JPRS L/10507

11 May 1982

West Europe Report

(FOUO 29/82)

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APPROVED FOR RELEASE: 2007/02/09: CIA-RDP82-00850R000500060020-8

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ENERGY ECONOMICS FRANCE

STUDY VIEWS COMMUNITY ROLE IN ENERGY POLICY, OUTLOOK

Milan ECONOMIA DELLE FONTI DI ENERGIA in French No 15 1981 pp 37-62

/Article by Bernard Bourgeois, of the Economic and Legal Institute of Energy, National Scientific Research Center, University of Grenoble: "Energy Policy in France: What are the Prospects for Regions and Local Communities?"/

/Text/ Since the mid 1970's French energy policy has aimed at reducing the part of petroleum in primary energy supply through rapid development of nuclear energy, and secondarily through measures for energy economy and diversified use of alternate sources.

This entire policy was decided on and implemented in a very centralized and authoritarian manner under the direction of the Ministry of Industry, Electricite de France, and the Commissariat for Atomic Energy 1/.

In that context local communities (regions, departments, and municipalities) did not have a large role to play. Most of them, moreover, did not claim it, for at least two reasons.

In contrast to the situation in Italy or Germany, local communities in France have remained very weak vis-a-vis the central authorities. The region, as a recent creation, does not yet have real powers. The department is above all a relay for central administrations.

Theoretically, the communes have real powers, but they seldom make use of all those conferred on them by law, for lack of financial resources and technical expertise, particularly in the case of the numerous and quite small rural communities. Those institutional weaknesses do not, however, mean that local leaders are without political power, as we shall see later.

The second reason is more directly linked to energy problems. As in most countries of the world, municipalities played a role, at the end of the 19th and in the early 20th century, in creating and developing gas and electricity distribution systems. But that role was never as extensive as it was elsewhere, and particularly in Germany. After the nationalizations of 1946, municipalities kept control of only 250 gas and electricity utilities affecting 3,000 communes and approximately 4,000,000 inhabitants 2/.

Why then is there discussion in France today concerning the role of local communities in the definition and execution of energy policy? Independently of institutional changes now underway 3/, two groups of factors contribute to it:

Firstly, social factors: the new aspirations expressed by the ecological movement, the rebirth of associative life, and the development of regionalism have compelled major traditional decision makers to seek the approval, or at least the neutrality, of local communities concerned by establishment of large energy installations. In consequence the latter have begun to express their interest in energy problems, particularly by examining possible local alternatives to certain national choices;

Secondly, technical and economic factors: even though energy saving has not up till now been the priority objective of French energy policy, the central authorities have understood the role which could be played by certain local initiatives. Primarily because local communities are energy consumers which could economize by appropriate measures.

Secondly--and this is probably more important--because local communities, by their impact on housing and transportation, and on industrial installations, influence energy consumption by all users. It is thus important that they should take into account the energy impact of their local policies.

Finally, local communities are better able than major energy companies, or the state, to develop dispersed energy resources, particularly insofar as their development requires better adaptation between resources and consumers. To that end, it is indeed desirable to take account of existing complementary relationships between energy resource networks suited to collective development and those suited to individual development. This necessary complementary relationship appears, for example, in the heliogeothermal projects, or in the potential effects of ground water cooling which would result from massive development of heat pumps using ground water as a heat source. To spell out these factors which militate in favor of active local community participation in development and implementation of energy policy is not to suggest that the modes of such participation are simple.

Of the many problems to be solved, two will be discussed in the following portion of this article:

The first concerns the sphere of local community action. Examination of this problem is not complete, for that would imply in particular an evaluation of energy resources under the direct or indirect control of local communities which could be integrated into the French energy account by the year 2000 4/;

The second relates to the mode of local community action, which must remain compatible with national energy policy. If we wish to avoid duplication and waste of investments, it is indispensable to define the logic which will govern arbitration between central and local actions.

1. Evaluation of Regional Energy Supply and Demand Prospects in France by 2000

1.1 Introduction: Scope of the Study

Here will be presented a brief summary 5/ of the study made by the IEJE for DATAR /Delegation in Charge of National Development and Regional Action/. The main objective of that study was to construct a contrasting projection of medium and long term energy supply and demand. In order that they may be compared with one another and situated in relation to national prospects, these regional projections are expressed in the form of energy accounts whose construction assumes the definition of a number of strong trends; some are made explicit in the scenario, as for example regional differentiation, modes of economic growth, assumptions concerning the evolution of the international environment and energy prices; while others have an implicit "rationality," as for example the policies of local communities, and the behavior of consumers, and this rationality is assumed to be coherent with the hypotheses of the scenarios.

Projection of these regional energy accounts is accomplished with the aid of three contrasted economic and energy scenarios.

The time frame is set between the limits of 1975, the last base year common to the energy statistics of CEREN /expansion unknown/ and the economic statistics of INSEE /National Institute for Economic Statistics and Studies/, and 2000, the conventional reference horizon for studies of this kind.

The regional division represents a compromise between a level of detail sufficient to be pertinent in an approach designed to be regional, and a minimum level of consolidation, allowance being made for limitations on access to information and treatment of data.

In practice, the division could only be into a whole multiple of program regions. The choice fell on a 9-region division.

The basic national and regional economic scenarios adopt the results of joint studies made in the context of a seminar at the Social Sciences Center of the Ecole Normale Superieure 6/. Table 2 indicates the major economic characteristics of these scenarios.

Associated with those economic scenarios are energy scenarios having the following characteristics:

Scenario I (least probable of the three): As is the case in the rest of the economy, energy policy consists of allowing the international market to determine short term adaptations of the energy system;

Scenario II: Since the energy sector is one of the strategic sectors whose orientations are planned and determined by the state, continued support is given to the electro-nuclear program;

Scenario III: Within the framework of an imperative energy plan, choices are made with the aim of promoting a high level of energy saving and mobilization of local resources.

1.2 Supply-Demand Equation and Forecasting Methodology

1.2.1 Supply-Demand Equation

By definition, construction of an energy account aims at providing a supply-demand balance for a given geographical area and time span. This balance can generally be attained in various ways:

According to the level and structure of demand, whose determinants are set by socio-economic conditions;

According to the supply system in effect, which is characterized by a structure of available resources, and by particular conditions of adjustment relating each of those resources to the various demand categories.

In practice, the supply-demand balance is obtained either in its entirety or for the few major demand sectors, without introduction of the concrete conditions of adjustment between the characteristics of supplies and those of demand. The method adopted here, on the contrary, permits those conditions of adjustment to be specified and verified by starting from relatively disintegrated geographical levels, and then progressing step by step to the regional and national echelons.

Supply-demand adjustment is attained in accordance with three criteria: the time frame, the spatial localization, and the thermodynamic level.

For the first criterion, the accounts constructed here follow the standards applied to conventional accounts: that is, an accounting system founded on an annual base and detached from particular constraints linked to energy storage. For the second criterion, the level of disintegration is minimally that of the DATAR /Delegation for National Development and Regional Action/ region. In fact, finer adjustments are attained for supply-demand pairs concerning types of energy not easily transportable, such as those supplying urban heating systems; or, more simply, coherence tests are made for dispersed forms of energy, such as biomass, which would necessitate adjustments at an excessively detailed level.

