

# NATIONAL RESOURCES BOARD

**A Report on National Planning and Public Works  
in Relation to Natural Resources and including  
Land Use and Water Resources  
with  
Finding and Recommendations**

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Land Use and Water Resources  
with  
Findings and Recommendations**

**DECEMBER 1, 1934**

**Submitted to the President in Accordance with  
Executive Order No. 6777, June 30, 1934**

NATIONAL RESOURCES BOARD

INTERIOR BUILDING

WASHINGTON

November 28, 1934.

The PRESIDENT,  
The White House,  
Washington, D. C.

MY DEAR MR. PRESIDENT:

We have the honor to transmit herewith the report of the National Resources Board with the supporting documents used in its preparation.

This report carries this significance: That it is the first attempt in our national history to make an inventory of our national assets and of the problems related thereto. Moreover, for the first time it draws together the foresight of the various planning agencies of the Federal Government and suggests a method for future cooperation.

The members of the Board have not all had an opportunity to give full consideration to all of the points involved. However, they unanimously agree in principle and desire to indicate to you their belief in the great importance of this study and of initiating steps toward the accomplishment of the broad program therein outlined.

Very respectfully yours,

HAROLD L. ICKES  
Secretary of the Interior, Chairman

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Secretary of War  
HENRY A. WALLACE  
Secretary of Agriculture  
DANIEL C. ROPER  
Secretary of Commerce  
FRANCES PERKINS  
Secretary of Labor

HARRY L. HOPKINS  
Federal Emergency Relief Administrator  
FREDERIC A. DELANO  
CHARLES E. MERRIAM  
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## FOREWORD

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The natural resources of America are the heritage of the whole Nation and should be conserved and utilized for the benefit of all of our people. Our national democracy is built upon the principle that the gains of our civilization are essentially mass gains and should be administered for the benefit of the many rather than the few; our priceless resources of soil, water, minerals are for the service of the American people, for the promotion of the welfare and well-being of all citizens. The present study of our natural resources is carried through in this spirit and with a desire to make this principle a living fact in America.

Unfortunately this principle has not always been followed even when declared; on the contrary, there has been tragic waste and loss of resources and human labor, and widespread spoliation and misuse of the natural wealth of the many by the few.

The conservation movement begun a quarter of a century ago marked the beginning of an organized national effort to protect and develop these assets; and this national policy was aided in many instances by the individual States. To some extent the shameful waste of timber, oil, soil, and minerals has been halted, although with terrible exceptions where ignorance, inattention, or greed has devastated our heritage almost beyond belief.

This report of the President's National Resources Board brings together, for the first time in our history, exhaustive studies by highly competent inquirers of land use, water use, minerals, and related public works in their relation to each other and to national planning. The report lays the basis of a comprehensive long-range national policy for the conservation and development of our fabulous natural resources. If the recommendations contained herein are put into effect, it is believed that they will end the untold waste of our national domain now, and will measurably enrich and enlarge these national treasures as time goes on.

An examination of the reports upon land, water, minerals, and public works, respectively, shows the importance of considering these special factors in their relations to one another, and to economic and governmental problems as well. Water policies and land policies cannot be planned except as taken together, and evidently minerals cannot be considered apart from land in a planning program. Erosion is a problem of land and water; afforestation is likewise a problem of land and water; flood control is related to navigation

and also to land cultivation systems. Water pollution is closely related to industrial development, as well as to sanitation, urban and rural. Reclamation policies are inseparable from the agricultural policy of the Nation, while the recreation policies discussed in relation to land and water are appropriate to any comprehensive plan for social welfare.

It is the special purpose of the National Resources Board to bring together these and other social interests, sets of data, and principles of action, and to consider them from the over-all position of national policy. In so doing, we should guard against too narrow a view of the possibilities of natural resources development, attractive as they are. The economic crisis in the United States was not caused by erosion, serious as its inroads are on our soil assets; nor is unemployment due chiefly to lack of adequate flood control, calamitous as the consequences of floods are in many instances. It is too much to suppose that the proper development of our drainage basins will of itself solve the problems of the perplexed body politic.

The problems centering around land and water cannot be solved in these terms alone, but require for their practical and successful treatment a full consideration of the broader but closely related aspects of agriculture, industry, labor, transportation and communication, health, education, public finance, governmental organization.

Finally, human resources and human values are more significant than the land, water, and minerals on which men are dependent. The application of engineering and technological knowledge to the reorganization of the natural resources of the Nation is not an end in itself, but is to be conceived as a means of progressively decreasing the burdens imposed upon labor, raising the standard of living, and enhancing the well-being of the masses of the people. It follows that the social directives back of such technical programs should be developed by persons competent by training and point of view to appraise the human values involved.

A *continuous national planning* agency was recommended by the National Planning Board of the Public Works Administration in its report last June. By Executive order, on June 30, 1934, the President established the National Resources Board as successor to the National Planning Board and the Committee on National Land Problems, consisting of the Secretary of the Interior, Secretary of Agriculture and the Admin-

istrator of Federal Emergency Relief. Thus the new Board represented a consolidation of previously existing agencies and a continuation of earlier activities.

As its first task, the National Resources Board was directed to prepare a report on land and water resources to be presented to the President by December 1, 1934. In this emergency undertaking the Board had the aid of two technical committees, one upon land planning, the other upon water planning. It is significant that, after careful study of the special problems assigned to them, both of these committees presented reports reiterating the need of a permanent planning organization.

*State and regional planning* has been assisted by the National Resources Board through continuation of assignment of consultants to State planning agencies. Largely as a result of the suggestions and stimulation supplied by the National Planning Board and the Federal Emergency Relief Administration, 42 State planning boards have been set up by the governors of the respective States and are actively functioning today.

*Public works planning* was studied intensively by the National Planning Board and a series of researches was arranged and carried to completion. From these data, long-range policies have been developed and are now available for consideration in connection with legislation for the continuation of the Public Works Administration.

*Water planning* was given a new importance and broader interpretation through the work of the Missis-

issippi Valley Committee of the Public Works Administration and the President's Committee on Water Flow. Since a large proportion of the construction bill of the Federal Government is paid out for projects related to water—power, dams, navigation improvements, flood control, etc.—it is particularly appropriate that a water program should be prepared at this time as a sample of public-works planning. For this work, the former Mississippi Valley Committee has become the water planning committee of the National Resources Board.

*Land planning* studies have similarly been carried on continuously over many years, but new efforts were beginning to bear fruit in the Committee on National Land Problems and the Agricultural Adjustment Administration when the National Resources Board was organized. Through the land planning committee, previously set up by the National Planning Board, this work has been coordinated and a restatement of new and old policies is now submitted.

*Mineral planning* studies were begun by the planning committee for mineral policy upon its appointment by the President last April and have been continued with assistance from the National Resources Board. The preliminary findings of the committee are summarized in the following pages.

These matters are treated in this report in accordance with the following table of contents.

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# REPORT OF THE NATIONAL RESOURCES BOARD

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**PART I**  
**REPORT OF THE NATIONAL RESOURCES BOARD**

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## FINDINGS AND RECOMMENDATIONS

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The program indicated in the following sections may be expected, if carried through, to—

1. Provide for the systematic development of our water resources for purposes of sanitation, power, industrial uses, transportation, recreation, domestic consumption, and other collateral uses on a far higher level than ever before.
2. Remove the recurring menace of great floods and vast losses to persons and property.
3. Reduce the heavy losses of soil caused by uncontrolled erosion.
4. Eliminate the use of land incapable of affording a minimum standard of living, develop agricultural production on the most suitable soils only, and aid in raising the standards of living in many agricultural regions.
5. End the wasteful use of our mineral resources and substitute a national policy of mineral conservation.
6. Make available large areas of land for purposes of popular recreation.
7. Assemble basic data in regard to mapping, public finance, and population, necessary for national planning.
8. Avoid the extravagance caused by failure to coordinate public works—Federal, State, and local; bring about better programming of socially useful public works; prepare public works projects suitable, if desired, for use in emergency situations.
9. Provide for continuous long-range planning of land, water, and mineral resources in relation to each other and to the larger background of the social and economic life in which they are set.

It is, of course, idle to expect that the mere declaration of a set of policies will automatically produce such results. Legislation, administration, cooperation of many different types of government on many levels, and strongly supporting public opinion—all are necessary to bring about substantial changes of the kind just indicated. Nor can it be forgotten that the use of natural resources is not a thing apart, but involved closely in the whole mass of human activities, with industry, labor, finance, taxation. Natural resources planning is not planning at all, if it leaves out of account the many vital factors in our economic and social life, the resultant of which makes a standard of living.

It is the judgment of your Board, however, that the broad policies here outlined, would, if put into practical execution with the hearty and continuing support of the Government and the people of the Nation, lead to very substantial gains in the Nation's wealth and in the broad distribution of human welfare at which our national policy aims.

### I. Land Planning Recommendations

#### A. Continuous Planning

1. That a *permanent Land Planning Section* of the National Resources Board or its successor be established, with an advisory committee consisting of representatives of the Federal bureaus primarily concerned and served by the secretariat of the Board.

2. That the *functions of the Land Section* should include:

(a) Action as a clearing house for all projects involving *purchase of land* by Federal agencies to prevent competition and to secure coordination with State and other plans.

(b) Recommendations on proposed *transfer of jurisdiction* over lands among Federal agencies, such as

public domain, Indian reservations, grazing districts, forests, parks, etc.

(c) Advice as to coordination of *land management policies* to encourage consistent erosion control, wildlife, recreation, grazing, forestry, and similar policies on lands under the jurisdiction of different Federal agencies.

(d) Aid in coordination of *research projects* on land use to prevent duplication of research in different bureaus or overlapping of field investigations and demands on service agencies.

(e) Assist in negotiations between Federal and State agencies in developing land policies where Federal as well as State action is needed.

*B. Needed Changes in Use*

1. That a *land purchase program*, to secure more effective use of areas than is probable under private ownership, be undertaken over a term of years, involving:

(a) Continued *retirement of submarginal lands* at the rate of about 5 million acres per year for a period now estimated at 15 years.

(b) Additions to the *National and State forests*.

(c) Additional wildlife refuges.

(d) Additional *National and State parks* and purchase of areas within existing National park boundaries.

(e) Enlargement of Indian reservations.

(f) Squaring out or blocking up *delinquent tax areas* in cooperation with States enacting suitable legislation concerning State and county titles to tax delinquent lands.

2. *Land settlement policies:*

(a) That the *homestead and selection laws* be repealed to prevent new settlements of submarginal areas, and that the States be urged to take corresponding action concerning unorganized State lands.

(b) That the *classification of lands* according to problems and probable best uses be undertaken by Federal agencies in cooperation with the States, in order to designate areas unsuited to settlement.

(c) That *zoning and purchase of rights* by States and counties to promote best uses of land and prevent misuse, be encouraged through availability of Federal cooperation on purchase and other projects in preferred status where State action on zoning has been secured.

3. That *consolidation of some farm holdings*, as well as modification in type of farming should be sought through collaboration of the Department of Agriculture, Relief Administration, and Farm Credit Administration with State and local agencies and individuals.

4. That *tenancy* conditions warrant early consideration of legislation to provide compensation to tenants for improvements and immediate study of the larger problems involved with a view to formulating general policies.

5. That in relation to *subsistence homesteads*—

(a) Early attention be given to providing types of credit necessary for an adequate system of land settlement, free from the restrictions inherent in funds provided primarily for relief purposes.

(b) No steps be taken to facilitate any considerable movement of unemployed people from urban areas into commercial agriculture.

(c) The integration of agricultural and industrial employment by the establishment of homes for workers employed in nonagricultural occupations

where they may produce part of their living become a permanent national policy; and that this policy be broadened to include: Encouraging the location of industries, under proper conditions, in rural areas now seriously deficient in sources of income; reconstruction of existing rural industrial communities, which under *laissez faire* policies took the form of wretched homes huddled around a mine or a factory; planning for the integration of agricultural and industrial employment in the case of relocating industries; encouraging the location of industries on the periphery of large cities in definite relation to rapid-transit facilities to the countryside, as an important objective in city and regional planning; and developing the program of public-land administration with the definite aim of integrating employment on public lands with employment in agriculture.

*C. Reclamation Policies*

1. That in view of the scarcity of water in the arid sections of the country there be developed a well-rounded plan for the use of water, based on technological and economic considerations, and that there be State participation in planning and developing reclamation projects.

2. That the general national policy should be to complete and perfect old developments and to utilize them fully so far as practicable before undertaking new ones.

3. That consideration be given to facilitating the development of numerous small and seemingly unimportant irrigation operations, which, though essentially local in significance, in the aggregate are of considerable economic importance.

4. That no Federal project involving reclamation of land for agricultural purposes be undertaken until its economic feasibility and advantages have been considered by the Departments of the Interior and Agriculture, in conjunction with the coordinated planning agency already suggested.

*D. Operating Policies*1. *Grazing:*

(a) That the provisions of the Taylor Act be extended to include such part of the unreserved public domain as may be primarily used for grazing;

(b) That advantage be taken of the exchange provisions of the Taylor Act to block up districts in public ownership; and

(c) That policies of the Forest Service and Grazing Administration be coordinated.

(d) That policies be formulated in cooperation with the States for State and Federal aids in areas where assessments are reduced or lands withdrawn from taxation due to development of extensive grazing operations.

## 2. Forestry:

(a) That forests under intensive management for sustained yields be greatly increased.

(b) That the State give consideration to a more scientific readjustment of tax burdens on forest lands.

(c) That public aids be continued for forest-fire control.

## 3. Recreation:

(a) That municipalities be urged to provide a minimum of 1 acre for recreation to each 100 persons.

(b) That States be urged to develop State park systems based upon comprehensive surveys.

(c) That the Federal Government's responsibility is chiefly to preserve superlative examples of scenery, historical and archeological sites of national importance, and primeval areas.

(d) That the Federal Government should cooperate with the States in making an inventory of historic sites and in establishing a central agency for selection and preservation of historic monuments.

(e) That the large recreational use of highways calls for more attention to roadsides and parkways.

## 4. Wildlife:

(a) That game policies of Federal agencies need closer integration and also the policies of the United States with those of the States.

(b) That one of the most important measures for the preservation and management of wildlife is the further extension of the system of public wildlife refuges, both for waterfowl and for upland game.

## 5. Indians:

(a) That the responsibility of the United States should not be to continue to support the Indians but to give them an opportunity to work out a more satisfying life.

(b) That appropriate steps be devised to meet the needs of the Indians for (1) additions to now available Indian lands sufficient to provide for those willing to assume the necessary responsibilities of land use, (2) an adequate system of credit, and (3) an educational system designed to fit them for operating land.

## 6. Erosion:

(a) That erosion control policies aim at establishment of control measures on all of the most seriously eroded areas in not more than 10 years and effective checking in not more than 20 years.

(b) That State cooperation be secured through enactment of regulatory legislation and active work by appropriate State agencies.

(c) That farm-mortgage credit and production-adjustment programs of the Federal Government be related to erosion control activities and conditions.

## II. Water Resources Planning

1. That a permanent Water Planning Section of the National Resources Board or its successor be established.

2. That the functions of the Water Planning Section should include:

(a) To assemble promptly the basic data needed for planning the uses of water that now exist in scattered places, and that it initiate whatever researches are needed to provide additional data.

(b) To proceed as rapidly as is compatible with thoroughness to develop constructive programs for the uses of the country's water resources in the public interest, and for safeguarding that interest against dangers threatened by water.

(c) To make the fullest use feasible of the specialized knowledge and experience possessed by existing public agencies—municipal and State as well as Federal.

(d) To investigate water pollution in all its phases, including the effect of pollution on fish and other forms of aquatic life and organisms.

3. That the present Water Planning Committee make detailed engineering, social, financial, and legal studies of water projects in the following drainage basins:

(1) The Connecticut River project in Vermont, New Hampshire, Massachusetts, and Connecticut.

(2) The Delaware River Basin in New York, Pennsylvania, and New Jersey;

(3) The St. Lawrence, and the development of coal-generated, mine-mouth power in Pennsylvania.

