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CIVIL AFFAIRS HANDBOOK ON ITALY

SECTION TEN on PUBLIC WORKS + UTILITIES

BOOK ON ITALY

PUBLIC WORKS + UTILITIES -/-/-

CONFIDENTIAL

Preliminary Draft

Letter to Major James A Bullard.
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CIVIL AFFAIRS HANDBOOK

on

I T A L Y

Section Ten

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on

PUBLIC WORKS AND UTILITIES

CIVIL AFFAIRS HANDBOOKS

TOPICAL OUTLINE

1. Geographical and Social Background
2. Government and Administration
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4. Government Finance
5. Money and Banking
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7. Agriculture
8. Industry and Commerce
9. Labor
10. Public Works and Utilities *
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13. Public Health and Sanitation
14. Public Safety
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* This study on Public Works and Utilities in Italy was prepared for the Military Government Division of the Office of the Provost Marshal General by the Office of Strategic Services.

INTRODUCTION

Purposes of the Civil Affairs Handbook.

International Law places upon an occupying power the obligation and responsibility for establishing government and maintaining civil order in the areas occupied.

The basic purposes of civil affairs officers are thus (1) to assist the Commanding General of the combat units by quickly establishing those orderly conditions which will contribute most effectively to the conduct of military operations, (2) to reduce to a minimum the human suffering and the material damage resulting from disorder and (3) to create the conditions which will make it possible for civilian agencies to function effectively.

The preparation of Civil Affairs Handbooks is a part of the effort of the War Department to carry out this obligation as efficiently and humanely as is possible. The Handbooks do not deal with planning or policy. They are rather ready reference source books of the basic factual information needed for planning and policy making.

Revision for Final Publication.

Significant area information is immediately needed (a) for civil affairs officers charged with policy making and planning, (b) for the use of civil affairs officers-in-training and (c) to make certain that organized data is in hand, whenever events require it.

Arrangements were therefore made with the cooperating agencies to organize all immediately available material in accordance with a prepared outline. Hence, this section on Public Works and Utilities in Italy was hastily assembled to meet emergency needs and it is being revised preparatory to its incorporation in the handbook for Italy as a whole. As it appears here, this section does not cover docks, harbors, or naval installations, and sewerage, public buildings, parks, or improvements, as well as water supply systems, of principal cities.

COMMENTS AND CRITICISMS BY OFFICERS USING THIS MATERIAL ARE REQUESTED. THEY SHOULD BE SENT TO LT. COLONEL JAMES H. SHOEMAKER, MILITARY GOVERNMENT DIVISION, P.M.G.O., 2805 MUNITIONS BUILDING, WASHINGTON, D.C. (OR PHONE WAR DEPARTMENT EXTENSION 76370)

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(1) Hydroelectric and Steam Power.

i. General. The hydroelectric industry of Italy produces about 95% of the country's total electric output. The rest is made in steam plants. Two-thirds of the electric power generation and distribution is under the control of a small number of large companies. The balance is in the hands of municipalities, industrial companies, the state railways and some small independent companies.

It is very clear from the table that follows that five large holding companies dominate the field. These are the Edison group, Societa Idroelettrica Piemonte (S I P), Adriatica, Meridionale, and Centrale. In Table I are listed the names of the leading companies, the number of companies controlled in each case, their total capitalization, and the quantity of kilowatt hours distributed by them in 1938.

Table I

Largest Private Electric Companies in Italy

Company	Headquarters	No. of Affiliated Companies	Total Capital 1938 (Million lire)	Distribution 1938 (Million KWH)
Società Edison (Edison)	Milan	41	3,519	4,250
Società Idroelettrica Piemonte (SIP)	Turin	9	915	2,190
Società Adriatica di Elettricità (Adriatica)	Venice	20	1,205	1,340
Società Meridionale di Elettricità (Meridionale)	Naples	18	971	1,470
Unione Italiana Esercizi Elettrici (Unes)	Rome	5	329	410
La Centrale (Centrale)	Florence	14	1,185	1,665*
Società Elettrica Sicilia Orientale (Sicilia)	Palermo	1	212	181
Società Elettrica Sarda (Sarda)	Rome	2	221	160

* Estimate

An American company, the Italian Superpower Corporation, trades in and holds securities of many of the more important Italian electric power corporations. In addition French, Belgian and British capital has gone into Italian power enterprises.

The equipment for electric power stations is all made in Italy by Italian firms which have an international reputation for good work in the field. Much of the present equipment is practically new, and since all such machinery has a long life, it is evident that the condition of equipment is excellent. Adequate repair and replacement facilities are available.

Water power represents the greatest source of electricity in Italy. In 1935, hydro-electric power represented 83% of the installed capacity and 97% of the total output. Thermal plants play an important part in serving as stand-by plants and for the transmission of power over long distances. The capacity represented by thermal plants is greatest on the islands, particularly in Sardinia. Power in Italy is affected by the seasonal distribution of water flow. When the water flow in the Alps is at its minimum in December, January, and February, it reaches its maximum in the peninsula and the islands. As the year proceeds, the discharge from the Alps increases with the melting of the snows, while that in the Apennines decreases with the arrival of the dry season. Owing to the greater demand on the Alpine installations, the seasonal lack of water in the north is not sufficiently compensated by the flow in the south. The period from December through February is one of minimum output.

The autumnal drought of 1941, followed by prolonged freezing conditions early in 1942, resulted in a serious supply situation. Some factories utilizing electric power closed down and others shortened their hours of work. Industrial consumption of electricity declined as much as 35% in February and March 1942. The autumn of 1942 brought another drought, and measures were introduced in December 1942 reducing industrial consumption by 15% of the amount used in the corresponding month of 1941. The 1943 production of electricity will almost certainly suffer a reduction owing to the length of time needed to refill the storage basins from their present low level.

