European Community Energy Policy: Regulation or Mainly Information?

Last winter's energy crisis made development of a common energy policy by the European Community more urgent and less likely. When the Arabs raised oil prices, cut production, and placed a total oil embargo on the Netherlands and a partial embargo on Denmark, the other member countries of the Community each, in effect, opted for a national rather than a Community approach to the problem. Since the darkest days of the winter, some progress has been made toward what the Europeans call a "global" energy policy, but that progress has been slow. And while the Europeans appear to be much closer to cooperating on a significant energy R & D program and exchange of relevant information, they still seem very far from agreement on any effective plan to deal in a united way with the oil companies or the oil-producing countries.

On one energy question of increasing importance—uranium enrichment—the energy crisis does seem to have hastened the Community toward decisive action (see box on p. 1160). But just as the debate on uranium enrichment has centered on when and by what means the Europeans should end their heavy dependence on United States nuclear fuel enrichment capacity, the forging of a comprehensive energy policy involves complex questions of relations with other countries, notably the United States and the Middle Eastern oil-producing countries.

Answers Coming

Some of the Europeans' footdragging on formulating an energy policy can be ascribed to questions of the extent to which Community countries can expect to share American fossil fuel supplies—particularly coal—and to cooperate in energy R & D programs. Some of these questions should begin to be answered this month at a meeting of the energy coordination group (ECG), which grew out of the Washington energy conference in February. There has been some ambiguity over whether the Community is really represented on the ECG because France chose not to join the group. This may be less of a factor in the future, since France's new president Valéry Giscard d'Estaing is expected to move away from the automatic anti-Atlanticism of his predecessors.

Even without the problems of external relations, internal difficulties have been serious enough to impede progress toward a Community energy policy. One of the stickiest issues remaining is the role of the oil companies, particularly of the "majors" such as BP (British Petroleum) and Shell. A main aim of the Community energy group is to obtain greater "transparency" in the workings of the companies in order that the Community can make informed policy decisions. Brussels officials are seeking to increase the checks on company operations, but, as in the United States, this is proving no simple task. Adoption of a Community energy policy will require the approval by the Council—the Community's top authority—of recommendations made by the Commission. The commissioners are appointed by the member countries but are expected to put forward proposals which embody a "Community" solution, and they generally do. The Council is comprised of ministerial level representatives of the member governments, and its members are actuated much more directly by national interests. The Commission has put forward a detailed proposal on energy policy but has so far failed to persuade the Council to approve it. Informed observers, however, think it likely that the Council will act favorably at the end of June on a compromise version of the Commission's recommendations.

The Commission effort to formulate an energy policy was ordered in a summit meeting of Community prime ministers held in the cold gray light of the energy crisis in December in Copenhagen. In an apparent effort to cover all bets, the prime ministers told the commissioners to come up with a common energy policy which provided machinery for rapid decision-making, allowed for wide-scale cooperation with oil-producing countries, and helped secure stable energy supplies at reasonable prices.

The Community initiative on energy policy has been carried by an energy committee headed by Henri Simonet, a Belgian-appointed vice president of the Commission, who is mainly responsible for energy affairs in the Brussels executive. Since the beginning of the year, several proposals on energy have gone to the Council—one on stockpiling fuel for power plants and another for a system of price monitoring of petroleum products, for example. No details of the broader policy proposals have been made public officially, but in early April a summary of policy recommendations by the Simonet group was aired by the news service, Agence Europe, whose sources are so good that Eurocrats think the service must get an extra copy of everything photocopied in the Brussels headquarters.

European Project Independence

The Simonet proposals apparently resemble the U.S. Project Independence in recommending medium-term (to 1985) measures and long-term (to 2000) measures and in contemplating at least a degree of energy independence for Europe. Reportedly, the proposals call for energy conservation and for rationalization of the use of various kinds of energy. For example, coal and lignite would continue to be relied on as important fuels under the plan and natural gas would be used mainly for domestic heating. In the nuclear power domain, an increase in installed capacity of 20 gigawatts electric by 1985 is prescribed for the Community. A regional system of import and export of fuels and structured consultation with petroleum producers are recommended.

Probably most controversial is a proposal for a Community energy agency. Such an agency would apparently have responsibility for developing existing and new Community energy resources and would be expected to construct the infrastructure required to carry on Community energy research and technology development. The agency would also be at least partly responsible for storage of fuels and for security of fuel supplies.

There are plenty of potential points of friction in the proposals. The French, for example, reportedly were aston-

ished and pained by the proposal to keep the level of coal production in the Community at 240 million tons a year—minable coal reserves in Western Europe are virtually all in Britain and West Germany, and cost of coal research and production could be high.

