

'Peaceful applications in the atomic energy sector', from Il Sole 24 Ore (15 October 1955)

Caption: On 15 October 1955, the Italian daily newspaper Il Sole analyses the importance of the use of nuclear energy for civil purposes and sets out the proposals for this new source of energy.

Source: Il Sole 24 Ore. 15.10.1955. Milano. "Le applicazioni pacifiche nel settore dell' energia atomica".

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Peaceful applications in the atomic energy sector

US progress with the cooperation of private industry

Italian companies ready to face the risks of the pioneering phase

For more than a year now — from 30 August 1954, to be precise — the United States has had a new law on atomic energy. Ending the monopoly held by the Atomic Energy Commission, which the 1946 McMahon Act had made the sole depositary and custodian of the secrets of atomic technology, it has stimulated wide-scale cooperation between the AEC and American industry with a view to exploiting the potential of nuclear energy, and especially to creating, in the shortest possible time, a nuclear installation capable of producing electrical energy at a cost no higher than that produced by conventional power stations. The United States had constantly devoted itself to the military applications of nuclear energy from 1950 to 1953, especially in the area of submarine propulsion, but in sectors other than that of armaments it is now rapidly making up for lost time compared with its main international competitors, the USSR and Great Britain. Although the United States was the first to produce electrical energy from the atom (in December 1951, using a small experimental reactor) and to introduce the reactor-powered generation of commercial electricity (on 18 July 1955, using a 10 000 kW reactor identical to that powering the second atomic submarine, the ‘Seawolf’), it was Russia that completed the first nuclear power station designed for civilian use, a unit producing 5 000 kW as described at the Geneva Conference last August. Great Britain, for its part, announced in its White Paper of 15 February 1955 a ten-year plan for the construction of 12 large power plants at a cost of 300 million pounds. Its centre at Calder Hall was already in a state of advanced construction; on 13 June it was announced that a further six Calder Hall-type reactors would be constructed for the production of fissile material for military use and for generating electricity.

Development programmes in the United States

On 9 January 1955, shortly before the UK publicly announced its atomic programme, the United States AEC, which was already funding a five-year, 250 million dollar plan to develop a variety of small experimental reactors (in addition to the large Shippingport plant that was to produce at least 60 000 kW), launched another practical programme. The AEC invited industry to submit plans for developing ‘commercial-scale’ nuclear power plants. Where such projects were approved, it promised substantial aid in the form of free loans of nuclear fuels, free research and study facilities in its laboratories and early payment for any technical and economic information derived from the construction and operation of such plants. Replies to this invitation came from four companies or industrial groups. One of the groups, headed by Commonwealth Edison of Chicago, announced in presenting its action plan that it was prepared to proceed without any Federal assistance or subsidy. Even in this planning phase there is a noteworthy change in the construction and running costs predicted for the atomic energy plants: whilst the Shippingport power plant, built jointly by the AEC and the Duquesne Light Co. and due to come into service in late 1957, costs almost 1 000 dollars per rated kW, the station that Commonwealth Edison is to have built by General Electric will probably cost less than 250 dollars per kW. It should be noted that this marked reduction in costs has come about in little more than a year, given that Shippingport was built in July 1954.

Apart from the four projects presented in response to the AEC’s invitation, a further two have been announced. If they are in fact built, there will therefore be six power stations in all for total expenditure of about half a billion dollars. Although this is undoubtedly more than would be needed to build thermal power plants of the same total capacity, the projects could provide vital information in the field of technology and economics as well as indicating the best path towards developing this new industry.

This has all been made possible by the ‘atomic liberalisation’ that has allowed the most efficient companies in the fields of electricity, metallurgy, engineering and chemistry to show what human initiative is capable of achieving once it has been given free reign.

If the effects of the Atomic Energy Act of August 1954 were to be confined solely to the United States, it would be of little more importance to the rest of the world than as a pointer, as an example to follow. In fact,

however, the greater freedom of research, study and use of atomic materials is of practical relevance for all the nations that are friends of the star-spangled banner. For the new American law is also a 'liberalising' force for foreign countries, allowing as it does the dissemination of news and data, cooperation and technical assistance, and the transfer of installations and the precious fuel even beyond national borders.

The potential achievement of qualified companies

The United States has, as a result, been able to draw up 30 or so bilateral agreements in this sector with friendly states. Where Italy is concerned, the finalisation of these agreements will enable us to implement the contracts for the purchase of power-generating reactors that some of our largest companies have negotiated, and are now concluding, with those American companies (there are more than 15 of them) that claim to be able to supply large-scale reactors to power thermoelectric power stations.

Italy's industry has shown that it is ready to face the risks inevitable in the pioneering phase through which atomic technology is currently passing. It follows that it is obviously the duty, and in the interest, of the Government to encourage and not to hamper such private initiatives.

The risks, which are economic in nature as well as technological, are inevitable, but considering how far we lag behind the nations in the forefront as regards the practical applications of nuclear fission, it would be unwise to make our way alone along a path that others have already trodden. It would be preferable to go abroad to obtain the reactors and licences with which our metallurgical, engineering and chemical industries can gain the experience that will enable them, let us hope in a reasonable period, to acquire the know-how and come up with imaginative solutions for the multitude of problems connected with the planning, building and running of a nuclear plant.

The low efficiency of state-run enterprise

The risks stemming from governmental decisions are, however, far more dangerous for the future of the atomic industry and, indirectly, for the economic development of our economy as a whole. It is conceivable that there should be a state monopoly limited to the military uses of the atom, for obvious security reasons. Where peaceful uses are concerned, however, since no human mind or organisation exists that can, on its own, exploit the atom in all its many aspects, the more freedom granted, the more fruitful the outcome. The world offers many examples of the inefficiency of state-run enterprises as compared with those that are private. In Italy, in this very field of energy resources, we have a state-controlled enterprise [Ente Nazionale Idrocarburi — ENI] that until now has had the dual effect of leaving hydrocarbons underground and keeping away the foreign capital so essential to our economic progress. Centralised control restricting the scope for private initiative in a sector such as atomic power that is evolving and expanding at such an extraordinary pace would irreparably delay any conquest along the highway of man's progress. In the United States, this grave peril has been appreciated for some time.

Let us hope that, by looking at America and remembering our own experience, the terms of the problem will become clearer in Italy too, otherwise we shall have to resign ourselves to the gradual widening of the gap in industrial power — and the standard of living — between ourselves and the more advanced states, undermining all the efforts we have made to narrow that gap in this first post-war decade. Recently, there have been clear signs leading us to believe that the danger is diminishing; but, nonetheless, it is well worth bearing in mind.