From Table II below it is evident that three-fourths of Italy's hydroelectric power is produced in Northern Italy. As of January 1938, the installed capacity, according to geographic regions, was as follows:

Table II

Distribution of Hydroelectric Power Capacity

Region	Installed Capacity	Percent of Total
Northern Italy	3,395, 400 KW	76.4
Central Italy	762, 300 KW	17.2
Southern Italy	210, 100 KW	4.7
Sicily and Sardinia	77, 200 KW	1.7
Italy	4,445, 000 KW	100.0

Although the numerous power stations are linked up by a network of power lines, there is as yet no complete coordination through a grid system. There is only one high tension interconnection between the distribution system of Northern and Central Italy. There are, moreover, three different frequencies.

ii. Governmental Supervision and Control of Electric Power. Because electric power is so important to the Italian government, particularly the development of hydroelectric power, it is not surprising to find the industry very carefully controlled on a national and local basis. Since 1933 any new plant or addition to old installations must be approved by the Ministry of Corporations. Control is vested in a Council of the Ministry of Public Works. The Permanent Committee (Comitato permanente) of the Higher Council on Public Works (Consiglio superiore dei lavori pubblici) has four sections. The third section handles electric power, the use of public water power, and plants for production and transmission of electric power. This committee has 11 members and decides all vital problems of national policy in electric power except the building of new plants.

There are several other agencies that have to do with electric power, such as the electrical section of the Royal Corps of Civil Engineers (Corpo reale del genio civile) whose job is to organize production, distribution and new developments. The allotment of power in time of war comes under control of the Office for Mobilization of Electric Power (Ufficio per la mobilitazione of dell' energia elettrica) which is answerable to the president of the third section of the Permanent Committee mentioned above. A research body, Hydrographic Service, (Servizio idrografico), records all the facts new and old as to meteorological and hydrographic conditions.

One of the 22 corporations of the corporate states has general supervision of electricity, gas and water (Corporazione dell' acqua, del gas e dell'elettricità). Its president, as is the case with all 22 corporations, is the Head of the Government, Mussolini. There are 5 Fascist Party members and 22 other members, representing half labor and half employers. Eight members are chosen from the electric industry; two of these represent municipal power enterprises, publicly owned. The corporation was founded in 1934, and met first in 1936.

The industry also fits into the federation organization of the economy. Two of these are employers' federations: 1) the National Fascist Federation of Owners of Electrical Enterprises (Federazione nazionale fascista degli esercenti imprese elettriche) and 2) the National Fascist Federation of Municipal Electrical Enterprises (Federazione nazionale fascista delle aziende industriali municipalizzate) with headquarters in Rome. The National Fascist Federation of the gas, water and electrical workers (Federazione nazionale

dei sindacati fascisti degli addetti all' industria del gas, dell' acqua e dell' elettricità) organizes the workers of the industry under the Fascist Party. Wages are determined by collective bargaining and the drawing up of contracts between the workers' syndicates and employers' syndicates. Actually the workers' organization is strictly under the thumb of the Fascist Party, since officials are hand picked by Rome for party loyalty. There have been no difficulties in labor problems of the industry.

There are still other national organizations concerned with electric power. The National Fascist Union for the Electrical Industries (Unione nazionale fascista industrie elettriche) promotes the development of power and study of electrical power problems. The Italian Electric Technical Association (Associazione elettrotecnica italiana) is a professional society interested in technical problems and is comparable to the American Association of Engineers. The Credit Institute for Public Utility Enterprises (Istitute di credito per le imprese di pubblica utilità) makes loans to state, provincial and communal (for cities of over 100,000 inhabitants) electrical companies. Its capital is 150 million lire. Up to 1936 it had made guaranteed loans of 1,268 million lire to electrical companies. The I.R.I. (Istituto di Ricostruzione Industriale) and the I.M.I. (Istituto Mobiliare Industriale) which are like the American Reconstruction Finance Corporation, have also helped power companies, especially during the depression years (1931-1934). To the extent that public agencies loan considerable sums of money to the private companies, they come more and more under government control.

The laws governing the use of water for hydroelectricity are definite and to the point. The Minister of Public Works is the dominant figure in all decisions as to how water is to be used and who shall use it, subject to the Ministry of Corporations on new projects. In determining who can use water for electric power, the law says the following may do it:

(i) the legal owner;
(ii) whoever had the use of the water for 30 years before 1884; amount limited to quantities formerly used;
(iii) whoever can get concessions to use it under the law.

The applicant for a concession applies to the Minister of Public Works, gives evidence of financial ability, technical competence, etc. For large developments the concession may run for no longer than 60 years, smaller undertakings for no longer than 30 years. The Minister of Public Works has the right to eminent domain to take over properties if necessary to change water courses to get power, if this is in the public interest. If any development is desirable but uneconomic, the Minister can contribute public monies to cover two-thirds of the necessary expenditures. Also the State can take over at any time by buying the equipment already set up at a price

calculated to be its value at the time of acquisition. The water rights revert to the State at the end of the concession period. The concession may be renewed.

The concessioner must pay the central government 12 lire a year per horse power of energy. He must also keep in reserve at least 10% of his minimum power load for the use of public services in the commune where the project is located. The division of power and the price to be paid for such power is settled by the parties concerned. In case of an impasse, the Minister of Public Works decides the issue on the basis of costs, etc. If the electrical energy goes 15 kilometers beyond the territory served locally, the commune charges 2 lire a year per horse power. If the power goes out of the province, the commune collects 3/4 of this fee, the province 1/4.