(4) The Potomac River in Pennsylvania, Maryland, Virginia, West Virginia, and the District of Columbia.

(5) The Red River in Minnesota, North Dakota, and South Dakota.

(6) Missouri Basin, involving the Kansas City flood-control projects in Kansas and Missouri.

(7) Ohio Basin, in relation to the Pittsburgh flood-control project in Pennsylvania, New York, and West Virginia.

(8) The Kanawha-Greenbrier-New River in West Virginia, Virginia, and North Carolina.

(9) The Caddo Dam and Reservoir on the Arkansas River in Colorado.

(10) The Conchas Dam and Reservoir on the South Canadian River in New Mexico.

(11) The Fort Reno Dam and Reservoir on the North Canadian River in Oklahoma.

(12) The Brazos Basin project in Texas.

(13) The Coldwater-Yazoo River project in Mississippi.

(14) The St. Francis project in Missouri and Arkansas.

(15) Colorado Basin.

(16) The Central Valley in California.

(17) The Columbia Basin in relation to the Grand Coulee High Dam irrigation and power project.

That these studies be started as promptly as possible and prosecuted vigorously, with intent to reach early decisions concerning the wisdom of carrying out the projects in question. Further, that working plans for actual construction be made for those projects that are approved by the committee.

4. That studies for water projects and programs for adoption by Congress be prepared on the basis of drainage basins as wholes and consider a great variety of water and land uses and controls.

5. That further studies are needed concerning division of responsibility and costs among Federal, State, and local authorities.

### III. Mineral Resource

1. That the Federal Government assist the mineral industries to attain economic stability, in order that they may minimize waste of natural resources, maintain reasonable wage standards and protect investments.

2. As means toward that end, careful consideration should be given to collective organization and action by the industries; industry control under public supervision of capacity, production, stocks, and sometimes of price; as guides toward the type of control adapted to different mineral industries, experience under the N. R. A. codes should be analyzed with care.

3. Before any type of control is authorized for an industry, that industry should be required to accept whatever safeguards are required to protect the interest of consumers, of wage earners, and the Nation's long-run interest in the conservation of its natural resources.

4. Each industry presents problems peculiar to itself. An effort should be made to adjust whatever controls are authorized to these peculiar needs and opportunities.

5. The situation of stranded populations dependent on mines now closed calls for prompt attention.

6. To make its efforts increasingly effective, the Government should promote scientific research relating to minerals, foster mineral technology, and provide a permanent planning agency to consider problems of policy.

### IV. Public Works Planning

1. That a *permanent Public Works Administration* be established, based upon the powers, duties, and functions of the Emergency Administration of Public Works. The Federal Employment Stabilization Office should be merged with the Public Works Administration.

2. That the *functions of the Administration* should include—

(a) Preparation of a 6-year budget of construction or longer-range program of public works, revised annually, for submission through a Works Program Committee, to the President and the Congress.

(b) Negotiation of agreements with local, State, and regional authorities governing extent and method of Federal participation in public works projects within general limits to be prescribed by Congress.

(c) Allocation by the Administration of a lump sum appropriation among construction agencies, Federal, State, and local.

3. That a *Works Program Committee* be established to approve programs, negotiations, and allocations, and in general coordinate projects and programs from different points of view, such as unemployment and physical development of resources. The proposed committee should be in continuous contact with the proposed National Planning Board through the Board's secretariat.

4. That a series of advisory *planning committees* of the proposed National Planning Board be established for continuous study of public works projects, in such fields as water, roads, or buildings, and for the formulation of long-range plans and programs in cooperation with State, regional, and Federal agencies.

5. That legislative procedure on public works be developed as an extension of the well-established methods now used for rivers and harbors, public roads, etc., involving—

(a) Approval by Congress of a 6-year program or longer-range plan revised annually.

(b) Appropriation of a lump sum by Congress for allocation by the President among projects included in the approved program.

(c) Authorization by Congress for the Administrator of Public Works to negotiate and approve agreements with local, State, and regional authorities within limits prescribed by Congress and approved by the President.

### V. State and Regional Planning

1. That the States be encouraged to establish permanent State planning boards and to develop as promptly as possible adequate State planning programs.

2. That continued cooperation with and encouragement of State planning and local planning work should be one of the primary obligations and activities of the proposed National Planning Board.

3. That assistance and encouragement to interstate and regional planning should constitute an important obligation of the National Planning Board.

#### **VI. Basic Data for Planning**

1. That a financial balance sheet for the Federal Government should be set up and maintained by the Comptroller General and that provision be made to make available to Federal agencies adequate similar statistics concerning States and municipalities.

2. That a mid-dicennial census of population and employment be taken during the next year, and that techniques be developed for reliable estimates of population and employment for the periods between the years when the Census is taken.

3. That standard maps of the United States be pushed to completion within 10 years as a Federal project with initial appropriations at the rate of fifteen million dollars annually.

4. That assistance be provided for basic studies relating to water and land resources, including climatology, soil erosion, soil classification, and ground water, and that gaging stations on rivers and other recording operations be extended to cover the principal streams of the country.

#### **VII. Continuous National Planning**

1. That an advisory National Planning Board be set up consisting of five members appointed by the

President of the United States, to serve as a general staff for the Chief Executive.

2. That the functions of the Board should be advisory and not executive and should include—

(a) Coordination of planning policies within the Federal Government.

(b) Coordination of planning policies between Federal, State, and local jurisdictions.

(c) Stimulation and assistance to the planning agencies within the Federal Government and in regions, States, and localities.

(d) Fundamental research directed toward the development of basic national policies and programs.

3. That the staff of the Board under a Director be organized as a secretariat responsible for keeping in touch with planning agencies in departments and bureaus and serving as a liaison or agency with coordinating committees and special committees concerned with various aspects of national planning.

4. That continuing advisory committees, including representatives of Federal agencies primarily concerned, be set up dealing with long-time public works planning, land use, water resources, mineral policy, and mapping.

5. That an adequate appropriation of \$            be made available for the work of the Board and included in the budgetary estimates for the executive officer.

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PART I SECTION I  
PLANNING THE USES OF OUR NATURAL RESOURCES

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## SECTION I

### I. Land Utilization and Land Policy

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#### Introduction

The traditional American attitude toward land has been to develop and exploit it as rapidly as possible, with little regard for the consequences. This, to be sure, was the natural attitude of a new Nation reacting against the economic restraints of mercantilism and the remnants of medieval land tenure, and confronted with an apparently illimitable array of resources. This attitude contributed to rapid expansion and development, but at the same time produced a planless, crazy-quilt pattern of land use, destroyed or impaired a large proportion of the Nation's irreplaceable resources, and wrecked the hopes, aspirations, and the very lives of untold thousands of people.

In no other field of our economic activity has the doctrine of laissez faire been given freer rein than in the use of our agricultural lands. Farm lands have been used and abused and bought and sold as mere commodities, practically without restriction. Indeed, the extreme of laissez faire has been reached with respect to some of the Federal Government's own lands, on which unrestricted grazing has been permitted even to the point of destroying valuable range resources.

A gradual change in this traditional attitude has been under way for a generation or more, and has been somewhat reflected in land policies, particularly those relating to forests, but very little in agricultural land policies and in certain other segments of the land problem. The need for more study and definition of land policy led last spring to the creation of a Land Policy Section in the Agricultural Adjustment Administration. A beginning on coordination of land policies had previously been made through the Land Planning Committee of the National Planning Board, including representatives of the Agriculture and Interior Departments.

When the National Resources Board was assigned the task of preparing a report on land use for presentation to the President in the short space of 5 months, it naturally turned to these two existing agencies for help. A Land Section of the Board was set up under Dr. L. C. Gray, who as head of the A. A. A. Land Policy Section and through years of previous work in the field was recognized as a leading authority.

The Land Planning Committee continued as an advisory and coordinating group and later reviewed and revised the report which constitutes Part II of this volume. The Land Planning Committee consists of Dr. M. L. Wilson, Assistant Secretary of Agriculture,

chairman; Oscar L. Chapman, Assistant Secretary of the Interior; Jacob Baker, Assistant Administrator F. E. R. A.; Dr. Hugh H. Bennett, Chief of the Soil, Erosion Service; Charles W. Eliot 2d, executive officer of the National Resources Board; Mordecai Ezekiel, economic adviser, Office of Secretary of Agriculture; Dr. L. C. Gray, Chief, Land Policy Section, A. A. A.; and W. C. Mendenhall, Director, United States Geological Survey.

The report prepared by Dr. L. C. Gray and revised by the committee is based on a series of more detailed reports prepared through the cooperation of a number of Federal agencies to which additional help was assigned by the National Resources Board. Besides the Land Section of the A. A. A., the Bureau of Agricultural Economics, Forest Service, Biological Survey, Bureau of Agricultural Engineering, Weather Bureau, and Bureau of Chemistry and Soils contributed to the report, together with the Indian Office, National Park Service, Geological Survey, and Soil Erosion Service of the Interior Department. From the Science Advisory Board help was forthcoming on scientific data for land planning. In brief, the report is the result of a cooperative effort.

The report of the Land Planning Committee published in this volume is in itself but a summary of the larger Land Report consisting of the data collected and analyzed by the cooperating agencies and organized by the director of the study, Dr. Gray. Many or all of these data, in itself a voluminous report, might appropriately be published after this document is released or transmitted to the Congress for its information.

The Land Report presents a complete reversal of the attitude of heedless and unplanned land exploitation. It reflects the point of view that public policy should aim at effecting such ownership and use of land as will best subserve general welfare rather than merely private advantage. The report, the most comprehensive ever made on this subject in the United States, takes stock of the probable future requirements for the various products and services of the Nation's lands, and inventories the available lands which may be used to satisfy these requirements. It points out glaring maladjustments in present land uses and proposes public policies for correcting such maladjustments and for directing land uses into the most productive channels.

## OUTLOOK FOR POPULATION

As a Nation we have been long accustomed to count upon an extraordinarily rapid increase in population. We now find ourselves faced with the necessity of readjusting our economic system and the outlook for land requirements to the relatively early prospect of a stationary population, due mainly to the virtual cessation of immigration and the rapid decline of the birth rate. A careful analysis of population factors indicates that during the next 25 years the increase will be between 15,000,000 and 17,000,000, or no more than during the single decade ending in 1930. This assumes virtually no net foreign immigration, which has been negligible during the past several years. The prospect is for but little increase in population after 1960, and for a slowly declining population by 1970.

Cessation of foreign immigration and other factors are also materially affecting the age composition. During the next 25 years the proportion of the population comprising persons over 60 years of age will be approximately doubled. On the other hand, young people under 20 years will decrease by about as large number as the increase in persons over 60. Thus, the change in the two age periods of dependency will be in an opposite direction. There will be a little increase in

the proportion of people in the intermediate, that is, the productive period of life.

The distribution of population between country and city will depend largely on the tendencies of rural-urban migration. If we assume the restoration of a volume of cityward migration such as prevailed during the decade ending with 1929, urban population will be nearly 20 percent larger in 1960 than in 1930, while farm population will have slowly declined. Assuming no net migration between city and country, urban population will increase less than 3 percent by 1945 and will then slowly decrease, while farm population will increase nearly one-half by 1960 and rural nonfarm by about one-fourth.

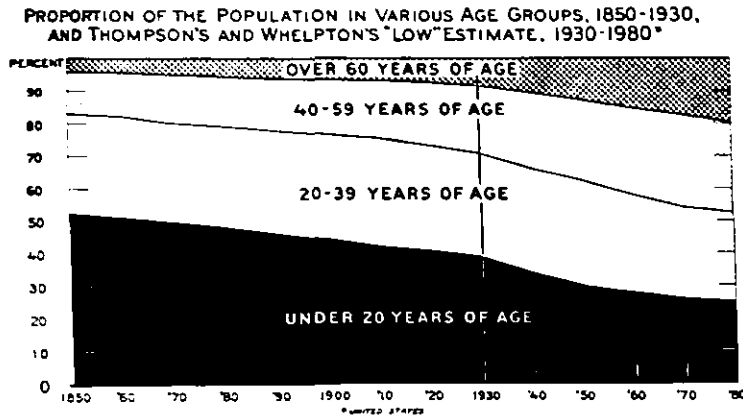
### Important Relationship of Industrial Recovery to Land Utilization and Policy

The conclusions resulting from the two extreme assumptions as to urban-rural migration suggest the great importance of the outlook for industrial recovery in determining our course in land utilization and policy. It is probable that during the next 25 years progress in use of labor-saving machinery and in farming methods would make possible the production of our domestic supply and probable exports of farm products by a farm



Relief map of the United States.



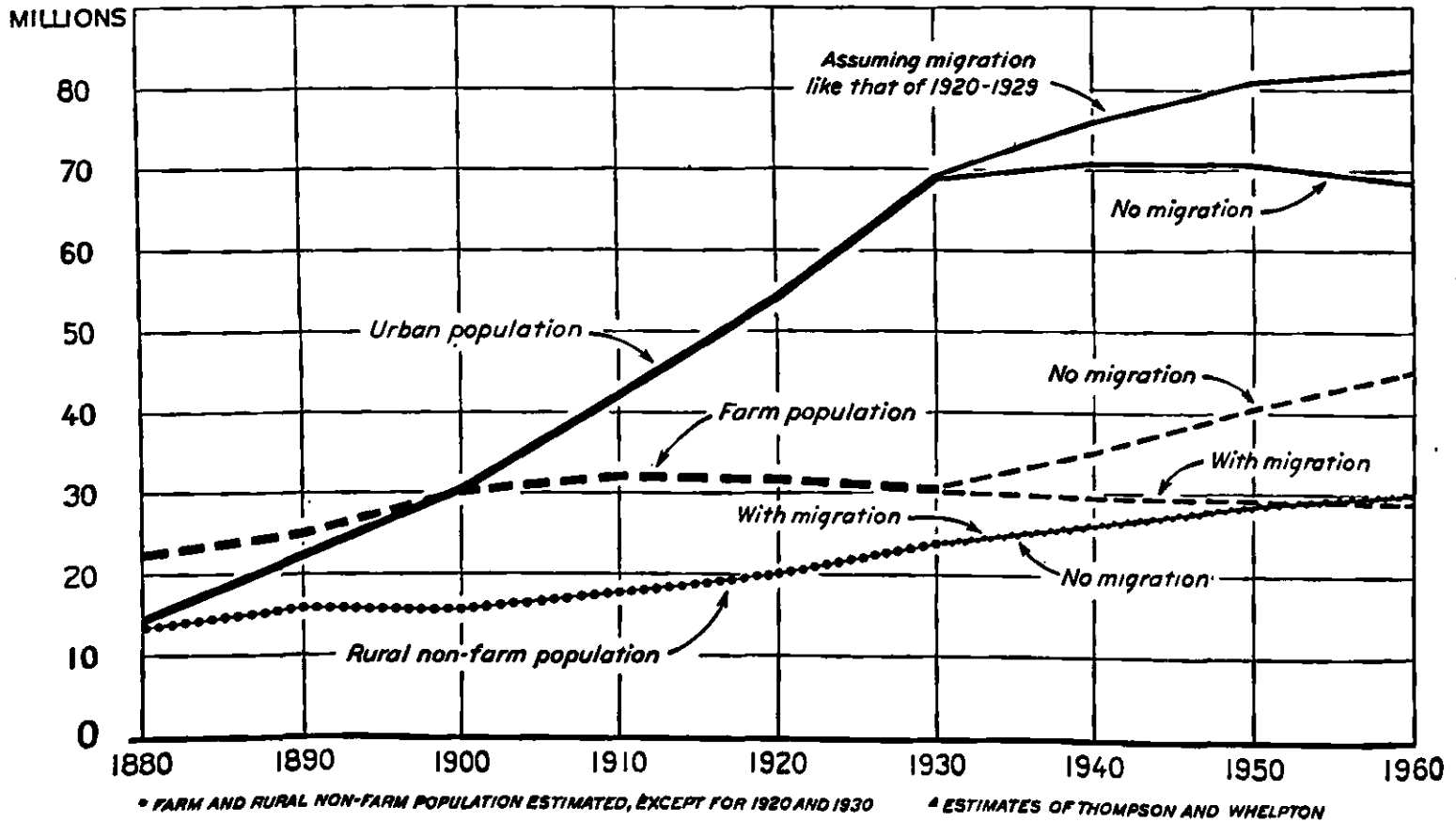


In 1870 over half the population was under 20 years of age, but in 1930 less than 40 percent. By 1950 these children and young people probably will constitute only 30 percent of the population and by 1980, or before, only 25 percent. In 1870 about 5 percent of the population was over 60 years of age. By 1930 the proportion had risen to 8.6 percent. By 1950 these old people will constitute 13 percent of the population, and by 1980 probably 20 percent. In 1870 about 45 percent of the population was between 20 and 60 years of age, which may be considered the productive years of life, taking the people as a whole. By 1930 people in these productive ages constituted 52.6 percent of the total population. By 1950 they will constitute about 57 percent, and by 1980 perhaps 55 percent. During the next few decades, when population will be almost stationary, a larger proportion of the population will be of productive age than in the past, or, probably, in the more distant future.

population little or no larger than at present, as is implied in the assumption of a full restoration of migration to cities. The more serious questions would arise from the other extreme assumption of no rural-urban migration, and the resulting indication that our farm population, merely through natural increase alone, would be greater by one-half in 1960 than it was in 1930.