Reservations about an energy agency are doubtless reinforced by experience with Euratom, the European atomic energy agency. Ironically, Euratom was in part a product of an energy crisis that did not occur. The Suez war of 1956 seemed to raise the threat of reduced supplies and higher prices of oil. The threat did not really materialize, but the post-Suez atmosphere encouraged the six member countries of the Common Market to collaborate in developing nuclear energy for peaceful purposes.

Euratom's poor track record is generally attributed to the unwillingness of the Community's member nations—particularly France and Germany—to sacrifice the interests of their own national nuclear industries to a Community effort. Other factors contributed. Euratom scientists were granted civil service status from the start, and many used their job security to pursue their own specialized scientific interests, in some cases not very hard. There were individual exceptions, of course, and some good work was done. But, in general, the Euratom staff "lost their scientific reputation," as one Brussels official put it, and came to be regarded "like museum guards."

Disenchantment with Euratom by 1968 was strong enough to cause the discontinuance of multiyear budgets and the start of 5 years of grudging, annual budgets which made continuity in the agency's program impossible. Euratom research is carried out in four laboratories—at Ispra in Italy, Geel in Belgium, Karlsruhe in Germany, and Petten in the Netherlands. Of these four labs, which comprise the agency's Joint Research Centre, Ispra is the largest and was reputed to be most notably in decline.

Part of Euratom's problem was that, while other useful areas of research might beckon—environmental research, for example—the agency's latitude in broadening its program was severely limited by the Euratom treaty and, later, by the agency's lackluster reputation.

Finally, last year the newly enlarged Community moved to deal with the Euratom problem. A 4-year budget was granted on the understanding that the agency would be roundly reorga-

Briefing

House Fails to Pass Metric Bill

Prospects for adoption of a coordinated national metric conversion plan appear to have foundered for the time being.

On 7 May the House voted not to vote on its metric conversion bill. So the bill is dead for this year, barring the unlikely event that Olin E. Teague (D–Tex.), chairman of the Science and Astronautics Committee, decides to bring it up again under a different rule. While the vote reflected doubts on the part of House members about the desirability of a 10-year voluntary conversion plan, the specific objections were to the voting procedure that Teague had decided on, which would have eliminated all discussion and prohibited any amendments. Teague chose to risk defeat of the measure rather than to allow amendments that would have committed the government to shelling out indefinite sums for retraining of workers, reimbursement for the purchase of metricated tools, and loans for small businesses. (see *Science*, 5 April).

Members of the Senate (which passed a conversion bill in the last Congress) decided this year to await House action before moving ahead with their metric conversion bill, which has been reposing for some time in the Commerce Committee. There is still no action planned in the Senate.

The problem seems to be that proponents of metric conversion have not prepared the ground sufficiently for favorable action. Many thought an official conversion plan, which requires minimal funding, would sweep through Congress. In fact, many congressmen are ill-informed about or politically wary of metric conversion, and it may be that a good deal more education and public discussion will have to take place before definitive action can be taken.—C.H.

Government Support of Research Queried

What is the proper role of the federal government in biomedical research? Health, Education, and Welfare (HEW) Secretary Caspar Weinberger has been wondering about that. He thinks a presidential commission could give him the answer.

In response to a request from the Office of Management and Budget for "program initiatives," Weinberger suggested creation of a special panel of scientists to examine what the government is doing in biomedical research. He would give them a year and ask them to look not only at research programs supported by HEW but also at those sponsored by other federal departments and agencies including the Department of Defense and the Atomic Energy Commission. Obviously a fair amount of attention would be focused on the National Institutes of Health, but Weinberger definitely has a government-wide review in mind because he would like to know how programs in various places are related to each other. He also wants to know more about the support research receives from private institutions and foundations and from industry and how their money fits into the total enterprise that is biomedical research.

As Weinberger envisions it, the presidential panel would be composed of well-respected scientists, many but not all of whom would be giants in biomedical research. To prevent undue bias, the rest of the panel members, possibly including the chairman, would be drawn from those working in the physical sciences.

News of the Secretary's proposal has, already, made a number of people very nervous.—B.J.C.

nized. In fact, several hundred people have been separated from the Joint Research Centre's permanent staff of about 2000 in order to make way for recruits from the new member countries and new talent generally. But the purge has been conducted in the polite paternalistic tradition of the Community, with most of those departing getting the "golden handshake" (a generous payoff) rather than the unceremonious boot. Euratom is expected to continue solid work in progress on nuclear fusion and hydrogen research and other energy- and environment-related R & D. This will be clearer when a revised program, which is scheduled for approval this spring, is "finalized."

