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**STATEMENT BY OSAGYEFO THE PRESIDENT  
DELIVERED TO THE NATIONAL ASSEMBLY ON  
TUESDAY, 21<sup>ST</sup> FEBRUARY, 1961**

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Mr. Speaker, Members of the National Assembly, I have stated on a number of occasions in the past that Parliament would, at the appropriate time, be given an opportunity to discuss the Volta River Project. That appropriate time is to-day, when I wish to inform Members of the National Assembly of the position now reached in regard to the Volta River Project, and to give them the long-promised opportunity to hear of the various actions taken by the Government on this all-important project. A debate will be taken on a substantive motion after my statement, and I hope the House will at the conclusion of that debate, endorse action so far taken by the Government, and authorize the final negotiations to proceed in order that the project may start this year.

I have made no secret of the fact, and I remain firmly convinced that Ghana must progress towards a balanced economy, and this means the creation, where nothing existed before, of an industrial sector of our economy which can balance the agricultural potentialities which we are already developing. Members are aware that a number of steps in this direction have already been taken with the creation, either by the Government or, with the encouragement of the Government, by private enterprise, of a number of industries of varying size and importance.

Recently the Government has made an offer to the shareholders of five gold mines. This offer, if accepted, will mean that the State will own mines which last year produced 58 per cent of Ghana's total output of gold. If, therefore, the offer is accepted, the State will own an important share in one of the leading heavy industries of the country.

But I have always felt that it is necessary to provide, in a far more effective manner than hitherto, the means whereby industrialization can be accelerated. All industries of any major economic significance require, as a basic facility, a large and reliable source of power. In fact, the industrialization of Europe, of America, of Canada, of Russia and of other countries, emerged as a result of the invention of sources of power of hitherto undreamt of size. Newer nations, such as ours, which are determined by every possible means to catch up in industrial strength, must have electricity in abundance before they can expect any large-scale industrial advance. Electricity is the basis for industrialization.

That, basically, is the justification for the Volta River Project. There are other very sound reasons which I will mention in a moment but, first, I would like to sketch in brief the events which have made it possible, for the first time, for a definite proposal to be placed before this House.

As is stated in the White Paper now on the Table of the House, my Party was first to promise in an election manifesto in 1951, that when voted to power, it would do everything possible to harness power from the Volta. As a result of this determination,

My Government pursued the project through various stages, culminating in the Preparatory Commission whose report was published in 1956. We had all hoped at that time that we would be able to proceed with the scheme as it was then planned, and much work and considerable sums of money were spent in arranging for exhibitions and descriptions of the scheme to be sent to all parts of the country so that the people would know what was proposed and why.

Unfortunately, the timing, in terms of international financing, coincided with financial stringency when interest rates on loans and the lengths of loan repayments became less favorable and world demand for aluminium was temporarily outstripped by production capacity. We therefore found it was not at that time advisable to go ahead with a scheme which might have cost, in total, as much as three hundred million pounds. This original scheme was extremely comprehensive and covered the complete operation of producing aluminium metal from raw bauxite, including the building of the towns, the railways, the roads and a special harbour, by the Government, and a mine, alumina plant, and smelter by the aluminium companies. Since then protracted discussions and negotiations have been continuing with a view to improving the scheme to make it more attractive financially. The Government had already in 1953 decided that a new harbour at Tema and new township there would be necessary in any case, regardless of whether the Volta scheme went ahead or not, and this has much reduced the costs attributable to the project. The world financing position has tended recently to be more stable so that it is possible to plan with rather more assurance that situations will not alter so rapidly as to render a scheme, which is possible this year, hopelessly uneconomic next year.

During the period since 1956, I have been at pains to explore every possible way of bringing this scheme to life. I have sought the assistance of friendly Governments and, in particular, the Government of the United States of America, with whose President I raised in October 1957 the desirability of pressing forward the scheme. President Eisenhower was sympathetic to my aspirations, and arranged for the International Co-operation Administration to assist in finding ways and means of making the project attractive. Arising out of the advice of this body, it was decided that the project should be re-appraised to examine the engineering aspects of developing the power of the Volta waters and to make an appreciation of the economics of the project. The Henry J. Kaiser Company, a leading American firm of engineers, was selected to undertake this re-appraisal and, in February, 1959, submitted to the Government "The Reassessment Report on the Volta River Project".