In all likelihood we shall make at least sufficient recovery in our national economy to avoid this last extreme. How soon, however, such recovery will occur and how completely it will permit the absorption of the population surplus now backed up on farms is a question of supreme importance. Already there are at least 3,000,000 more people on farms than when the depression began, and the natural increase of the farm population is estimated to average a half million per year. It is obvious that the continued increase of this abnormal farm surplus presents serious problems of land tenure, housing, farm employment, agricultural competition, and land utilization and settlement, some of which problems are discussed in the Land Report. (Part II.)

URBAN, FARM, AND RURAL NON-FARM POPULATION, UNITED STATES, 1880-1930 AND ESTIMATES\* FOR 1940, 1950, AND 1960



During the half century, 1880-1930, urban population in the United States increased more than fourfold, rural nonfarm population (estimated prior to 1920) nearly doubled, and rural farm population increased scarcely a half. Practically all of this increase in farm population took place before 1910, little change in number occurring between 1910 and 1930. Looking to the future, and using Dr. Thompson's assumptions as to births and deaths, with no net immigration from foreign lands, it appears that the urban population, under the assumption of no internal migration, will increase less than 3 percent by 1945 and then decline slowly; rural nonfarm population will increase gradually until after 1960, by which year it will be about one-fourth larger than in 1930, while rural farm population will increase by about a half. But assuming the continuation of the 1920-29 migration, urban population will continue to increase until after 1960, by which year it will be nearly 20 percent larger than in 1930, rural nonfarm population will increase about the same as if no migration occurred, while farm population will slowly but constantly decline.

## LAND REQUIREMENTS

### For Agriculture

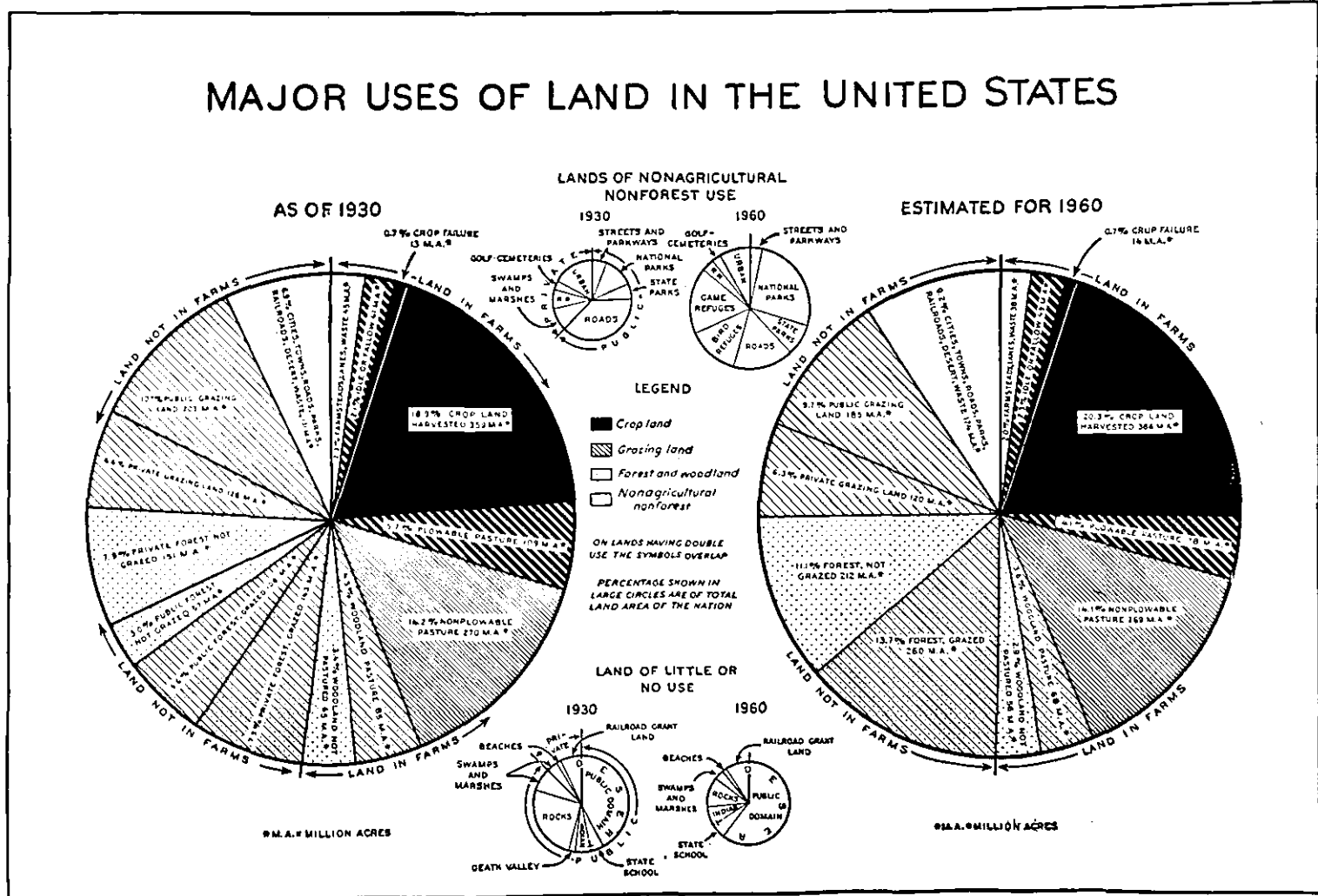
The land surface of the continental United States is in round figures 1,903 million acres. Nearly all of it is capable of some kind of use, although relatively small parts are not now employed and large areas are inadequately or wastefully used.

The accompanying figure shows the present major uses of our land surface and also summarizes the uses 25 years from now as estimated in terms of requirements for various uses in relation to available land resources.

Meeting our requirements for agricultural products is a primary consideration. These requirements will be determined largely by prospective population, standards of consumption, foreign trade, and probable changes in yields and carrying capacity.

There have been notable changes in per capita domestic consumption of various farm products since the

beginning of the present century. Nevertheless, when reduced to terms of land requirements, the per capita acreage of crop land required for domestic consumption of farm products has decreased about 2 percent from the average for the 5 pre-war years. Potentially, future changes in habits of consumption could exert a profound influence on agricultural land requirements. The Japanese, for instance, employ little more than one-tenth as much crop land per capita in providing for domestic requirements as we do; yet, with our much larger acreage millions of Americans have an inadequate and ill-balanced diet, especially lacking in milk, vegetables, and fruit. In part, this is due to poverty, but, perhaps, even more to ignorance and inertia. An adequate diet at moderate cost might be maintained on approximately our present per capita acreage. There appears to be little reason to anticipate, therefore, a material modi-



A little over half of the land in the Nation is in farms. Of this land in farms, 38 percent was in crops in 1929 (including crop failure), 37 percent was in pasture (excluding woodland pasture), and 15 percent in woodland, the remainder being crop land lying idle, farmsteads, lanes, and waste land. All crop land is in farms, but the acreage of pasture, including range land outside of farms, exceeds that in farms. About 60 percent of this pasture land not in farms is publicly owned and 40 percent is privately owned. Nearly all this land is in the western half of the country and consists of range, mostly native, short-grass and bunch-grass vegetation adopted to the semiarid or arid conditions. In addition, much forest and woodland (over one-half) is grazed, particularly in much of the West and portions of the South, where the forest is quite open, permitting sunlight to reach the soil. The carrying capacity of this woodland pasture, like that of range pasture, is generally low. (See table 3.) The 53 million acres of land used for nonagricultural and nonforest purposes is small, but its value is great, particularly the urban land. Finally, there are about 77 million acres of absolute desert, bare rock, certain marsh lands, and coastal beaches which are now valued at almost nothing, but have a social utility for wildlife and recreational use.

Looking to the future, it appears that the estimated prospective increase in population is likely to involve a slight increase in crop land, a decrease of pasture land and of forest in farms, if past trends continue, and increase in forest not in farms, more and more of which seems likely to pass into public ownership, and a notable increase in land devoted to recreational purposes. The increase in crop land will be the net result, as in the past, of decreases in some areas, mostly hilly or eroding lands, or sandy or infertile soils, and increases in other areas inherently more fertile or less exhausted of their fertility, or otherwise more productive, or which can be made productive by reclamation.

cation in per capita requirements of crop land for domestic consumption within the next 25 years.

Export requirements obviously depend in a measure on the choice we and other nations make with reference to foreign trade policy. Previous to 1929 we were exporting the products of 60 to 80 million acres of land, the greater part of which was in cotton, wheat, and corn, in the form of hog products (chiefly, hams and bacon). In 1932 we were exporting the products of only 43 million acres of land, and exports in the crop year 1934-35 will be even lower. An optimistic outlook would involve a slight increase of acreage for export, while a pessimistic point of view suggests no increase whatever, and possibly a small decrease.

While experience of European countries indicates a theoretical possibility of a great increase in productivity of our arable land, it would largely be at heavy expense. The analysis of trends and other considerations in the Land Report indicates that it is doubtful that we shall effect such economies in use of our arable acreage as would materially influence land requirements.

There has been no notable increase in crop yields for several decades. Progress in seed selection, fertilization, and other improvements has been more or less offset by the influence of soil depletion, insect enemies, and the crop diseases. The most important economies in the use of arable land have been through more efficient animal husbandry. Other reasons for not anticipating the meeting of our additional requirements through greater economy in the use of crop land is the fact that control of erosion will necessitate more extensive rather than more intensive use of some of the land, and the further fact that we shall not be subjected to the pressure to induce the adoption of intensive methods characteristic of more densely populated countries. Of course, it is extremely difficult to forecast tendencies of this kind, and it is always possible that epoch-making discoveries or more skillful land use may change our conception of future trends. On the other hand, increase in the use of more productive methods has been checked by the relatively low incomes from agriculture since the war. As demand increases and better balanced production brings about more satisfactory prices, the incentive to seek again more efficient methods of production, such as improved variety of seeds, more productive livestock, legumes, liming, etc., may offset the demands of increasing population. If all farmers were financed so they could use the efficient methods already proved practicable by the best farmers, the yield per acre from the arable area of the humid sections might be increased 30 or 40 percent at no great additional cost in the long run.

When all factors are considered the probable arable land requirements expressed as acreage harvested are estimated by our own experts as follows, in round numbers.

	Acres		Acres
1930.....	359, 000, 000	1950.....	377, 000, 000
1940.....	353, 000, 000	1955.....	383, 000, 000
1945.....	368, 600, 000	1960.....	386, 000, 000

If foreign trade fails to recover the requirement by 1960 might be 10,000,000 acres less. Associated with our harvested acreage there were in 1930 nearly 13,000,000 acres of crop failure, which varies with seasonal conditions, and 41,000,000 acres idle or fallow. The idle and fallow land includes a considerable acreage of summer-fallowed land in western dry-farming areas. Much of the "idle" crop land in the East is abandoned land on its way back to forest or pasture. If the same ratio of these two classes of land to harvested acreage continues, there is indicated a total theoretical acreage of crop land by 1960 of 430,000,000 to 444,000,000 acres (depending on foreign-trade developments) as compared with 413,000,000 acres in 1930.

Thus, it appears probable that we must provide for an additional 20,000,000 to 30,000,000 acres of crop land to meet our requirements in 1960, depending on degree of restoration of exports. Moreover, as indicated later, there are about 25,000,000 acres that should be retired from cultivation because of very poor quality or to prevent further serious deterioration. Thus, we shall probably find it necessary to provide at most for an additional 55,000,000 acres of arable land of average productiveness during the next 25 years.

It may appear strange that this forecast points to the need of increasing our arable acreage when during the present emergency there has been so much emphasis on reducing it. It should be noted, however, that the apparent excess of acreage has been due largely to a collapse of foreign and domestic demand; that the present arable acreage is not greatly in excess of our physical requirements; and that the forecast of needed acreage takes into account the requirements of increasing population. It will be noted that the forecast for 1940 is about 6 million acres less than the amount reported for 1930, and that no increase of acreage is shown before 1945.

In case the yield per acre of our crop land is seriously reduced by continued cropping without adequate rotation, and erosion takes its toll, and in case foreign demand is fully restored, it is probable that by 1960 we will require in order to take care of our domestic and foreign demand for agricultural products, new crop lands of at least the following amounts from the sources stated: 3,000,000 acres of irrigated land within the range of probable feasible cost, 10,000,000 acres through drainage, 10,000,000 acres of new clearing on the better quality of soils now in stumps or trees, and about 32,000,000 acres from plowable pasture.

Pasture requirements are more flexible than the requirements for arable acreage on account of the possibility of substituting feed crops for pasture. Our pas-

ture area has decreased since 1880 by about 189,000,000 acres, and since 1900 by 85,000,000 acres as a result mainly of conversion to cultivation, yet with no reduction in the quantity of milk and meat produced. This was possible almost wholly because of substitution of feed crops. In general the average productivity of our range lands has been decreasing for many years. It is widely recognized, however, that carrying capacity could be materially increased through better management. There has been and will continue to be some accretion through reversion of poor crop lands to pasture. The prospect is for a net decrease of about 30,000,000 acres of plowable pasture by 1960 and a small decrease in acreage of other pasture.

### Forest Land Requirements

These cannot be judged merely in terms of needs for timber or other tree products. Forests are important for regulating stream flow, preventing erosion, and providing protection against wind. They provide a habitat for wild life, and have large possibilities for outdoor recreation. They are interrelated to agriculture and are an important factor in scenic, recreational, and economic interests of innumerable localities.

Timber requirements are influenced in a large measure by the available abundance or scarcity of timber and of the land available for producing it. A number of civilized countries where timber is unusually abundant have a larger per capita consumption, and others where it is scarce use much less than we do. It is a fair assumption that we would not be using so much timber per capita if it did not serve useful purposes, and therefore that we should provide for the maintenance of that volume of consumption if the land can be spared from other uses and if the costs do not outrun the value of the produce with due consideration for social values of forests.

On the basis of trends in consumption and the average consumption for years immediately preceding the depression, the Forest Service estimates normal annual future drain at 16,540 million cubic feet. This is but little more than the average drain just before the depression, but it is based on standards of consumption predicated on a comparative abundance and relative cheapness of timber products. If the general outlook, for a period of serious scarcity of timber is realized, this might result in material modifications in consumption standards, including the development and adoption of substitutes. These changes might continue into a subsequent period of greater abundance.

It was estimated that for the period 1925-29 growth amounted to only one-half the total drain. The problem of balancing growth and drain, however, is a function not merely of area, but also the management of the area as it may influence growth. Moreover,

present growing "stock" is only about three-fourths of what would be required to maintain a sustained yield equal to the estimated drain, and is poorly distributed geographically.