The compulsory trust for the development of hydroelectricity is called the Consorzio per l' utilizzazione delle acque pubbliche, which operates under the direction of the Minister of Public Works.

iii. Transmission Lines. In order to set up lines carrying not less than 5,000 volts authorization must be secured from the Ministry of Public Works, subject to approval of the Ministry of Corporations. For smaller lines authorization can be given by the prefect of the province, who may consult the Office of Civil Engineers (Ufficio del genio civile). Military lines must have the approval of the Military Ministries. The owners of property along the lines must let the lines go through, over or under ground. They are paid an indemnity each year if the lines remove from use part of the property.

Local tribunals have been set up to settle local problems. These are located at Turin, Milan, Venice, Florence, Rome, Naples, Palermo and Cagliari. Appeals may be made from their decisions to the Tribunale superiore delle acque pubbliche" at Rome. In case of drought regional commissioners decide the best use to be made of the resources and the best method of distribution. In the drought of 1942-43, the central government has curtailed use of electricity by 25% to 35%, both in homes and in factories.

Authorization is needed to import or export electric power. Such license is given by royal decree on proposal of the Minister of Public Works, and is revocable at any moment for interests of public safety. The import tax on power is 0.025 lire per KWH from November to April, and half as much for the period from April to November.

New plants or addition to old plants, whether steam or hydroelectric, are subject to the approval of the Ministry of Corporations.

iv. Subsidies, etc. There are various subsidies, exemptions from taxes, etc., designed to promote development of electric power. Subsidies now will only be given for projects involving reservoirs and artificial lakes. Such projects are exempt from 12 lire per horsepower state tax, but must pay local tax. Subsidies may be granted up to 30% of construction costs, and up to 10% of architectural and engineering research done before the project is started. The subsidy for construction may be up to 60%, if the project provides for other public works, such as irrigation schemes, etc. From these projects the state gets 25% of all profit over 7% or 50% of all profit over 10%, until the subsidy is paid off.

State taxes on electric power consumption carry so many exemptions that a relatively small percentage of users are taxed. The following power is exempt from taxes:

(i) Power used by municipalities (provinces, communes).
(ii) Power used by State Railroads.
(iii) " " " factories.
(iv) " " to produce more power.
(v) " " in theelectro-chemical industry and the electro-metallurgical industry.
(vi) Power used in boats, autos, (self-generated).
(vii) " " for scientific use in lecture halls and laboratories of public institutions.
(viii) Power used in diplomats' offices, homes, etc.

The tax is 20 centesimi (1/5 of a lira) per KWH. Small homeowners are exempted. The rate for lighting was raised to 40 centesimi in 1936. In that year 736 million KWH of power for illumination were taxed; 1,370 million KWH of power for other uses were taxed, but 9,500 million KWH went untaxed.

The communal tax varies according to the size of the commune as follows:

Communes whose population is:	Tax, Lire per KWH
From 30,000 to over 500,000	0.25 to 0.45
From 10,000 to 30,000	0.18 to 0.30
Less than 10,000	0.12 to 0.20

Prices of electric power were blocked from 1936 to 1940 by law. Prices in 1936 ranged from 0.81 to 2.15 lire per KWH without tax, or from 1.36 to 2.60 lire per KWH including tax; they ranged from 1.36 to 2.57 in 1940.

Practically no power has been exported, and only small amounts (about 1.6% of total consumption) have been imported.

The Ministry for War Production (Commissariato fabricazione di guerra) probably now has jurisdiction over all phases of electric power -- both production and consumption.

v. Industries and Electric Power. Approximately 85% of the total power production is consumed, according to an estimate for 1942, by industrial concerns. About half of the industrial consumption was used in process work by the electro-chemical and electro-metallurgical industries, whose products form a considerable contribution to the materials needed for the Axis war effort. Electricity is also used for motive power in other industries, such as textiles, metals, and machinery, to a greater extent than is the case in most other European countries. It is estimated that as much as 90% of the Italian manufacturing industry is dependent on electric power. Transport consumes about 10% of the total output.

The consumption pattern for electric power in Italy as of 1939, both for domestic and industrial uses, is shown in Table III.

Table III

	Millions of KWH	Percent of Total
Domestic Lighting	748.8	4.7
Public Lighting	311.5	2.0
Domestic Appliances	438.8	2.8
Miscellaneous Public Services	366.1	2.3
Agriculture	145.3	.9
Traction	1,777.3	11.2
Industrial Heating	596.9	3.8
Electro-metallurgical industry	2,655.6	16.8
Electro-chemical industry	2,481.3	15.7
Food	788.1	5.0
Textile Industry		
Cotton	582.6	3.7
Flax, hemp, jute	100.1	.6
Wool	209.8	1.3
Silk	51.6	.3
Rayon	296.5	1.9
Miscellaneous	86.7	.6
Machinery Industry	982.3	6.2
Metal Industry	711.4	4.5
Chemical Industry	692.1	4.4
Paper Industry	535.5	3.4
Building Materials	555.0	3.5
Mining and Quarrying Industries	254.0	1.6
Timber Industry	102.1	.7
Ceramics and glass Industries	100.0	.6
Clothing Industry	56.7	.4
Printing Industry	32.8	.2
Miscellaneous Industries	147.4	.9
Total.....	15,806.3	100.0

(2) Gas Plants.

