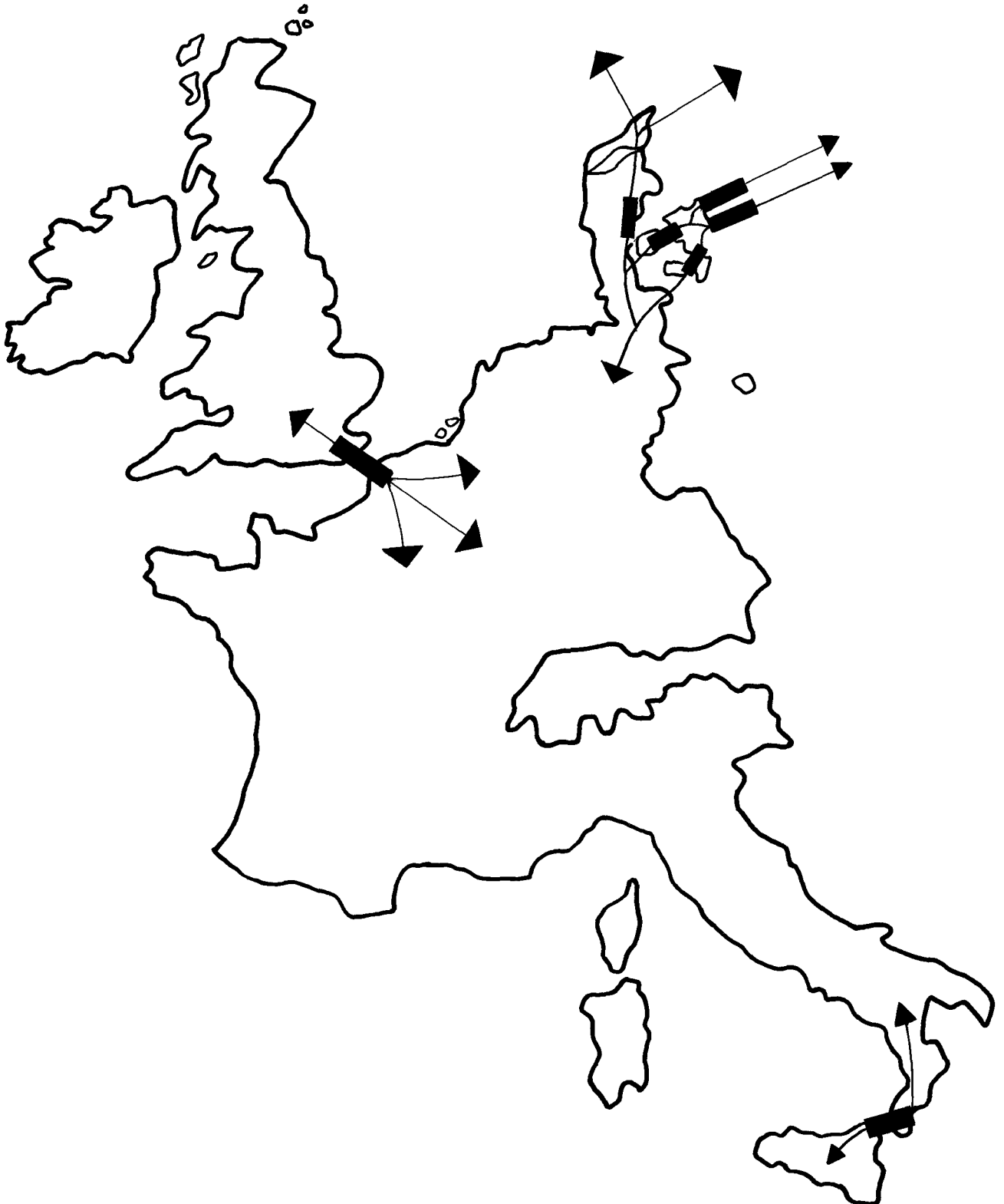
European Conference of Ministers responsible for regional planning - effects of transport infrastructure on regional development - the economic impact of the Severn Bridge - a Case Study, Council of Europe, 1973.

Channel and so on, one thing that does emerge from the case study is that the role of the national government is probably at least as significant in shaping the development of industry by incentive grants and so on, as the new transport infrastructure itself. If the Severn Bridge has changed the leisure pattern of individuals, it has had comparatively little effect on the general industrial scene, although, for example, the town of Gloucester which had previously served as the pivot between South Wales and the South West of England, has certainly experienced a decline in its distributory role. Against this, however, must be taken into account the environmental benefits which Gloucester (and other towns on the old land route) have experienced as a result of a decline in through traffic.