By now it had become clear that the original basis of a type of financial partnership between the Government and aluminum producers would not be the best way to tackle the problem, and our Government decided that the power development should be undertaken from public resources, while the development of a smelter should be a matter for private enterprise purchasing power on a purely commercial basis; it was also considered that it would be better to defer the production of alumina from Ghana bauxite, so that the smelter can use imported alumina, in order to reduce the heavy initial capital cost of the project.

It is desirable to mention briefly why it is necessary for an aluminum smelter to be encouraged to establish itself and to purchase power from the Volta project. The project involves damming a very large river; the flow of the Volta River varies in the ratio of as much as 300 to 1 between flood and low water, and, therefore, to obtain the maximum power from the Volta means creating a large lake which will provide a reserve of water for the low water season and will without danger absorb the large quantities of water which flow during the floods. To build a small dam and power house would be very uneconomic and would lead to considerable waste of water, because the lake area would be too small to absorb all the flood.

The proposed dam will provide a steady flow of water sufficient to generate from Akosombo alone electricity more than twenty times greater than the total installed capacity of the Electricity Department in 1960. If electricity is to be sold economically, the price will have to be calculated by dividing the annual outgoings of the project, which include loan servicing, by the number of units of electricity actually sold. Therefore, the Volta project would be uneconomic if sold electricity only to the Electricity Department and did not have another major customer to reduce the initial cost of the power by sharing the bill. A smelter, which produces metal by passing a very heavy current of

electricity through alumina power, is the only major industry which consumes a very large and steady current of electricity. By encouraging a smelter to establish itself in Ghana, the Government becomes assured of a steady sale of electricity, in our case approximately 300,000 kilowatts. This immediately reduces the overall cost of generating electricity so that the balance can be sold to the Electricity Department at a reasonable and economic figure.

The Reassessment Report recommended the construction of the dam at Akosombo rather than Ajena and, when all the power produced from this development was committed, the extension of the scheme by the provision of a smaller power station at Kpong would provide an additional 86,000 kilowatts of power. The Report also recommended, as a further development, if necessary, the establishment of a hydro-electric station at Bui, and Members will recollect that the Government has recently reached agreement with the Soviet Union for the design and construction of this station.

The original Volta River Project was designed to provide the bulk of the electricity produced by the dam to an aluminum smelter, and a comparatively small proportion only would have been made available for domestic consumption in Ghana. The Kaiser Reassessment Report, on the other hand, recommended the installation of a national electricity grid system covering the major part of southern Ghana from Tema through Accra, Cape Coast, Takoradi, Tarkwa, Dunkwa, Kumasi, Koforidua and back to Akosombo. At selected points on the national grid would be provided outlets from which the Electricity Department would distribute electricity for domestic and industrial users in a wide area, and the routing of the grid would also provide outlets for power supplies to many of the larger mines.

In fact, the amount of electricity would be sufficient, if transmission lines could be installed economically, to provide power for the whole country, and even to sell some power to our sister neighbouring countries. This scheme was accepted in principle by the Government, not only because it provided for reasonable economic operation of the scheme in the early years by selling power to a smelter but also because it would provide a large and reliable source of electric power for many years to come for Ghana's development.

As I already mentioned, I have arranged for the details of the project to be set out in a White Paper which has been placed on the Table of the House this morning. This Paper contains the details of the scheme, and I commend it to Members for their study and approval. It will be seen from this Paper that the project provides for a return on the money invested in such a way that, in addition to the scheme being fully self-liquidating over the period of its estimated life of fifty years, the financial returns should suffice to cover from its own earnings any future power development which may be required by Ghana. The cost of the scheme is estimated to be just over £G70 ½ million for the public utility sector consisting of the dam, power house, transmission lines and sub-stations, including provision for the resettlement of the people whose area will be flooded by the lake which the dam will create. This will cover 3,275 square miles and will be the largest man-made lake in the world. Also included is the cost of establishing a Volta River Authority which will be charged with the task of constructing and operating the project, and the cost of health measures to ensure the prevention of epidemics which might arise as a result of the creation of the lake.