It is for the third criterion that the dispersal effort is carried farthest. Indeed, one objective of the study is to determine the best possible contribution from local forms of energy. Since these are often of lower thermodynamic quality, and therefore less polyvalent, than conventional forms of energy, it is necessary to estimate their potential penetration into usages requiring corresponding quality. The methodological steps in construction of accounts, first at the regional and then at the national level, are expressly defined to permit such adjustment. They consist initially of projecting demand by breakdown according to forms of energy, economic sectors, and usages, and then examining a few categories of supply which correspond to it, in relation to preceding criteria, and allowing for priority allocation of certain forms of energy to certain usages.

1.2.2 Categories of Demand

Demand is evaluated in terms of five major sectors: residential-tertiary, industrial (with a breakdown into intermediate goods, capital goods, consumer goods, and agricultural-foodstuffs), transportation, agriculture, and construction. In addition, three usage groups are distinguished, which themselves may possibly be subdivided within sectors other than agriculture and construction: heating, mobile motive power, and specific uses of electricity.

Except for the last two sectors, for which energy demand not broken down by use was evaluated directly in its final form, demand was evaluated beforehand in terms of useful energy for each use category in the other sectors. This distinction between useful energy and final energy on the one hand permits better determination of the place of non-commercial energies whose conditions of adjustment are more constraining, and whose contribution is more easily defined in terms of useful energy, since the final energy equivalent in fact results from conventions, and secondly makes it possible to highlight the importance of performance in use in assessing energy consumption.

Those use performances themselves vary, for a given use, with forms of energy utilized. To the extent that those forms of energy can be substituted for certain uses, final energy demand is conditioned by the structure of the supply. Hence it was evaluated, after various prior iterations, on the basis of the formulation proposed in the Medea simulation model.

Table 3 summarizes the major use categories mentioned, by sector and in relation to major physical categories of supply: fuels, hydrocarbons, electricity, and new energy forms.

1.2.3 Categories of Supply

Physical categories of supply group energy forms according to their thermodynamic characteristics and use limitations for different types of use. Those distinctions permit verification of conditions of thermodynamic adjustment between supply and demand. Energy supply, moreover, is spread according to three geographic levels so as to bring out more explicitly the contribution of local energy resources or, conversely, the extent of dependence on outside sources. From that standpoint:

Local energy includes all forms whose primary origin is local, or whose local application permits reduction of the proportion of imported energy;

National energy includes those forms whose transformation is not linked to strict local limitations such as thermal electricity, conventional or nuclear;

Imported energy includes fuels of outside origin.

Those groupings assume a number of conventions for treatment of energy forms related to several levels:

Non-imported fuels are assigned entirely to the local-regional level, owing to the preponderance of coal, which is ill-adapted to long-distance transportation;

Among new energy sources, heat pumps are assigned to the local level, despite the need to supply them with electricity or conventional fuels. They are in fact accounted for under the heading of new energy only because of the portion of heat they preempt from the natural environment (water, air, soil).

The means of electricity production are considered almost entirely in national terms owing to their connected network. Nevertheless, hydraulics, combined production, and cogeneration are placed with local energy sources, because of the nature of the primary resource in the case of the former, and because of the practical modalities of utilization in the case of the latter.

Other techniques of use or production of new energy forms could have been considered, but it appeared more realistic to consider only proven technologies, or those which could become so fairly rapidly, and which present no major uncertainties.

1.2.4 Supply Projections and Settling of Accounts

The various distinctions considered, both on the supply and the demand side, permit verification of the conditions of adjustment between those two components, from the spatial viewpoint (thanks to the regional or subregional divisions) as well as from the thermodynamic viewpoint (thanks to the spread introduced into the uses and forms of energy).

Complete determination of supply, in both its volume and structure, does, however, assume definition of priorities between local, national, and imported energy sources, the ulterior arbitration between energy forms within each category depending on technical and economic considerations. By design, and in conformity with the overall logic of the three scenarios, we opt in the third scenario for vigorous penetration of local energy forms, and we agree to assign to the first two rates of penetration fixed respectively at 25 and 50 percent of the rates obtained ex-post-facto for scenario III. Once the contribution of those energy forms is determined, the supply-demand balance is met by national and imported energy sources. That operation bears partly on fuels and hydrocarbons, and partly on electricity. The account for new energy forms is settled by definition, since demand is considered only to the extent that it can be met by available supplies.

Details of these calculations are explained in the document "Energy and Regions." Therein will be found the overall hypotheses concerning the contribution by local energy forms, as well as the rules adopted to balance the fuels and hydrocarbons account and the electricity account.

Herein are mentioned only those hypotheses and arbitrations intended to evaluate contributions potentially admissible by new energy forms within the context of scenario III.

Heliothermy. Solar energy is under development in the domestic, tertiary, and industrial sectors. It covers over 50 percent of heating needs for new construction.

Biomass. The potential of biomass is estimated on the basis of agricultural wastes, animal and vegetable, which are not re-usable for other economic purposes or not needed for soil reconstitution. For lack of timely access to the results of the National Forest Inventory, we were unable to include in the biomass potential that of firewood. The existing government objective is to attain 5.5 Mtep /million tons equivalent petroleum/ by 1990 (3 Mtep in 1980).

Urban wastes. Only those from urban centers of over 50,000 population are considered.

Geothermy. Its use is reserved for cities of over 20,000 population which exceed a given threshhold of heat consumption. A 25 percent shortfall must be made up, of which half is to be provided by heat pumps and half by conventional fuels 7/.

Industrial heat wastes. Allowance is made for limitations restricting use to within 10 km from location of wastes, and for the need to adjust supply to seasonal variations in depand 8/.

Heat pumps. It is accepted that 30 percent of new housing to be built in 1975-2000 are to be equipped with heat pumps, and their competitiveness is being enhanced in cold climate areas.

The estimate of penetration levels for those forms of energy takes account of many factors such as the evaluation of regional potentials, the rapidity of maturation of technologies applied, the influence of social and institutional conditions, the evolution of production costs, etc. Uncertainties concerning those factors lead to certain arbitrations adopted to the detriment of certain forms of energy owing to lack of data on existing potential or on time requirements for technological maturation. To offset those exclusions, penetration hypotheses for forms of energy considered are formulated from a clearly voluntarist perspective. Compatibility of penetration rates in regions where new forms of energy represent a considerable proportion is tested indirectly by insuring, for example, that the volume of new energy forms intended for new housing does not exceed the possibilities opened in each region by new construction.

1.3 Regional Results of Energy Supply and Demand Projections to 1985 and 2000

For information purposes, final energy accounts for France to 2000, in the three scenarios, are given in the Appendix.

In Chart 2 will be found the portion for each form of energy in final uses for each region for Scenario III to the 2000 horizon.

1.3.1 Analysis of Regional Results

In 2000, final consumption as derived from Scenario I is superior, for all regions, to that resulting from Scenario II, with the exception of the East and Southwest. For the former must be noted the determination to safeguard, within the "national rebirth" scenario, such strategic sectors as steelmaking, and for

the latter the will to apply a more vigorous policy of industrial employment creation. With Scenario I, two regions make rapid progress: the Paris Basin and the Rhone-Alpes, as a consequence of polarization of economic activities in two regions already endowed in 1975 with good infrastructures. For Scenario II, classification of regions according to the growth rate of final demand from 1975 to 2000 is shown in Table 5.