Some observers trace the difficulties of formulating energy policy for the Community to the same source of failure which afflicted Euratom—the protection of national industrial interests. The same issue is reported to be rearing its head in the ECG, with the Europeans finding American companies sticky about discussing certain budding energy technologies. The main issue between the Commission and the Council over a Community energy policy is said to be a disagreement over the extent to which the Community should intervene in the "organization of the market," that is, whether the Community should be content with simply eliciting information from energy companies or should take steps to regulate prices and company operations.

To an outsider the rate of Community progress toward an energy policy seems hardly to exceed the speed of continental drift. But there is another view by which it might be held remarkable that there is any progress at all. If the energy crisis increased the need for a common energy policy, it also stimulated an opposite and at least equal impulse for member nations to exploit the situation to their national advantage—the French to try to get their money back on the Pierrelatte en-

Uranium Enrichment: Both the Americans and Europeans

International bargaining over the enrichment of uranium fuel for nuclear power plants has been beset by uncertainties over future demand, supply, and prices. These uncertainties notwithstanding, both the United States and the member nations of the European Community will soon have to make some crucial decisions in the matter of creating new enrichment capacity.

Pressures to make these decisions have been heightened by the energy crisis. The new economics of oil has prompted Western nations to increase the number of nuclear plants planned for the 1980's, and the demand for enriched uranium fuel is expected to outrun existing enrichment capacity in the early 1980's.

Up to now the U.S. Atomic Energy Commission (AEC) has been the supplier for American and most Western European customers of enriched uranium, the fuel on which the currently dominant light-water reactors operate. Three AEC gaseous diffusion plants (at Oak Ridge, Tennessee, Paducah, Kentucky, and Portsmouth, Ohio), built primarily to meet military requirements, have so far been able to meet most domestic and foreign needs. About 1970, the government reexamined its position on uranium enrichment. Looking ahead, government planners decided that new enrichment capacity would be needed by the early 1980's and posed the question of who should build the next block of capacity, the AEC or private industry?

Enrichment was the only part of the fuel cycle still in government hands, and the Nixon Administration made the decision that the next plant would be owned by private industry. The AEC encouraged American industry to get into the enrichment game and informed the Europeans that enriched uranium in the future would be available at higher prices and on different terms.

The law requires that enrichment charges be based on full recovery of costs over a reasonable period of time. But because the three existing plants had been built years ago for military purposes and had excess capacity available when military requirements declined by the early 1960's, the capital costs had been essentially written off. In addition, the plants used relatively cheap TVA power. The prices that private operators of the new plant would charge would reflect construction costs in an inflationary economy, high interest rates, and rising costs of electric power.

The new terms announced by the AEC, which were to apply to both American and foreign customers, caused a sharp reaction in Europe. The AEC in recent years has written rather liberal "requirements" type contracts under which the AEC was obligated to provide the customer's fuel requirements but the customer was not obligated to take specified amounts of fuel on a stated schedule. Customers have been able to sign up a short period in advance for practically any amount of fuel, but that era is ending. The new terms require that contracts for the 1980's be signed 8 years in advance of the first delivery of enriched fuel. The contracts also give the supplier the right to change price with 60 days notice.

The Europeans Disconcerted

The American terms disconcerted the Europeans, who were already exploring ways to lessen their dependence on the United States. As long ago as the late 1950's, the French had proposed that their European partners purchase enriched uranium from new facilties that would use the gaseous diffusion technology the French had developed to meet their military needs. For a number of reasons the offer was not taken up, and in the 1960's a British-Dutch-German "troika" began to collaborate in research and development of the gas centrifuge method of uranium enrichment.

Competition developed between the troika company (Urenco) and a new French-dominated company (Eurodif) for the potential European market because it was assumed that the Community market for enriched uranium would not be sufficient to support rapid development of production capacity for both processes. The situation has changed materially since the energy crisis

richment plant, Germany to capitalize on its industrial strength, Britain to grow cagier about sharing its bonanza of North Sea oil and natural gas.

The spirit of the Community is not the one-for-all-and-all-for-one spirit of *The Three Musketeers*. Experienced Community watchers say it is not the acuteness of a problem that makes a member state accept a Community solution but the fact that such a solution is more desirable than a national one. They do it because of "their own interest, not the common interest," says one middle-level Community official. "Why we have such trouble with the British [is that] they never understand what a Community resolve means." The process of compromise and adjustment takes a long time, as in the case of energy policy, and the more senior officials of the Community have learned to live with the bureaucratic ballet in Brussels and to tolerate the delays. In considering whether the Community is a success or failure they tend to recall the Community's accomplishments in trade and to note that, after all, it is no small thing that the Community has made it unthinkable that the nations of Western Europe, for the third time in the 20th century, might again start killing each other by the millions.

