# Archival sources from the Historical Archive of the National Bank of Greece. The case of the "White Anthrax" archive and the initiatives and studies on the exploitation of hydroelectric power in the first half of the 20th century.

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This presentation will focus on the ways the historical archives of banks and financial institutions can contribute to the research on the history of energy sources exploitation, energy production, the creation and establishment of national distribution networks and energy transitions. By shedding light on a wide range of archival sources found in the Historical Archives of the National Bank of Greece, we will attempt to examine the role that banks have historically played in the process of achieving energy sufficiency and delve into the history of the electrification of Greece from the second half of the 19th century to the period of reconstruction after the second world war.

The impact of the development of electricity production and distribution on almost every aspect of modern social structures can today be easily perceived and analyzed. But how did societies and national economies manage to support and adopt the transformations brought about by the new energy source? What were the steps that led to the new era and what decisions and initiatives had to be taken, at the level of research, funding and organization, in order to support this scientific and technical invention?

Historical archives of banks and financial institutions have traditionally played an important role for the research in a wide range of fields, from economic, financial and monetary history, the study of industrial development, infrastructure and transport, to social and even political history. They collect, arrange and provide access to primary sources that document the role banking institutions have played for national economies, offering valuable insights for understanding and further reflection on different historical periods.

When it comes to the topic of research on the history of the development of energy production, one has to think of the ways banks have been involved in the process of funding the construction and operation of production units, participated in the capital of newly established energy companies, but also acted as critical agents in the negotiations to attract investment funds.

In various archival units found in the Historical Archive of the National Bank of Greece, a wide range of different kinds of documents related to all of the above can be found. Together they form an invaluable set of research resources, covering a time period of over 180 years and following the history of the Modern Greek State and of course the history of the electrification of Greece.

Since the time available for this presentation is limited, my intention today is to indicate categories of archival material relevant to the topic of energy history research and to briefly refer to their contents.

Starting with financing energy production units, within the archival series “Loans” and “Industrial Credit”, folders contain documents on the process of issuing short-term, as well as fixed asset loans. These provide information on the terms of the lending, financial data of the companies and insights on the assessment process. Through their study, however, further knowledge can be gained in matters concerning the means of production, technical equipment, administrative organization and the characteristics of local economies through different time periods.

The documents of these folders contain, among others, legal contracts, correspondence with various divisions of the bank, statutes, legalization and other official documents, financial and other reports.

Useful information on the financial transactions of these companies can also be obtained from the archives of the bank’s local branches and of course the archive of its Central Branch.

By studying these records, the researcher can, for example, observe the transition in the late 19th century, from the use of natural gas to electricity for urban lighting.

Another source of historical resources on the subject, is archival material related to the participation of the National Bank of Greece in the capital of energy companies.

In some cases, Governors and other executives of the bank participated as members of the Boards of these companies. Records such as minutes of the companies’ board meetings but also the bank’s board meetings, related correspondence and bank reports on the financial prospects of these companies are of great informative value for historical research.

In addition, the involvement and participation of the National Bank of Greece in negotiations with foreign investors in the effort to attract investment capital to support the development of local production units, as well as the national electricity distribution network, is also documented through the archive.

Archival series such as “Companies”, “Public Works”, “Archives of Governors, Directors and Executives of NBG” and “Annual Board of Management Reports and Balance Sheets” contain a wide range of relevant resources and contribute to the creation of a more comprehensive perception of the economic and historical conditions within which the developments of the Greek energy economy and energy market occurred.

There is, also, a third aspect of the involvement of NBG in the development of energy production in Greece, that I have chosen to focus on today, because it serves as a perfect example of an archival resource of great informative value on the subject of the history of energy transitions. And that is the “White Anthrax” archive.

“White Anthrax” (or” White Coal”) is a term used during the 20th century to refer to the use of water and waterfalls as a source for the production of electric power.

Through the story told by the records that belong to this archive, the prominent role played by financial institutions and especially the National Bank of Greece, the country's largest financial institution of the time, to promote, organize, and support the conduct of research on an issue of great significance for the development of the national economy, which is the exploitation of domestic energy sources, will be revealed.

The first power plant in Greece was established in 1889, in Athens, by the General Contracting Company. The Greek economy was then largely based on the agricultural sector, transports and trade.

The involvement of Thomson-Houston Electric Company of the Mediterranean in the Greek electricity market and the establishment of the Hellenic Electric Company in 1899 would mark the period of the next two decades when most of the important urban, production and commerce centers of the country were provided with electric power.

Until then, all new local power plants were based on thermal energy, as waterfalls were located in large distances from the urban and industrial centers and the cost of the construction of hydroelectric plants, as well as, transporting the energy to consumption centers held back investments.