It appears that regions with the most sustained growth rate are in general those which retain a high level of industrial employment or which benefit from priority development.

With Scenario III the change is complete. For many regions, the 2000 level often exceeds the 1985 levels by only a few points (Paris Basin, North, East, Rhone-Alpes), and the Paris region even declines from 1985, owing essentially to population stagnation. Only three regions (West, Southwest, and Massif Central) record an appreciable rise, and they are the very ones for which economic development hypotheses are strongest. Reference to the chart will show that those are the three regions in which the projection interval for 2000 is the narrowest. The "new growth" in Scenario III here gives results approximate in form to those for "pure liberalism" considered in Scenario I. Actually, that equivalence results from two evolutions which broadly offset each other: support for economic development and energy conservation in the one case, and in the other stagnation of development and of energy conservation for lack of public encouragement. For all other regions, and especially the Paris Region and Paris Basin, the spread in projections between Scenarios I, II, and III is more pronounced. There is no compensation of those two opposed orientations, but on the contrary an amplification of the socio-economic hypotheses by the energy hypotheses, an indication of the degree of that amplification being already apparent in the distance separating I and II, which is small for the North and East, greater for the Paris Basin, Rhone-Alpes, and Mediterranean, and considerable for the Paris Region.

The repercussions of the various national development policies are clear, but of varied density. They are clear in the sense that economic development projects lead to a rise in total energy consumption resulting from population increase through an outside influx into the region or maintenance of the local population level. That is a rather natural conclusion, and one which has been brought out by many studies of relationships between energy, gross domestic product, and employment.

But overall, for all regions, the "reinforced polarization" of Scenario I is accompanied by an ever greater levy by favored regions on national consumption. The "loose polarization" of Scenario II attenuates the most marked effects of that tendency. Only a policy of decentralization (Scenario III) permits restoration of a certain balance between eastern and western regions of the country 9/.

1.3.2 Contribution of New Forms of Energy to Regional Supplies

Construction of supply scenarios has taken account of the doubly favored character of local and regional energy sources arising from their contribution to

national energy independence and from their marked links to regional space. In addition to their contribution to the supply of France as a whole, their part in supplying the various regions should be appreciated.

The contribution of conventional fuels of regional origin will be very limited in the 2000 horizon, and will be almost entirely attributable to two regions alone, the East and Southwest. As for hydroelectricity, the major hydroelectric regions (East, Rhone-Alpes, Mediterranean, and Southwest) will maintain their predominance by concentrating in their territory nearly 90 percent of production. The rise in regional energy production will in fact relate mostly to new forms of energy.

The contribution of new energy forms in 2000 for all regions steps from 4.0 Mtep to 9.7 Mtep to 18.9 Mtep according to the three scenarios. Those different levels correspond to 25 and 50 percent reductions of the contribution in 2000 (III) of most of those energy forms, in accordance with the hypothesis adopted at the outset of supply scenario construction. That reference to the third scenario permits the conclusions set forth to be limited to that single case. In Table 6 will be found projections relating to the penetration of each new form of energy in each region.

The regional distribution of new energy forms proves rather homogeneous, and invalidates the idea of favored regions. Most of them attain by 2000 a level of 10 percent of the potential set at the national level. Though the Paris Basin exceeds that threshhold because it totals a quarter of the national contribution, and though the Massif Central, on the contrary, brings but a relatively modest contribution, those distortions in relation to the average are due in large part to conventions adopted at the outset of regional division.

Solar energy, urban wastes, and heat pumps are distributed regionally in a manner very close to that of new energy forms as a whole. For solar energy, which is in first place in 5 of 9 regions, we find that is a consequence of the fact that this form of energy is valued almost homogeneously according to region for heating uses, by reason of the compensation between length of heating season and sunlight intensity. Volumes of urban wastes are themselves directly linked to the size of urban populations in the regions. Finally, penetration of heat pumps is linked to the rate of new construction, except in regions of mild climate such as the Mediterranean and southwest, where their competitiveness is less assured. For that reason, this source of energy is not expected to attain quite as homogeneous a distribution as the two preceding ones.

On the other hand, the three other energy sources of biomass, geothermy, and industrial heat wastes have a very unbalanced distribution, and their development possibilities at the present stage of technology are limited to a few favored regions.

Biomass is concentrated in a proportion of 72 percent in three regions: the Paris Basin, West, and Southwest. That regional concentration is in fact related to a double specialization: combustion of grain straw in the Paris Basin (40 percent of the national contribution), and methanization of animal wastes in the West, with the Southwest combining the two equally. As for wood, its contribution has not been possible to estimate, for lack of reliable regional data at the time of the study.

Geothermal energy plays a significant role only in the Paris Region, the Paris Basin, and the East, owing to localization of sources and urban centers. Development of mid-depth geothermal sources could, it is true, contribute in the future to spreading this resource over a broader span of regions, by taking advantage of combined use with heat pumps to raise the temperature level of sources concerned.

Industrial heat wastes recoverable in significant quantities are for the most part localized in three regions: Paris Basin, East, and Mediterranean.

2. Logic of Local Community Action in the Energy Field

Although the "families" of actions can in practice have elements of similarity, the following discussion will present them in terms of two dominant logical principles:

1. Logic (1), or "buffer-relay" logic;

2. Logic (2), or logic of local or regional initiative.

The content of these two logical principles is made explicit in what follows by a comparison of their effects on:

1. Motives for action which the local community accepts or hopes to take in charge;

2. Local modalities of action;

3. Modalities of linking actions in the energy field to other components of communal or departmental concern;

4. Modalities of linking local actions to those at other levels.

Though the examples given in the balance of this section primarily concern large urban communities, the particulars given remain valid, subject to transposition and adaptation, for smaller urban or for rural communities.

2.1 Motives for Action which the Local Community Accepts or Hopes to Take in Charge

It is assumed here that throughout the whole range of possible urban community action in the energy field, application of logical principles 1 or 2 would lead to a different selection of actions.

Under logical principle 1 the community is limited--even confined--in its range of action, either because it considers it need not intervene where specialized private agencies are able to act, or because it relies on the competence of energy producing organizations or of the National Agency for Energy Conservation. This desire or obligation to accept limitation does not mean that the community refuses to accept a role in informing the "dispersed clientele," for example, on energy conservation, or in fostering relationships between the dif-

ferent occupational groups concerned in such investment; but that role is limited to relaying information produced by institutions having national impact, such as those mentioned above.

Under logic 2, communities can progressively consent to take their own action in certain cases, or--while retaining control--to delegate responsibility to specialized agencies. In addition, they may be led to provide "autonomous" information on subjects traditionally recognized as within the competence of energy producers. This paeticularity may be linked to the fact that within the context of this logic 2 communities seek to develop their potential energy resources systematically 10/, and to advise users as to choices of one or several energy forms, local or national. In that spirit the community can, with the backing of consumers' associations, constitute a neutral reference point in relation to technical or commercial pressures by energy producers. This can go so far as accepting--unofficially--to provide its good offices in the event of sharp conflicts between groups of private persons and energy producers or processors.

Under logic 1, where that sort of conflict can also occur, the community intervenes only under the compulsion of an urgent situation, without real negotiating power vis-a-vis energy companies, and so with an implicit role of "buffer" between "partners."

Thus the differences here relate not only to the relative scopes for action, but also to the content of information imparted to the public; which content can range from simple reproduction of standards developed elsewhere to adaptation, or even modification of those standards, according to the objectives being sought.

