

Large-Scale River Basin Management

The Tennessee Valley Authority Experience



The integrated management of water resources, combined with TVA's unique institutional capacity, propelled the Tennessee Valley from one of the poorest regions in the United States into a region with a strong, diversified economy and a healthy environment base.

THE purpose of this case study series is to familiarize Missions and Regional Bureaus with practical approaches to integrated water resources management (IWRM) that have proven to be successful in USAID field programs.

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Introduction

The Tennessee Valley Authority (TVA) represents one of the earliest successful examples of integrated water resources development and management. Established in 1933, TVA continues to operate a wide variety of water, power, economic development, and environmental programs within a seven-state region of the southeastern United States. The

integrated management of water resources, combined with TVA's unique institutional capacity, propelled the Tennessee Valley from one of the poorest areas in the United States into a region with a strong, diversified economy and a healthy environmental base. This case study summarizes those aspects of TVA related to IWRM that could serve as a useful guide to USAID Missions and Regional Bureaus in strategy development and institution building at the regional and transboundary scale.

Historical Context

The Tennessee Valley of the 1930s was a poverty-stricken region of the United States much like many of the countries in which USAID works. The natural resource base of the region, which was the foundation of the economy, was deteriorating rapidly. It was obvious that the social problems of the valley could only be addressed by first improving the economy. Development of the region's land, water, and forest resources was essential for economic revival. As part of President Franklin D. Roosevelt's New Deal to lift the U.S. out of the depths of the Great Depression, TVA was established by an Act of the U.S. Congress in May 1933. The TVA Act allows the agency to function as a government corporation with the flexibility and initiative of a private enterprise. Between 1933 and the end of World War II in 1945, TVA established its institutional framework,



built broad-based local support for its programs, and constructed an extensive physical infrastructure. It was during these early years that it established what may become TVA's greatest legacy — the integration of a healthy natural resource base, a strong infrastructure, and the human capacity to foster the social and economic development of a region. For the first time, a complete river basin was used as a planning unit and the resources of the watershed could be developed for the benefit of the entire region. In addition, flood control, navigation, and power generation were not treated as ends in themselves, but the means to advance the social and economic well-being of the valley. Resource development was consolidated under the administration of a single, grassroots agency with headquarters in the valley and not as a



TVA coordinates with other federal agencies to ensure that the resources in the Tennessee Valley are accessible for a variety of uses, including not only flood control, navigation, and power generation, but tourism and recreation as well.

branch of the central government in Washington.

TVA's vitality was bolstered by its early, tangible, and largely positive impact on the lives of the people within the valley. By the late 1930s, the

Tennessee Valley was essentially “online,” supported by an extensive transmission system and a decentralized system of locally owned municipal and rural distributors. Significant advances were also made in the areas of forestry and agriculture. TVA introduced experimental fertilizers, demonstration farms, and new farming systems. Reforestation projects and improved forest management practices were implemented. Controversy over relocations and resettlements required during the early dam building was addressed not by promises, but by rapid and tangible economic development. The people of the valley were put back to work and incomes rose dramatically.

TVA Profile

- Fifth largest river system in the U.S.
- 650 miles (1,050 km) of navigable river
- 11,000 (17,600 km) of public shorelines
- 480,000 acres (190,000 hectares) of recreation lakes
- 25 flood control dams
- US\$829 million capital invested in the valley
- US\$23 million of economic development loan commitment to valley businesses
- US\$951 million spent with valley businesses for goods and services in 1999
- Largest wholesale producer of electricity in the U.S.
- More than 6 million customers served
- Fuel sources: fossil, nuclear, hydro, and combustion turbine
- Total assets: US\$33 billion
- Total debt: US\$26 billion

Source: TVA Annual Report, 1999

Approach

Institutional Framework

TVA established its physical infrastructure, institutional framework, mission, and constituency quickly, and went about the business of developing the valley. The organizational structure that emerged from its first decade of

operation and that has served the agency for most of its 68 years consists of an appointed board of three directors, a general manager (later a chief operating officer), and strong operating divisions. In general, the board's responsibility is to set policy, coordinated by a general manager and carried out by highly professional operating arms. There have been several important implications of this institutional structure. While policy making at TVA has remained centralized, planning, management, and implementation have largely remained decentralized and the responsibility of the operating arms. There has never been a master development plan; rather, planning has been tied to operations and physical development programs. Furthermore, the decision-making process among the operating arms has relied on self-coordination and healthy tension. Problems and conflicts are resolved at the lowest possible working level and "bubble up" to higher levels only if serious disagreements persist.