The government controls over gas manufacture and production are very much the same as those over electric power. It belongs to the same government corporation, the Corporazione dell' acqua, del gas e dell' elettricità. Seven members of the corporation represent gas interests, 2 of whom represent municipal gas plants. There are 2 federations of owners, the National Fascist Federation of Entrepreneurs engaged in gas production and water distribution (Federazione nazionale fascista degli industriali del gas e degli acquedotti) which included 298 members in 1936, and the corresponding federation of municipally owned plants, the Federazione nazionale fascista delle aziende industriali municipalizzate. A third federation includes all workers. This is the Federazione nazionale fascista dei lavoratori dell' industria dell' acqua del gas e dell' elettricità. A voluntary association called the National Syndicate of Coal for Gas (Sindacato Nazionale carboni gas), with headquarters at Rome, did have considerable power in establishing regulations for the imports of coal going to gas manufacture, setting unified costs and prices. This power has in all probability been taken over by the coal monopoly, which is controlled by the State Railways Administration.

Other associations having to do with gas are the Italian Association for Gas and Water (Associazione italiana acqua e gas) at Rome which contributes to the scientific and technical progress of the industry, and the Society for the Development of the Gas Industry (Società per lo sviluppo dell' industria del gas) at Milan, with a capital of 100,000 lire, which studies projects and proposed plants for the production of gas.

New plants for gas production or additions to old ones must be approved by the Minister of Corporations.

Any plant producing more than 20 cubic meters of gas per minute must have a license to operate from the Financial Administration. The same categories which are exempted from paying the state tax on electricity are exempted in using gas. The rate is 10 centesimi per cubic meter on gas from oil and on methane gas. The exemptions from the communal taxes are similar to those for electric power. Only about 2% of gas consumed is subject to the communal tax, whose rates vary as follows:

For Communes:	In Lire Per Cubic Meter
Over 30,000 people	0.03 to 0.05
From 10,000 to 30,000 people	0.025 to 0.042
Less than 10,000 people	0.02 to 0.03

Gas rates were blocked during World War I and were fixed every five years thereafter by the Central Commission for Gas Service.

(Commissione Centrale per il servizio del gas), now under the supervision of the Ministry of Corporations. In 1936 gas as well as electricity rates were blocked through December 31,1940. Prices for gas used in dwellings ranged from 0.605 lire per cubic meter at Udine to 1.125 lire at Perugia.

In the early days of the gas industry in Italy the most important gas companies were owned by foreigners — French, Belgian, English, etc. This was true of the plants at Milan, Rome, Naples, Genoa, and Bologna. At first, gas was used only for lighting. There were no municipal plants whatsoever until 1903, when a law (Municipalizzazione dei Pubblici Servizi) was passed, making it possible to convert private companies to municipally owned corporations and to set up new municipal plants.

The gas companies had a hard time in World War I, since they could not get enough coal and lacked sufficient manpower. Similar difficulties have been encountered in World War II. Another difficulty was the growing competition of electric power for lighting, which sent consumption figures down, before the use of gas for heating, cooking and hot water became widespread.

A change in capitalization occurred after World War I. Italian capital began to supplant foreign capital. The foreigners were afraid of possible municipalization of their plants and of possible loss of their franchises. Fascism speeded up the virtual elimination of foreign capital and encouraged the elimination of small companies and merger of smaller firms with the larger companies.

Technical changes accompanied the switch-over from gas for illumination to gas for heating, cooking, etc. Gas for lighting requires 5,000 to 5,500 calories per cubic meter, while cooking gas requires only 4,200 calories per cubic meter. More modern furnaces have been installed and the various by-products are carefully collected and utilized. The plants are of modern construction and adequate repair facilities are available.

Another difficulty is that foreign coal must be used. A mixture can be made of 10% native coal and 90% imported coal. Gas is collected and piped from cokeries, For example, Venice gets gas from the cokeries at Porto Marghera, Trieste from the cokeries at Servola, and Genoa gets part of its gas from the Ansaldo cokeries at Cornigliano.

In 1940 home consumers used 586 million cubic meters of gas, while industrial consumers used 2,453 million cubic meters. The pattern of domestic consumption by years is revealed in Table IV.

Table IV

Domestic Consumption of Gas

Year	Millions of Cubic Meters
1914	289
1923	293
1925	484
1935	533
1936	538
1940	586

Sources: "L'Industria del Gas Illuminante in Italia" by Professor C. Giordani in a special number of Acqua e Gas, June 1938.
"Annuario Statistico Italiano , 1941

One hundred eighty-two companies supply domestic gas; 145 of these are private companies, serving 9,165,000 people with 394 million cubic meters of gas, or 73% of the consumers and 74% of the gas; 37 are municipal companies, which service 3,715,000 people with 143 million cubic meters of gas. Large sections of the country have no domestic gas plants, including the following provincial capitals: Reggio Calabria, Aquila delgi Abruzzi, Grosseto, Aosta, Potenza, and Avellino. Puglie, on the heel of the boot of Italy, includes many cities on the Adriatic Coast without gas plants. The distribution of companies by size is shown in Table V.

Table V

Distribution of Gas Companies by Size, 1938

Size	Private	Municipal
Sales up to 500,000 cubic meters	94	9
" from 500,000 " " to 100,000	19	7
" " 1 to 5 million cubic meters	25	17
" " 5 to 30 " " "	4	4
" " 30 to 50 " " "	-	1
" over 50 " " "	3	-

Source: "L'Industria del Gas Illuminante in Italia" by Professor C. Giordani, in a special number of Acqua & Gas June 1938

Arrangements as to price and quality are made by the company and the commune. Standards are set up as to caloric value, the permissible quantity of impurities, and necessary pressure to be maintained in the pipes. Prices are determined by two devices through commune-company agreements: 1) the first method is based on the cost

of coal, recovery of by-products, and cost of labor and materials; 2) the second method includes the cost of coal, and formula using the cost of gold, the wholesale price index, and the cost of manpower. The second method has been employed in all new agreements in Milan, Rome, and Naples. Prices have ranged from 0.56 lire to 1.125 lire per cubic meter.

