FEDERAL EXPENDITURES FOR NATURAL RESOURCE DEVELOPMENT

FEDERAL EXPENDITURES AND PROGRAMS FOR THE DEVELOPMENT OF NATURAL RESOURCES

DEPARTMENT OF THE INTERIOR

Statement submitted by Fred A. Seaton, Secretary of the Interior

This statement addresses itself to the following questions which have been formulated by the Subcommittee on Fiscal Policy: (1) The relationship of Federal expenditures and programs for the development of natural resources and for regional development to the processes of economic growth in the private sectors of the economy; (2) the usefulness or limitations of such programs for purposes of stabilization; and (3) the standards employed by the Department of the Interior in determining the kind and size of such programs requested.

While the Department of the Interior is the principal natural resources agency in the Federal Government, it is not the sole Federal agency in this field. The total expenditures of the Department which amounted to $572 million during the fiscal year 1957 comprised only one-third of the estimated total Federal expenditures on the conservation and development of natural resources. The Department of Agriculture, the Tennessee Valley Authority, and the Corps of Engineers of the Department of the Army accounted for most of the remaining two-thirds. This statement does not purport to cover the activities of all these agencies, but is limited to the expenditures and programs of the Department of the Interior.

Before discussing the various programs of the Department in connection with the issues raised by the subcommittee, it would be helpful to set forth certain considerations which are associated with Federal expenditures on natural resources development.

Under our free enterprise economy, the basic responsibility for the development and use of our natural resources rests with private groups and individuals. The expenditures of the Federal Government on the conservation and development of water, land, forest, mineral, fish and wildlife, and outdoor recreation resources are small in relation to the total expenditures on these activities by State and local governments and private enterprise. The role of the Federal Government is limited to supplementing and strengthening the efforts of other governmental units and private enterprise. Thus, even the most comprehensive analysis of Federal expenditures on natural resources development is inevitably only a partial analysis.

Federal programs for the development of natural resources are almost entirely long range in two respects. First, the full economic effects of many of these programs may not be felt for several decades,

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and second, the projects themselves, notably in the field of water resources development, may require years and perhaps decades to complete because of their complexity.

Because of the long-range nature of many of these projects, private enterprise would be reluctant to undertake them in the face of the great uncertainty inherent in any long-term investment. Another consequence of this aspect of natural resources projects is the difficulty of making precise economic evaluations of such projects. The analysis of expenditures whose major effects occur in the future must be based on the underdeveloped art of economic forecasting.

Because of the limited magnitude and long-range character of Federal expenditures for natural resources development, the greatest economic impact of these expenditures will come from the results of the expenditures in the form of increased productive capacity, rather than from their immediate contribution to aggregate demand. This imposes a severe limitation on the usefulness of these expenditures as an instrument for counteracting cyclical fluctuations in the economy.

Many of the results of these expenditures, though they are tangible, cannot be accurately measured in monetary terms. This is true of expenditures on research, on certain types of conservation, and on the development of recreation resources which are freely available to the public.

A measure of the total contribution of Federal expenditures on natural resources development to the growth of the private sectors of the economy would have to take account not only of the direct effects of these expenditures on the productive capacity of the economy, but also of the indirect effects on private investment which can be attributed to the initial Federal expenditure. For example, an irrigation project which brings arid land into production may stimulate a volume of private investment well in excess of the amount of the Government expenditure. The development of a quantitative measure of the total economic effects of Federal expenditures on natural resources development would require highly involved statistical techniques which cannot be attempted here.

The economic effects of Federal expenditures on natural resources development are frequently expressed in terms of their direct and indirect contribution to the gross national product, which includes not only the effect on the economy's productive capacity, but also the total demand induced by the utilization of the additional productive capacity. In this paper, however, we are concerned primarily with the contribution of Federal expenditures to the growth of the economy. Whether the increase in productive capacity is used will depend upon the level and composition of demand throughout the entire economy.