The total forest area of the United States is 615 million acres, of which about 106 million consist of mesquite, pinon, juniper, and other arid woodland species. Of the remaining 509 million acres, only 495 million are held for commercial purposes, including farm woodlots.<sup>1</sup> A consideration of requirements for all major uses indicates that we may continue to employ this much land for forests and the various associated uses.

This is ample for any reasonable timber requirements, but at present much of it is either wrecked or on its way to destruction. The essential need, therefore, is for forest policies that will put our available forest area in condition to provide the various benefits which forests should contribute to national well-being.

### Recreational Land Requirements

The measurement of recreational requirements merely in terms of acres would be obviously misleading. More significant are the character and accessibility of the land employed; and much depends on the type of recreation to be provided. Our magnificent system of national parks, for instance, is serviceable for only certain types of recreation and for a large proportion of our urban population is relatively inaccessible. Any program of land utilization must consider particularly the needs of low-income urban groups, for whom a program for recreational areas must provide open spaces near their homes: Either as small parks, in connection with school plants or in open courts of well-planned workers' housing.

We have a rapidly growing need for outdoor recreation due to increasing leisure resulting from changes in employment and the increasing proportion made up of residents of congested areas (prior to the depression). The provision of adequate opportunities for outdoor recreation is one of the most important forms of defense against antisocial influences.

In considering a program for the utilization of land for recreational purposes we again encounter the fact that land-use planning is dependent upon social objectives and institutions and upon plans for other types of development. The requirement for neighborhood parks and playgrounds depends upon the type of land coverage in projects for workers' housing and also upon the use of land in connection with school building programs. It would be a function of a National Planning Board to aid in integrating the plans of those separate agencies, both Federal and local, that are working in

<sup>1</sup> A small part of the 495 million acres will probably be required for new crop land and associated pasture, but this is likely to be more than offset by crop and pasture land that will revert to forest.

the fields of parks, school building and housing. For example, there is also a relationship between recreational land use and broad social institutions. In many countries by law, and to some extent in this country by individual arrangement, urban wage earners are granted vacations with pay. So also, especially in European countries, reduced rates have been developed to provide transportation for workers to the countryside. Any such trends should be considered in planning an extensive system of national parks or for preserving beauty spots. A primary concern of a National Planning Board as regards recreational land utilization should be the health and enjoyment of urban wage earners.

For the large proportion of our population in urban communities, municipal parks constitute the principal means of year-round recreation out of doors. In 1930, there were 308,805 acres in 1,072 cities with a population of 5,000 or more devoted to this purpose. A proper ratio of such facilities to population would necessitate at least double this area. A larger proportion should be in children's playgrounds and neighborhood play fields.

There may well be a considerable increase in the 100,000 acres reported for the 74 counties supporting parks, most of which are within metropolitan districts. A much larger number of counties should have parks of the natural area type.

It is also desirable to increase the number of metropolitan districts having organized park systems and particularly to provide more outlying recreational areas available for the use of industrial workers and the poorer class of children, for week-end and vacation use. These may be provided by the States when outside the corporate limits of metropolitan park districts.

State parks are visited annually by a far larger number of people than visit national parks, yet contain less than a fourth as much area. Few States at present have adequate park systems, though in some States this lack is supplied in large part by national forests and parks. There is notable need for well-planned systems of State parks, including such elements as large natural areas, parkways, small wayside parks, public beaches, numerous small camps, and picnic grounds. In the report of the land committee it is estimated that State and county park systems combined should be increased from the present 3,800,000 acres to as much as 10,000,000 acres.

The extensive areas in Federal ownership, including the public domain; the 15,000,000 acres in national

parks, monuments, historic sites, and memorials; and the 130,000,000 acres in national forests constitute a vast potential though somewhat poorly distributed, recreational system, in most of which recreation is subordinate to other major uses. Certain additions should be made to the national-park system, mainly by transfer from other Federal administrative agencies. Prospective increases in national parks and forests in the eastern part of the United States will also enlarge the Federal area available for recreational use.

#### Land Requirements for Wildlife

The principal need for specialized wildlife areas consists of three principal types:

(1) Bird refuges, mainly to serve the needs of nesting areas and resting areas along migration flyways. Under the administration of the Biological Survey there are now upwards of a hundred refuges, mostly of this type, and an additional number aggregating upwards of a million acres is being acquired. Certain other marsh and swamp areas that can serve no other important purpose than for wildlife should be included in these refuges;

(2) Primitive areas where the fauna and flora may remain virtually undisturbed by man; and

(3) So-called upland game refuges.

The migratory-bird refuges will, in general, be areas specially acquired and administered for game and fish. The Biological Survey estimates that 17,000,000 acres of marsh and swamp lands should be provided with special wildlife administration. The second class will be provided in the main by specialized reservation and administration within national and State parks and forests. At present the national parks and some 25,000,000 acres within national forests have been given such specialized designation, of which about 21,000,000 are so designated by States. The upland game refuges will also be provided in the main as a coordinate use within publicly owned areas devoted to other major uses such as park, forest, and range lands. Sanctuaries will be only a part of this type, while much of it will be open to hunting under suitable regulations. The extension of the area of public forests and parks, including lands acquired under the submarginal land program, will be justified in part by the increased provision for this fourth type of game refuge and the associated recreational opportunities. Certain supplemental reservations from range lands to increase the winter range of wildlife in national parks and forests appear desirable.

## MALADJUSTMENTS IN LAND USE AND PROPOSED LINES OF ACTION

## General Nature of the Problem

With the exception of the unreserved public domain, most of the serious maladjustments apply to land in private ownership and grow out of the virtually unlimited powers of use and abuse which we have permitted in our system of private property in land. Basically, however, absolute ownership still resides in the State (either individual commonwealth or Nation), and under the police power the State may constrain the private use of land within bounds set by the public interest. Thus far in the rural areas there has been but little exercise by the State of its reserved rights in land. Considerations of public welfare may require a further extension of these rights. Some of these extensions are suggested in the Land Report.

## Farm-Land Problems and Policies

The land consultants appointed to assemble field data for the Land Report were instructed to indicate on maps the location of the principal areas of serious maladjustments in farm land use.<sup>2</sup> While the maps are only rough approximations they do present a bird's-eye view of the extent and character of these maladjustments and afford a good starting point for the development of a more adequate land policy.

## Submarginal Farm Lands

One of the outstanding types of maladjustment is what has been popularly designated as the problem of submarginal land—that is, areas where the land is so poorly adapted to farming or has deteriorated so seriously that nothing is in store for the inhabitants but extreme poverty and wretchedness. The accompanying figure shows the location of regions within which lie extensive areas where such conditions appear to justify a program of land purchase and removal of at least part of the present population to a more favorable environment. It is estimated that this should apply to a total of 75,000,000 acres of farm land, comprising about 20,000,000 acres of land in crops and about 35,000,000 acres of pasture. These areas are characterized by incredibly low standards of living. In some the soil is steadily deteriorating and conditions of life will continue to grow worse. All but a few of the areas are characterized by sparse population so that the cost of providing adequate schools and roads is excessive. In some of these areas a large proportion of the families are on relief and other social costs are high.<sup>3</sup> In the West these conditions are largely due to the indiscriminate occupancy of lands under the Homestead Acts.

<sup>2</sup>It has been possible to publish only a few of these maps in the accompanying Land Report.

<sup>3</sup>These conditions are elaborated in the Land Report.

Last spring a program for the purchase of these poor farms and for aiding the transfer of the families to other locations was begun through an allotment from the Public Works Administration, supplemented by drought relief funds appropriated by Congress. The program, which is being developed through collaboration of the Federal Emergency Relief Administration and the Departments of Agriculture and the Interior, is moving forward rapidly, and these agencies are engaged in plans for the acquisition of approximately 165 project areas containing a total of over 6,000,000 acres.

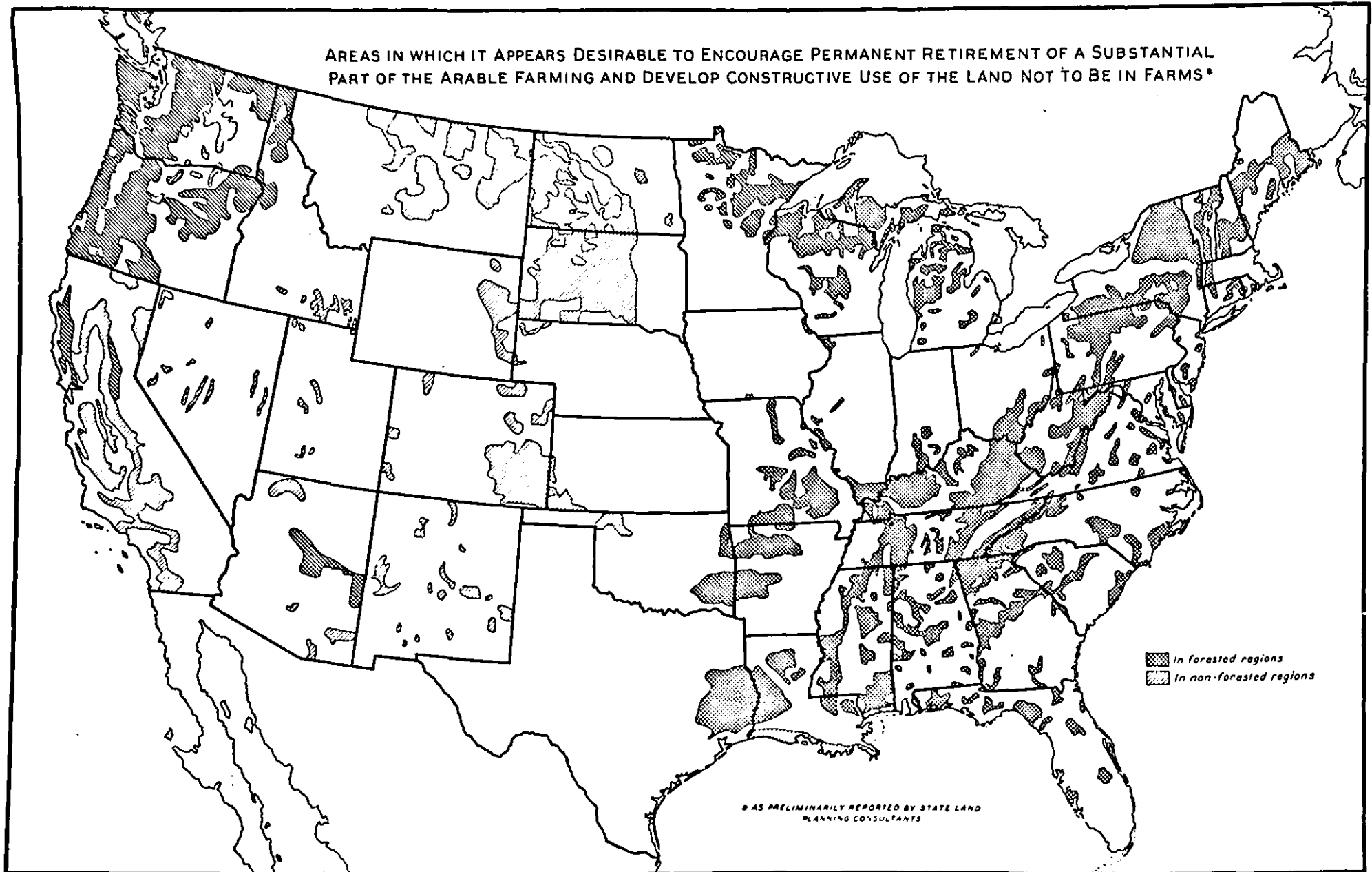
The lands acquired by the Federal Government will be included in adjacent national forests, parks, or wildlife refuges; will be leased to States for administration as public forests, parks, or wildlife refuges, when desirable; or will be formed into cooperative grazing districts when located mainly in range areas. Some of the lands will be devoted to meeting the land needs of the Indians.

Owing to the lack of opportunities for industrial employment, steps are being taken to resettle the families on better lands either with a view to farming as a mode of livelihood or to subsistence farming supplemented by outside employment. When industrial recovery is further advanced this part of the program can be confined to families who prefer to continue in farming. Experience during the current year has shown that, for the most part, the families in these areas respond readily to the program and that it is well supported by local public opinion.

It is believed that this program, with some modifications in procedure, should be continued as a gradual undertaking with a view to retiring these farm lands from cultivation at the rate of about 5,000,000 acres a year. At the present time the cost of acquisition, including administrative costs, runs from \$5 to \$6 an acre. Naturally this is somewhat above the average cost of purchasing cut-over forest land.

If the program is to be continued, certain modifications, set forth in the Land Report, should be given consideration, and steps hereafter suggested taken to coordinate the program with other Federal and State acquisition programs.

*Soil Deterioration Through Erosion and Other Causes:* Unquestionably one of the most acute problems of agriculture land use is soil depletion, which in many parts of the country is proceeding with startling rapidity. A careful estimate made for the Land Report indicates that on our crop and pasture land there is an average annual loss of 322,000,000 tons of organic matter and a net loss of 222,000,000 tons. Over half of this is due to leaching or erosion. (It was not prac-



Within these areas are farms from which arable farming should ultimately be encouraged to withdraw, mainly because experience has demonstrated the land to be too poor to provide adequate family living and support public institutions and services. Agricultural occupation of many of these areas continues only by grace of continual public subsidy or relief. Many of them are very sparsely settled and required public aid to help bear the high per capita expenditure for roads and schools. Most of them also have some land which should continue in agriculture. Further investigation will make possible a refinement of this map.

ticable to distinguish sharply the losses for these two sources.) It is estimated that usefulness for farming of 35,000,000 acres has been completely destroyed, that the top soil has been nearly or quite removed from an additional 125,000,000 acres, and that another 100,000,000 acres are starting in that direction. A detailed erosional map made for the Land Report, based on a reconnaissance survey, shows the widespread extent of this evil. (See the more generalized map, p. 290, Land Report.)

Erosion is responsible not only for severe losses in soil fertility, but also for the silting up of canals and reservoirs, the shallowing of navigable streams, and overlaying good soils with infertile material. Inadequacy of a protective covering on the land is responsible in large measure for damaging floods. Wind erosion, principally in semiarid areas formerly covered with range grasses, is causing serious damage.

Physically, the problem of dealing with erosion includes a number of steps. Where the evil has not gone too far, the most important measure is maintenance of an adequate cover, principally of forests or grass, although some crops are less contributive to erosion than other crops. It is possible to mitigate the evil somewhat, also, by such practices as contour plowing, strip cropping, and terracing. Where the serious gullying stage has been reached, it will be generally necessary to provide check dams.

Erosion is a serious economic problem. In some cases, to be sure, failure of private landowners to protect their lands is attributable to ignorance or inertia, and the remedy is education and demonstration. In the main, however, the failure is due to the fact that the other preventive steps require an outlay which the landowner does not feel justified in making.

Certain steps have already been taken by the Federal Government relative to the erosion problem. Systematic research as to character and extent and methods of control on different types of land is being carried on at a number of soil-erosion stations established by the Department of Agriculture. The Soil Erosion Service, established under Public Works Administration funds in the Department of the Interior, is engaged in erosion-control demonstrations on a national scale, embodying coordinate plans of erosion-control procedure in selected demonstration areas where the risks from erosion are high. The program is conducted in cooperation with the farmers, who contribute labor and teams needed. In the crop-adjustment program of the Agricultural Adjustment Administration certain provisions have been included to encourage the planting of soil-protecting crops on areas withheld from basic crop production.

These various measures, however, in their present scope, are not an adequate solution.

A national land policy should provide for the coordinated mobilization of all efforts, national, State, and local, to control erosion. It should aim at the establishment of erosion-control measures on all of the most serious areas within 10 years and effective checking of erosion in these areas within 20 years.