In logic 2, local communities intervene either to counter or modify national energy policy in relation to other overall choices, or to obtain consideration of specific local factors (heterogeneity of space and facilities).

2.2 Modalities of Action

We have just seen that logic 2 would rather tend to provide the community with partially autonomous 11/ means of technical expertise, whereas in logic 1 the community seeks rather to deflect requests for action to local or national experts independent of its influence.

From the legal standpoint, the more interventionist tendency of logic 2 could lead communities to commit themselves more directly to responsibility for management of local public services; thus modes of direct management by a public corporation, or a mixed company under predominantly local control will be preferred to contractual or concession systems, which are more in keeping with the spirit of logic 1.

From the financial standpoint, communities may within the terms of logic 2, in order to permit sufficient coverage of the financial risk entailed by development of certain local resources, go so far as to set up agencies for compensation of those risks, which would play a self-insuring role with the backing of

other local communities facing the same problem. In like manner, subsidies in addition to those of national agencies may be initiated to co-finance all operations considered as "demonstrations" in the community. But in this field budgets will never be large insofar as financial repercussions (reduction of foreign exchange outgo) hardly favor the community budget.

Indeed, if logic 2 leads communities to provide themselves with means of financing complementing those used in logic 1 (Deposit Fund, Sofergies, AEE /Energy Economy Agency/ subsidies), their motivation must be other than a "frantic will to interventionism in energy matters" in all directions.

2.3 Modalities of Linking Actions in the Energy Field with Management Policies for Other Urban Services

If logic 2 leads the community to promote a policy of intensive development of public transportation facilities, this normally has positive effects on energy consumption 12/. But the realities of community financial management compel those economies, despite the considerable increases in energy costs, as negligible in the light of the inevitable operating deficits normally incurred by development of public transportation capacity. If such deficits are accepted, that is more fundamentally because they are the counterpart of social policy objectives relating to mobility of persons of low income. In like manner, if communities consent to intervene in operations to insulate public housing units, the energy conservation aspect is but secondary compared to that of reduced heating costs to tenants in those housing units.

Despite the possible existence of "pilot-alibi" experiments by communities, logic 1 would likely lead them to confine their action to management to prevent overcrowding of subsoil between development of energy systems centralized in the community, and development of other properly municipal systems such as water and sewers.

In logic 2, that obligation to harmonize development constraints affecting energy distribution and municipal utilities systems would more likely find a corresponding determination to integrate in the Pos (subsoil use plan) an energy use plan indicating zone allocations for particular forms of energy, such allocations being defined in conformity with development projects for local energy resources.

2.4 Modalities of Linkage to Regional and National Echelons

In logic 1, linkage should normally be limited to regionalization of national objectives for energy diversification or conservation. Urban or rural communities are indispensable partners, but they only accompany energy programs adopted at another level and from a perspective foreign to the community spirit; which is not to say, however, that this strategy proves ineffective in terms of results obtained.

By contrast, logic 2 would lead communities progressively to define local energy programs, whose broad lines would be negotiated at least in part at a regional echelon, if risks of incoherence with plans of centralized producers should

appear. In this domain, ad hoc regional exchanges would have the role of settling conflicts between development of networks in certain sensitive zones in which development of local energy resources depended on protective measures.

Such a mechanism, moreover, is proposed in the law on energy conservation and heat networks, but in that law the authority to arbitrate as to classification of networks is finally vested in the state.

3. Conclusions

It must be recalled here that utilization of these two logical principles of action deliberately simplifies the range of actions open to local communities in practice. It is quite possible that in actuality, concrete situations could be intermediate between these two extremes, and present characteristics related to both logical principles presented.

It is tempting to seek to cross these two logical principles with possible relationships between the state and local communities.

The types of situations which would result can be sketched as in Table 7.

In the balance of this article we shall particularly consider the groups of hypotheses combining on the one hand situation 1 a--the logic of buffer-relays and centralized relationships; and secondly situation 2 b--the logic of initiative and decentralized relationships.

Finally, we shall cross those two groups of hypotheses with the two following sets of conditions:

a. A high level of energy conservation and mobilization of local energy resources in France in 2000;

b. A moderate to low level of energy conservation and mobilization of local energy resources, in the same space-time frame.

In addition to differentiating the economic hypotheses explained below, which influence the probability of occurrence of those two sets of conditions, Table 8 indicates on the one hand the choice of hypotheses adopted to define, respectively, Scenarios II and III of the study; and secondly the existence of indeterminate factors affecting the judgment which can be made today on the conditions of success of the strategy aiming at a high level of energy conservation and mobilization of local energy resources.

That type of crossing is all the more problematical in that it combines:

Explicit technical-economic hypotheses tending to predict the chances of techniques for use and production of energy at a local level, and;

Hypotheses of "implicit regulation"--to adopt the terms used by Y. Stourdze.13/ --which interact in the confrontation of three "actors" in a complex game: the central administration and its local secular arm, the local leading citizen, and the technician/industrialist.

"For over a century a curious contest has opposed the leading citizen to the technician, a contest played out in several rounds with interminable prolongations. Its recurrences are strange and its rules intangible, the idea being roughly as follows: the technician can have no real hope of entering into the local universe without showing the velvet glove, for any incursion into it is subject to negotiation. At the border of the local world, technology, if it wishes to penetrate inside, will have to accept control. Whence a complex game of interrelations at the local level between notables and technicians, whence the particular form assumed there by technology." Stourdze, op. cit., p. 142.

Thus if, as Stourdze further states, "it is through differentiation that the local echelon pretends to assume its difference and its responsibilities," the strategy for a high level of energy conservation and mobilization of local resources under the impulsion of a centralizing state, through the relaying action of local communities, appears to constitute a situation of unstable or temporary balance, insofar as acceptance by local authorities of that program implies a transition from the logic of buffer-relay to that of initiative.

Consequently, recognition of "local specificity" is necessary at two levels in the context of an intensive program of energy conservation and development of local resources:

a. At the technico-economic level: the extreme differentiation of gegoraphic and economic situations, of characteristics in the energy resource to be mobilized, and of programs for thermal rehabilitation of existing habitats, all indicate thorough investigation of local realities;

b. At the level of relations between authorities: that thorough investigation can be conducted in a uniform manner and without negotiation with local leaders insofar as they are the persons "who hold in their hands the power, tenuous but real, partially to disconnect the system." Stourdze, op. cit., p. 146.

Reciprocally, the risk of a strategy of energy conservation and development of local energy resources, which would aim at decentralization by taking account of local specificities through multiplying "technical specificities which seem to be more like artificial tangles than authentic differences" is to lead initially to a costly proliferation of impossible situations, and later to a financial deterioration of the entire program.

FOOTNOTES

1. When the dynamism of the Energy Conservation Agency began to thwart the policy of promiting use of electricity for heating, particularly of housing, the agency was recalled to order and its chief was changed.

2. Cf. ANROC [National Association of Public Service Corporations and Local Community Organizations] and FNCC [National Federation of Contracting Communities and Public Corporations].

