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## TVA: A DEMOCRATIC METHOD FOR THE DEVELOPMENT OF A REGION'S RESOURCES

GORDON R. CLAPP\*

Since 1933 more than 16,000,000 men, women, and children have come to the Tennessee Valley to see for themselves the work that is going on in this region. In 1947 almost 3,000,000 people—people from every one of the 48 states and territories of the United States and from more than 50 foreign countries—visited one or more of the 26 dams that have turned the Tennessee River system into a source of obedient human benefits.

In the Tennessee Valley the people and the TVA working together are developing the resources of a large region with the help of the most advanced knowledge known to engineering and science. In this joint undertaking the TVA is more than dams, more than electricity. The TVA is a *method*—a means by which the region's resources are put to work to restore to the people a wider range of alternatives among which they can choose in an endless series of decisions. As this process goes on the people chart their course of action and development. Through this process they can come closer to the attainment of the kind of a region and the kind of living they want and are capable of achieving.

Few regions of the country illustrate more dramatically the challenge of abundant but idle resources to the managerial abilities of the people. For more than a century the Tennessee River, a destroyer of life and property as it ran in flood year after year, has been identified as a potential inland waterway, a stream of great undeveloped and wasted power. But American capital, private and public, generally speaking, passed it by and chose instead to invest in other regions.

Abundant rainfall and the abundant growing power of temperate sunshine have in times past been sold short in the Tennessee Valley through too much open cultivation for corn and cotton. This practice grew up not from a free choice; it was dictated by a soil too weak in minerals—primarily phosphate—to nourish a grass and pasture agriculture. These cropping systems exposed a bare and unfrozen soil to the ravages of winter rains. The fertility of the soil and the soil itself was drained and washed away by natural forces of rain and runoff, and by man in the export of the products of the soil.

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\* Chairman of the Board, Tennessee Valley Authority. This article is based on an address delivered at the Vanderbilt University School of Law in February of 1948.

The Tennessee Valley Authority was created in 1933 by the Congress and the President as a government owned corporation to do something about the idle and wasting resources of the Tennessee Valley. The cornerstone of the whole TVA development is Muscle Shoals and Wilson Dam. These facilities were the product of the first World War. They were built to supply power and munitions.

During the 1920's, private interests offered to acquire the nitrate plants and Wilson Dam for a small fraction of their cost. Through the persistent and able leadership of Senator George Norris of Nebraska and others, Congress twice voted to devote these national wartime assets to a public purpose; both times the enactments were vetoed. Out of this long and vigorous public debate the TVA was created and the Muscle Shoals chemical plants and Wilson Dam became the physical nucleus of the present development of the whole Tennessee Valley.

The TVA was to try a new approach to the conservation and development of natural resources. None of the major functions assigned to the TVA was new to agencies of the Federal Government. The *approach* was new: Congress selected a single region within the country; a government corporation was located there and authorized to provide technical assistance, to work with the people of the Valley in achieving full development of the region. For the first time in our history the resources of a whole region were viewed, not in unrelated pieces, but as a whole.

This region—the 41,000 square mile drainage area of the Tennessee River and its tributaries and the larger area reached by its high voltage power lines—includes parts of seven states: Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia.

The combination of functions assigned to the TVA created a managerial responsibility unprecedented in character in the history of private or governmental policy. Some of the objectives Congress had in mind in bringing several traditional functions of the Federal Government together into a single regional agency were defined broadly: Resource development for "the general welfare of the people of said basin" is the language of the law. Some of the objectives were stated specifically: for example, TVA was instructed to create a 9-foot channel from Knoxville, Tennessee, to Paducah, Kentucky; it was authorized and directed to produce and sell power not just to those who would pay the highest price but preferably to domestic and rural consumers at the lowest possible cost to achieve the widest possible use.

The managerial methods by which these broad and specific objectives were to be achieved were left to the TVA, subject to a strict accountability to Congress and the President for results. Management likes to devise its own methods—that is the source of its pride of craftsmanship. But the TVA Act estab-

lished a special and more difficult challenge to management. By repeated reference the TVA Act emphasized the idea of decentralization. By this is meant that TVA was admonished to cooperate with existing agencies to get others—state and local agencies, organizations of farmers and workers, businessmen, and private citizens—to do that part of the work which they were best equipped by interest, will, and competence to perform.