Only 7 million cubic meters of gas are now used for illumination. The rest is used for domestic heating, cooking, hot water, and industrial plants (such as F.I.A.T.), and printing shops. The distribution of plants by regions is shown in Table VII. It is easy to spot the regions almost totally lacking in gas service from this table.

The largest municipal gas plants are located in the following cities:

Genoa	producing	45	million	cubic	meters	a year
Bologna	"	27	"	"	"	"
Trieste	"	21	"	"	"	"
Palermo	"	8	"	"	"	"
Padua	"	6	"	"	"	"
Spezia	"	5	"	"	"	"

The largest private companies are listed below in Table VI with their capitalization and production (only for their largest plant, since several are holding companies).

Table VI

Name of Company	Location of Largest Plant	Production (in Mil.Cub. Meters)	Capitalisation (in Mil. Lire)
Toscana Azienda Gas (STAG)	Florence	17	15
Nazionale Gazometri	Milan	132	16
Compagnia Napolitana	Naples	30	30
Romana del Gas	Rome	100	85
Italiana per il Gas (Italgas)	Turin	59	366
Venta Industria Gas	Venice	10	20
Triestina Elettricità e Gas	Trieste	5*	4
Compania Meridionale del Gas	Naples	4*	3.7

*Estimates.

Source: "Notizie Statistiche" of the Associazione fra le Societa Italiane per Azioni, Rome, 1937.
"L'Industria del Gas Illuminante in Italia" by Professor C. Giordani in a special number of Acqua e Gas, June 1938.

Table VII

Distribution of Plants, Consumers, and Volume of Gas, by Regions

	Private			Municipal			Total		
	No. of Plants	Consumers 1,000's	Gas Sold Mil. Cu. Mts.	No. of Plants	Consumers 1,000's	Gas Sold Mil.Cu.Mts	No. of Plants	Consumers 1,000's	Gas Sold Mil.Cu.Mts.
Piedmont	26	217.6	64.5	5	15.4	3.5	31	233.0	67.9
Liguria	14	35.4	10.9	2	108.2	48.0	16	143.6	58.9
Lombardia	35	388.0	143.0	7	37.2	10.1	42	425.2	153.0
Veneto	14	31.0	12.1	5	32.9	14.5	19	63.9	24.5
Venezia Giulia	4	5.5	1.8	3	45.9	23.0	7	51.4	24.9
Venezia Tridentina	3	6.9	1.8	1	2.9	0.6	4	9.8	2.4
Emilia	10	19.4	5.4	7	76.1	29.6	17	95.6	35.1
Tuscany	11	61.5	26.1	1	3.2	1.2	12	64.6	27.3
Marche	2	1.6	0.4	2	10.8	4.0	4	12.4	4.4
Umbria	3	3.0	1.0	-	--	--	3	3.0	1.0
Lazio	3	136.7	88.6	-	--	--	3	136.7	88.6
Abruzzi e Molise	2	2.1	0.6	-	--	--	2	2.1	0.6
Campania	7	60.5	30.9	1	0.9	0.3	8	61.4	31.2
Calabria	1	0.6	0.2	-	--	--	1	0.6	0.2
Puglie	3	7.7	2.9	-	--	--	3	7.7	2.9
Sicilia	2	2.5	0.9	3	22.0	10.4	5	24.5	11.3
Sardinia	2	4.6	2.1	-	--	--	2	4.6	2.1
Totals	142	984.6	393.4	37	355.4	143.0	179	1,340.1	536.4

Source: "L'Industria del Gas Illuminante in Italia" by Professor G. Giordani, in a special number of Acqua e Gas, June 1938.

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Table VII

of Plants, Consumers, and Volume of Gas, by Regions

Sold	Municipal			Total		
Cu. Mts.	No. of Plants	Consumers 1,000's	Gas Sold Mil.Cu.Mts	No.of Plants	Consumers 1,000's	Gas Sold Mil.Cu.Mts.
4.5	5	15.4	3.5	31	233.0	67.9
0.9	2	108.2	48.0	16	143.6	58.9
3.0	7	37.2	10.1	42	425.2	153.0
2.1	5	32.9	14.5	19	63.9	24.5
1.8	3	45.9	23.0	7	51.4	24.9
1.8	1	2.9	0.6	4	9.8	2.4
5.4	7	76.1	29.6	17	95.6	35.1
6.1	1	3.2	1.2	12	64.6	27.3
0.4	2	10.8	4.0	4	12.4	4.4
1.0	-	--	--	3	3.0	1.0
8.6	-	--	--	5	136.7	88.6
0.6	-	--	--	2	2.1	0.6
0.9	1	0.8	0.8	8	61.4	31.2
0.2	-	--	--	1	0.6	0.2
2.9	-	--	--	3	7.7	2.9
0.9	3	22.0	10.4	5	24.5	11.3
2.1	-	--	--	2	4.6	2.1
3.4	37	355.4	143.0	179	1,340.1	536.4

te in Italia" by Professor G. Giordani, in a special number of

Of the 50 companies filing returns for 1937-38, with a capitalization of 585 million lire, 37 companies (with capitalization of 575 million) made a profit of 41 million lire, about 7.13%; while 13 companies (with a capitalization of only 10 million lire) lost money.