3. The decentralization bill now being debated in parliament is the first major reform undertaken by the Left since its accession to power. /For related article, see JPRS 80182 No 1914 dated 25 Feb 82, pp 5-16 of this series./

4. As established by a study commissioned from the Economic and Legal Institute of Energy by DATAR /Delegation for National Development and Regional Action/ and executed by B. Bourgeois, J. P. Bonaiti, and J. Girod. Complete results were published in "Energy and Regions: Production and Consumption Prospects, 1985-2000," DATAR Notes, La Documentation Francaise, Paris 1980 246 pp.

5. This summary is derived from an article by J. P. Bonaiti, B. Bourgeois, and J. Girod entitled: "Regional Energy Supply and Demand Prospects in France to 2000." The article appeared in REVUE DE L'ENERGIE, No 334, May 1981. I thank the editors of that review for permission to reproduce various passages of that article.

6. P. Barret, F. Bas, J. F. Langumier, J. C. Muron, J. Piona, and A. Valeyre, "The Future: its Use or its Obsession," FUTURIBLES, SCENARIOS POUR L'AVENIR, Paris, 1978.

7. These hypotheses would normally lead to estimating geothermal heat potential at several Mtep. In point of fact this potential has been substantially reduced because of an arbitration more favorable to combined production in cities of over 50,000 population in regions of moderate climate: that is, outside the Southwest and Mediterranean regions.

8. Evaluation of effluents and recoverable potential was done at CEREN by Messrs Chauchat and Labbe. Regarding industrial cogeneration, it is supposed that 50 percent of electricity consumption by the 5 branches: refining, woodpulp, textiles, chemistry, and agricultural-foodstuffs, is supplied by mixed sources (gas turbines and diesel engines).

9. These conclusions can be extrapolated by considering the forms of energy making up total consumption. We are thus led to assume a relatively close link between national infrastructure development policies and levels of electricity consumption. It indeed appears that an industrial redeployment policy (Scenario II) particularly favors increase of such consumption, in any case much more than that of fuels.

10. Whereas occasional development of those resources is admissible in logic 1.

11. Variable according to size of communities and type of problem raised.

12. "Perverse" effects can mask these positive aspects: the considerable development of public transportation in the Paris region offers a good example of this, insofar as it was accompanied by an equally large increase in "mobility" of travelers.

13. Y. Stourdze, "Variable-Geometry Authority: Deregulation," ANNALES DES MINES, Feb 1981, pp 137-146.

TABLES

Table 1. Year 1980: Energy Consumption in France (Mtep)

	National total	Local community portion
Industry and agriculture	64.8	0.5
Transportation	36.1	0.5
Residential-tertiary	61.6	4.1
Energy sector	26.1	---
Total	188.6	5.1

Source: Report by M. Ossadzow, AEE [Energy Economy Agency], "Contribution by Local Communities and Residences to Energy Conservation and Substitution of Energies," in "Regional Conference on New Energies and Optimum Energy Use in Local Communities and Residences," 26-27 Feb 1981, Regional Council of Burgundy and City of Talant.

Table 2. Major Economic Characteristics of Scenarios

Tableau 2	(1)	(2)	(3)	(4)	
	Dénomination	*Echanges extérieurs*	*Branches motrices*	*Taux de croissance*	*Aménagement du territoire*
Scénario I	Nouveau libéralisme (5)	Ouverture totale (6)	Electronique verre, mat. cons. IAA autom. (7)	+3% 1975-85 +5,5% 1985-2000 (8)	Polarisation renforcée (9)
Scénario II	Relance nationale (10)	Intégration européenne contrôlée (11)	Sauvegarde des industries de base et biens d'équipement (12)	+3% 1975-80 +5% 1980-2000 (13)	Polarisation desserrée (14)
Scénario III	Nouvelle croissance (15)	Auto-centrage (16)	Biens d'équip. maintien biens intermédiaires services publics (17)	+3% 1975-2000 (18)	Tendance à l'homogénéisation (19)

Key:
1. Name
2. Outside exchanges
3. Motivating branches
4. Growth rate
5. New liberalism
6. Total opening
7. Electronics, glass, building materials, IAA [?], automobile
9. Reinforced polarization
10. National upsurge
11. Controlled European integration
12. Safeguard of basic industries & capital goods

[Key continued on following page]

Key, Table 2, continued:

14. Loose polarization
15. New growth
16. Self-centralization
17. Capital goods; maintenance; intermediate goods; public services
19. Trend to homegeneity

Table 3. Principal Categories of Energy Use by Sector

Tableau 3	(1) *Combustibles*	(2) *Carburants*	(3) *Electricité*	(4) *Energies nouvelles*
Residientel tertiaire (5)	Usage chaleur: Chauffage, E.C.S., Cuisson	(6) (7)	Usage chaleur: Chauffage, E.C.S., Cuisson Electricité spécif.	Usage chaleur: Chauffage, E.C.S.
Les quatre sous-secteurs industriels	Usage chaleur		Usage chaleur Electricité spécif.	Usage chaleur
Transports	(8)	Force motrice	(9) Force motrice	
Agriculture	Usages indistincts	(10)	Usages indistincts	Usages indistincts
Batiment (11)	Usages indistincts		Usages indistincts	

Key: 1. Fuels
2. Hydrocarbons
3. Electricity
4. New energies
5. Residential-tertiary
6. Uses for heat:
   Heating
   ECS [?]
   Cooking
7. Electricity, specific uses
8. Transportation
9. Motive power
10. Indistinct uses
11. Construction

Table 4

Energies	Local	National	Imported
Combustibles and motor fuels	Coal Natural gas Hydrocarbons		Coal Natural gas Hydrocarbons
Electricity	Hydraulic and wind Combined urban production Industrial cogeneration	Conventional thermal and nuclear	
New energies	Solar, biomass Urban wastes Geothermal Industrial heat wastes Heat pumps		

Table 5. Regional Growth Rates

Growth Rate	Region
Under 2 %	Paris Region Mediterranean
2 % to 2.5 %	Massif Central Rhone-Alpes
Over 2.5 %	Southwest North Paris Basin West East

Table 6. Regional Contributions of New Forms of Energy in Mtep, Scenario III, year 2000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mtep	*Solaire*	*Biomasse*	*Déchets Urbains*	*Geothermie*	*Rejet th. industriels*	*Pompes a chaleur*	*Total Nfe*	*Part des Nfe dans le total des utilis finales (%)*
Region Parisienne	0.6	0.2	0.5	0.3	0.1	0.5	2.2	9.1
Bassin Parisien	1.0	2.6	0.2	0.1	0.6	0.5	5.0	15.2
Nord	0.5	0.3	0.1	—	0.2	0.2	1.3	7.3
Est	0.7	0.4	0.1	0.1	0.3	0.4	2.0	7.8
Ouest	0.7	1.2	0.2	—	0.2	0.4	2.7	13.8
Sud-Ouest	0.6	0.9	0.1	—	0.1	0.2	1.9	10.4
Massif central	0.2	0.3	0.1	—	—	0.1	0.7	13.0
Rhône-Alpes	0.5	0.3	0.2	—	0.1	0.3	1.4	9.1
Méditerranée	0.7	0.3	0.2	—	0.4	0.1	1.7	8.5
Total France	5.5	6.5	1.7	0.5	2.0	2.7	18.9	10.7

Key: 1. Solar
2. Biomass
3. Urban wastes
4. Geothermal
5. Industrial heat wastes
6. Heat pumps
7. Total new energy forms
8. New energy forms: percentage of final use total