Here was a severe test of modern management. For in the broadest sense the TVA was launched as an experiment in administrative methods. The enterprise from the beginning was viewed by its critics as an impossible task radically conceived. Its advocates looked upon the TVA as an enterprise in faith. There were those who doubted that this new organization could design, build, and operate dams that would by the same structures—tied into a single system—control floods, maintain a year-round navigation channel, and at the same time produce the hydroelectric power that was to energize an entire region. And there were many experts of little faith who were certain that the power from the river would be a surplus commodity, a financial loss, and worse—an idle and wasted investment of human energies.

Physical and engineering control of the river was a managerial responsibility of substantial size, but success in this respect alone would not prove the feasibility of this new approach to resource development. Would the depletion of soil fertility and forests continue to destroy the foundation for the economic activity into which this new source of energy was to be released? Would new dams and transmission lines and the new mineral fertilizer products of the chemical plants at Muscle Shoals produce the expected effect upon the general welfare of the people? TVA had no authority to make anybody do anything. Would the agencies of the states and local communities, would the people of the Valley use the new tools to be built by the TVA to build a stronger Valley? This was the real test for the TVA.

If the TVA could meet this test the Tennessee Valley would certainly be a stronger region—with more income for more people. In addition, the Nation might look upon the experience gained there as a valuable demonstration that would illuminate future policies concerning the development of resources in other regions. If the TVA failed, the Valley would have suffered another frustration and the idea, itself, would be discredited.

The TVA as a whole may be viewed as a test in another way. Its critics and foes viewed the TVA as a threat to freedom: the assignment of governmental functions to a single agency, they said, would create a center of managerial power that would threaten the independence of the people and their institutions of private management. But, as has been said, we were encouraged by the law to enlist the cooperation of existing agencies and groups and organizations of private citizens in achieving the full development of the

Valley. This was an instruction concerning the means to an end. Could TVA satisfy its obligation to get results by relying upon the voluntary cooperation of the people and their state and local agencies?

Thus, the crux of the argument about the TVA centered upon *methods*, the managerial means by which the TVA would go about its work. In this atmosphere of divided public opinion the task was begun.

Now, for a brief summary of what has been done. Today the Tennessee River is a controlled and useful asset in the economic life of the region. Twenty-six dams, 16 built by the TVA, are operated as a single system. These dams control the flow of water in the Tennessee and most of its tributaries from its sources in the high Great Smokies to its junction with the Ohio River.

Harnessed by this system of dams, the Tennessee River is the most completely controlled river in the world. The dams create reservoirs that provide more than 11,000,000 acre-feet of flood control storage. This storage for flood control is conservatively estimated to be worth as much as \$200,000,000 to the alluvial valleys of the lower Ohio and Mississippi Rivers in addition to benefits in the Tennessee Valley. TVA dams can reduce flood crests on the Ohio River at Cairo, Illinois, from two and one-half to four feet, and in lesser amounts on down the Mississippi.

These same dams create a 630 mile navigation channel, carrying coal, petroleum, wheat and corn, iron and steel products, aluminum, automobiles, and other freight over a route that in 1933 was useless for through river commerce. In 1933, traffic on the Tennessee River, consisting largely of sand and gravel, amounted to 33,000,000 ton-miles. In 1947, the river carried ten times more—approximately 350,000,000 ton-miles.

The TVA dams and supplementary steam plants have an installed generating capacity of more than 2,500,000 kilowatts and produce and use some 15,000,000 kwh of electricity a year—ten times as much as the area produced and used in 1933. The electricity produced by the TVA is transmitted and sold at wholesale rates to 140 locally owned municipal and rural electric cooperatives, who resell it at low rates to about 800,000 consumers, and to several federal agencies and large industries.

The TVA dams have also created many important by-products. Among these is the development of the setting for a great recreation industry, a new and growing source of millions of dollars of income to many people.

The construction of TVA reservoirs has increased the necessity of a vigorous attack upon malaria which for years has been a common ailment in many communities, a serious handicap to work and enterprise and a menace to health. Improved methods of control along the shore lines and careful cooperative work with local public health agencies have reduced malaria far below pre-TVA levels along the Tennessee River.