During the Balkan Wars and even more so during World War I, the consequences of the exclusive usage of thermal energy were realized. The lack of imported raw fuel and the sharp rise in the price of coal created the need for state restrictions and interventions in the electricity market and the production units faced significant difficulties. It was then that attention began to focus on the national power generation capacity and sources such as waterfalls and lignite.

The National Bank of Greece, already actively involved in the electricity market with its participation in the capital of H.E.C., begun to show increased interest in the possibility of exploiting the waterfalls. In 1918, the first national law on the harnessing of hydropower was enacted.

Two years later, in May 1920, on initiative of the NBG and encouraged by its co-governor, Alexandros Diomides, the Hellenic Syndicate of Hydroelectric Studies and Facilities of Western Macedonia and Central Greece was founded with the participation of the country's major banks.

The aim of the syndicate was to support the conduct of all necessary scientific, technical and economic studies on the usage of hydropower in the region of Western Macedonia and Central Greece, the creation of power transmission and distribution channels throughout the country, the attraction of investment capital and the potential undertaking of the construction of hydroelectric powerplants.

The National Bank of Greece took over the negotiations with the Greek State and in January 1921 the Board commissioned the Swiss engineer, Boucher, to study the hydropower capacity of Acheloos River.

In the following years, the studies focused on more rivers, lakes and waterfalls in the area and statistical and techno-economic analyzes were made on the outlook of the

Greek industry sector, consumption and distribution, but also on the legal framework of hydroelectricity internationally.

In 1922, the Municipality of Patras together with the National Bank of Greece founded "Glafkos", a hydroelectric company for the exploitation of River Glafkos in the Peloponnese.

However, historical and political events and the consequences of the Asia Minor Catastrophe, which occurred in 1922, played an inhibiting role regarding the development of the hydroelectricity network.

The Hellenic Syndicate of Hydroelectric Studies and Facilities ceased its operation in 1930 and NBG received permission by the Board to retain the right to use the studies for the purposes of the negotiation with the British "Power and Traction Finance Company", on the exploitation of the waterfalls of Rivers Krathis, Vouraikos and Selinountas.

During the turbulent years between the two World Wars and due to the severe impact of the Asia Minor Catastrophe on the Greek economy the development of the electricity production network could not be materialized without foreign investment funds.

In this period, a rapid growth in small-scale, local power plants across the country was observed and even though the importance and the benefits of the usage of domestic power generating resources had been recognized, by 1932, only 4% of the consumed electric power in Greece was generated by hydroelectric plants.

The significant upfront costs required for the construction of such units, along with the infrastructure needed to transport the power to the consumption centers, involved long-term commitment of capitals and returns. Foreign investors appeared to be more interested in thermal energy plants located near major urban centers and the economy remained heavily dependent on imported raw fuel materials.

With the outbreak of the second World War, all the difficulties related to energy production were significantly aggravated. The Greek economy was faced with energy shortage, the import of crude fuel for the operation of the industrial units caused a loss of foreign exchange and the problem of the unexploited hydropower capacity remained.

During the war, in 1942, the National Bank of Greece set up the Committee for the Study of the Energy Sources of Greece and assigned its engineer Theodoros Raftopoulos to lead the research on the issue of the utilization of the domestic energy sources. The initiative was part of the preparation by the NBG of a general plan for the reconstruction of the national economy after the end of the war.

In the same period and in parallel with the work of the committee headed by Raftopoulos, similar studies were carried out by other scientists too. They proposed different strategies for the planning of a mid-term development of electricity production in Greece and they all agreed on the need for further exploitation of hydropower.

When the war ended and in May 1947, the United Nations Relief and Rehabilitation Administration (U.N.R.R.A.) prepared a specific analysis on the matter of power production in Greece, and a year later, based on the results of the U.N.R.R.A. report, the Greek Committee for European Cooperation, within the framework of the Marshall Plan, proposed a four-year reconstruction plan for Greece. According to the recommendations of the report, the exploitation of hydropower and lignite would offer low-cost energy to the production units, a condition recognized as fundamental for the future industrialization of the country.

In 1948, the Greek Supreme Council for Reconstruction and the Greek Government assigned the American company EBASCO Services, with the study and report on the optimal strategy and plan for energy production, transmission and distribution for the country.

The White Anthrax Archive.

In the historical archives of the National Bank of Greece and as part of the archive related to the operation of the bank's Technical Services Department, the subseries titled "White Anthrax" can be found. Under this general, almost poetic title lies a set of various kinds of documents related to all stages of the bank's participation in the initiatives and research on the issue of hydroelectricity exploitation in Greece. The archive consists of 172 document files and twenty-two books and covers the period from 1906 to 1947.