Table 7. State-Local Community Relationships

State-local community relationships	Logic of local community action in energy sector	
	a. Logic of buffer-relay	b. Logic of initiative
1. Centralization	Possible	Impossible
2. Decentralization	Not very plausible	Possible

Table 8. Socio-political Hypotheses in Relation to Local Energy Programs

	Local energy conservation and development program	
Scope of socio-political hypotheses	Broad	Narrow to moderate
Buffer-relay role of local communities, with centralization	Temporary crossover possible	Crossover possible (Scenario II)
Local community initiative, with decentralization	Crossover possible if program takeoff problems solved (Scenario III)	Crossover possible but not very plausible

Final Energy Accounts of France, Year 2000, Scenarios I, II, and III

Scenario I

	Combustibles et carbur. Mtep	*Energies nouvelles*	*Electricité* TWh*
Consommation			
Industrie et BTP	76,5	0,4	218,8
Résidentiel-Tertiaire	48,8	3,6	232,5
Agriculture	5,8		3,8
Transports	64,3		12,2
Totale utilisations finales	195,4	4,0	467,3
Pertes de transport de l'électricité			36,7
1) Total consommation finale	195,0	4,0	504,0
Disponibilités			
Apport des énergies locales et régionales			
Charbon	5,4		
Gaz naturel et hydrocarbures	1,5		
Solaire		0,8	
Biomasse		1,6	
Déchets urbains		0,4	
Géothermie		0,3	
Rejets thermiques industriels		0,5	
P.A.C.		0,4	
Hydraulique et éolienne			66,0
Prod. Comb. Urb.			6,2
Coger. industr.			10,3
2) Total apport local & régional	7,0	4,0	83,0
1 – 2 Combustibles	188,0		
Electricité			421,0

Scenario II

	Combustibles et carbur. Mtep	*Energies nouvelles*	*Electricité* TWh*
Consommation			
Industrie et BTP	79,2	1,4	274,6
Résidentiel-Tertiaire	34,6	8,3	232,9
Agriculture	4,9		3,1
Transports	51,3		15,4
Total utilisations finales	170,0	9,7	526,0
Pertes de transport de l'électricité			41,3
1) Total consommation finale	170,0	10,0	567,0
Disponibilités			
Apport des énergies locales et régionales			
Charbon	6,3		
Gaz naturel et hydrocarbures	1,5		
Solaire		2,5	
Biomasse		3,2	
Déchets urbains		0,8	
Géothermie		0,5	
Rejets thermiques industriels		0,8	
P.A.C.		1,9	
Hydraulique et éolienne			70,0
Prod. Comb. Urb.			7,6
Coger. Industr.			14,4
2) Total apport local & regional	8,0	10,0	92,0
1 – 2 Combustibles	162,0		
Electricité			475,0

Scenario III

	(1) *Combustibles et carbur. Mtep*	(2) *Energies nouvelles*	(3) *Electricité* TWh*
Consommation			
Industrie et BTP	62,5	3,7	186,2
Résidentiel-Tertiaire	31,7	15,1	152,6
Agriculture	3,1	2,0	2,0
Transports	33,9		16,5
Total utilisations finales	131,2	18,8	357,3
Pertes de transport de l'électricité			28,1
1) Total consommation finale	131,0	19,0	385,0
Disponibilités			
Apport des énergies locales et régionales			
Charbon	7,6		
Gas naturel et hydrocarbures	1,5		
Solaire		5,5	
Biomasse		6,5	
Déchets urbains		1,6	
Géothermie		0,5	
Rejets thermiques industriels		2,0	
P.A.C.		2,7	
Hydraulique et éolienne			76,5
Prod. Comb. Urb.			20,2
Coger. industr.			39,2
2) Total apport local & régional	9,0	19,0	136,0
1 – 2 Combustibles	122,0		
Electricité			249,0

(1 – 2) Apport dés énergies nationales ou importées.
* Y compris l'autoproduction en provenance de la production combinée urbaine et de la cogénération industrielle (respectivement pour I, II, III, 17 TWh, 22 TWh, 59 TWh).

/Key on Following page/

Key to tables, Scenarios I, II, and III:

1. Combustibles and motor fuel, Mtep
2. New energy forms
3. Electricity, TWh*

Left-hand column:

Consumption:

Industry and BTP /expansion unknown/
Residential-tertiary
Agriculture
Transportation
Total final uses
Electricity transfer losses
1) Total final consumption

Availabilities: local and regional energy contribution

Coal
Natural gas and hydrocarbons
Solar
Biomass
Urban wastes
Geothermal
Industrial heat wastes
Heat pumps
Hydraulic and wind
Combined urban production
Industrial cogeneration
2) Total contribution, local and regional
1) and 2) Combustibles
Electricity

(1 - 2) Contribution of national or imported energies
*Including self-production originating from combined urban and industrial cogeneration (respectively I, II, and III: 17 TWh, 22 TWh, and 59 TWh).

CHARTS

Chart 1 - Division into 9 regions

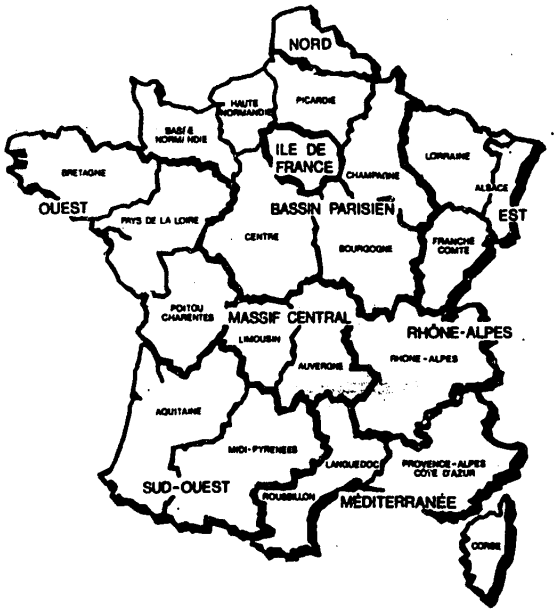
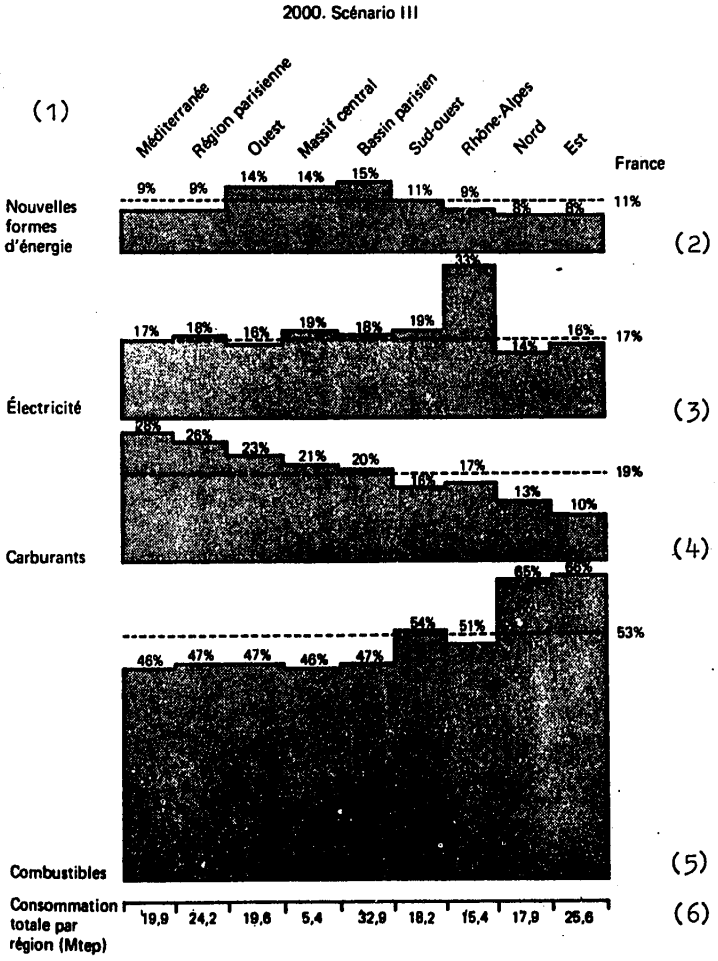