£G70 ½ million is a lot of money. To implement the project will mean a real sacrifice for the people of Ghana, and in order that everyone may be fully aware of the reasons why I consider this scheme to be worth while, I wish to mention briefly some of the advantages which will accrue from it.

In the first place, the provision of the power and transmission system will remove one of the obstacles in the way of our rapid industrialisation, because, once the scheme is built, power will be

available for sale to any industry; moreover, it is well known that industrial development follows the provision of adequate and reliable supplies of power-power to drive machinery, power to process materials, power to provide refrigeration, power to operate chemical processes and, of course, power to smelt aluminium and other materials.

Secondly, the smelter itself will at one stroke provide a new major industry for Ghana. I am aware that in certain quarters there is doubt regarding the sincerity of the Government's wish to encourage, as part of the overall development of Ghana, the private sector of the economy. The establishment of a smelter will cost its owners in the region of £100 million. For so large an investment special arrangements are necessary and this House will be asked specifically to approve the terms of the agreement which is to be entered into between the Government and the Volta Aluminum Company Limited to be commonly known as VALCO. It will, however, be noted that the Government's agreement with Valco provides for certain simple changes in our legislation, which have already been approved by this House, and that the general provisions of our law are such that a private company is sufficiently encouraged to undertake so very great an investment. When it is remembered that this private company has been formed by some of the world's greatest producers of aluminum, this willingness to invest in Ghana's future at once gives the lie to those who would wish to cast doubts on our intentions.

The smelter will employ about 1,500 persons when in operation; once its pioneer company relief period is over, it will be paying company taxes to the Ghana Government; and the company will be paying to the Volta River Authority nearly £2 ½ million per year for electricity.

The third advantage to be derived from the project will be the increase in Ghana's foreign exchange which will accrue from the operations of the smelter. We will, in effect, be exporting electricity and we will be exporting the work of the smelter's employees. Let me explain how this comes about. The smelter will be bringing to Ghana, in the early stages, the alumina powder for conversion into aluminium metal. This process, as I have already mentioned, involves passing large quantities of electricity through the powder, thereby melting out the metal. When the aluminium ingot emerges at the end of the process, electricity has, in effect, been incorporated in it and the cost of the electricity will have been paid for, in the processing charge, by Valco's foreign purchasers of the metal. Into the production of the aluminium will also have gone the work of the smelter's employees, and this also will have been paid for, in the processing charge, by Valco's foreign customers. And so Ghana's work and Ghana's electricity will have gone abroad to earn foreign exchange for our country.

Fourthly, the creation of a lake such as that which the scheme envisages will provide a new highway from the dam up to the Northern Region. The Government has arranged for a survey to be conducted by Kaiser Engineers to report to me on the prospects of continuing that water highway to the sea, so that ships may transport bulk materials to the Northern Region, and may bring back the cattle and produce of the north to southern Ghana, thereby developing inland trade by providing cheap transportation. Moreover, in north-east Ghana near the head of that branch of the lake which will cover what is now the Oti River, there are deposits of iron ore which will, we hope, be exploited to provide the raw material for a ferro-manganese plant and iron smelter. Plans for this are also being worked out, as part of our industrialization programme.

A fifth advantage which will accrue to Ghana from this project is the creation of a very large source of fish. The lake will, it is estimated, eventually produce up to 10,000 tons of fresh fish a year, much of it readily accessible to areas of Ghana too far from the sea for our sea-water catches to be readily transported there. The lake fishing industry can become important, and it is proposed to develop this as soon as the lake has filled and the fish have had time to multiply.

A further advantage is that about six hundred square miles of land around the shores of the new lake will be flooded each season at high water, and should prove amenable to intensive cultivation of crops such as rice, and it is the intention of the Government to increase Ghana's food production by making the best possible use of this land.