Going through the subseries' descriptive entry in the electronic catalog, we are informed that: "*The subseries was originally created by the Committee for the Study of Energy Sources of Greece established in 1942"* and also, that *"the Committee received the files, books and plans of the Hellenic Syndicate of Hydroelectric Studies and Facilities of Western Macedonia and Central Greece, which had been established in 1920 by a group of Greek banks. After the abolition of the Committee, the study and gathering of data for the major reconstruction projects of the country was assigned to the Engineering Service of the Technical Services."*

In the same entry the content of the archival unit is described as: *"Studies for the construction of hydroelectric facilities, electrification of transport, drainage works and construction projects."*

Examining the inventory, three distinct thematic sections can be identified. They represent three different major chapters in the history of the NBG's involvement in the efforts to study and promote the use of hydropower.

The first unit is related to the establishment and operation of the Hellenic Syndicate of Hydroelectric Studies and Facilities of Western Macedonia and Central Greece, and it consists of records from the first quarter of the 20th century.

It includes the studies conducted by Boucher, and other studies on the hydroelectric capacity of rivers in the central and northern parts of Greece, as well as documents related to the general research on the issue of hydroelectricity, such as reports on the Italian legislative framework of the time.

The second unit relates to the participation of the National Bank of Greece in the establishment of the "Hellenic Anonyme Hydroelectric Company Glafkos" and the studies for the construction of the hydroelectric facility.

The records of these files, which date from 1926 to 1948, include a copy of the contract with the Municipality of Patras for the project on Glafkos, technical, geological and economic studies, correspondence and administrative documents on the supply of mechanical and other equipment, the operation of the plant, the targeted market, the company's cooperation with government services etc.

The last section of this archive, results from the work of the Committee for the Study of the Energy Sources of Greece that the National Bank of Greece founded in 1942. The content of these files offers a detailed record of the committee's study and research on the exploitation of the domestic energy sources. They include manuscripts (like this one from Theodoros Raftopoulos) and official reports covering a wide range of topics related to energy sources, power production, transmission, distribution, and consumption, articles written by scientists and experts working for the committee, publications in the national press, reports on the development of hydropower generation internationally, records and data on the industrialization of Greece, studies on the potential uses of electric power for urban infrastructure, transport and more.

Most of these documents were produced during the war, while others are related to the period of Reconstruction. Among the latter we find the minutes of the meeting held at the offices of the NBG, between representatives of the bank and the U.N.R.R.A., on May 18, 1946, as well as a copy of the final report of 1947 and a copy of the EBASCO report of 1949.

The creation of the "White Anthrax" archival unit reflects the leading role the National Bank of Greece played over a period of almost thirty years in the process of organizational and research initiatives undertaken at national level.

It is as a result of the Bank's active involvement in the effort to explore and support the development of Greece's electricity generation potential that this wide set of specialized records were initially created and eventually brought together as an archive. They offer a rich and rare source of historical information that includes all kinds of technical reports on hydropower but also issues relevant to the distribution and use of electricity in industry and urban centers, hydraulic studies on irrigation and drainage works for agricultural purposes and of course economic and financial studies for the funding of the construction and operation of hydroelectric plants, transmission and distribution networks. The archive documents many different stages of the committees' work process and contains research material, collected for their various purposes, offering an even more comprehensive overview of the subject and the technological and research progress of the time.

And then we also have the White Anthrax collection of plans, maps and technical drawings. Arranged as part of the archival collection of architectural plans the collection forms a set of 586 items, arranged in forty-eight archival files. Similar to the observations made about the documents in the archive, here too, we find records that were either collected by the various working groups or created by them for the purposes of their studies.

To categorize the items in this archival collection, we would have to use two criteria: the specific study, or phase of the process to which they refer or belong, and secondly their type.

Regarding the first criterion, and following the analysis on the archive, we can identify within the collection, records from the period of the operation of the Hellenic Syndicate of Hydroelectric Studies and Facilities, records created by the Hydroelectric Company "Glafkos" and others that belong to the period and work of the Committee for the Study of the Energy Sources of Greece.

Even though chronological indications are not available for every record under study, it is possible to identify the stage of the process they refer to, by examining them in contrast to the archival documents and the contents of the various studies, as different regions, waterfalls, constructions and proposals were examined at each case.

When it comes to the type of records, a wide range of technical drawings and plans can be identified among the almost six hundred items. As already mentioned, some of these records were collected for the purposes of the studies and were created by others, in some cases, government services like the Ministry of Transport. For example, maps and cartographic resources of Greece and regions of the country, like geological, topographic, forest and other thematic maps.

Topographic maps and plans are a quite common type of records in the collection. Sometimes they depict whole areas of the national territory, but also lakes, rivers, streams and riverbeds and smaller areas of specific interest.

Bathymetric maps, which include indications and data about the shape, elevation and depth of lakes and rivers can also be found within the collection.