Chart 2 - Forms of energy: proportion of total final energy use in each region

Graphique 2 - Part de chaque forme d'energie dans les utilisation finales de chaque region



Key:
1. Regions
2. New forms of energy
3. Electricity
4. Liquid fuels
5. Solid fuels
6. Total consumption per region in Mtep

6145
CSO: 3100/397

POLITICAL TURKEY

LACK OF IMPARTIALITY IN DEALING WITH TURKEY DECRIED

Paris AL-WATAN AL-'ARABI in Arabic No 266, 19-25 Mar 82 pp 48-49

[Article by 'Isam 'Abd al-'Aziz]

[Text] Two and a half years after the army coup in Turkey, the "achievements" of the army have become one of the most important questions under discussion, especially among the various political parties in Western Europe. Opinions are divided and varied. Some say General Kenan Evren's seizure of power on 12 September 1980 was a logical result of the anarchy that reigned in the country at that time. Others say that all the army has achieved in Ankara is repression and concentration on the link to American military plans to realize a strong wish of the men of the Pentagon in Washington.

In reality, the facts of the situation in Turkey today have become a matter of lively dispute of concern to various circles in the Third World. It is expressed in this specific question: Is it possible for an army to develop into a safety valve capable of preventing a country from rushing into a whirlpool of anarchy and social and political struggles?

Supporters of the army's experiment in Turkey say that political terrorism in the country had led just before the coup to the killing of about 20 persons a day and that the struggles between the various parties made it impossible for the government to remain in power. Disorders broke out at that time in the Kurdish areas in the southeastern part of the country and workers' strikes spread everywhere so that industrial production fell 30 to 40 percent and there was also total economic disarray. Moreover, the public debts of the Turkish government were about 18 billion to cut off electricity throughout the country for 6 hours a day in an effort to supply pressure to the oil bill which amounted to almost a billion dollars a year. Meanwhile, inflation was at the rate of 96 percent a year and 14 percent of all those able to work were unemployed.

Supporters of the military coup add that political terrorist operations have declined 98 percent, the average inflation rate is close to only 36 percent, and the value of Turkish industrial exports in the first 9 months of 1981 rose by 600 million dollars over what it was in the comparable 1980 period.

Defenders of General Kenan Evren's experiment go on to say that it was difficult for the "National Security Council," i.e., the ruling military council, to achieve more than that in the short period of time that has elapsed since the coup. Moreover, all the signs indicate that things are moving in the right direction, especially since Turkey lived through a bloody period before the coup.

But what do critics and opponents of the army experiment say?

Opponents of the military regime in Turkey are aiming their arrows at the economic and political spheres in particular. As for the economic sphere, they say the government froze wages at 36,000 Turkish liras a month without taking into account the effect on the situation of families that earn the lowest wages, especially since the standard of living of these families has been falling by one-half on average annually since Evren came to power and adopted a policy of formally covering up the inflation problem by taking away part of the income of the poor families.

These opponents add that the military government deliberately ignores the problem of rental housing and does not take into account the effects of inflation, despite the fact that rent alone swallows up a third of the income of families with a limited income.

Critics of the army also point out that Turkish factories are still working at half their capacity, despite the 46 percent annual increase in exports. The trade deficit remains what it was before the coup (2.5 to 4.5 billion dollars a year).

In the political sphere, opponents of the army regime say that never in all its history has the country witnessed as repressive a regime as that which followed the September 1980 coup. They cite as evidence official figures which indicate that the number of political prisoners in the country at the end of last year was 24,000 awaiting trial, with 7000 in prison and 2500 of those "indicted" having received varying sentences.

Apart from these views, is there a neutral view on Evren's experiment?

A correspondent of the London FINANCIAL TIMES wrote from Ankara last 18 November that "peace in Turkey still rests on shifting sands. The silence that has fallen over the country does not mean the people are satisfied. While the majority supports the regime, the divisions that brought Turkey to the brink of disaster are still interacting under a thin layer of artificial calm. The political struggle is still raging as always and the older leaders have not stopped working. Most of them, including Alpaslan Turkes who has been detained for 14 months and is facing a death sentence, believe that when the army returns to its barracks, the stage will be set to receive them once again.

However, European sources are not neutral.... At the present time Europe is unable to place its weight behind Evrend as it did in the fall of 1980.

The reason is that Washington has intervened to spoil those relations between the two parties.

Early in December, the American Secretary of Defense Caspar Weinberger wound up his visit to Ankara by agreeing to the formation of a committee of Turkish and American experts to supervise the "broadening and improvement of military cooperation between the two countries." This means Washington has definitely decided to rely on Turkey to carry out two specific tasks:

(1) Extension of NATO activities beyond the European zone, specifically, in the direction of the Persian Gulf region, through the creation of American military bases (within the alliance framework) in Turkey.

(2) Development of a network of medium-range nuclear missiles aimed at the Soviet Union from Turkish territory adjacent to the Soviet borders. That angered Europe, for it means committing the continental members of NATO to participate in American strategy in the Middle East. It also means European economic interests in the Middle East will be at the mercy of American policy, aside from the fact that this strategy" is a procation to the Soviets for which Europe will eventually pay the price. Doesn't the old continent have steadily increasing economic interests with the countries of the Soviet bloc? Is it not this and this alone that will turn into a field of tactical nuclear warfare, as Reagan said in an earlier statement last fall?

So, the dispute has begun to affect relations between Europe and Turkey, on the one hand, and between the United States and Turkey, on the other. In this context, General Bernard Rogers, commander-in-chief of the NATO forces, declared that military aid to Turkey must be increased to between 5 and 6 million dollars to modernize the Turkish military establishment. The American aid received by Ankara in 1980 was valued at 450 million dollars. It rose in 1981 to 547 million dollars and again in 1982 to 703 million dollars.

At the same time the Parliament of Europe (21 Western European countries) postponed indefinitely its 1982 assistance to Evren's government (600 million dollars) while awaiting the return of democracy to Ankara.

The fact is Europe is not criticizing the absence of democracy in the Evren regime, nor is the United States interested in Turkey's domestic situation except insofar as this situation allows it to carry out its strategy in the region.... As for the Soviets, the American-Turkish military rapproachment was enough to impel the newspaper IZVESTIYA to accuse General Evren's government last January of being a "military clique interested only in suppressing the Turkish people and increasing their poverty and deprivation."