Although, therefore, this scheme is costly, it is my view, and the view of the Government, that the advantages which will accrue from it very fully justify us in taking every possible step to bring it to fruition.

I wish to discuss briefly the method by which the money which we need for the scheme is to be found. The Government has completed preliminary discussions with the International Bank for Reconstruction and Development, the Development Loan Fund of the United States, the United Kingdom Government and the Export-Import Bank of Washington, for loans amounting to a total of thirty million pounds. I approached the previous President of the United States of America with regard to the provision of an additional loan of approximately ten million pounds to provide for the national transmission system, and it is hoped to make arrangements for this money also. Finally, it is proposed to provide up to a maximum of thirty-five million pounds from our own development fund as an equity investment in the scheme. While the details of the loan agreements between the Government and the organizations I have mentioned are not yet final, it is expected that these will be finalized in the course of the next two or three months, thus ensuring that when the tender is awarded, the financial arrangements will all have been completed.

The Reassessment Report on the Volta River Project was received in February, 1959. Whenever any large project of this nature is undertaken, a great deal of time can be wasted in initial preparatory work on the site, including such matters as the provision of access roads, housing for the construction staff, and water and power facilities during the construction phase. I have been confident throughout that we would succeed in bringing the Volta scheme to life and the Government has accordingly undertaken, by arrangement with the Kaiser group, for the bulk of this preparatory work to be completed in advance of the letting of the contract for the dam and power house, so that, when the contractor arrives to start work, he will find a site ready for his occupation. Our faith in this scheme is now visible at Akosombo in the shape of houses, a power station, water supplies and a first-class access road. We have, in fact, already created the nucleus of a modern township and are continuing the preliminary works, which can be used by the contractor during the construction of the project and which can afterwards develop into the township serving a lake port at Akosombo and accommodating the staff operating the project itself. Arrangements have been made for these preliminary works to be integrated into an overall town plan which will cover Akosombo's future growth and development, and Doxiades Associates have been engaged to undertake this work. One of the criteria which has been adopted is that of keeping the site of the dam and power station free from ugly and depressing buildings, so that the area can be made into a true attraction for tourists, not only because of the world-wide interest which so great a project will arouse, but also because the area will be made into a delight to the eye.

I have in mind a plan whereby, without any loss of power, water can be diverted from the dam so as to provide a series of fountains and pools set in terraced gardens which climb up to a first-class hotel. At night the fountains can be lit by thousands of multi-coloured lights.

I have already mentioned the amount of power which the Volta River Project is designed to produce and wish now to give a few details of the project itself to give Members an idea of the vast size of this work. The main dam across the river will be 2,100 feet, or 700 yards, long at its crest. It will in effect be a large hill built of rock with a waterproof clay core in the center. It will be 370 feet high,

and will require a total of 10.9 million cubic yards of rock and clay. By comparison, it will be four-and-a-half times longer and nearly five times higher than the Ambassador Hotel building. Looking up-river, there is a valley to the right of the dam which will also have to be closed by a smaller dam 1,200 feet long and 120 feet high and, between the two dams, will be a spillway structure to control flood water. On the left, looking upstream, will be the intake structure, level with the top of the dam, and the power house some 200 feet below. Between the two will be six penstocks, which are 24-foot diameter pipes, to feed the water from the intake structure into the turbines driving the electricity generators. Thus, each penstock would be big enough to take two double decker buses side by side, and still leave plenty of room. The power house will be designed to take six generators, each of 128,000 kilowatts continuous output, and each will be designed for 15 per cent overload. The rotating part of each generator will be about 35 feet in diameter and will weigh nearly 500 tons. The power house will be about 560 feet long, 130 feet high, and 170 feet deep. In order to transform the voltage produced by the generators to the 161,000 volts of the transmission net, each generator will have a transformer which will weigh nearly 150 tons and will be 20 feet high by 16 feet wide. The transmission system will be about 270 miles long. When completed, it will be fair to say that this dam and power station will be one of the major engineering feats of the world.