Modern engineering has brought the Tennessee River under control. Modern engineering is helping the farmer to control the water where it falls on the land. The TVA chemical plants at Muscle Shoals have been modernized and are now used to develop and produce new and improved fertilizers, mainly phosphates, in which most soils of the United States are deficient. These new products of research and experimental manufacturing have been used by practical farmers in test-demonstrations with the educational assistance of the state agricultural extension services.

During the 13 years from 1935 to 1947, TVA produced about 860,000 tons of concentrated phosphate fertilizers in various forms and distributed it to experiment stations and farmers. This average of 67,000 tons a year is negligible in quantity compared to the total commercial volume produced by industry; it is even less significant in terms of the recognized needs of the soils of the Nation. These phosphate materials produced by the TVA *are* significant for two reasons: the processes by which they are produced are adding new knowledge to the technology of the industry, pointing the way to more efficient, more highly concentrated products that cost less to ship; and the tests and demonstrations of the use of these new products on thousands of practical farms are helping farmers to build a more fertile soil under improved systems of farm management.

More than 55,000 farmers have been at work in this program in the past 13 years. Their practical experience with these new mineral fertilizers is showing the way to improved farm practices, greater diversification with more soil and water-holding cover crops. More grain, grass, and pastures have led into a growing livestock agriculture that is bringing new wealth and health to whole communities.

During the 1934-44 period, more than a million acres of the 11,000,000 acres of valley agricultural land has been shifted from row crops to close-growing grain and pasture crops. More than a million acres have been terraced. The pasture acreage has been increased by 14 percent, or nearly 800,000 acres.

At the same time, progress has been made in improving the water-holding capacity of the forests and woodlands which cover more than half the Valley area. Protection against forest fires has been extended to some 6,000,000 acres since 1933 through the efforts of TVA, state forestry agencies, and local groups working in cooperation. Some 140,000 acres of the 1,000,000 acres in need of reforestation, have been reforested, chiefly by private owners. Some 160,000,000 seedlings have been provided from TVA forest nurseries for this purpose. Modern forest management, based on sustained-yield harvesting, has been fostered by getting private landowners to set up 600 practical

demonstrations on a total of more than 200,000 acres, including large forest holdings and farm woodlands.

The TVA has joined with the state agencies of education and research to devise and promote new and better uses for the minerals of the region. New machinery for farming and new processes to utilize farm products have been developed, demonstrated, and adopted. In these, and in many other ways, the TVA as authorized by Congress, is helping the people to use their resources to build a stronger region.

A valley that was once a national problem proved to be a source of great strength for a nation at war. Because of TVA power the Tennessee Valley was literally a wartime arsenal. The atomic energy plant at Oak Ridge, Tennessee, took great quantities of power supplied by the TVA. The navigation channel helped relieve the wartime pressure on other forms of transportation. TVA research in the manufacturing of phosphorus enabled it to produce 60 percent of the elemental phosphorus needed by the U. S. Army. New forms of highly concentrated fertilizers helped to increase food production, both at home and abroad.

All these facilities are now hard at work in peacetime. We have no idle power plants; TVA is producing and selling more electricity than at any time during the war, and our loads are still growing fast. The people of the Valley are putting this new energy to work as fast as we can add new generators.

This, then, in brief summary, is what TVA is and what it does. But behind these activities the more discerning observers see a new kind of administrative arrangement, a new relationship between the Federal Government and the people of an entire region. In the course of fifteen years, the TVA has developed contracts, agreements and understandings with more than a hundred local, state, and federal agencies, scores of quasi-public service organizations, and literally thousands of Valley citizens. By this means the people and their agencies have arrayed themselves in a loose and flexible but tough federation of effort to build a better living from the resources of the Tennessee Valley.

Within this informal regional federation there are the state, county, and local agencies of research, education, and administration. Through these agencies, in cooperation with the TVA, a useful body of fact is developed by research, by investigations in the laboratories and from practical demonstrations and experiments. These facts of science and engineering are tested by practice and then slowly but surely are channeled into the everyday knowledge of more citizens—farmers, workers, employers, businessmen, housewives, and others for whom these agencies were established to serve.

But TVA's cooperative arrangements are not limited to governmental bodies; the many private and quasi-public organizations—labor unions and

the farm organizations—have joined in the work of building the region. There are the land-use associations and farmer cooperatives in county after county where whole communities of farmers have organized to plan and carry on more effective use of their soil and water resources. There are the Chambers of Commerce and the many business and industrial concerns whose relationships with the TVA range from that of the user of TVA power to cooperation, for example, in the experimental development of new farm equipment or the development of a new process for using the minerals of the Valley.