So, there is no neutral source to determine exactly the nature of what is going on in Turkey. All the parties involved have a direct interest, one way or another, in concealing aspects of what is happening there secretly and in public.

5214
CSO: 4606/25

MILITARY FRANCE

LIGHT ARMY PLANE ADAPTS TO NEW ANTIAIRCRAFT WEAPONS ABROAD

Paris ARMEES D'AUJOURD'HUI in French Mar 82 pp 30-31

[Article by Col Jacques Lazare*: "ALAT Abroad"]

[Excerpts] The increase in the number of modern antiaircraft weapons (guns and ground-to-air missiles) henceforth forces our helicopters to resort constantly to tactical flying, precludes the orbital firing of weapons from the gunport, and necessitates the outfitting of aircraft with devices aimed at masking the thermal radiation of their engines. Furthermore, even if the presence of hostile aircraft continues to be exceptional, the threat represented by armed helicopters makes it indispensable to carry shipborne self-defense weapons today.

Implementation of the Means

There are three possibilities in this area. Two of them are conventional--aircraft, rapid but with small carrying capabilities; and ships, which can transport a sizable load but can move about slowly. A third alternative is more recent--the organized flight of helicopter formations.

Techniques of loading and unloading that are specific to ships and transport planes are familiar by now to ALAT personnel and are used routinely. It should be noted that these two methods of transportation, with the exception of aircraft carriers, make necessary preparatory exercises prior to embarkation and realigned flight formations following unloading, the duration of which should be taken into account in planning prior to any action.

The constraints connected with the use of aircraft and ships have prompted ALAT to experiment with the autonomous use of its helicopters in flight. It is now conceivable to envision the disposition of helicopter formations in flight traveling distances of 900 km without a refueling stop and

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*A graduate of Saint Cyr military academy (class of 1954), Col Jacques Lazare has served alternatively in the ABC [Armored Corps and Cavalry] and in ALAT [Ground Forces Tactical Air Support]. Holder of an Advanced General Staff Certificate, Colonel Lazare commanded the 5th Combat Helicopter Regiment. He is now head of the 3d Bureau in the ALAT command.

of 1,800 km a day using an intermediate stop. In the latter case the helicopters can be used for assignments immediately upon arrival, but the continuation of their operations for longer than a few days remains subordinated to transportation by other means (aircraft or ships) of the personnel and equipment necessary for support and environment.

Combat and Its Support

ALAT's combat and support abroad follow the same rules as those spelled out for the European theater. However, experience has shown that very special attention must be given to certain fields: The training of personnel, the organization of the means, their use, and their technical support.

It is obvious that specific preparation of the personnel must precede the overseas engagement of units of all types. This is even truer of the air crews called to combat as isolated patrols while at the same time faced with a particularly adverse environment in terms of the technical means that they use. Additionally, the units of ALAT have been obliged to acquire a collective know-how essential for action abroad: take-off from a naval force at sea to secure a landing beach or airfield making it possible to establish a beachhead. ALAT has an essential role to play in such an initial stage of operations, assuming responsibility for the establishment of the support bases and their necessary coverage through reconnaissance and protective fire. This presupposes training beforehand related to actions launched from aircraft carriers, the technical training of the crews, and the tactical training of the units.

The deployment of available strength often raises a difficult problem. The limited number of aircraft prompts one to keep them assembled so as to have a sizable mobile air reserve at hand, but additionally the large distances separating the ground units at the time of controlling a territory may make it desirable to give each group some mobile air capability. Centralization, decentralization--there is no rule making it possible to decide in absolute fashion which is better, and what will be involved first and foremost will be constantly to adapt the deployment to the situation of the moment by using maximally ALAT's capability to redeploy its forces rapidly.

The often limited number of aircraft engaged abroad should not allow one to forget three basic rules of ALAT combat:

1. Any authorization for the utilization of ALAT capabilities must rely on an ALAT liaison officer enabling their optimal use in a difficult environment.

2. The minimal unit in the use of ALAT is the two-plane patrol, a level below which they are not effective.

3. The aircraft of ALAT are specialized and the results of their engagement will be a function of their use in missions for which they are planned:

Helicopters or light planes for information-gathering, armed helicopters for support, intermediate-sized helicopters for tactical and logistical transportation. If necessity demands that the authorization for use not respect this specialization function, one must, nevertheless, be aware of the limits of the means involved, even of the risks undertaken.

The combat support of ALAT abroad raises first and foremost a problem of maintenance in working condition of equipment in a very adverse environment. To meet this problem, experience has shown that the personnel and equipment of the second and third echelon should be consolidated in a single workshop located close to an airfield necessary for the rapid transportation of spareparts originating from the home base.

ALAT has learned a lot during engagements abroad in which it has participated and still continues to participate. The data that it has collected from them make it possible for ALAT today to be better prepared for this kind of action. But it should be noted that beyond an indispensable effort to adjust to such an environment, its effectiveness in combat depends, even more than elsewhere, on the motivation and determination of its personnel.

2662
CSO: 3100/497

BRIEFS

NEW VOICE CONTROL SYSTEM--Crouzet's voice command and control system developed jointly with the Istres Flight Test Center under a DRET [Research and Technical Studies Directorate contract will soon begin its flight tests at the Bretigny CEV [Flight Test Center] in late May or early June. This obviously important stage will open a new era in European and French aviation history inasmuch as it quite simply constitutes the first development of this type on the Old Continent (similar developments are under way on F-16 aircraft in the United States). This stage will also constitute materialization of the remarkable work done by Crouzet technicians and Istres CEV personnel. During a recent visit to Istres, we were able to see for ourselves that the system had advanced significantly toward becoming truly operational equipment. Three CEV pilots, Messrs Varin, Robert, and Plessier, have contributed to developing this concept into a first-rate operational tool. The coming flight tests will, of course, also add their contribution, notably by integrating the environmental aspect of flight: ambient noise, helmet noise, pilot fatigue or stress, accelerations and vibrations, etc. [Excerpt] [Paris AIR ET COSMOS in French 10 Apr 82 p 28] [COPYRIGHT: A. & C. 1982] 8041

ARMED SERVICES MANPOWER--The total 1982 authorized personnel strength of the armed forces and services breaks down as follows: strategic nuclear forces: 19,348; tactical nuclear forces: 9,632; conventional forces: 387,882; overseas forces: 17,313; research and tests: 6,766; training organizations and agencies: 76,192; personnel support organizations and agencies: 23,375; equipment support organizations and agencies: 19,169; general administration: 17,451; total strength: 577,128. [Text] [Paris AIR ET COSMOS in French 10 Apr 82 p 29] [COPYRIGHT: A. & C. 1982] 8041

CSO: 3100/564

GENERAL FRANCE

PHOTO OF ARIANE SOLID PROPELLANT BOOSTER RELEASED

Paris AIR ET COSMOS in French 10 Apr 82 p 43

[Article: "Ariane 3 Solid Propellant Booster"]

[Text] Aerospatiale has just published the first photo of one of the solid propellant boosters for the future European Ariane 3 launch vehicle scheduled to become operational in 1983. This booster was produced by the Italian firm Aeritalia. Its erection container was built by ACMH of France. This container will be used to raise the boosters to an upright position for their attachment to the launcher's first stage. Integration of these Ariane 3 boosters is accomplished in Aerospatiale's plant at Les Mureaux near Paris.

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CSO: 3100/564

END