The most direct economic impact of many types of Federal expenditures for natural resources development is local or regional. This arises from the fact that some resources cannot be transported over long distances. In addition, there are statutory limitations on the geographical scope of certain programs. The activities of the Bureau of Reclamation, for example, are confined to the 17 Western States. This factor imposes a serious limitation on the usefulness of the Department of the Interior's expenditures as an instrument of national fiscal policy.

The basic objectives of the Department of the Interior are to foster the development and conservation of our natural resources so that we

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can produce, at the lowest possible cost, the food, fiber, and raw materials needed by our growing population and expanding economy; and to protect and enlarge the opportunities for outdoor recreational activities such as fishing, hunting, and camping.

As the economy grows, the demands on our natural resources will continue to increase. According to the most authoritative estimates, our 1975 population will need about 453 billion gallons of water a day—nearly twice as much as we need now. Our electric power generating capacity will have to increase from 123 million kilowatts in 1956 to about 321 million kilowatts in 1975. Our requirements for minerals and fuels in 1975 have been estimated at more than double our present consumption.

The most serious problems confronting our natural resources industries arise, paradoxically, as a result of our high level of economic activity. The unprecedented output of our farms, factories, and mines is causing tremendous drains on some of our resources.

In the field of electric power, for example, we have reached a stage where most of the economically feasible hydro sites have been developed. It has been estimated that during the next 20 years, falling water can provide no more than 8 percent of our new generating capacity, unless we are prepared to pay a substantially higher price for our electrical energy. It is clear that we must continue our unremitting search for new sources of relatively lower-cost energy if we are to meet our growing needs.

Our increasing consumption of minerals is causing heavy depletion of known deposits of our high-grade ores. To counteract this trend, we must find ways of using economically our low-grade ores, and making greater use of those minerals that are still abundant, such as magnesium.

The economic forces which are exerting an upward pressure on the costs of producing electric power and minerals are also making themselves felt in the development and use of our water resources. Unless we do a more effective job in the conservation and use of our water supply, some regions of the country face the prospect of paying a substantially higher price for water.

Our rapid economic growth is having a profound impact not only on energy, mineral, and water resources, but also on our great scenic, wilderness, and historic areas, and on fish and wildlife resources. With higher incomes, more spare time, and more and better highways, more people than ever are visiting the national parks and other recreation areas. Within the past 6 years, the number of visits to the national park system has increased by two-thirds. To accommodate the rapidly growing number of visitors, we must improve and expand the facilities in our national park system and other outdoor recreation resources.

The sections of this paper which follow describe the programs of the Department of the Interior for the conservation and development of our natural resources and the relationship of these programs to economic growth and stability.

The annual expenditures on the various programs of the Department of the Interior during the past 4 years are shown in table 1.

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TABLE 1.—*Expenditures*[1] *of the Department of the Interior on the conservation and development of natural resources*

[Fiscal years. In thousands of dollars]