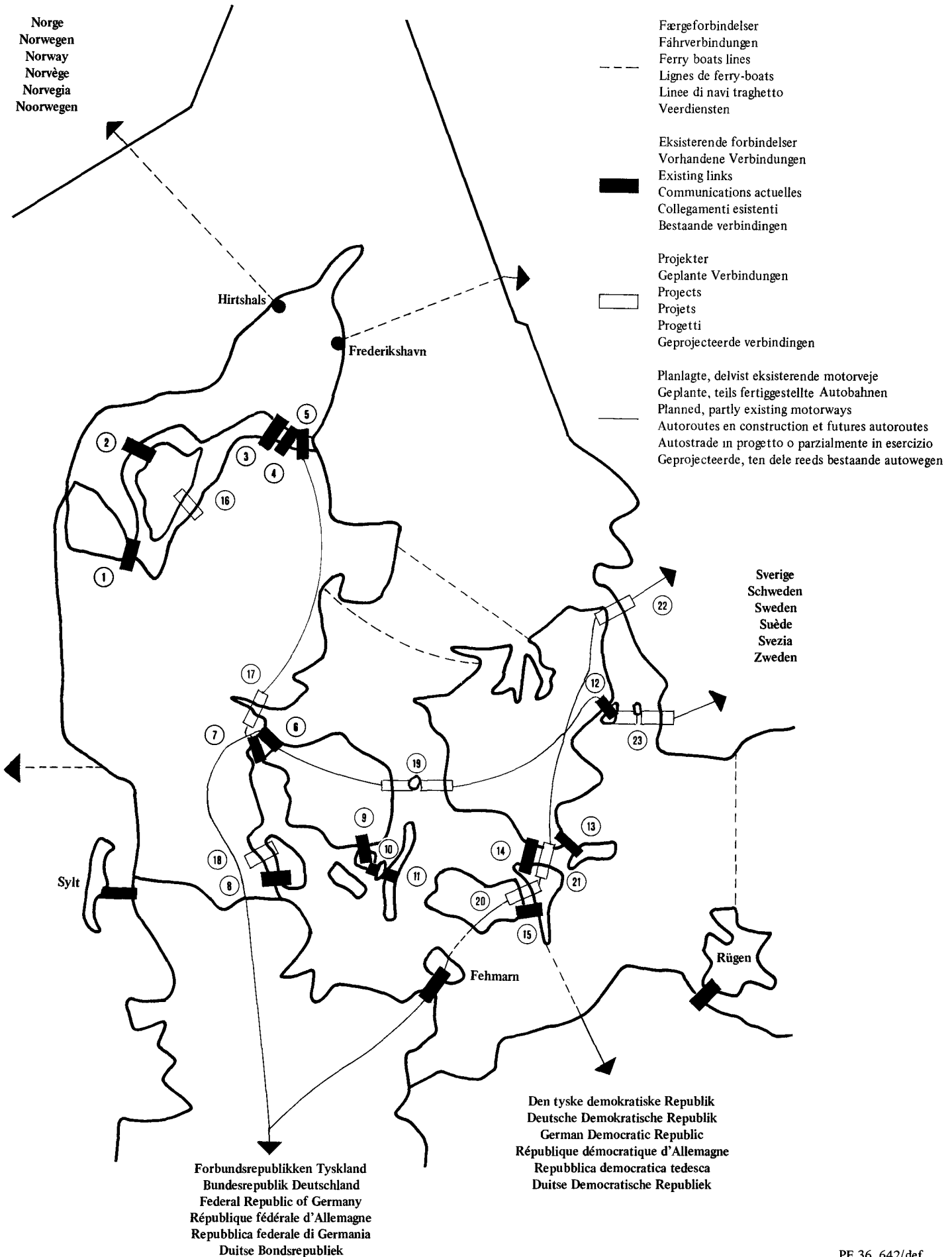
60. The example of the Severn Bridge also serves to illustrate the detailed attention that is necessary when such projects are under consideration to such matters as supporting route surfaces, which have been considerably affected by changed traffic movement.
61. On the assumption that there will be no further traffic growth on the Severn Bridge beyond 2000 and on the most severe set of assumptions - a 10% discount rate - the bridge, which cost some £21.5 million will show a net benefit - to all classes of users - of virtually £100 million. The lessons learnt from the Severn Bridge would seem to be that change may be much greater than than estimated for; that traffic growth may be spread over several years, developing most rapidly among private motorists; and that the areas affected will not be confined to those immediately connected. The report concludes "the potential pay-off from this type of investment is very great even on conservative tests ..."



Projekterede faste forbindelser over eller under europæiske stræder
Projekte für feste Verbindungen über europäische Meerengen
Projects for Permanent Links Across European Sea Straits
Projets de voies de communications permanentes à travers des bras de mer en Europe
Collegamenti permanenti in progetto attraverso alcuni stretti marittimi d'Europa
Schema van geprojecteerde vaste oeververbindingen over een aantal Europese zeeënngen



FORBINDELSER MELLEM DANSKE ØER (Tallene henviser til teksten)
 VERBINDUNGEN ZWISCHEN DEN DÄNISCHEN INSELN (Zahlen beziehen sich auf den Text)
 THE DANISH ISLANDS' LINKS (Figures refer to text)
 COMMUNICATIONS ENTRE LES ILES DANOISES (Les chiffres renvoient au texte)
 COLLEGAMENTI IN DANIMARCA (Le cifre vanno riscontrate con quelle corrispondenti nel testo)
 DE DEENSE OEVERVERBINDINGEN (cijfers verwijzen naar de tekst)



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