While it should be the aim to avoid imposition of legal restrictions to control erosion wherever possible, voluntary cooperation of private owners in erosion preventive measures will not always be possible to secure, and public assistance and control may be necessary in some instances. State legislation of this character might be encouraged through the extension of erosion-control aids to States enacting satisfactory regulatory measures.

In view of the interstate character of erosion problems, the Federal Government should assume responsibility for coordinating erosion-control measures, including its own activities along this line.

Legislation should be enacted to provide for Federal support to erosion-control measures on State and private lands. The Federal and the State Governments should acquire the most highly erosive areas on which control measures under private ownership do not appear feasible.

Federal farm-mortgage credit should be extended on the basis of the future value of the land, with due consideration to the possible effects of erosion.

In any production-adjustment program, increasing emphasis should be given to erosion control on lands retired from production of basic crops.

*The Problem of Farm Consolidation and Land Tenure:* In certain areas farms are at present too small to permit adoption of the kind of cover, mainly pasture, necessary to protect the soil and in some cases also to permit a generally safe and stable type of farming (see fig. 36). This problem is especially manifest in the Great Plains as a result of the operation of the Homestead acts. Consolidation of some holdings, through purchase or leasing, as well as modifications in type of farming are needed. Debt readjustment will also be necessary and the resettlement of surplus population on other areas. It is in the main an undertaking in agricultural land planning that should be carried out through the collaboration of the Department of Agriculture, the Relief Administration, and the Farm Credit Administration with State and local agencies and individuals. With the exception of refinancing, such a program would require mainly funds for the investigational, planning and educational activities involved.

A large part of the responsibility for soil depletion and other maladjustments in agricultural land use must be attributed to our system of land tenure, which in turn reflects the influence of the speculative and migratory



habits of a large proportion of our population. In 1930 nearly 53 percent of our farmers operated some leased land, and nearly 44 percent of all land in farms was operated under lease.

Tenancy is not inherently contributory to robber farming. In many European countries tenants as a class expect to remain throughout their lives on the same farm and have a more or less material interest with the landlords in preserving and improving the farm plant. In this country a certain proportion of our tenants, mainly in the North, are relatives of the landlord and collaborate closely in a policy of safe and stable farming. Too many tenants, and landlords also, have little or no concern for the maintenance or improvement of the soil and the farm structures, or identifying themselves with community life. In fact the average period of occupancy by a renter is only a fraction above 2 years.

These characteristics of American tenancy are attributable in part to the migratory habits of our people. In large part, too, the system of landownership is at fault. Too many of the farm landowners, even including some who operate their farms themselves, expect to sell at some future date, and therefore have little concern for the deterioration of the soil. There is a good deal of speculative dealing in farm lands and a considerable proportion of our farm landlords are absentees. As a result of the depression a more than usual proportion of our lands is in the hands of creditor or Government agencies which have been compelled to take over the property. In the West North Central States nearly 30 percent of the total value of farm land was thus owned, in the East North Central States nearly 20 percent.

It is obviously not possible to correct all of these unfortunate conditions by legislation. However, it is high time that we should undertake seriously to deal with these problems. In the main the requisite legislative powers reside in the States rather than in the Federal Government, whose contribution may be limited mainly to leadership and stimulation, and possibly some financial collaboration.

One thing that should be carefully explored is the possibility of adapting to American conditions the policy of compulsory or semicompulsory compensation for improvements made by tenants, long employed in Great Britain and certain other countries, and certain measures for protecting competent tenants against the risk of unwarranted displacements. Such measures would greatly encourage both stability of occupancy and the protection and improvement of the farm plant.

There are many who believe that the solution lies in the direction of aiding all of our farmers to become landowners. The difficulty of approximating that position under present conditions is shown both by the present

high percentage of tenancy in areas homesteaded only a few decades ago and by the impossible debt burdens or the high percentage of foreclosures of many who undertook to borrow their way to farm ownership. It is desirable to provide more liberal credit facilities than are at present available for those farmers capable of assuming the obligations and responsibilities of ownership. Obviously, however, liberal credit must be employed with great discrimination if it is not to prove a two-edged sword.

In view of the population prospect and other conditions, it is probable that there will be less farm land speculation in the future than in the past, and it is desirable to readjust the attitudes of farmers, tax assessors, and real estate interests which have led to an abnormal capital structure, now gradually being liquidated. We should deliberately shape public policy to check such land speculation as may arise. No doubt the wider sphere of influence of Federal credit machinery can be made to contribute materially to this end, and if necessary special forms of taxation might be developed for the same purpose.

In view of the serious import of these problems of land tenure, it is recommended that funds be made available to the National Resources Board at an early date to develop a policy and that in preparation therefor the Department of Agriculture, in cooperation with the various agricultural experiment stations, undertake the requisite exploratory work.

*Land Reclamation:* It was indicated in a preceding section (p. 12) on land requirements that, on the basis of conditions there outlined, during the next quarter of a century twelve or fifteen million acres of new arable land might be obtained by reclamation through drainage and irrigation projects. This necessity emphasizes the importance of developing a national land reclamation policy. Such a policy should be national in scope because intimately related to the economy of water use in deficit areas, to flood control and power policies, and above all, to the need for a planned provision for our agriculture land requirements.

With the following recommendations of the Land Planning Committee the National Resources Board is in substantial agreement:

1. That in view of the scarcity of water in the arid sections of the country there be developed a well-rounded plan for the use of water, based on technological and economic considerations, and that nothing be allowed to interfere with such a plan.
2. That there be State participation in planning and developing reclamation projects.
3. That in case more than one State is involved and they fail to agree, the friendly offices of the Federal Government should be used to work out an acceptable policy.

4. That no project be undertaken until its economic feasibility or other necessity warranting its construction has been unquestionably demonstrated.

5. That the general national policy should be to complete and perfect old developments and to utilize them fully so far as practicable before undertaking new ones.

6. That consideration be given to facilitating the development of numerous small and seemingly unimportant irrigation operations, which, though essentially local in significance, in the aggregate are of considerable economic importance.

7. That, in the case of expenditure of Federal funds there should be a national benefit, as well as regional or individual benefit, and that not only farmers but also other individuals and the communities benefited be required to incur obligations commensurate with these benefits.

8. That no Federal project involving reclamation of land for agricultural purposes be undertaken until its economic feasibility and advantages have been considered by the Departments of the Interior and Agriculture, in conjunction with the coordinated planning agency hereafter suggested.

9. That in view of the serious mistakes made by uncontrolled private enterprise in the development of drainage and irrigation projects on the basis of speculative and promotional considerations, that the interests of farmers settling in such areas have been injuriously affected, that the Federal Government has subsequently been called upon to refinance such areas and to provide relief, and that some futile drainage enterprises have destroyed valuable refuges for wild life, the Federal Government should require the development of such projects to comprise an essential part of a national land use plan aimed at a proper coordination of the various major forms of land use so that the Nation may take the proper precautions to prevent the development of ill-considered projects and may direct agricultural expansion toward areas of lowest capital costs in relation to the utility of the land involved.

*Public Policies for Giving Direction to Land Settlement:* The above suggestions relative to reclamation policy serve to call attention to the need for a broader policy of direction to land settlement. It is obviously futile to undertake the retirement of poor farm lands and at the same time to permit the settlement or resettlement of other areas equally unsuited for farming. The farm-land market is overloaded with undeveloped land and the pressure of carrying charges is constantly urging the employment of high-pressure methods to effect the sale and settlement of such land and as a result to create new sore spots in rural areas. Both the Federal Government and the States have an obvious

interest in preventing the continuance of planless land settlement which is seriously contrary to the general welfare as well as the welfare of the settlers themselves. The following recommendations are made with regard to this problem:

1. That the Federal Government put its own house in order in this respect by withdrawing from homestead entry and selective privileges all lands unsuitable for occupancy under the conditions of the acts. In part this has been provided for under the recently passed Taylor Act. The large volume of recent applications for entry, stimulated by unemployment, emphasize the need for such action. It is obviously inconsistent to be spending millions to retire submarginal lands in the very areas where homesteading is tending to place people in similar situations.

2. That States having considerable bodies of unorganized public land be encouraged to take similar steps to prevent the settlement of unsuitable areas.

3. That, in order further to support a public program of direction to land settlement, it is recommended that States pass adequate zoning enabling acts as in Wisconsin, and encourage localities to apply these acts to areas unsuited for agricultural occupancy.

4. That the Federal Government and the States cooperate in securing adoption of zoning laws outlining areas where settlement is clearly contrary to the public interest as well as to the interest of the individual settler. Both State and Federal agencies might also collaborate in directing settlement to areas adapted to the purpose.

5. That States modify their grants in aid of education, roads, and other utilities so that they may not stimulate unwarranted settlement of unsuitable areas.

6. That the Federal Government coordinate its credit and relief policies with a sound plan of land settlement in such way as to discourage the settlement of unsuitable areas.

7. That the States be encouraged to develop their legislation relating to real-estate transactions and their "blue-sky" laws where necessary to insure conformity with the general plan of land use referred to above, protect buyers and sellers of farm land from fraudulent and unscrupulous practices, and that the Federal Government further extend the administration of its postal laws so as to reenforce the administration of such State protective acts.

*Policies for Facilitating Land Settlement:* Although the record of organized public land-settlement enterprises as well as of private land-colonization enterprises in this country is not a happy one, the Federal Government is now embarking on an extensive program of land settlement. There are a number of conditions that emphasize the need for a definite national policy in regard to land settlement. One of these is the

necessity for the resettlement for persons now living on submarginal areas or areas where congestion of rural population is associated with farms that are unduly small to permit the type of farming requisite for soil protection. There are numerous families permanently stranded in rural industrial areas. Finally provision must be made for the rapidly increasing farm population and the formerly urban families which have voluntarily been returning to the land.

As has already been noted (p. 10) although rural population is expanding substantially, the existing farm population is sufficient to produce an adequate supply of agricultural products in the next 25 years. Ultimately this growing population must be absorbed in the production of industrial goods and services such as are now produced primarily in urban centers.

The existence of unemployment on a large scale in our cities makes it necessary to consider the problem of substandard farm families from both a short-run and a long-run point of view. Those wage earners now employed must be protected against the competition of a still larger number of anxious unemployed wage earners; nor is it conceivable that these families be added for long to the relief rolls. Means are being sought to better the condition of substandard farm families and of unemployed urban workers, even though it be impossible to afford them immediately that amount of income which our national resources and technical knowledge assure us eventually. These immediate and sometimes temporary measures should be conceived to contribute to, or at least not to conflict with, a larger ultimate solution of the problem. The following recommendations that lie within the field of the analysis of land use appear to warrant serious consideration:

1. That steps be taken for the more adequate coordination of existing Federal land-settlement programs, including the subsistence-homestead program, the rehabilitation program, and the reclamation program, and that the entire settlement program be fully coordinated with such broad plans of land utilization as are recommended in this report.

2. That early attention be given to providing types of credit necessary for an adequate system of land settlement, free from the restrictions inherent in funds provided primarily for relief purposes. The provisions of the so-called "Commissioners' Loans of the Farm Credit Administration" might well be broadened to make provision for their employment both in facilitating the progress of tenants to ownership and for Federal land-settlement programs.

3. That no steps be taken to facilitate a substantial movement of unemployed people from urban areas into commercial agriculture.

4. That the integration of agricultural and industrial employment by the establishment of homes for workers employed in non agricultural occupations where they

may produce part of their living become a permanent national policy; and that this policy be broadened to include: encouraging the location of industries, under proper conditions, in rural areas now seriously deficient in sources of income; reconstruction of existing rural industrial communities, which under laissez faire policies took the form of wretched homes huddled around a mine or a factory; planning for the integration of agricultural and industrial employment in the case of relocating industries; encouraging the location of industries on the periphery of large cities in definite relation to rapid-transit facilities to the countryside as an important objective in city and regional planning; and developing the program of public land administration with the definite aim of integrating employment on public lands with employment in agriculture.

The following suggestions are made with reference to settlement procedure:

- (a) That, in view of the very considerable uncertainty that industries can be induced to move to specific rural areas, it is desirable to proceed slowly in the establishment of agricultural settlements planned in the hope of, but without the assurance of, obtaining most of the money income from the establishment of new industries within the settlement area. Failure to accomplish the industrial side of the program would result in a new set of stranded populations living on agricultural units too small for commercial farming.

- (b) That an elastic policy with reference to form of tenure in relation to the needs of the individual case be followed but with proper opportunity for acquisition of ownership in suitable cases. In many cases this will involve a considerable trial period on a leasehold basis and perhaps in some cases a continuance in that status, with provision for compensation for improvements made by the settler in case of change of occupancy. In order to prevent the misuse of settlement holdings for speculative purposes, recapture clauses in settlement contracts should be given due consideration.

- (c) While it is important to avoid doing too much for settlers and to leave them full opportunity to employ spare-time labor in making their own improvements, adequate provision should be made for the training and guidance of many new settlers in agricultural pursuits.

The complete solution of the problem of raising the standard of life of all workers lies beyond the scope of this chapter on land. It involves a series of economic, social and political considerations with which a National Planning Board, as proposed later, would concern itself. At this point we note merely that a complete long-range outline of types of land utilization cannot be developed in isolation; it depends upon the broad economic and social policies of the Nation.

#### Range Policies

The serious consequences of the Federal Government's laissez faire policy in regard to the use of the

public domain have been so frequently pointed out that it is not necessary to repeat them.

The Taylor Grazing Act is a step toward remedying the situation. It was recommended above that all lands unsuitable for agricultural occupancy be withdrawn from entry and from selection privileges. It is further recommended:

1. That the regulation of surface use be extended to the remaining area of the public domain and to the 54,523,311 acres in the "withdrawn" and "unperfected entry" classifications now wholly unregulated, and that there be vigorous cancelation of unperfected entries long since past the 3-year period.

2. That the exchange provisions authorized under the Taylor Act be fully exercised to block up the area in public control.

3. Development of sustained yield management on State and county range lands, including lease and inspection provisions to assure reasonable compliance.

4. Collaboration of the Grazing Administration of the Public Domain and the Forest Service in the coordination of seasonal grazing.

5. Collaboration of interested agencies with the Agricultural Adjustment Administration to even out the cattle production cycle.

### Forest Land Problems and Policies

Inasmuch as there is an available area of about 500 million acres for forest use without encroaching seriously on other important uses and in view of the fact that over much of this area there are important social values other than timber production which would probably justify the maintenance of a forest cover of some kind, the primary question is less one of how much land we should devote to forests than how intensively our forest management should be.

On the basis of a county-by-county survey, taking into consideration particularly the relationship of the forest to the life of local communities, the Forest Service has reached the conclusion that a relatively large proportion of the total forest area should be under intensive management and also recommends that a large proportion be devoted to public ownership and administration. These estimates are summarized in the following table:

TABLE 1.—Acreage recommended by the Forest Service for various kinds of management, by type of proposed ownership

Owner	Total	Inten- sive	Exten- sive	Protec- tive
Private.....	231.2	113.3	81.9	36.0
Federal.....	291.7	131.9	54.7	105.1
State.....	68.6	40.0	12.3	9.0
County.....	3.8	2.3	1.3	.2
Municipal.....	.9	.5	.1	.3
<b>Total.....</b>	<b>596.1</b>	<b>294.0</b>	<b>150.3</b>	<b>151.2</b>

The area recommended by the Forest Service for public ownership is about 30 million acres larger than was recommended in the Copeland Report<sup>4</sup> and the area recommended for intensive management is very much larger than was recommended in the latter owing to greater emphasis on local needs in relation to forest management. Figure 53 in the Land Report shows the location of areas they propose for different types of management and figure 61 shows the location of areas recommended for the different forms of ownership.

These proposals for specific areas, which represent only the results of a very hasty survey, should be given further consideration in the gradual development of the forest program. It does not follow, however, merely because the interests of particular localities would be advanced in the immediate or remote future by intensive forest management, that either private timber owners or Federal or State governments would be justified in incurring the necessary cost throughout the aggregate estimated area. In all cases there should be a careful balancing of costs against the value of prospective returns including due consideration of the social values. Some of the important social values are not dependent upon either intensive forest management or even the production of commercial timber.