	1954	1955	1956	1957
Bureau of Reclamation:				
General investigations	$3,167	$3,755	$4,754	$5,350
Construction and rehabilitation	167,602	130,753	127,409	126,324
Operation and maintenance	18,348	19,683	21,831	21,387
General administrative expenses	4,416	3,684	3,771	3,651
Emergency fund	177	264	245	57
All other funds	2,693	2,554	3,016	14,024
Total[2]	196,403	160,693	161,026	165,978
Bureau of Land Management:				
Management of lands and resources	11,464	12,160	14,157	17,586
Construction	1,427	1,970	4,367	4,310
All other funds	25,988	35,073	33,526	38,683
Total	38,878	49,203	52,050	60,579
Bureau of Mines:				
Conservation and development of mineral resources	15,458	13,832	13,982	13,857
Health and safety	4,627	5,129	5,431	4,894
Construction	1,009	276	443	4,131
General administrative expenses	1,150	982	1,109	954
All other funds	1,644	−943	−1,400	−541
Total	23,888	20,219	20,965	23,836
Geological Survey:				
Surveys, investigations, and research	26,710	27,390	27,852	29,992
All other funds	241	−309	33	−324
Total	26,951	27,081	27,885	29,668
National Park Service:				
Management and protection	8,965	9,191	10,410	11,406
Maintenance and rehabilitation of physical facilities	7,978	8,624	9,128	9,941
Construction	15,016	15,861	23,134	35,852
General administrative expenses	1,236	1,050	1,241	1,265
Total	33,195	34,726	43,913	58,464
Fish and Wildlife Service:				
Management of resources	7,939	7,208	7,858	10,132
Investigations of resources	4,345	4,371	4,820	4,546
Construction	560	383	536	1,115
Fish restoration and management	2,461	3,787	4,260	4,324
Wildlife restoration	13,450	13,791	13,193	13,669
Migratory bird conservation	4,477	6,455	5,187	4,242
Promotion and development of fishery products and research		1,170	3,581	4,009
General administrative expenses	807	720	810	824
All other funds	3,809	4,351	3,949	6,486
Total	37,888	42,238	44,194	49,347
Bureau of Indian Affairs:				
Education and welfare services	49,100	61,031	45,603	45,028
Resources management	12,622	11,031	12,313	13,780
Construction (buildings, utilities, and land and water rights acquisition)	17,087	14,526	10,553	9,951
Road construction and maintenance (CA)		5,095	8,999	9,789
General administrative expenses	3,047	2,644	2,798	2,938
All other funds	2,023	2,428	8,151	9,685
Total	83,880	96,756	88,418	91,171
Total for Department	535,140	515,299	511,790	572,079

[1] Exclusive of trust funds.
[2] Discrepancy in totals are due to rounding.

NOTE.—General departmental administrative and other expenditures are not shown separately.

NATURAL RESOURCES EXPENDITURES AND ECONOMIC GROWTH

Water resources

One of the Department's most important programs for expanding our resource base is the reclamation of arid and semiarid lands

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through the construction and operation of irrigation projects by the Bureau of Reclamation in the 17 Western States.

Since 1902, the Bureau has built facilities which furnish a full or supplemental water supply for 7.7 million acres of irrigable land which represents approximately one-quarter of all the irrigated land in the 17 Western States. The crops produced on these lands served by reclamation projects during 1956 were valued at $952 million.

The earliest reclamation projects were constructed for irrigation water storage without regard to the flood-control needs of downstream areas and the multiple uses of water. However, Congress soon recognized the need for the multiple-purpose development of water resources and amended and expanded the original Reclamation Act to include not only irrigation and flood control, but also municipal water, hydroelectric power, navigation, fish and wildlife, recreation, and pollution abatement.

As towns adjacent to projects grew, many of them exhausted their initial supply and looked to the water stored for irrigation as a solution to their municipal water problem. Out of this, there evolved the practice of developing water for municipal use. As a consequence, reclamation projects have contributed an important part of the water supply of many communities, including the metropolitan area of southern California, Salt Lake City, and several municipalities in the Great Plains States.

While the Bureau of Reclamation does not construct projects exclusively for the generation of hydroelectric power, it has built 18 multipurpose projects with power facilities. These projects have 36 powerplants with a total generating capacity of over 5 million kilowatts.

The Federal Water Power Act provides for the licensing of power sites by the Federal Power Commission for development by State or local governments and private utilities. However, there are many instances where sites suitable for hydroelectric development are also suitable for the construction of storage dams and reservoirs. In such cases, the Bureau undertakes investigations of the feasibility of multipurpose development and presents its findings to Congress.

Irrigation and farm surpluses

The need for expanding agricultural production through irrigation must be judged in the light of the expected increase in the demand for food and fiber and the means available for meeting this demand.

The Department of Agriculture has estimated that the output of our farms will have to increase by one-third by 1975, and that the annual increases will have to be about 20 percent greater than the prodigious gains recorded during the postwar years. Livestick production will have to increase by about 45 percent and farm crops by about 25 percent. The annual increase in feed grains may have to be as much as 5½ times greater than the rate of increase in recent years. It has been estimated that the additional output will require the equivalent of 150 million acres of cropland by 1975. There are, of course, many ways in which farm production can be increased through advances in farm technology which increase yields per acre. But we will also have to increase the amount of land under cultivation.