The workers in the industry number 8,800; 5,800 are in private companies and 3,000 are in municipal companies. There have been no difficulties in labor relations.

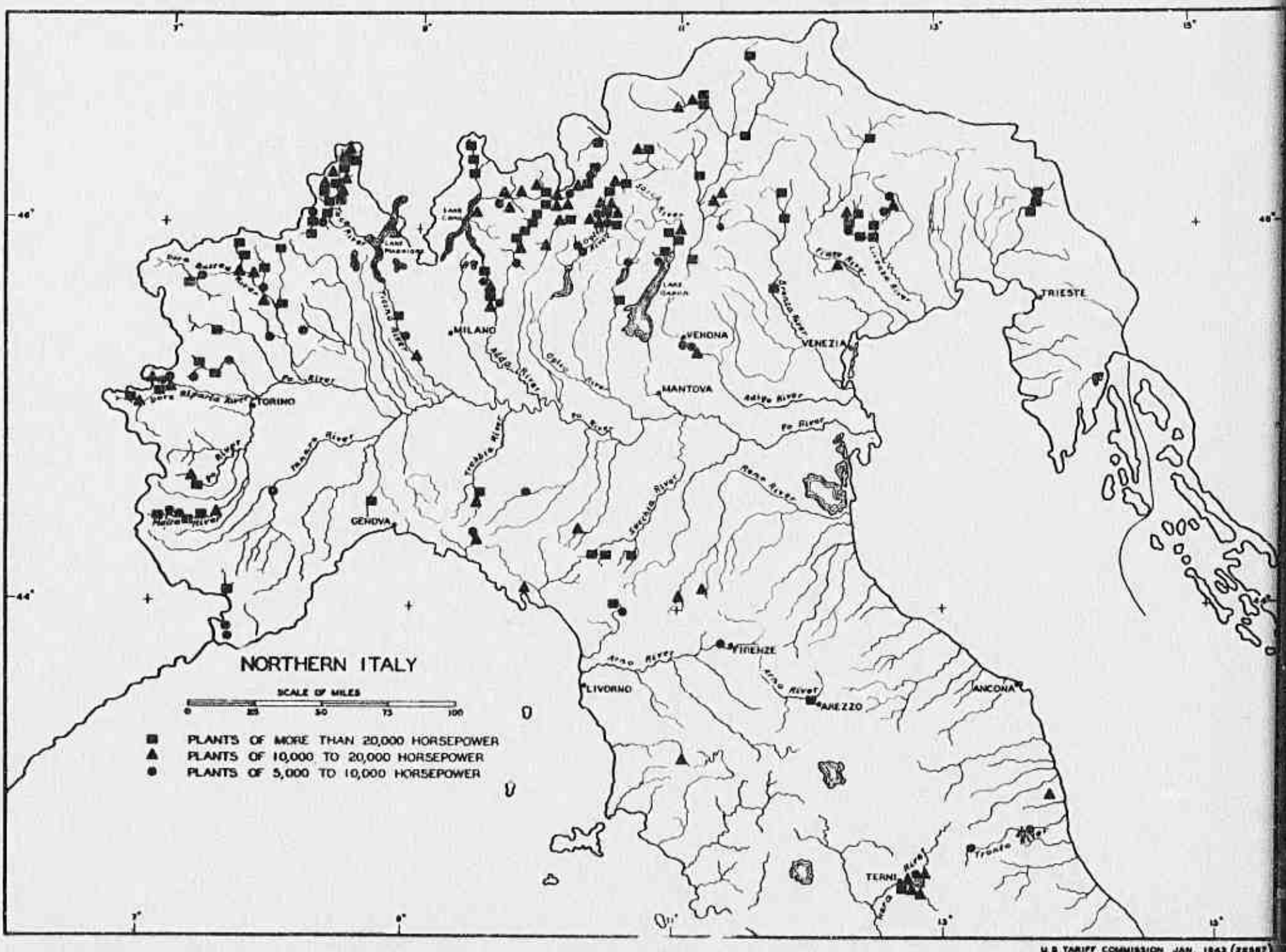
(3) Waterworks and Water Supply.

Information on this topic is available, but has not been organized for the preliminary draft of this handbook. Consult the following: (1) Terrain Intelligence Reports of the Intelligence Branch, Office of the Chief of Engineers, U. S. Army, (2) Aqua e gas magazine.

b. Docks, Harbors, etc.

Information on this topic has not been organized for the preliminary draft of this handbook. Consult Strategic Engineering Studies on Port and Terminal Facilities, of the Intelligence Branch, Office of the Chief of Engineers, U. S. Army.