—JOHN WALSH

Erratum: In a recent article on the Committee on Biomedical Research Impact (5 Apr., p. 44), we reported that the committee had raised $32,000 from scientists interested in supporting its program to compile data on the economic benefits of biomedical research. Unfortunately for the committee we were in error; The correct figure is $2000.

Erratum: In the editorial "Assessing the demand for scientists and engineers" by B. Vetter (5 Apr., p. 11), lines 2 and 3 of the first paragraph should read ". . . the total federal research and development budget of $19.6 billion is up 10 percent over last year."

Erratum: In "Stratospheric ozone depletion and solar ultraviolet radiation on Earth" by P. Cutchis (5 Apr., p. 13), the legend to Fig. 5 was inadvertently omitted by the printer. The legend should read "Fig. 5. Direct solar UV irradiance and scattered UV irradiance on a horizontal surface at sea level for solar zenith angles θ of 0°, 30°, 60°, and 75° and 0.341 atm-cm of total ozone [data from (*10*)]."

Erratum: On page 371 of the 19 Apr. issue the photo credit to the facing page was omitted. It should have read "Courtesy Darrel Freund, National Capitol Astronomers, Washington, D.C."

Must Decide Where to Get the Nuclear Fuel of the 1980's

spurred the increase in planned nuclear power capacity.

What has evolved is a proposal by the Commission that a European enrichment capacity be created by the promoters of both technologies. Between now and 1985 Eurodif and Urenco are urged "to maintain competition as regards plant, construction and operation." In addition, European users are urged, given equal economic conditions, to place orders with European enrichment industries. And tax preferences are held out as a possible incentive.

The Commission proposal has been endorsed by the European Parliament, the Community's legislative arm, but not by the Council. The Parliament still performs a discussion rather than a decision-making function in the Community, and Council action will decide the issue.

The Soviet Union is something of a dark horse entry in the enrichment stakes. Now a supplier of fairly small quantities of enriched uranium to France, Germany, Italy, and other European countries, the Soviets have indicated they intend to stay active in the world market. Like the United States, the Soviet Union is believed to have developed sizable gaseous diffusion facilities for military purposes and to have surplus capacity available for enriching uranium fuel. Estimates differ on the size of the potential Soviet supplies, but some observers think that the Soviets might tide over new European nuclear plants until the Community countries develop their own enrichment capacity.

The Soviets have generally been setting their prices a few percent below the American price of $36.40 per kilogram unit of separative work, with their contracts providing a diminishing margin over the years. The Soviets say they plan to continue to gear prices to the world market.

Prices set by prospective American and European sources in the future will be considerably higher. United Enrichment Associates, a consortium of American companies interested in building a new domestic diffusion plant, estimate the unit price at $73 in 1984. The unit price for the projected 9000-metric-ton per year Eurodif plant is presently quoted at about $50 "unescalated," but with major escalations implied before production begins in about 1979. Urenco proposes to have two pilot centrifuge plants in operation by 1979, each producing some 200 tons or a total of 400 tons. Output would rise to a planned 2000 tons in 1980 and 10,000 tons in 1985.

A 1972 estimate by the AEC projected demand for U.S. production in 1974 at 4300 tons from domestic users and 3700 tons from foreign users. The 1972 forecast, which will soon be superseded by another AEC forecast, set total demand in 1984 at 26,400 tons from domestic plants and 24,600 from foreign plants, excluding those in the Soviet block. The forecast share of enrichment work by U.S. facilities in 1984 was put at 42,700 tons or about 60 percent of demand outside the Communist nations. That percentage is expected to be reduced in the new forecast.

Many Open Questions

Increasingly, in both the United States and Europe, nuclear power will have to pay its own way with less direct subsidies provided by government or the indirect support of military nuclear programs. Many open questions confront the planners, particularly in Europe. For example, will Urenco really solve the chronic problems of centrifuge technology which have blocked progress into the production phase of the process? What will be the effect of rising electricity costs on the Eurodif's power-intensive diffusion process? How will currency exchange fluctuations affect the transatlantic economics of enrichment? Faced with these unknowns, the Europeans are likely to make the key choices less on the basis of cost-effectiveness analyses than on a mix of political and economic motives. The Community seems to be moving toward creating its own uranium enrichment capacity, even if the price of independence comes high.—J.W.