Our productive farm acreage has been diminishing under the steady pressure of growing suburbs, industrial expansion, and land requirements for new highways and airports. Our new superhighway sys-

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tem, for example, is expected to require nearly a million additional acres of land. These and other inroads are taking more than a million acres of farmland out of use each year. In contrast with this, reclamation is bringing into production only about 100,000 acres a year.

As far as farm surpluses are concerned, irrigation in the West contributes very little to the production of the 5 principal crops which comprise about 87 percent of our agricultural surpluses. About three-quarters of the irrigated land produces forage and grain crops which are fed to livestock in the dry grazing areas of the West.

Federal reclamation projects accounted for 0.4 percent of our total corn production, less than 2 percent of our wheat production, 2.8 percent of our rice production, 5.8 percent of our production of upland cotton, and no tobacco. Table 2 summarizes for the principal crops, the relationship of the production on these projects to total United States production and the total amount under crop support in 1956.

TABLE 2.—*The production on Federal reclamation projects of principal crops under the Federal price-support program as related to United States production and total amounts under price supports—1956*

Crop	U. S. Bureau of Reclamation projects							
		Price-support program		Production		Assumed support		
	Production	Amount	Percent United States production	Amount	Percent United States production	Amount [1]	Percent United States support program	Percent United States production
	Thousand	*Thousand*		*Thousand*		*Thousand*		
Corn.....bushels	3,451,292	434,729	12.60	13,931	0.40	1,441	0.33	0.04
Wheat.....do	997,207	250,874	25.16	19,709	1.98	4,568	1.82	.46
Cotton:								
Upland.....bales	13,303	3,829	28.78	775	5,.83	92	2.41	.69
American-Egyptian...do	49	1	1.91	20	41.85		41.99	.80
Barley.....bushels	372,495	76,391	20.51	28,476	7.64	2,993	3.92	.80
Oats.....do	1,152,652	35,996	3.12	10,420	.90	530	1.47	.05
Sorghums.....do	205,065	42,056	20.51	4,498	2.19	309	.73	.15
Rice.....do	47,402	23,727	50.05	667	2.81	365	1.54	.77
Rye.....do	21,558	3,144	14.58	84	.39	21	.65	.10
Beans.....hundredweight	17,114	4,694	27.43	4,743	27.72	1,023	21.80	5.98
Flaxseed.....do	48,712	17,424	35.77	993	2.04	9,354	.05	.02

[1] Data on amount of any crop under price-support loans and purchase agreements is available on a State basis. The proportion of total State production which is under support is applied to the production on Federal reclamation projects to arrive at a calculated or assumed level of support for crops grown on reclamation projects.

The irrigated lands in the Western States produce many of the crops which have become an important part of our diet. They produce virtually all of our apricots, almonds, walnuts, filberts, dates, lemons, figs, and prunes. They also supply about 95 percent of the grapes and plums, 90 percent of the lettuce and sweet cherries, 75 percent of the avocados, pears and cantaloups, 65 percent of the asparagus, 50 percent of the peaches, 87 percent of the fresh peas, and more than 50 percent of the commercial truck crops. Many of these crops cannot be grown in any other part of the country and much of this production takes places during the off season for other producing areas.

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The long-term character of reclamation projects relates not only to their long amortization period which extends over 50 years or more, but also to the long period of time required for the investigation, planning, and construction of the projects. These investigations frequently require many years. After Congress authorizes a project, there is an additional delay before appropriations are made and detailed plans and specifications are complete. Thus, many years usually elapse before construction is completed. Farm layout and development and the establishment of an optimum cropping program entail further delays in achieving full production. Depending on size, a period of from 5 to 20 years may be required before an irrigation project is fully developed and producing.