IMPORTANT HYDROELECTRIC PLANTS



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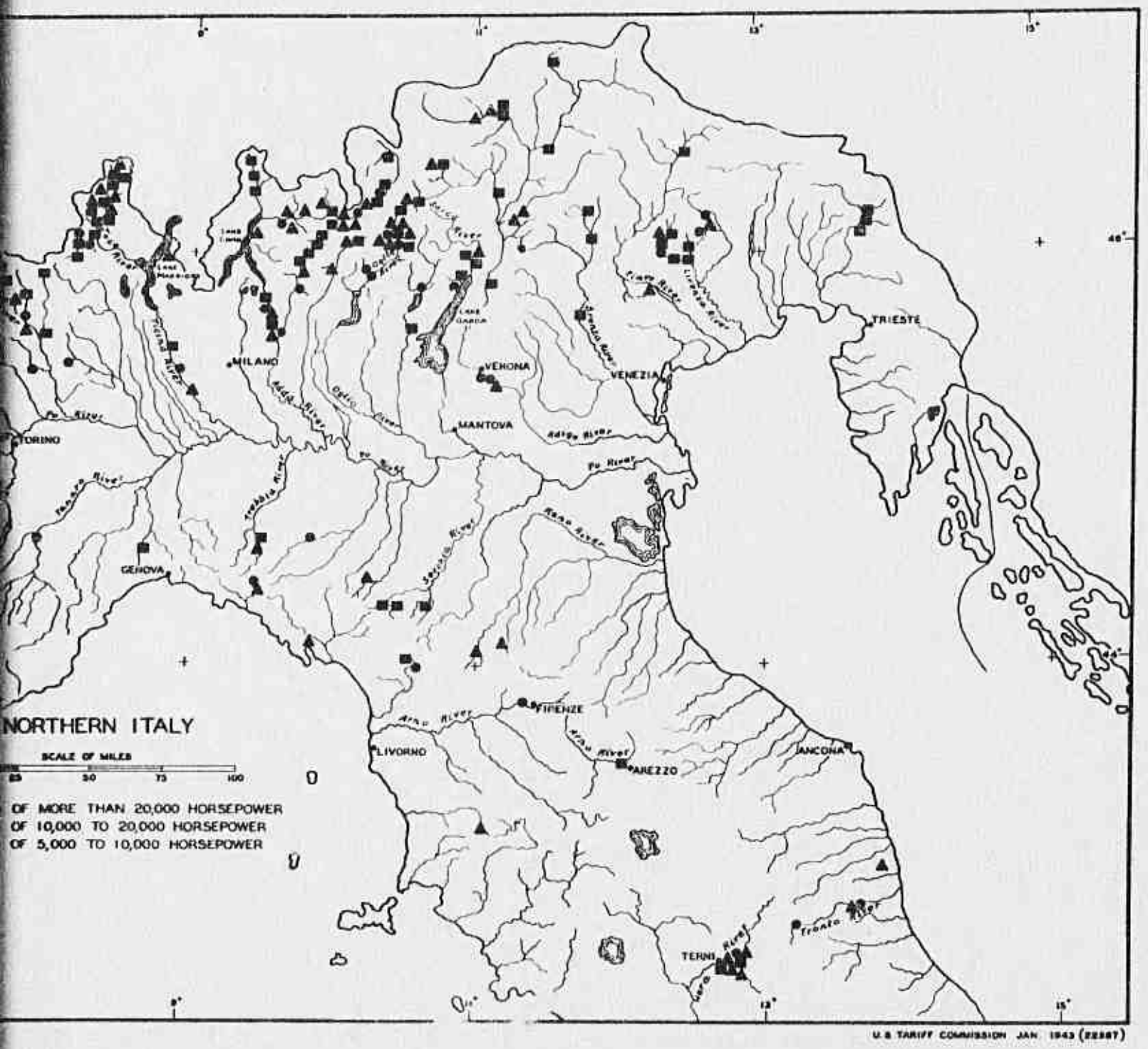

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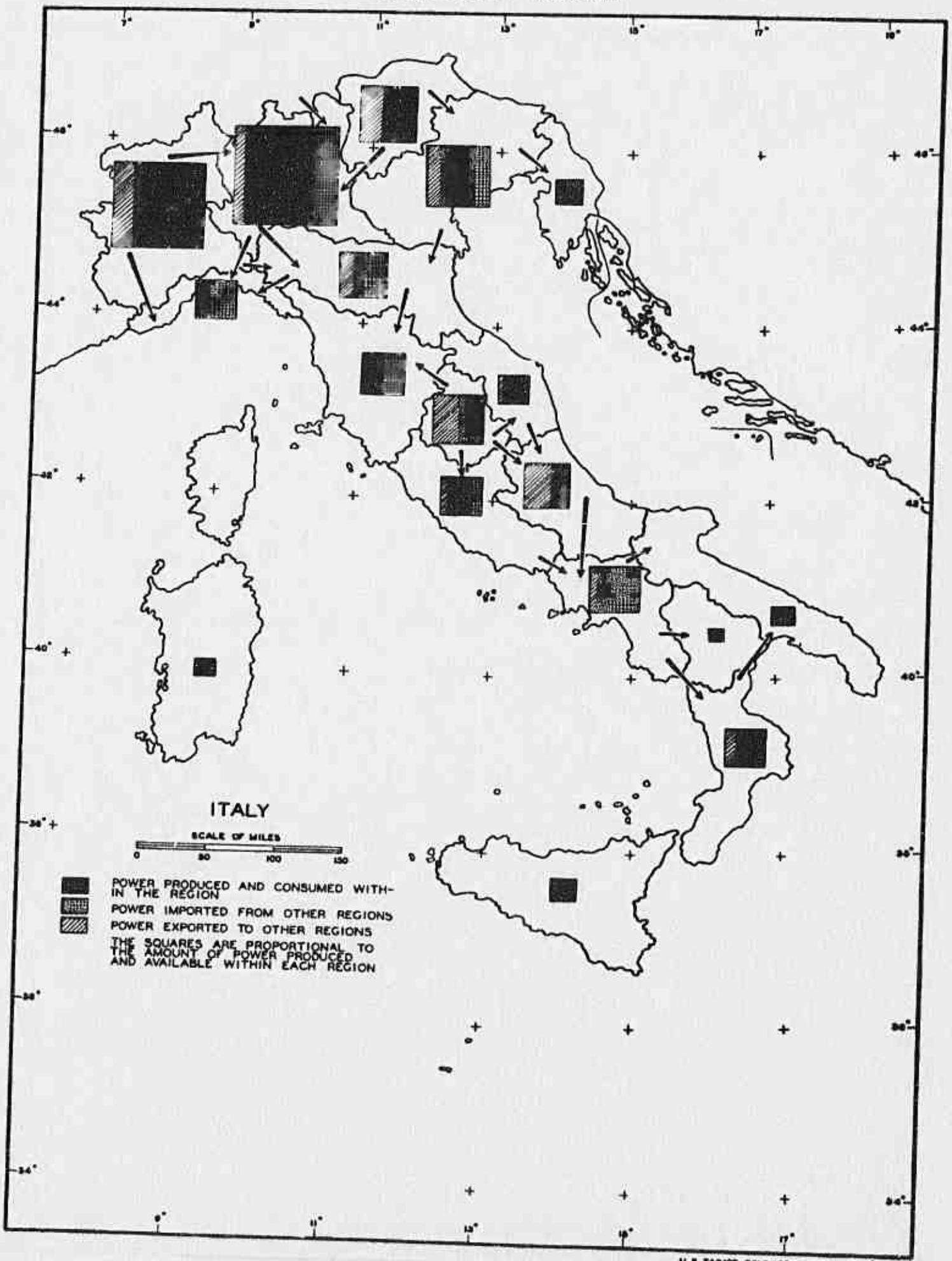
REGIONAL PRODUCTION, AND INTERREGIONAL EXCHANGE OF ELECTRIC POWER