Other kinds of maps and plans show transportation, rail and road, networks, as well as the existing electricity transmission and distribution network at each time period.

Another type of records are the technical and engineering designs and blueprints of dams, retaining and other structures related to the construction of hydroelectric units.

The last major category of documents in the collection consists of data tables, diagrams and charts. They include measurements and data from hydrological and other studies, but also tables with data on the consumption of electricity in urban centers, the amount of power produced by power plants throughout the country, and comparative tables of energy consumption in different regions.

Of notable interest is a series of charts and tables with data predicting electricity demand up to the year 1965.

Apart from their type, the records of the collection vary also in terms of their medium, shape and size.

The numerous studies carried out during the war period and up to 1948 and the solutions these studies proposed presented alternatives regarding the optimal strategies to follow. Their differences were mainly focused on the issue of the interconnection of the consumption centers to the power production plants and the transmission of power from large production units over long distances versus the

choice of smaller-scale units that would meet consumer demand (industrial and urban) locally. Each study proposed a development plan with different stages of implementation, focusing on the various rivers and waterfalls and an optimal combination of hydrothermal power generation to achieve the necessary levels of energy production. However, and as the demand for electric power increased significantly after the war, they all agreed on the importance of further exploitation of national resources for the development of the national economy, it's industrial sector but also transport, trade and urban development. The final solution was based on the recommendations of the report presented by EBASCO, according to which electric power production should be achieved through an integrated generation system that would be based on domestic and supported by a nationwide transmission and distribution network.

The program suggested the establishment of hydroelectric power plants on the rivers Vodas, Ladonas, Acheloos and Louros and two thermal plants and its realization relied on funding from the Marshal Plan Fund for Greece. Even though the implementation presented differences from the initially proposed strategy, as the plant on river Acheloos was eventually not included in the program, the fact was that the results of a long period of technical and scientific research begun at that point to drive progress towards reducing national dependence on crude fuel imports.

The scale, requirements and characteristics of the program complied by the Supreme Council for Reconstruction necessitated a single administrative organization and therefore in August 1950 the Public Power Corporation (PPC) was founded "with the aim to bring electricity to the farthermost reaches of the country". During the next five years the Hydroelectric Power Plant at river Louros was completed and the Agra and Ladonas Hydroelectric Plants were put into operation. In 1956, PPC is granted an exclusive privilege for the generation, transmission and distribution of electricity throughout the country. In 1966 Kremasta Hydroelectric Plant at river Acheloos, one of Europe's biggest projects became operational too.

Until 1975, seven large and a small hydroelectric production plant, with total installed capacity of 1411,4 MW, were completed. Today, sixteen large and nineteen small HPPs are in operation, many of them being part of the four complexes of rivers Acheloos, Aliakmonas, Arachthos and Nestos. The average annual hydroelectric generation from HPPs, depending on the hydraulicity of the year, covers 8 -10% of the total energy generation of PPC.

The "White Anthrax" archive cannot be considered a typical type of archival unit found in the historical archive of a bank. It mainly consists of scientific and technical studies. Its documents cover a period of about thirty years and through their study an important part of the history of the electrification of Greece is revealed. But that is not the only reason which makes this archive stand out.

An aspect of the role of financial institutions that can be regarded as non-traditional is highlighted here. Through the story told from the archive, the commitment of the

National Bank of Greece, the country's largest financial institution of the time, to promote, organize and support the conduct of research on an issue of great significance for the development of the national economy is unveiled. Its constant efforts to bring together all necessary counterparts from the private, as well as the public sector in order to facilitate the implementation of a series of large-scale works of great importance for the public benefit took place in a period of historically and politically turbulent years. The results of these efforts formed the basis upon which the reconstruction program for Greece's power production was built.

Of course, the Bank's involvement in the process of the exploitation of hydroelectric power was not limited to the founding of the Syndicate and Committees. Its governors and executives were strongly engaged in efforts to negotiate with foreign investors and attract capital for the implementation of a nationwide electricity network, it contributed with capital in the establishment of electric companies and issued loans for the construction of hydroelectric, as well as thermal plants across the country.

Within the historical archives of NBG, a broad set of archival units and records document the bank's operations related to the funding of the works. These archival units could not be presented here in detail, but the intention was to focus attention on the significance of the leading role played by the bank on the level of initial visioning, planning and research around infrastructure projects.

Probably the most commonly used form of renewable source of energy at the moment, hydroelectric energy is a clean, flexible, reliable and cost-effective form of power. While the global discussion on energy production and sufficiency remains highly relevant today, the example of the history of the exploitation of hydropower in Greece and NBG's engagement in the process, as documented through the archive presented here today, calls for further reflection on the historic, but also future role of banking and financial institutions for the national, as well as global economy, and (environmental) sustainability.