It is clear that the reclamation program is directed toward the long-term objective of developing our agricultural resource base to serve our future needs. The ultimate merits of the program cannot be appraised on the basis of current conditions. They can be judged only in the light of future developments.

Lands and forests

Our expanding economy is creating additional demands for the use and development of the public lands and their resources. In addition to private sources of demand, States and counties are showing increased interest in acquiring or using public lands for such purposes as recreation, wildlife, and forest management.

While the programs in the field of lands and forests are primarily management and conservation programs, they do have certain developmental features.

As manager of the public domain which comprises 468 million acres of land in the United States and Alaska, the Department of the Interior through its Bureau of Land Management administers programs concerned with the classification, use, and disposal of public lands and the development, conservation, and use of the natural resources on these lands.

The Bureau of Land Management is responsible for the disposal of public lands to private and public organizations and individuals for various uses. The Bureau also issues leases, licenses, or permits for land use. Where conflicts arise in the competing demands for land use, the Bureau resolves such conflicts by a process of land classification which allocates lands to their highest uses in the interest of maximum development.

The Bureau manages Federal grazing areas totaling 170 million acres. These Federal rangelands provide seasonal or year-round forage for nearly 10 million head of livestock which represent an important element in our production of meat, wool, and leather.

Through the granting of grazing permits in grazing districts, and grazing leases on public lands outside grazing districts, the Bureau administers grazing and range activities to protect the productivity of lands, permit the highest use of forage, and, at the same time, retard soil erosion and provide watershed areas. Programs are also carried out for the rehabilitation and more effective use of rangelands.

The Bureau administers more than 161 million acres of forest and woodland, which consist of 46 million acres of commercial forests and 115 million acres of noncommercial woodlands. It carries on a program of sustained-yield forest management for the purpose of obtain-

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ing continuous timber production at the highest possible level. Under this program, timber sales amounted to more than $27 million in 1956. In addition, the Bureau of Indian Affairs manages 6 million acres of commercial forest on Indian trust lands which produce an annual harvest valued at approximately $14 million.

Mineral resources

Mineral resources, unlike water and timber, cannot be renewed. With every ton of ore we take from the earth, we reduce an irreplaceable supply. At the same time, it should be recognized that Nature has probably endowed the earth with more bodies of ore than we shall ever need. The problem is to find the concentrations of ore which are necessary to meet the demands of a growing and changing economy. Changes in the composition of the demand for mineral resources arising out of technological advances may be more significant than the overall growth of demand. Minerals and metals which were unknown only a few decades ago have assumed major importance in our industrial economy.

The principal objectives of the Federal Government in the field of mineral resources are (1) to assure an adequate supply of mineral raw materials at the lowest possible cost to meet our security requirements and the needs of an expanding economy; (2) to maintain a mining industry capable of competing in peacetime and which can provide high-level production in the event of war; and (3) to bring about an orderly and wise use of our mineral resources.

The major contributions of the Federal Government to the development of our mineral resources come from programs of scientific research and development. The Bureau of Mines and the Geological Survey carry on programs for the collection, interpretation, and dissemination of information concerning minerals; the development of new prospecting techniques; and research in all types of minerals technology. Since mineral resources are not renewable, the long-range supply problems can be solved through the development of better methods of locating new ore bodies, by improvements in the processing of lower grade deposits, and by searching out and learning how to utilize new materials. At one time, the mining industry had to rely upon fortuitous outcroppings to locate mineral deposits. But, with the depletion of some of our resources, it has become necessary to reach below the earth's surface.

Although the actual prospecting for minerals is primarily a task for private industry, the minerals investigations of the Department of the Interior have directly or indirectly resulted in the discovery of significant new deposits. The Yellow pine tungsten deposit in Idaho is a case in point. Another is the San Manuel copper find in Arizona, where the Department's initiative in investigating a relatively unpromising outcrop resulted in the discovery of one of the country's largest copper deposits.