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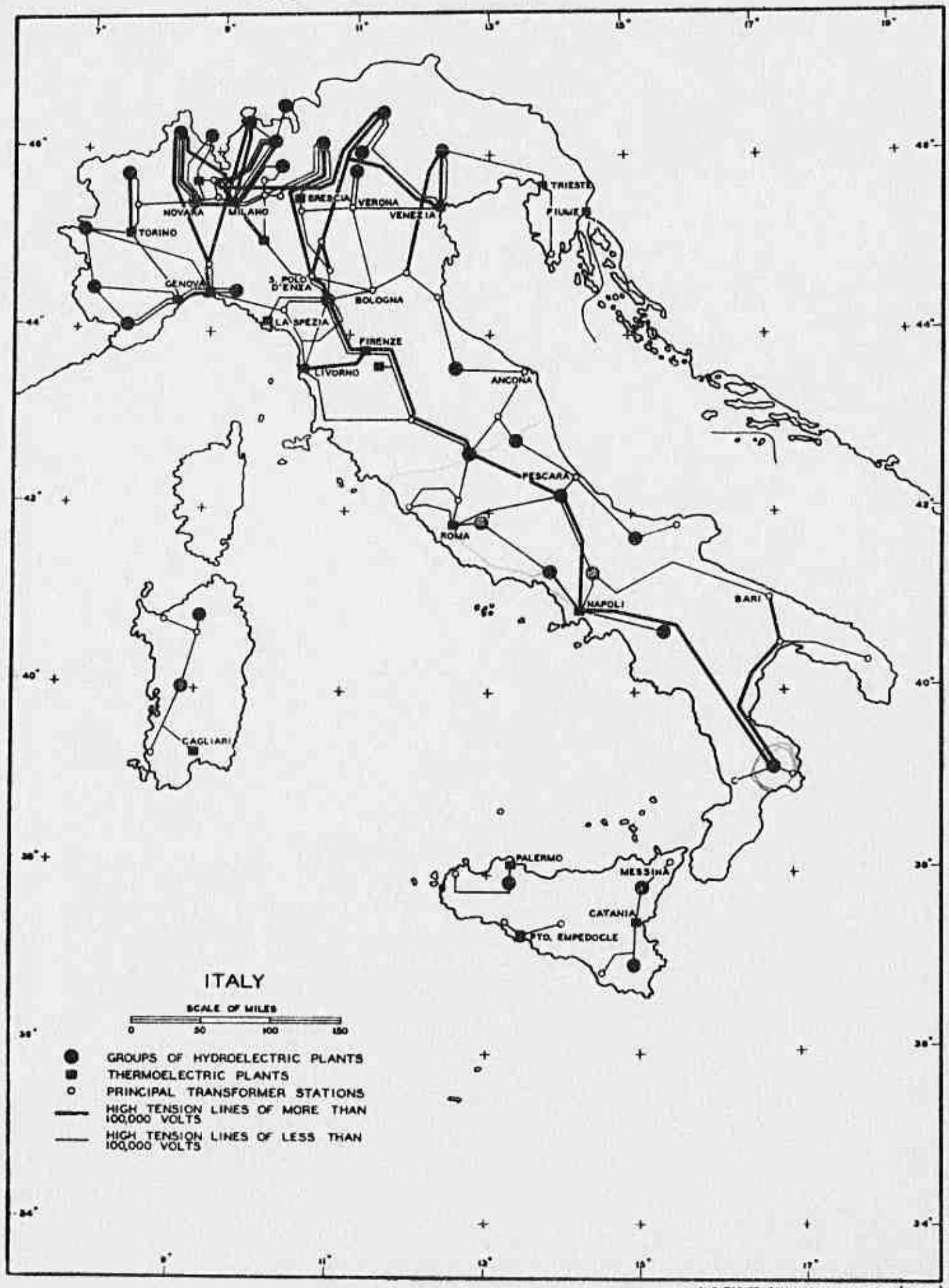
PRINCIPAL CENTERS OF ELECTRIC POWER PRODUCTION AND MAIN TRANSMISSION LINES



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