There are also the federal agencies and bureaus; each makes its specialized services available in the Valley program through its cooperation with the TVA, or through direct cooperation with state and local agencies.

Finally, there has developed in recent years a number of regional conference bodies and committees organized on the basis of a special subject matter or professional interest. These conference groups meet from time to time to consider problems common to the region as a whole. Many of them have developed administrative facilities, sometimes with the help of grants-in-aid from various foundations, to carry on the work of the conference group between meetings.

These regional bodies are a new development in the Tennessee Valley since the creation of the TVA. For example, there is the Valley States Conference of land-grant colleges, directors of extension, directors of experiment stations of the seven Valley states, the United States Department of Agriculture, and the TVA. There is the Tennessee Valley Trades and Labor Council made up of the fifteen international labor unions of the American Federation of Labor Building and Metal Trades which have working agreements with the TVA. The Tennessee Valley Public Power Association brings together the municipal power boards and rural electric cooperatives which distribute TVA power. The Committee on Southern Regional Studies and Education, the Tennessee Valley Library Council, and the Committee on Southern Regional Training for Public Administration fill an important place in the region.

The emergence of these regional organizations is evidence of a growing sense of regional unity that transcends state lines. These agencies comprise a new and invaluable asset, a new administrative resource of the region. The future progress of the Tennessee Valley in all phases of resource use and development will depend very largely upon the effectiveness of these regional forums for fact finding, for analysis, for discussion, for planning, and for recommendations on courses of action.

There are untold opportunities for creative discovery and progress in the gaps between the specializations of our professional disciplines, between the farmer and the industrial worker, between the local community and the state and the Federal Government.

A local activity *unchanged except for the acknowledged fact that it is a part of a regional effort* can acquire increments of prestige, quality and spark that can move whole communities from the inertia of a dormant local leadership. The community, working with the state agencies which in turn are cooperating with other state agencies, draws strength from the thinking and administrative momentum of the region. The common purpose of a region's full development and the combined thinking and propulsion of many communities, and the local and state agencies nourish and energize each other. But it takes some one agency whose primary responsibility runs to the region as a whole to perform these marriages of interest, to link the efforts and thinking of specialized professional interests or the welfare of the small community to the thinking and aspirations of the people of a region.

Before the TVA grew into the Valley scene, no existing agency could legally and administratively devote its thinking, its time and its staff to such a task. The TVA helps to bring those diverse forces together in this program of resource development. TVA's objective in this process is to add strength to each of the cooperating parts of the whole and to encourage initiative in the smallest units of administration.

An experiment should welcome appraisal. The TVA has been the subject of debate, controversy and appraisal for a period that began before it was established. Its specific actions and accomplishments have been under the microscope of first-hand daily observation by the people of the Tennessee Valley among whom the TVA lives and works. Congress, the press, millions of visiting citizens, careful and disinterested critics, and some who are neither careful nor disinterested, have investigated, probed, studied and judged the TVA. Some proclaim it as "one of the great wonders of the new world;" some denounce it as "the work of the devil." Sober and informed judgment will probably place the verdict somewhere in between these naive and vicious extremes.

Those who have been privileged to have a part in the work of the TVA neither claim the one nor give up to the other. We can suggest, however, a basis for fair appraisal.

Is the Tennessee Valley a stronger region today than it was 15 years ago? The accepted indices of economic growth—*increase in manufacturing, factory wages, number of wage earners, income of individuals, value of manufactured products, wholesale and retail trade, bank deposits*—show that the Tennessee Valley has made economic gains at a faster rate than the rest of the country in the past 15 years.

Do the people of the Tennessee Valley believe the region offers more opportunity? One important test is whether the people who live in the Valley move away during a period of expansion in the nation's economy: Between

1933 and 1947 the population of the region, for the first time since the decade of 1870-1880, shows a net increase greater than the United States as a whole. The Tennessee Valley is decreasing the wholesale export of its human resources; its people, who for too long have been forced by necessity to seek opportunity elsewhere, are finding increased opportunities in their home region.