The strengths of this institutional framework is that it has kept the agency action oriented and grounded on doing real things that have made a difference to the lives of people of the valley. This emphasis, coupled with a history of working through local agencies, has built widespread grassroots support for the agency. This framework proved to be quite successful during the development/construction phase of the evolution of the agency, when TVA's mission was clear and large-scale construction projects were under way. The structure has been less successful since the agency made the transition from a development role to a management and stewardship role. Furthermore, lack of centralized planning has hampered TVA's efforts to define new agency-wide missions, creating fierce competition among the operating arms

One of the most significant criticisms of the TVA model is that there is no mechanism for

external scrutiny or critical oversight. Efforts to correct these deficiencies began in 1988, when TVA initiated a series of organizational changes to increase the authority of the board, increase competitiveness in the power arena, operate the water control system more efficiently, and run the agency more like a business. Restructuring has been an ongoing effort, as the agency tries to cope with change while remaining competitive.

Legal and Financial Framework

TVA's legal authority for its water management programs is derived from the TVA Act, which grants TVA broad multi-resource conservation and regional planning powers and the authority to build its own projects. TVA water, land, environmental, and other natural resources programs have historically been funded by U.S. Congressional appropriations as part of TVA's nonpower programs. Contrary to public perception, TVA's appropriations budget has been much less than 5 percent of the agency's annual revenue (power revenue) in the past decade and more.

TVA's early and only partially successful move into the nuclear power business as the way of the future — a

misguided and costly policy decision — put the agency on a rapidly escalating debt path. Congress allowed the debt ceiling to be raised several times to help the agency during the construction phase of its nuclear plants, an advantage not afforded to the private sector. Re-engineering of the federal government and controversy over the future of TVA's nonpower programs have led to the elimination of the TVA appropriations for FY00 and beyond. TVA is currently funding its nonpower programs from its power revenues and essentially functions as a utility. At an annual revenue of about \$6 billion and an accumulated debt in the upper \$20 billions, TVA is operating in a financial condition not considered sound and sustainable by today's business standards.

Results

Constituencies and Partnerships with the People

Over the years, one of TVA's greatest strengths has been its strong base of local constituencies, including grassroots support; state and local governments; interest groups, such as distributors, industries, environmental advocates, and recreational organizations; the Tennessee Valley



TVA strives to achieve balance its missions as a multi-resource development agency and a power generation utility.

Congressional Caucus; and other federal agencies. Due to its long history of grassroots work, residents of the valley and state and local governments have generally been staunch supporters of TVA. The success of TVA's water resources programs can be partially attributed to its commitment to working cooperatively with other federal, state, and local agencies; regional and national interest groups; and the residents of the Tennessee Valley. TVA coordinates with other federal agencies in the areas of flood control and navigation and has worked with the states to adjust lake levels to encourage tourism, recreation, and economic development. TVA's constituencies provide input to improve fish habitat, protect endangered species, enhance water quality, and increase recreational and economic opportunities. Public access telephone lines and Internet Web sites provide real-time and forecast information to the public on TVA activities, dam releases, and streamflow. While TVA works with the public to fine-tune operations at individual projects to meet special needs, the overall reservoir system continues to be operated as a unit for the greatest benefit of the entire region.

Distinguishing Characteristics

In the decade between 1933 and the end of World War II, TVA distinguished itself as a multi-resource agency. Set in a unique array of historical, political, and geographic circumstances, TVA emerged from the combination of five major driving forces: need, champions, opportunity, vision, and early tangible results.

Ironically, no other regional agency like TVA has been created within the U.S. However, the concepts of comprehensive river basin management pioneered by the agency have served as models for the management of other river basins in the U.S. and around the world. TVA's distinct characteristics remain focused on:

- integrated regional water resources and economic development;
- regional autonomy and control over natural resources;
- centralized policy making

implemented through decentralized decision making;

- high standards of professional excellence within the operating arms;
- grassroots participation and support;
- strong regional identity; and
- an action orientation with early tangible results.

Additional Information

Tennessee Valley Authority
(<http://www.tva.gov>)



As part of President Franklin D. Roosevelt's New Deal to lift the U.S. out of the depths of the Great Depression, TVA was established by an Act of the U.S. Congress in May 1933.

Lessons Learned

Regardless of what the future might bring to TVA, this agency is one of the few long-term success stories in integrated natural resources development and management. Creation and evolution of TVA's institutions and operational programs can provide insight into the implementation of IWRM policies and practices at a regional and transboundary level. Application of the TVA model to other river basins, however, would greatly depend on the degree to which its elements of success and distinguishing characteristics can be replicated. Nonetheless, there are some important lessons that can be learned from the TVA experience.

- The success of TVA was heavily dependent on the strength of its champions, the vision of its first leaders, and its ability to show tangible results early on.
- TVA's greatest legacy has been the integration of a healthy natural resource base, a strong infrastructure, and the human capacity to foster the social and economic development of a region.
- TVA's institutional structure served the agency well during its early years, but has been partially responsible for its challenges and setbacks, particularly in response to change, as the agency has matured.
- TVA's greatest source of internal and external challenge has been the battle (and balance) between its missions as a multi-resource development agency and as a utility.