One of the most immediate considerations in forest policy is the protection of the existing forest area against the ravages of fire, insects, and disease. At present all but 190 million acres are under protection against fire, in large part due to the cooperative Federal fire protection program. (See fig. 55.) This program should be maintained and expanded to apply to such unprotected areas as justify the necessary expense. The protection against forest insects and disease is at present inadequate, and a considerable expansion of the public facilities for this function appears desirable.

The greater part of the forest area is still in private ownership. Over all but a small fraction of the privately owned land the process of systematically wrecking the forest continues, with all the demoralizing consequences to the dependent communities.

It is recommended that as rapidly as possible the Federal Government and the States take over through tax delinquency or otherwise for public ownership such wrecked or other areas as are clearly unsuitable for private ownership either because they hold out no promise of profit when managed in accordance with the principle of sustained yield or because there are associated with them social values which cannot be properly entrusted to the custody of private interests.

It is further recommended that certain measures be taken to provide more favorable conditions for private forestry, as follows:

1. Reconsideration and more scientific readjustment of tax burdens on forest lands.

<sup>4</sup>"A National Plan for American Forestry"—Senate Doc. No. 12, 73d Cong., 1st sess., March 1933, recommends that 234,000,000 acres be acquired.

2. Public loans to private forest industries at low interest rates, on condition that operations be adjusted to sustained-yield management and reasonable safeguarding of other social interests in the forest.

3. Government aid in the construction of forest-road systems for fire protection and for public travel.

4. Public aid in fire protection and the control of insect and disease outbreaks.

5. In general public regulation requiring compliance with certain minimum silvicultural standards and sustained-yield management, provided that industrial self-government proves unavailing to realize these objectives.

6. Public acquisition (or exchange) of forest land and timber to aid owners who can benefit by liquidating part of their holdings and blocking up the remainder through exchange.

7. Reduction of the excessive volume of timber going to market, particularly on the Pacific Coast, which results largely from the pressure of carrying charges on private timber holdings excessive in relation to plant requirements. If this is to be accomplished by the industry itself it will necessitate material readjustments in indebtedness and in tax burdens, as well as the full collaboration of timber owners.

8. Ample provision of Federal aid to assist States in the distribution of forest-planting stock to farmers and to provide advisory service for the management of farm woodlands. It seems probable that similar services should be extended to other classes of owners, the public contribution to be shared equally by the Federal Government and the States.

Insofar as possible we should rely on industrial self-regulation for the development of sound forest management on privately owned lands adapted to such management. It seems probable, however, that a certain amount of collaboration by the Federal and State Governments with the administration of the industry will be requisite in order to bring nonconforming owners into line. With these ends in view, the following proposals are recommended:

1. Cooperation of the Federal Government and the States with the administration of the industry in maintaining adequate technical forces to review management plans developed by forest owners, particularly by the smaller owners, to inspect woods operations and production records, and advise as to forest practices.

2. Ample penalties for violations, enforceable under the police powers of the States or by a combination of State and Federal action.

3. Management of small holdings, farm wood lots, etc., to be integrated with a general program of planned land use through such public provisions as are recommended in this report for conservation of soil or farm lands.

It is recommended that the program of forest acquisition be fully integrated with the program for acquisition by other State and Federal agencies in accordance with the recommendations for coordinating land policies made hereafter in this report.

### Development of the Nation's Recreational Resources

Although Government activities, as previously explained (p. 13), touch but a minor proportion of the recreational activities of the people, private recreational uses need governmental support and control to prevent such abuses as pollution of streams and unsightly placing of billboards, to prevent exclusive use of resources in which the public has an interest, to provide recreational facilities at small cost to low-income groups, and to preserve for succeeding generations certain areas and monuments of universal interest.

*Municipal and Metropolitan Regional Park System:* It appears desirable that municipalities of 8,000 inhabitants or over provide a minimum of 1 acre for recreation to each 100 persons, divided among play areas for children and adults, "in-town" small landscape parks, and larger park areas.

Cities, counties, States, and even the Federal Government have entered the field of planning for outdoor recreation in metropolitan districts without developing any definite standards or division of responsibilities. Planning for metropolitan area recreation should be on a unified basis.

*State Systems:* As stated in the Land Report, the responsibility of the States appears to be to acquire, develop, and maintain such areas as will meet the needs of their own people for recreation, as are not the responsibility of other governmental units. State parks, beaches, monuments, waysides, and parkways are examples of open spaces included in present State park systems.

State recreational systems should be based upon comprehensive surveys by qualified persons. Areas should be selected upon the basis of such factors as unusual or unique natural features or adequacy for the type of recreation involved. Boundaries should be wide enough to include all essential features and to prevent parasitic or unsightly border development.

*The Federal System:* The Federal Government's responsibility is chiefly to preserve superlative examples of scenery, historical and archeological sites of national importance, and primeval areas, which have been defined by the National Park Service as "tracts of virgin timber in which human activities have never upset the normal processes of nature." Primitive areas have been set aside in national forests and national parks, and include such specialized reservations as sacred

areas and research reserves. Many opportunities for making such reservations have been lost or diminished.

While the majority of historical sites should be preserved by the States, the Federal Government should preserve a limited number of unique significance. It should be the responsibility of the Federal Government, for instance, to preserve the archeological remains of Indian civilization. When of national importance such sites should become the property of the United States. The Federal Government should cooperate with the States in making an inventory of historic and archeological sites of the United States. A central agency of Nation-wide scope similar to those of France, Holland, Belgium, and England, for selection and preservation of historic monuments is needed in this country.

More than half the traffic over our highway system is recreational. While some highways devoted primarily to recreation are suitable for parkways, there is need for development of a type of trafficway of a character between the parkway and the highway. The policy of the Forest Service in leaving strips of timber along roadsides and on the borders of lakes and streams, and in locating its forest roads with due reference to esthetic values, contributes to the development of such trafficways and is to be commended.

The great and relatively unused recreation resources of our national parks and forests should of course be developed under a coordinated recreation policy including both State and Federal forests and parks.

A long list of proposed additions to the Federal park system has been prepared by the National Park Service. These additions would involve purchase of some property to establish new parks, or within boundaries of existing parks, but mainly transfer of jurisdiction over areas now administered by other Federal agencies.

A distinction should be maintained between areas set aside because of scenery, history, or natural wonders for inspiration and educational purposes as contrasted with areas producing timber or forest products, on both of which large recreational values can be developed without interference with their primary purposes.

#### Policies with Reference to Wildlife

The wildlife resources of the Nation provide meat and fur valued at almost 200 million dollars. Expenditures by hunters and by tourists attracted chiefly by an abundance of game aggregate over 400 million dollars. In addition, wildlife is of incalculable value in destroying insects preying upon agricultural crops and forest trees.

So far recognition of wildlife as a national asset has been centered on conservation, without regard to management. This has produced such situations as an overabundance of game in one region and a scarcity in

another. The most serious situation, however, is still the depletion of the population of most wildlife species.

Game policies of Federal agencies need closer integration and also the policies of the United States with those of the States. Violations of Forest Service game regulations for instance should be made a violation of State law or of the Federal courts.

Private uses of land affect particularly agriculture and materially affect the small game population. Farm operations may either increase or decrease the food supply for game at different seasons of the year. Greater interest in game management by farmers could be stimulated by allowing them some proprietary rights in the game, which now usually are vested in the State.

One of the most important measures for the preservation and management of wildlife is the further extension of the system of public wildlife refuges, both for waterfowl and for upland game.

#### Indian Land Problems and Policies

The disorganization of ownership of Indian lands brought about by the Allotment Act (repealed through the Wheeler-Howard Act), which provided for allotment to individuals instead of continued tribal ownership, is now the most serious handicap to the Indians' effective use of their lands.

The most urgent present needs of the Indians are (1) additions to now available Indian lands sufficient to provide for those willing to assume the necessary responsibilities of land use, (2) an adequate system of credit, and (3) an educational system designed to fit them for operating land.

Gradual changes are in process in the educational system, and the Wheeler-Howard Act has provided the small beginnings of a credit system for the Indians with a \$10,000,000 revolving fund. It has been estimated by the Indian Bureau, that it will require at least \$50,000,000 to provide the necessary homes, livestock, and equipment to lift them to a plane of reasonable opportunity.

The land needs of the Indians as carefully estimated by the Office of Indian Affairs, shows on some of the reservations, present land acreages are adequate, while on others, there is marked shortage. Altogether, the Office of Indian Affairs estimates that 9,706,490 acres at an estimated value of \$60,090,813, are needed for the Indians in excess of their present holdings and that there is a less urgent need for an additional 15,879,032 acres.

Some of this land could be provided from the public domain or from other Federal reservations, but a portion of it would have to be purchased. Toward a purchase program, \$5,000,000 has already been made available under the submarginal land purchase program

for conversion to pasture, and the appropriation of \$2,000,000 a year has been authorized by the Wheeler-Howard Act. With an appropriation no larger than this, however, it will require many years to acquire the 9¼ million acres. The Office of Indian Affairs recommends that the appropriations be increased to permit the completion of this needed land acquisition within a few years.

A part of the land requirements may be met by granting the Indians rights of use on the public domain or in the national forests. Certain white-owned grazing lands, which have been seriously over-grazed, might well be acquired now and allowed to recuperate for several years until the Indians have acquired animals to stock them.

The responsibility of the United States should not be to continue to support the Indians but to give them an opportunity to work out a more satisfying life.

#### **Policies with Respect to the Public Acquisition and Ownership of Land**

The Federal Government now owns over 400 million acres of land, and the States own about 70 million acres. Various proposals for Federal and State acquisition of additional land made by various Federal agencies aggregate almost 280 million acres, some of which, however, would be supplied from existing Federal holdings.

There are ten or a dozen land-acquiring or administering agencies of the Federal Government, whose programs are largely independent of each other. There has been little or no attempt to relate them one to the other or to State land policies. The need for coordination has been increased recently by the emergence of new agencies and new policies requiring public land acquisition. A Federal land-planning agency, whose organization and general functions are set forth in a succeeding section, appears indispensable in effecting such a coordination of the land-acquisition program of Federal and State agencies.

#### **A Program for Permanently Tax-Delinquent and Tax-Reverted Land**

Tax delinquency and tax-reverted lands demand a new approach in public-land acquisition.

The depression has brought on widespread tax delinquency even in the good agricultural areas, but with this type of delinquency, which is likely to disappear largely with the return of better times, this report is not particularly concerned. It is the chronic delinquency which has long existed in the poor-land areas, even before the present depression, which is creating serious problems. This type of delinquency is most

common in the cut-over areas of the public-land States of the West and in the Southern States. In general, such delinquency is the result of clear cutting timber resources, settlement of farm lands unsuited for the purpose, and the resulting maladjustments in social and economic organizations in the regions of misuse. In a minority of cases, reasonable readjustments in taxation would help to eliminate delinquency. For the most part, however, wrecked forest lands, interspersed by scattering farms on poor land, are likely to present extensive chronic delinquency. In general the solution is for the States or the counties (in general the State appears to be the best agency for this purpose, although there are exceptions) to take title to such land with a view to generally retaining it in public ownership. A State agency should be established, or an existing agency designated, to administer the lands to which the State acquires title. Lands acquired by the State should be classified as to its best use as a part of a larger program for inventory and classification of lands in areas in which the best use is problematical. The Federal Government might assist in this program, through a wide variety of cooperative measures.

#### **Requisite Procedure and Organization for the Development of a Unified Land Program**

There has been no coordinated plan in the past for the utilization of our land resources. The policy of the greatest good of the greatest number should be the broad objective of land planning. Planning activity should be focused on areas of obvious maladjustment in land use. There should always be a goodly measure of elasticity in policy, organization, and procedure to meet changing conditions.

Although it would be desirable to have at hand a complete physical inventory of all land resources and an economic classification of all lands, it does not appear advisable to undertake so costly a program. It is desirable to locate the areas in which need for readjustment is urgent. A preliminary approximation has been made in the maps and surveys made for the Land Report. The areas should be subjected to more detailed study through more intensive field surveys undertaken with a view to specific action. As applied to specific areas, this will involve: (1) Adequate inventory of physical, social, and economic conditions, and their territorial and functional correlations and interrelationships; (2) compilation and analysis of such data, and derivation of working plans for them; and (3) administrative machinery for putting plans into effect.

Existing agencies and personnel should be utilized wherever possible. There are a number of Federal and State agencies with wide experience in land administration, investigation, and planning. There is wide

variation, however, in objectives and procedure as between individual agencies.

It is highly important to provide at once, if practicable, for adequate coordination of Federal and State land policies, programing, and procedure.

To secure Federal coordination of land administration it is recommended that the major division of responsibility between administrative agencies be by areas rather than by functions, i. e., centralized responsibility for all of the various functional aspects of land administration should rest with the agency responsible for the major form of land use within the area.

There is especial need for coordinating the land acquisition programs of Federal and State agencies in order that the pattern of public ownership and control may be symmetrical and specific areas of land be put to uses and types of ownership most consistent with the general welfare.

For the Federal Government these and other phases of integration of land acquisition and other land policies require the continuation of an extra-departmental agency such as the existing land-planning committee of the Board, authorized to make necessary and appropriate recommendations. This agency should be provided with requisite personnel and funds to enable it to provide the necessary coordination of our public-land policies, including land acquisition and allocations and transfers of jurisdiction over specific areas. The

land-planning agency should provide leadership and initiative in order to determine the use which should be made of lands as viewed from the standpoint of general welfare, including what areas should be in public ownership, whether this ownership should be Federal or State ownership, and what governmental agencies are in best position to administer the land. Early attention should be given to areas in which there is serious economic dislocation, such as tax delinquency, idle lands for which no constructive use has been developed, submarginal farm land, and special areas proposed for public acquisition. The land-planning organization should not be responsible for acquisition or administration of land nor for administration of land policies. So far as practicable it should rely on the personnel and facilities of established agencies.

In the final analysis, land-use planning is of local as well as general concern because it must be locally applied, and the States should participate fully in land-planning programs. As in the Federal Government, the coordination of land-administration agencies within States is badly needed. The State planning boards should play the leading role in development of State land policies. For this purpose they might make use of institutions and agencies readily adapted to planning and which generally have been represented on the State planning boards.



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## SECTION I

### II. WATER RESOURCES

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During the early stages of this country's development, water courses played a dominant role. River mouths afforded many of the best harbors on the coasts; river channels allowed the small sea-going ships of the seventeenth and eighteenth centuries to sail considerable distances inland; streams and lakes gave explorers and settlers their least laborious routes through the interior of the continent. In large part, settlement was guided by streams, and an appreciable part of the food supply consisted of fish. These resources could be used with trifling improvements. Rough piers, landing stages, and such boats as were used on rivers and lakes could be built quickly by ax-wielding frontiersmen. Even the water wheels that drove the early sawmills and textile factories involved no great outlay, for they were installed where nature had made the task easy.

When the settlements spread west across the Alleghanies, the population accustomed to river transportation bethought themselves of sending their produce to market by canals. Ambitious schemes of artificial inland waterways, encouraged by the success of the Erie Canal, caught the imagination of the country and swallowed investments huge for the times. Meanwhile, Robert Fulton's invention of the steamboat was making our greater rivers, such as the Hudson, the Ohio, and the Mississippi, the most important common carriers of the wide regions which they drained. River improvements became a matter of national concern, and the practice of voting large appropriations for such purposes outlasted the heyday of the steamboat.

As the railway net spread over the country, the importance of streams for transportation suffered at first a relative and later an absolute decline. Despite large expenditures for channel improvements, the freight moving up and down the Mississippi in recent decades has been smaller than the traffic of 60 or 80 years ago. It is only where large vessels can be employed in moving bulky freights, as on the Great Lakes, that inland water transportation has made gains or even held its own. Even in these cases the transport is carried on to an extent not generally realized by privately owned fleets of specialized boats rather than by licensed common carriers.