The work of constructing this enormous project has been divided into a main civil engineering contract, tenders for which have recently been received, which will cover the construction of the dams, the power house and the spillway structures and other contracts providing for the supply of the electrical, mechanical and transmission equipment, together with the sub-stations. During the peak of the construction phase, it is estimated that over 3,000 workers will be required on the dams and power station, consisting of over 20 specialised trades. The task of assembling so impressive a force of construction workers without seriously disrupting other development work in Ghana, is itself a matter for very careful planning, and arrangements are being made for lists of potential workers to be held ready and for initial training schemes to be conducted in those skills which are not at present available in Ghana. It is planned that the contract should be let in April this year and that the work should be completed, and first power should start flowing down the transmission cables, in September, 1965.

As I have already mentioned, the success of this project depends on the purchase of electricity. We have arranged on the one hand for a large block of electricity to be sold to an aluminium smelter. The only other direct purchaser of electricity from the Volta River Project Authority is to be the Electricity Division of the Ministry of Works and Housing-probably in a more commercial form than at present. Clearly, therefore, the greater the amount of electricity which the Electricity Division can purchase, the more economically favourable the whole project will become. This fact has long been appreciated and not only is the Electricity Division taking steps to extend, reconstruct and reinforce its present distribution systems at those centres to be supplied from the proposed Volta grid, but on account of the present shortage of engineering staff in that Division, consideration is also being given now to the appointment of a consultant to assist the Division in the planning and design of future extensions at these centres. The aim of this two-way effort is to ensure that when power becomes available from the Volta, there should be no restriction whatsoever on the amount of electricity that any center can take, due to any inadequacy of the distribution network at that center. A contract has already been let for the construction of two transmission lines from Tema to Accra which will initially serve to convey power from the new Tema diesel power station to Accra, and eventually be incorporated in the national grid. This work is expected to be completed by September of this year.

In considering electricity consumption in Ghana, the potentialities of the various mines in the country has not been overlooked. It is a fact that the amount of electricity generated by these mines, for their own requirements, is some 50 per cent more than the total electricity generated by the stations

of the Electricity Division at present. In order to further enhance the economic viability of the national grid system, therefore, it has been planned to supply as many of these mines as the costs of the particular sections or extensions of the transmission line prove economically justifiable.

I have mentioned already that special arrangements have been entered into to encourage an aluminium smelter to establish itself in Ghana, and I shall now describe in general terms what these arrangements are. The Volta Aluminium Company Limited was formed towards the end of 1959 by a consortium of aluminium manufacturers under the leadership of the Kaiser Aluminium and Chemical Corporation. It included Reynolds Metals, the Aluminium Company of America, and Olin Mathieson. On the 16<sup>th</sup> December, 1959, I signed, on behalf of the Government of Ghana, a statement of the principles upon which it would be feasible to establish a smelter, and these Principles of Agreement were signed on behalf of Valco, as the Volta Aluminium Company is now known, by Mr. Rhoades, the President of the Kaiser Aluminium and Chemical Corporation. These Principles of Agreement formed the starting point for detailed negotiations with Valco which were conducted during 1960, and which ended on the 17<sup>th</sup> of November, 1960, with the informal signing of a complex of documents, known as the Master Agreement and its scheduled documents, by the Minister of Finance on behalf of the Government and by Mr. Edgar Kaiser on behalf of Valco.

I would like at this point to pay a tribute, and a very well deserved tribute, to Mr. Edgar Kaiser and his associates, including Mr. Chad Calhoun. Ever since his organization was brought into the Volta River Project to conduct an engineering re-appraisal, Mr. Edgar Kaiser has demonstrated enthusiasm and understanding of the project, and of the problems which have faced us in bringing it to life, which is second only to our own. He and his associates have helped with the engineering design and have been instrumental in bringing the concept of an aluminium smelter in Ghana forward to the stage of practical realization.