Do the people of the Tennessee Valley attribute these changes to the TVA? Many, I am sure, give the TVA more credit as a cause of economic change than the complex facts of cause and effect support. But I think you would find that the prevailing view in the Valley is about like this: "The TVA isn't the only cause, but these improvements in opportunity would not have happened without the TVA."

Have the people of the Tennessee Valley obtained the benefits of the TVA development at a sacrifice of their individual freedom? The governors of the seven Valley states were asked that question a few years ago by the *St. Louis Post-Dispatch*. I quote from one reply as characteristic of all seven:

I can say that the rights of this state and its citizens, far from having been restricted or violated by activities of this Federal agency, have been enlarged through enriched opportunities.

The fact is that the TVA has no power or authority to force anyone to do anything—with this exception: like a private utility corporation, it can go to court and condemn land required in the performance of its services.

Is the TVA a financial success as measured by the standards common to the market place? In the minds of some this is the most important test of all. Let me cite a few significant facts. That part of TVA's facilities devoted to the generation and transmission of electricity is self-supporting; the first 6 years following passage of the TVA Act were devoted to the development of a suitable market for the sale of TVA power which put power operations on a self-supporting and self-liquidating basis. The return on the net average power investment over the past 7 years has exceeded 4 percent. In the fiscal year 1947, it was 5½ percent. Through December 31, 1947, some \$18,000,000 obtained from the sale of power by the TVA had been paid as cash into the general fund of the United States Treasury, and \$8,500,000 in outstanding bonds had been retired. In addition to these payments, net income from power operations and provisions for depreciation have provided some \$132,000,000 for reinvestment in the enterprise.

The non-revenue producing facilities of the TVA—those for flood control, navigation, the development of new and improved phosphatic fertilizers, research and demonstration in forest management, and the like, yield their return indirectly as they do where carried on in other regions of the country.

And what of the TVA itself? Is it reasonably efficient and well managed?

Indeed, only a very few of TVA's severest critics argue this question. TVA built its dams and carries on its work with its own employees, selected by the TVA on a basis of merit and efficiency. The great majority of its employees are members of union organizations; collective bargaining, signed contracts, apprenticeship training and job improvement programs sponsored and supervised jointly by union-management committees are well established labor-management practices in the TVA. The TVA has carried on from the beginning without a single major work interruption caused by a breakdown of the relations between labor and management. The record of TVA's performance provides the measure of its quality and efficiency as an organization.

Finally, has the Nation benefited from what has been done in the Tennessee Valley? Fifteen years is a short time for such a test. But a few results can be stated:

The Tennessee Valley lies at the center of the larger region labelled ten years ago as the Number One Economic Problem of the Nation. That label certainly does not fit the Valley now. Today it is well recognized among business and financial interests over the country that any objective search for long-range business and industrial opportunities must not overlook the promise of the Tennessee Valley region. Certainly the strength and energies of a nation are made stronger and more productive as its great regions gain from the development of resources otherwise idle or destroyed.

Perhaps the experience of the Tennessee Valley has shown what can be done to turn a destructive river into a regional and national asset. If so, the experience can save for other regions money, property, and lives of far greater value than the cost of the TVA.

The experience of the farmers of the Tennessee Valley experimenting with new forms of phosphate is helping the Nation come to grips with the problem of the declining fertility of the soil. In any appraisal of TVA's contribution and the national welfare this part of the record merits careful judgment.

But the most important gain for the Nation, it is suggested, is this: the world is searching for better and more efficient ways to use natural resources without loss of individual freedom or the destruction or negation of the initiative and energies of individuals. The Tennessee Valley is demonstrating that this can be done; that the people—farmers, workers, businessmen and citizens generally— can mobilize their energies around the use of a great river and the more productive development of the forests and the minerals and the soil. The people of this Valley have proved that as they do these things agriculture and industry thrive and diversify and the individual finds greater freedom of opportunity for his talents.

The Tennessee Valley region has a long way to go before it comes into its

own. But a deep frustration has been dispelled and a discouraging trend has been arrested. And in the process to date perhaps we have learned a little bit more about self-government. Perhaps we have found ways by which the state in serving the individual can help him to achieve *voluntarily* a better balance between his desire to take and his desire to give. Prosperity from our great physical resources the world over will be as nothing unless we can resolve this conflict within us as individuals. Dollars for methods and works that move us along a little in this direction are good investments. But their real values are beyond the reach of the standard tests of the market place.