But while the rivers have declined in importance as transportation agencies, they have gained importance in other ways. They promise greater services and they threaten greater dangers. As the country has become more fully occupied by settlers, problems of water sup-

ply, flood damage, low water, sewage disposal, stream pollution, irrigation, drainage of low-lying lands, water power, stream crossings for railroads and highways, and the like, have become more pressing. Levees to protect fertile bottom lands have stretched to thousands of miles and grown progressively higher. Every new levee and every foot added to the height of old levees has increased the menace of floods to other lands. Cities have built aqueducts for hundreds of miles to reach watersheds that could be protected from contamination, and they get their electric current in many cases from waterfalls at similar distances. Towns, mines, and factories that used to dispose of their wastes by dumping them into river courses have been attacked by downstream dwellers for damaging their habitats, threatening their health and poisoning fish. Rival claimants to water for irrigation projects have brought their conflicting interests before the courts in hundreds of cases. Federal bureaus have been set up to care for both irrigation and drainage projects. Hydro-electric power presents another tangled problem which interests all citizens from the domestic consumer of electricity to the coal miner, the owner of public utility bonds, the industrialist looking for cheap energy, and the advocate of subsistence homesteads. Rivers that used to be great carriers of goods have become obstacles to the land roads of today—obstacles that must be spanned by bridges costing millions of dollars.

These illustrations suggest the complexity of the problems that face the country in making proper use of the water resources with which nature has endowed it so richly in certain regions and so sparsely in others. As the place of water resources in our national life has changed in the course of the country's past development, so it is likely to change further in the decades and centuries to come. The more interdependent we become as individuals and as communities, the more do we need to plan the uses of water with all our interests in mind. What was done on a lake or a stream in one settlement did not much concern other settlements a hundred years ago; it may change living conditions vitally in other districts today, and a hundred years hence the interdependence of interests will be greater than it is at present.

Nor can we confine attention to rivers, lakes, and harbors. Underground waters are the chief reliance of our population in many areas. These underground supplies are influenced to a degree that we cannot yet accurately determine, not only by the sinking of wells

and the rate of pumping, but also by methods of lumbering, grazing, tillage, and drainage that influence evaporation, plant absorption, run-off, and seepage into deeper strata. Rainfall itself seems to be affected by the cutting of forests, though here again we lack accurate means of determining the precise importance of human interference with natural processes. Certainly we are not justified in assuming that water resources will be constantly renewed by a bountiful nature in contrast to land and mineral resources which are depleted or exhausted by human use. The difference between the types of resources in this respect is a difference in degree only. In planning for water, the country must take a long view and think in terms of conservation as well as in terms of current use.

A fuller presentation of this many-sided problem of how to utilize our water resources to the best advantage may be found in the appended report of the water planning committee. The general objectives of this committee are defined as follows:

1. To develop more productive uses of water resources—power, water supply, navigation, power, irrigation, recreation.

2. To eliminate, modify, or neutralize harmful influences of waters, such as floods and erosion.

3. To eliminate, modify, or neutralize harmful handling of waters—pollution, waste through run-off and drainage.

4. To accomplish the above purposes effectively from the point of view of technology, geographical conditions, existing public agencies, and the intelligent understanding of good-willed citizens.

These objectives are considered with reference to representative regions, including:

1. The North Atlantic Basins.
2. The South Atlantic and Eastern Gulf Basins.
3. The Great Lakes and Red River of the North Basin.
4. The Upper Mississippi Region.
5. The Missouri Basin.
6. The Ohio Basin.
7. The Southwest Mississippi Basins.
8. The Lower Mississippi Region.
9. The Western Gulf Basins.
10. The Colorado Basins.
11. The South Pacific and Great Basin District.
12. The North Pacific District.

In the case of the Mississippi Valley region inquiry was extended over a considerable period of time and was pursued with greater intensiveness than in the case of the other regions.

The inquiry included water on the land and water in streams. Under the subject of water on land, the report deals with precipitation, run-off, infiltration, and evaporation. As to underground water, land-use zoning, and

irrigation. Work upon the latter fields naturally overlapped that of the sister committee on land planning.

Under the head of water in streams, the committee deals with floods, low-water control, water supply and sanitation, navigation, and power.

In the Mississippi Valley report, of which Morris L. Cooke was also chairman, such topics as forestry and wild life, conservation, and recreation were included—again with far greater detail and more elaborate techniques than were possible in the report which covered the whole country.

The specific recommendations of the water planning committee include:

- (1) Maps, surveys, inventories, and basic data.
- (2) Experimentation and regional planning.
- (3) Planning of specific projects.
- (4) Legislation and administration—ways and means necessary for sound water planning purposes.
- (5) Distribution of costs.

(I) Under the head of basic data, the Water Planning Committee recommends:

(a) The topographic mapping of the United States be pushed vigorously to completion.

(b) The present system of permanent gaging stations on all rivers concerning which records of flow are important for water resources planning, be extended.

(c) Appropriate inventory surveys of water resources of the Nation be undertaken systematically under unified Government auspices.

(d) Systematic, uniform land-use surveys of the country be initiated.

(e) Studies of the ground waters of the Nation be systematically pursued.

(f) The study of water supply and sanitation in relation to public health be promoted.

(g) Research in respect to water quality and standards be further promoted.

To this list should be added an item on the effect of pollution upon fisheries and wildlife.

II. Under the head of selective experimentation and regional planning, the water-planning committee recommends provision for surveys, studies, and experiments in selected unit areas. In this case it extends the proposal to include not only water but all other natural resources, such as land, forests, and minerals, together with the relevant economic and cultural conditions. At this point the recommendations of the water-planning committee should be associated with the recommendations of our land-planning and minerals committees. One region to be treated in this comprehensive fashion is the Ozark Highlands; but other areas are discussed, particularly in the more intensive report of the Mississippi Valley committee.

III. Under the head of planning specific projects, the water-planning committee recommends that studies be initiated promptly in a long series of instances. As a partial but not complete list of such projects, the committee suggests the following:

(a) *North Atlantic Basins*: (1) The Connecticut River power, flood control, and stream pollution project in Vermont, New Hampshire, Massachusetts, and Connecticut; (2) The Delaware River power, water-supply and stream-pollution project in New York, Pennsylvania, and New Jersey; (3) A study looking to the coordination of the hydroelectric power to be developed in northern New York, principally in the international section of the St. Lawrence, and the development of coal-generated, mine-mouth power in Pennsylvania, having in mind condensing water requirements, so as best to conserve the social, economic, and industrial interests of the States of New Jersey, New York, and Pennsylvania;

(b) *South Atlantic and Eastern Gulf Basins*: (1) The Potomac River project in Pennsylvania, Maryland, Virginia, West Virginia, and the District of Columbia.

(c) *Upper Mississippi and Red River of the North Region*: The Red River water-supply and flood-control project in Minnesota, North Dakota, and South Dakota.

(d) *Missouri Basin*: (1) The Kansas City flood-control projects in Kansas and Missouri.

(e) *Ohio Basin*: (1) The Pittsburgh flood-control project in Pennsylvania, New York, and West Virginia; (2) The Kanawha-Greenbrier-New River flood-control, power and navigation project in West Virginia, Virginia, and North Carolina.

(f) *Southwest Mississippi and Western Gulf Basins*: (1) The Caddoa Dam and Reservoir on the Arkansas River in Colorado; (2) The Conchas Dam and Reservoir on the South Canadian River in New Mexico; (3) The Fort Reno Dam and Reservoir on the North Canadian River in Oklahoma; (4) The Brazos Basin conservation and reclamation project in Texas.

(g) *Lower Mississippi Region*: (1) The Coldwater-Yazoo River flood-control project in Mississippi; (2) The St. Francis flood-control project in Missouri and Arkansas.

(h) *Colorado Basin*: The interrelation of United States Colorado Basin projects in California, Arizona, Nevada, Utah, Wyoming, Colorado, and New Mexico.

(i) *South Pacific and Great Basin District*: (1) The economic aspects of the Central Valley irrigation, flood-control, power, and navigation project in California.

(j) *North Pacific District*: The Grand Coulee High Dam irrigation and power project in Washington.

IV. Under the head of necessary legislation and administrative organization, the committee on water planning recommends:

1. An exhaustive study of Federal and State legislation necessary to permit effective cooperation of Federal, State, regional, and local agencies in the conservation and effective use of water resources. (See the discussion of Jurisdictions for Public Works in another section of this report, page 62.)

The committee further advises improved standards and practices dealing with such subjects as the tolerance of industrial and mine wastes and municipal sewage in streams; the uses of subsurface waters and uniform principles governing drainage, forest practice, and reforestation. To secure proper coordination, the committee suggests the creation of an organization for advisory planning of the use and control of water resources.

V. Finally, the water-planning committee recommends the development of an equitable system of distributing the costs of water-resource projects, which should include not only private but social accounting—a striking revision of conventional costing technique. A more detailed study of this problem also is given in the report of the Mississippi Valley committee.

In outlining a policy for Federal participation, that committee says:

1. In general, Federal funds will be contributed to a flood-control project only where reasonable protection is afforded against floods of maximum height.

2. Federal funds as a rule will be contributed to a project, or to a principal unit of a project, only where the benefit from flood protection will justify the expense of such flood protection.

3. To projects of chief benefit only to local communities, Federal funds may be contributed to the extent of 30 percent of the cost of labor and materials.

(a) There must be a responsible and legally constituted local agency with which the Government may deal.

(b) Such local agency must guarantee the Government against any future claims for damages on account of the construction or operation of the project.

(c) Such local agency must provide all necessary land, flowage rights, rights-of-way, and similar items, as well as the remainder of the funds (in excess of the Federal contribution) required for completion of all essential construction work.

(d) Operation and maintenance costs shall be borne wholly by local interests.

4. To projects of substantial benefit to Federal interests as well as to local communities, Federal funds may be contributed in excess of 30 percent of the cost of labor and materials, the amount of Federal contribution in excess of such 30 percent to be determined by the proportion of benefits definitely applicable to a recognized Federal interest.

(a) Federal funds so contributed shall be expended under the direction of a qualified Government agency.

(b) There must be a responsible and legally constituted local agency with which the Government may deal.

(c) Such local agency must guarantee the Government against any future claims for damages on account of the construction or operation of the project.

(d) Such local agency must provide all necessary land, flowage rights, rights-of-way, and the like, as well as the remainder of the funds (in excess of the Federal contribution) required for completion of all essential construction work.

(e) Operation and maintenance costs shall be borne wholly or in part by local interests as may be determined in each case.

With the recommendations made by the water planning committee for more thorough examination of these engineering projects in their economic and social relations, the National Resources Board is in hearty accord. The water planning committee included several engineers from civil life and the Engineers Corps of the United States Army who have had long experience in dealing with water problems of many sorts; also a geographer, a forester, an economist, and a specialist in hydraulics. The membership of this committee was:

Morris L. Cooke, consulting engineer, Philadelphia, chairman.

Harlan H. Barrows, chairman of the department of geography, University of Chicago.

Herbert S. Crocker, consulting engineer, Denver, Colo.

Glen E. Edgerton, lieutenant colonel, Corps of Engineers.

Henry S. Graves, dean, School of Forestry, Yale University.

Edward M. Markham, major general, Chief of Engineers.

Charles H. Paul, consulting engineer, Dayton, Ohio.

Harlow S. Person, consulting economist, New York City.

Sherman M. Woodward, professor of hydraulics, State University of Iowa.

This group approached these problems with a variety of specialized knowledge about stream flows, water tables, dams, levees, irrigation, hydroelectric power, sanitary engineering, river transportation, floods, diversion channels, and the many other technical matters that must be considered. They had at their disposal the great collections of water data that have been gradually amassed by the Departments of War and Interior. To the study of water planning they have devoted more than a year of intensive effort, first as the Mississippi Valley committee and then as the water planning committee. A considerable staff of technical experts have been employed at their suggestion, and they have consulted with numerous interests both within and without the Government. This committee, working under such conditions, reports that before a long-range program involving large sums to be spent upon our water resources is adopted, further study of the many projects that have been proposed is indispensable to wise action.

The immediate need for gathering basic data that can be relied upon in developing a constructive program for promoting the general welfare of the country in the long run is clearly demonstrated. To proceed intelligently we must complete the topographic mapping of the country—obviously fundamental to plans for using a substance that runs down hill; extend the system of permanent gaging stations; make inventory surveys of the water resources available in different regions; study ground waters, water supply and sanitation in relation to public health, and set up standards of water quality. Besides these scientific data, we need also a more definite presentation of Federal and State laws that may help or hinder whatever plans for water use may prove to be socially desirable. And it is obviously wise in many cases to try out new departures experimentally in local areas before adopting them upon a large scale.

To see that the necessary data are gathered, that the legal arrangements for effective action are made, that the experiments are wisely designed, and that the lessons taught by these experiments are put to constructive use, the National Resources Board supports the committee's recommendation of "An organization for advisory planning of the use and control of water resources." There already exist numerous agencies in the Federal, State, and municipal governments that deal with certain aspects of water problems; what must be added for effective work is a coordinating agency that will consider all phases of the problem and all the regions affected in relation to the general welfare. Such a water planning organization would draw heavily upon the information collected by the older special and local agencies and upon their practical experience in dealing with separate phases of engineering and social problems. Further, the planning organization would suggest ways to use many of the now existing specialized agencies in carrying out portions of its general schemes. Until the country has some organization responsible for the continuous, systematic study of water uses in all their manifold aspects and in their bearing upon the life of every citizen, it will continue to spend huge sums for inadequate returns in well-being. The costs of such an organization as is suggested would make but a small fraction of the wastes avoided and of the gains secured by its work. This agency should be related to the National Planning Board which is recommended in a later section of this report, in the same manner as the agencies suggested for land and mineral planning.

While this recommendation implies that planning the uses of water resources should continue indefinitely, it does not imply that all construction work relative to water should be postponed to an indefinite future. Even on the basis of the present inadequate knowledge, it is justifiable to draw up a considerable list of projects that merit priority of consideration. The 17 projects

in 11 major drainage basins or regions <sup>5</sup> selected by the water planning committee and named above constitute such a list. All parts of the country are represented in it, and so also are all phases of water problems from transportation to stream pollution, flood control, municipal water supply, hydroelectric development, and irrigation. Even these projects are recommended by the committee for detailed study rather than for immediate execution.

It is highly desirable that large water projects shall be utilized as a means of furnishing employment in periods of extensive unemployment. At the present time employment can be furnished to men, who must be supported in some manner, in making the necessary explorations, surveys, working drawings, cost and benefit estimates, legal studies, etc., for the seventeen projects in the present list. It will be economical to provide whatever funds are available to the completion of this work.

Only after such exploratory work will it be possible to set large numbers of workers to construction. Without waste such works can be prepared for contract within a year or less. Prudence demands this immediate preparation of projects not only against the possible need of such public work next year, but also to furnish a backlog of available work in any other unemployment emergency. Water projects require substantial periods of preparation before they can effectively serve the worker's need for a stabilizing public works program.

The first requisite is the adoption of the general policy of planning the projects before congressional approval is sought, and planning takes time and money. In any planned program, first place must go to projects to which the Federal Government is already committed. These undertakings should be carried at least to a point of reasonable utility. The records of the various construction bureaus and the Public Works Administration provide the following estimates:

*Federal water projects now under construction—Additional funds required*

	P. W. A. allotments to Dec. 1, 1934	Require- ments for fiscal year 1936	Require- ments for completion
Reclamation.....	\$76, 700, 000	\$44, 000, 000	\$103, 950, 000
Rivers and harbors.....	177, 189, 000	97, 000, 000	144, 150, 000
Flood control.....	51, 223, 000	56, 000, 000	104, 900, 000
<b>Total.....</b>	<b>305, 122, 000</b>	<b>197, 000, 000</b>	<b>353, 000, 000</b>

<sup>5</sup> Almost identical with the 10 basins selected by the President's Committee on Water Flow in April 1934, H. Doc. 395, 73d Cong., 2d Sess.