The work of the Bureau of Mines in the beneficiation of ores has complemented the work of the mining industry in the processing of lower grade ores that could not be profitably mined before. Its work in cooperation with the industry to bring into production the low-grade taconite iron deposits of Minnesota and Michigan is helping to offset the depletion of the high-grade iron ores of the Lake Superior district, and is contributing to the efficiency of blast furnaces by providing them with a high-grade feed.

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Another of the Department's outstanding contributions to the strengthening and diversification of the minerals industry has been the development of new mineral products. Titanium, for example, which is light in weight yet strong and highly resistant to corrosion, has given impetus to technological developments where these characteristics are necessary, as in aircraft-frame construction, marine equipment, and jet engines. Another example is zirconium, which is contributing to advances in the technology of atomic energy.

The most serious problems confronting the mining industry are the steady decline in the known deposits of higher grade ores, the tendency toward higher costs of mining the low-grade ores, and the cost of searching for and mining deeply buried ore deposits. The Department of the Interior is helping to solve these problems by taking the lead in research for better techniques for finding ore and for the development of better mining methods. Through a program of direct financial assistance to private industry, the Department also encourages exploration.

Under the authority of the Defense Production Act, the Defense Minerals Exploration Administration within the Department of the Interior has since 1951 conducted a program to encourage exploration for strategic and critical materials. While the program has had special appeal for small operators who have been active in exploring for highly strategic minerals which do not occur in sufficiently large deposits to interest large companies, some of the outstanding discoveries, such as the large zinc deposits in Tennessee, have been made by the large companies.

Recreation resources and commercial fisheries

With rising incomes and more leisure time, the demand for recreation can be expected to grow in the years ahead. The Department of the Interior has important responsibilities for the development of outdoor recreation resources to meet these growing needs. Through the National Park Service, the Department administers 29 national parks and other areas of scenic or historic importance. The Department is also active in the development and conservation of fish and wildlife resources.

The number of visits to the national parks is expected to rise from 55 million in 1956 to 80 million in 1966. To accommodate this rapidly growing number of visitors, the National Park Service initiated last year a $900 million, 10-year program of improvement and development. This program, which is known as mission 66, provides for the construction of roads and trails, the expansion of water and sewage systems, and more visitors' centers, museums, and administrative buildings. Private enterprise will undertake the expansion and improvement of overnight accommodations, restaurants, shops, service centers, and the like.

The task of providing adequate outdoor recreation facilities extends beyond the national-park system. Tens of millions of Americans participate in the sports of hunting and fishing. The Department of the Interior, through the United States Fish and Wildlife Service handles the Federal responsibilities for the conservation of fish and wildlife resources. The specific programs of the Service include the management of the migratory-bird resource, wildlife control, and work in the sports-fisheries field on Federal lands in coop-

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eration with the States. These programs, like those in lands and forests, are mainly management and conservation programs.

The basic problem concerning fish and wildlife resources is how to expand these resources in the face of a diminution in the amount of land and water available for habitat. Part of the solution lies in the multiple use of our land and water resources. The Department's management program also includes the conservation of marshes and wet lands for migratory waterfowl, and land acquisition for wildlife refuges.

In addition to its activities in sports fisheries and wildlife, the United States Fish and Wildlife Service also conducts an active program for the conservation and development of our commercial fisheries. The program includes biological and technological research to improve productivity, the restoration of mature fisheries, the development of latent fisheries, and the location of new ones. The Service also provides statistical and marketing services to private industry.

Natural-Resources Expenditures and Economic Stability

The relatively small magnitude and long-range character of Federal expenditures for natural resources development severely limit the usefulness of these expenditures as an instrument for promoting economic stability. Their principal economic consequences arise out of their effects on the maintenance and expansion of productive capacity rather than from their initial impact on demand. The effectiveness of Federal fiscal policies for promoting economic stability depends primarily on their ability to stimulate or curtail total demand. Natural-resources expenditures are simply too small to have a significant effect on total demand, though they may have important local effects. Moreover, their size and character are determined by their expected long-run impact on supply or productive capacity rather than by their short-run income-generating effects.