The Master Agreement between Ghana and VALCO is designed to provide the conditions under which the smelter and, later, the alumina plant and bauxite mines would operate. It includes provisions for Valco to provide the necessary finance and to construct a smelter; the rate of expansion of the smelter to its initial planned capacity of about 135,000 long tons of ingot per annum, consuming 300,000 kilowatts of power continuously; and the establishment of special trust arrangements for these funds to ensure that Valcos's obligations are met. It provides for investment in the power project by the Government; for the establishment by the Government of a Volta River Authority; for special arrangements for charges for processing alumina; for payment for water, port facilities and communications; for the employment and training of Ghanaians to the greatest feasible extent; for arrangements for the application of the new pioneer relief legislation to Valco; for tax stabilization and for exchange control measures in regard to Valco's earnings in foreign currency and for the execution of associated contracts. Of these, the most important is the power contract which provides for the long-term purchase of, and the charges for a block of the power to be produced at Akosombo. This power contract is to be executed by the Volta River Authority when it is established, and it is the intention to introduce, during the current meeting of this Assembly, a Bill to set up the Volta River Authority as a statutory corporation. The purchase of power is provided for in Article 13 of the power contract and the effect of this article in terms of revenue to the project is set out in Chapter 5 paragraph 9, of the White Paper; this chapter also explains the reasons for the application to Valco of a special contract price for the sale of power. Other documents which will have to be executed are the Smelter Site Lease, the Water Agreement and the Port Agreement, the terms of which are self-explanatory and are set out in the white Paper. It will be noted that the Master Agreement provides for a series of transactions which must be satisfactorily concluded before the agreements can come into effect. These "trigger" arrangements are set out in Article 47 of the Master Agreement, and it will be noted that the first of these is the signification by this Assembly of approval of a formal resolution endorsing the Government's action and the conditions

of the agreements. They include also the satisfactory conclusion of arrangements for financing the power project and the finalisation, on terms satisfactory to the Government, of a number of special financial and trust arrangements to be undertaken by Valco and Valco's shareholders. They also include the satisfactory conclusion of a tax treaty, providing for double taxation relief, between Ghana and the United States Government.

Action on all these points is continuing, and one of the purposes of the debate in this Assembly, which follows, is to seek the approval of this Assembly of the arrangements which we have made and the advice of the Assembly that I should, on behalf of Ghana, execute these agreements with Valco. It has always been the intention of the Government to give to the representatives of the people of Ghana a full opportunity to consider the Volta scheme in all its aspects before the Government enters into any final commitment and I hope that Members will take this opportunity of apprising themselves fully of all that is implied in this project, so that they may in turn explain its benefits to their constituents, and so that the whole of the Republic of Ghana may give to the Government and myself every support and encouragement.

To summarise, the present position is that, subject to the satisfactory conclusion of the various actions which I have described, to the satisfactory finalisation of the terms of loans from the World Bank, the United States governmental agencies, and the United Kingdom Government, and Valco's own financing, we are ready to go ahead with the project which will, I am convinced, transform not only the geography of Ghana, but also its economy and the rate of its progress towards a balanced future.

Some of our objectives of economic and social reconstruction are high productivity and a higher standard of living for our people. I am longing for the day, and it should not be far distant, when I shall be able to abolish personal income tax in Ghana and increase wages with an effective purchasing power. But this means hard work. If we can all produce more and reduce costs, if all of us will co-operate to revolutionise our agriculture and build the many industries planned for our country, we can achieve this.

The basic necessities for these developments, apart from trained personnel, are abundant electricity and water supplies. As regards the training of personnel I have planned this for the country in the form of numerous scholarships tenable locally or abroad. The Volta, the Bui and other medium power station projects which are to start very soon will provide more than the necessary electricity and water supplies needed by the country.

Mr. Speaker, the debate in this House will be opened by the Minister of Finance, who will be moving the formal resolution seeking the approval of this House for the arrangements which have been made. I will close by again inviting Members' attention to the terms of the White Paper and of the documents annexed to it, by restating my firm conviction that this project is likely to prove of the greatest possible benefit to the Government and people of our country, and by commending it to the approval of this august House. Mr. Speaker, Members of the National Assembly, I leave you to your deliberations.