These expenditures are long range, not only with respect to their principal economic effects, but also in terms of the time elapsing between the decision to spend and the actual expenditure. This is especially characteristic of expenditures on reclamation projects. The long expenditure period makes it difficult to accelerate or curtail these expenditures rapidly enough to counteract short-term fluctuations in the level of economic activity.

While the effectiveness of natural-resources expenditures as an instrument of anticyclical policy is very limited, once the projects are completed these expenditures can make a significant contribution to the stability of particular regions, especially in the field of agriculture.

A depression in an agricultural area may be caused not only by a general decline in demand and prices, but also by a contraction of output resulting from natural disasters, such as drought and floods. By providing protection against such disasters, the construction of irrigation and storage dams reduces the vulnerability of certain agricultural regions to depressions wrought by Nature.

Irrigation projects may also contribute to stability by providing the means for the diversification of crops. Irrigated land can be more readily adapted to new crops than dryland farming. An area which depends on a single crop is more vulnerable to sharp fluctua-

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tions in demand and prices than one which can grow a variety of crops. Even during a period of general prosperity, a single-crop, dryland area may find itself in a depressed condition as a result of a sharp decline in the price of its crop. However, this is less likely to occur in an irrigated region which is capable of growing a variety of crops.

Standards for Determining Size and Character of Program

The level of Federal expenditures on natural-resources development, like all Federal expenditures, is dictated first of all by the size and composition of the national budget. The size of individual programs is determined by the estimated long-term needs for particular resources. Since Federal programs for resource development are designed to supplement and strengthen the efforts of State and local governments and private enterprise, their size and character will also be influenced by the extent to which these efforts are expected to meet future needs. The level of certain programs, notably research in water, mineral, and fishery resources, is also influenced by the availability of technical and scientific personnel.

In general, the resource-development programs of the Federal Governments do not lend themselves to rigorous evaluation with respect to their economic efficiency because of the almost insuperable difficulty of measuring the results of these programs. This is especially true of the research programs and other programs whose benefits cannot be readily expressed in monetary terms.

However, in the field of water-resources development, a serious effort is made to calculate the economic costs and benefits of specific projects. Under this procedure, costs and benefits are reduced to monetary terms. The project is generally considered to be economically justified if total benefits are estimated to exceed total costs, and if the proposed project is the least costly of the alternative means for meeting the particular needs. The complete analysis of the projects also includes consideration of benefits which cannot be expressed in monetary terms.

Costs can be measured with reasonable accuracy. Benefits are much more difficult to estimate even if the analysis is confined to primary benefits. For one thing, these benefits occur in the future and their estimation involves a large element of uncertainty. And secondly, certain benefits such as recreation which does not have a market price are incapable of monetary measurement. The analysis therefore involves a substantial element of judgment. However, despite the conceptual and statistical limitations of benefit-cost analysis, it does represent one of the few serious attempts to evaluate the economic efficiency of Federal expenditures.

Conclusion

The resource programs of the Department of the Interior that contribute most directly to economic growth are those which are oriented toward the expansion of the Nation's resource base. These programs include reclamation which increases the amount of productive land, the supply of usable water for domestic and industrial purposes, and electric power generating capacity; and the development of the na-

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tional-park system and fish and wildlife resources to accommodate greater demands on these outdoor recreation resources.

Though their results are more difficult to identify than those of the above programs, the research and data collection activities in water, mineral, and fishery resources conducted by the Geological Survey, Bureau of Mines, and Fish and Wildlife Service, respectively, represent a vital part of the programs of the Department of the Interior for natural-resources development.

In addition to the development programs, the Department of the Interior also conducts a number of programs which are aimed at the conservation of our resource base. As manager of the public lands, the Bureau of Land Management is concerned almost exclusively with this type of program. Indeed, conservation is an integral part of virtually all Federal programs in the field of natural resources.

Since this statement deals mainly with programs that contribute to economic growth, conservation has not been emphasized. But we should not overlook the simple axiom that in order to achieve maximum growth, we must not allow our resources to be wasted.

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