A second step is to distinguish between so-called "self-liquidating" projects and Federal projects upon which no direct return is anticipated. If self-liquidating is defined in terms of cash returns to the Federal Treasury equaling all or most of the investment made by the United States, then a substantial part of the funds committed on projects already started belong in that class. However, this distinction has a financial rather than a broad social significance; for projects do or can make returns in a great variety of ways and in greater or less amounts. The self-liquidating criterion is really a matter of accounting rather than of programming.

An alternative method of determining priorities is to collect from the Federal construction agencies lists of projects which, from their experience and knowledge, appear meritorious. With such a list a minimum of effort would sift out glaring inconsistencies or interferences among proposals. This is the old method of planning individual projects with little or no attempt at interrelation. The National Resources Board does not recommend this procedure except as an emergency measure when there is no time for adequate planning.

A better procedure is suggested by the studies of the President's Committee on Water Flow and the water planning committee which treat drainage basins as wholes and consider a great variety of water and land uses and controls. A natural result of this approach to the problem would be the selection or "programming" of a group of carefully related projects in a drainage basin or series of basins. What coordinated planning of a drainage basin may accomplish through the wise use and control of water resources can be demonstrated only by actual experiment.

A start has already been made in this direction in the Tennessee Valley, Columbia River Basin, and on the Colorado River; and plans have been prepared for the St. Lawrence and the Central Basin of California. In a number of other basins, as noted in the water planning report, plans have reached a state from which they can be brought into focus in a few months.

If the general principle implied in this procedure is agreed upon, it would be possible to select from the great variety of projects proposed by Federal agencies as filed with the Public Works Administration, items that would fit into any probable plan for larger basins. In this way an interim 1-year program—pending completion of a long-range program—could be developed in combination with the completion of projects already started.

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## SECTION I

### III. MINERAL POLICY

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#### 1. The Planning Committee for Mineral Policy

Mineral resources have been a major factor in American industrial development. The country was endowed with a magnificent abundance and variety of minerals that provided cheap metal with which to make machines and cheap fuel with which to drive them. By the turn of the century, the United States had come to lead all other nations in both the production and use of mineral raw materials. In 1929 the mineral industries employed more than a million men and reported products to the value of 6 billion dollars.

For many years the country enjoyed the gifts of nature, secure in the belief that the horn of plenty would never fail. Warnings of impending shortage were sometimes heard, but new deposits were found and new methods developed. It was admitted that mineral resources were not reproduceable, but if new ones could be found, why be concerned for the future?

The first blow to the national complacency was the report of the Conservation Commission of 1908 which drew attention to the need of reform in the public land laws and to the huge wastes of the physical resources under prevailing methods of exploitation. The awakening of interest in conservation was followed by the World War, which revealed American dependence on foreign supplies of certain critical materials and at the same time stimulated production from domestic sources. Shortage of fuel, though caused largely by congestion of transport, made people acutely conscious of their dependence upon the mines and led to an elaborate machinery of war-time control. In coal, and in the metals, the war demand resulted in a great increase of productive capacity.

The overexpansion of war time was followed by a painful readjustment. In copper huge stocks held by the warring governments remained to be absorbed. In zinc, excess capacity built to meet the munitions demand had to be scrapped. In bituminous coal, the readjustment was accompanied by repeated strikes involving as many as 400,000 men and lasting as long as 5 months. Years of deflation followed in this industry accompanied by heavy financial loss and by sacrifice of labor standards. The oil industry, which continued to grow with giant strides, passed from one cycle of overproduction into another. Copper mining recovered from the post-war reaction only to find itself in 1930 faced with formidable competition from new fields opened abroad.

The difficulties of the mineral industries were brought to a crisis by the great depression. Metal mining—a handmaid of the capital goods industries—was prostrated. The oil industry struggled with a glut intensified by the phenomenal east Texas field. Coal mining saw the near collapse of the machinery of collective bargaining, and wages in some fields sank to starvation levels. The plight of the mine workers became among the most tragic of any section of our people.

A further effect of the depression was to intensify the existing waste of the underground resources. While great advances in mineral technology had occurred since the Conservation Commission of 1908 but little progress had been made in checking the resource losses associated with destructive competition and overdevelopment. With the coming of the depression, the loss increased. Some coal operators gave up the attempt to recover pillars. Waste of natural gas and overproduction of oil became more serious. In metal mining the collapse of prices forced many owners to "pick the eyes out" of their reserves and to abandon large tonnages of low-grade ore. Concern with the hardships of the mine workers and with the financial losses of owners was now reenforced by concern over the growing waste of the resources.

Acting on a suggestion from the Science Advisory Board, President Roosevelt, in April 1934, appointed a Planning Committee for Mineral Policy. The Committee was instructed to consider such questions as the estimating of future consumption, the curtailment of excessive production, the coordination of emergency appropriations in the mineral field, the relationship between Federal and State policy, the treatment of mineral resources on the public domain, the conservation of resources, and the effect of mineral tariffs—in short to undertake a general study of the mineral resources of the United States with a view to the establishment of a national mineral policy.

The membership of the committee included the Honorable Harold L. Ickes, Secretary of the Interior, as chairman; Dr. C. K. Leith, chairman of the department of geology of the University of Wisconsin, acting as a representative of the Science Advisory Board; Herbert Feis, Economic Adviser to the Department of State; J. W. Furness, Chief of the Minerals Division of the Bureau of Foreign and Domestic Commerce; Lt. Col. C. T. Harris, Jr., Ordnance Department, U. S. A., Director of the Planning Branch, Office of the Assistant Secretary of War; Leon Henderson, Director of the

Division of Research and Planning of the N. R. A.; W. C. Mendenhall, Director of the United States Geological Survey; F. A. Silcox, Chief Forester of the Forest Service; Wayne C. Taylor, Special Assistant to the Special Adviser to the President on Foreign Trade; Dr. W. L. Thorp, Director, Consumers Division, National Emergency Council; and John W. Finch, Director of the Bureau of Mines. A technical secretary, W. P. Rawles, was appointed and independent mining engineers were retained to make special studies.

Upon the creation of the National Resources Board, the Committee was also made the Mineral Section of the Technical Committee of the Board in order to care for the expenses of the Planning Committee for Mineral Policy and to assist the Board in its studies. The duties of the Committee are, therefore, twofold. Acting in its second capacity, the committee has contributed a section to this report of the National Resources Board. A later report, amplifying the findings in this preliminary statement, is in preparation.

## 2. Summary of the Report

In introducing its report, the committee calls attention to the importance of the mineral industry and to the fact that it has developed without the aid of any consistent national policy. The facts that warrant special consideration for the mineral industry and a unified policy for its guidance are: (1) That minerals are exhaustible and nonreproduceable; (2) that some minerals do not exist in the United States in quantities adequate for national welfare; (3) that others exist in present surplus; (4) that geographic distribution is fixed by nature and cannot be changed by enactment, thereby determining trade routes and trade areas, both domestic and foreign; (5) that there are special hazards, both physical and economic, in mining; (6) that closing down a mine may result in losses far more serious than closing down a factory.

The outstanding public question arising from these conditions is that of conservation, which is defined to mean not hoarding but rather orderly and efficient use in the interest of national welfare, both in war and peace, without unnecessary waste either of the physical resources or the human elements involved in their extraction.

It is pointed out that the application of improved technology has greatly reduced waste in operation and that the huge waste which still remains is attributable to destructive competition and over-development. Laws that forbid collective action between competitors have promoted waste, and, in the case of the petroleum industry, the law of capture has been strongly anti-conservational in its effect.

Proceeding in part II to the discussion of Policy in the Domestic Field, the mineral committee finds the cen-

tral problem to be the wise use of the national inheritance for the welfare of labor, the industry itself, and the consuming public. The problem centers around the facts of limited occurrence and exhaustibility. Complete exhaustion is too far in the future to cause immediate concern, but the depletion of reserves to the point at which costs begin to mount rapidly is not far distant in some minerals and will handicap an industrial life that has been built upon abundance of cheap mineral raw materials. Waste must be reduced and technology improved.

Forecasts of consumption are necessary to prevent the over-expansion of capacity—one of the major causes of instability and waste. Forecasts have been of great value in the petroleum industry, but they have not been attempted by other mineral industries for a number of reasons. The forecasting agency should be a governmental body, probably the Bureau of Mines, acting in cooperation with representatives of producers and consumers.

Surplus plant capacity has been the chief factor in promoting ruinous competition which in turn has brought on wage reductions, loss of capital, and physical waste of resources. Recognition of the fact that mineral resource industries are in a class by themselves has led many thoughtful persons to support the idea of production or price control in some branches of mining, although opposing it when applied to manufacturing or trade. Whether by price-fixing, control of output, or other means, it appears that some method of eliminating excessive competition with its attendant waste is desirable, if carried out under the proper governmental supervision.

Bituminous coal has suffered greatly from over-expansion, and some form of stabilization is needed to protect labor and capital, and prevent waste of the resource. Under the N. R. A. code, the condition of the industry has been improved in some if not all fields, and majority opinion appears to favor the continuance of some form of control.

Price and production control, along the lines adopted in Europe, have been suggested for this country, although it is agreed that the application would be far more difficult here.

Capacity also will have to be controlled if any method of production or price control is to be permanently effective. Among the plans which have been proposed for accomplishing this are: (1) Guarantees of minimum employment to the miners by the operators; (2) that the Federal Securities Commission require promoters of new mines to publish full information on the economic condition of the industry; (3) that extensions of common-carrier railroads be disapproved by the Interstate Commerce Commission until public necessity is demonstrated; (4) purchase and closure of marginal mines by the Government, the cost to be defrayed by

revenues from a tonnage tax; (5) purchase of reserve coal lands along existing railroads to be set aside as a national coal reserve, also to be financed by a tonnage tax. These proposals are not specifically endorsed by the minerals committee, but are recommended as worthy of further study and consideration. If the coal industry really desires to check the expansion of capacity, the committee is convinced that the problem can be solved.

The importance of the petroleum industry to the country and the unsatisfactory state of the national reserves is indicated. Substitutes will be available upon the exhaustion of petroleum from wells but at prices that will handicap the national economy. The need of conservation is set forth with mention of the ways in which the greatest waste occurs and illustrations of its extent.

Attempts at control of oil production in the past have included voluntary curtailment and voluntary unitization. Under the present code, quotas have been allotted to the producing States, and unitization is strongly encouraged.

Desirable results that could be reasonably expected from the formulation of a national oil policy are shown and, although no specific recommendations are made, the general recommendation is that methods for controlling production and for unitary development of fields discovered in the future should be included in any plan adopted.

Copper is the metal industry suffering most severely from over-expansion. The boom activity of 1928-29 was partly speculative and the reaction has been thereby intensified. Unemployment is acute; whole communities of stranded miners must be rehabilitated elsewhere. Conditions are forcing resource waste through "selective mining" and premature abandonment; caving and flooding threatens loss of huge tonnages of low-grade ores. It is believed that the emergency measures adopted under the N. R. A. should be continued until the present excess stocks are liquidated. Long-time control over competition is desirable from many angles, including that of the public; if the proper safeguards are provided.

The committee believes that plans for stabilization should originate within the copper industry, but should include publication of full and complete statistics covering all phases of supply and demand, forecasts of consumption by a public agency, and a limitation on accumulating of excessive stocks.

Lead and zinc are both in positions similar to that of the copper industry, although their difficulties are less acute.

The committee's general recommendations as to production and capacity control in the mineral industries burdened with a present surplus of plant capacity

are: (1) That the emergency provisions of the NRA codes for production control be continued in some form; (2) that in some cases, such as bituminous coal, provision for minimum and maximum prices may also be needed; (3) that action by Congress be considered establishing an agency to authorize control of production and capacity, and in special circumstances of prices, where uncontrolled competition is found to result in serious resource waste, with all necessary safeguards for the protection of the mine workers and consumers.

Turning from industries in present surplus to those for which domestic deposits are insufficient, the committee recommends that public encouragement should be given to exploration for new deposits, development of substitutes, and technological research for making low-grade supplies commercially available. Where domestic reserves are deficient tariffs have generally failed to bring adequate new supplies into being and instead have hastened the depletion of the inadequate supplies already known. A system of bonuses for discovery seems more desirable. The success of governmental agencies in developing supplies of potash and helium indicates the possibilities of systematic search.

The history of the administration and the present status of minerals on public lands is presented with a listing of the possible advantages and disadvantages of Government control and management under the leasing system adopted in 1920. The advantages briefly are: (1) A substantial revenue is collected in which the interested States share; (2) waste in mining is controlled; (3) adjustment of production to market needs is aided; (4) control of monopoly is aided; (5) safety standards are improved; (6) maintenance of reserves of essential minerals can be assured. The disadvantages are: (1) Increase of Government staffs and costs; (2) interference with freedom of action of citizens; (3) dangers to effective administration through withholding essential appropriations; (4) instability of policies under changing administrations; (5) chance of political favoritism.

The committee concludes that the advantages of the leasing system outweigh the drawbacks and that it should be extended, in much simplified form, to all publicly owned mineral deposits in the United States proper.

The committee approves the policy of retaining ownership of mineral deposits on public lands, but does not favor at the present time the general extension of public ownership over deposits of minerals that have passed into private hands. It favors the retention of the system of private operation, with Government supervision when necessary.

An exception to the policy of no general extension of public ownership may be advisable in the special case of bituminous coal, in which a proposal for the purchase of selected acreage as a means of controlling capacity



deserves serious consideration. Such a national coal reserve would be leased as needed with payment of royalty to the United States.

When mineral lands revert to the States through tax delinquency, the committee recommends that the States hold such lands in reserve until they are actually needed and then lease them under a system of royalty.

The question of submarginal mineral lands and mines is closely akin to that of submarginal agricultural land, although problems of readjustment become, if anything, more difficult, as mineral lands commonly have little or no value for other uses. Proposals to develop marginal deposits in order to relieve local unemployment must be weighed with care. The problem varies with the commodity involved; in the case of minerals for which we are still heavily dependent on imports, encouragement may well be given to development of marginal properties; in the case of minerals already burdened with a surplus of capacity, development of more mines will only displace existing production.

An opportunity exists for the National Resources Board, through its contact with the State planning boards, to foster or discourage local developments in the light of national interests.

After a discussion of Federal and local taxes on mines and on reserves, with particular reference to their effects on overdevelopment and resource waste, the committee recommends that further study be made of the question, especially of the ad valorem tax.

The importance of scrap metals at the present time and as a reserve against future needs is explained; and the committee recommends consideration of prohibiting the export of scrap of metals for which the domestic supply is deficient. It also recommends that more complete statistics concerning secondary metals be compiled by the Bureau of Mines.

The opportunity before the States to conserve their resources by exercise of their police powers in the prevention of physical waste is shown. The urgent need for such action, especially in checking the wastes of oil and natural gas, suggests a wide field of usefulness for State planning boards. It is recommended that the possibility of encouraging State action be given attention by the National Resources Board.

The committee reviews the functions of the scientific and technologic branches of the Government in the wise use of the country's mineral resources. The recommendations include: (1) Extension of areal geologic surveys; (2) more thorough inventories of reserves; (3) fundamental research in geology; (4) improvements in the technique of exploration; (5) improvements in the technique of mining and metallurgy; all of these require strengthening existing research agencies, coordinating private efforts, and exchanging information.

Progress in prevention of mine accidents is noted, but hazards to life and limb are still excessively high. Health and safety in mining are important from the economic as well as the humanitarian standpoint, and present a special problem. Federal work in this field should be maintained and strengthened.

After describing the present division of labor among Federal agencies dealing with mineral administration, the committee expresses the belief that the scientific, technical, and statistical services should remain in, and some of the fact-finding services in other departments should be transferred to, the Department of the Interior. The committee also feels that the fact-finding services should be under separate direction from the administration of mineral codes or production controls, but so articulated as to give the proper service.

Supervision of mineral codes involving control of production should ultimately be grouped under one agency, in order to facilitate the treatment of urgent problems of inter-industry competition, such as the competition between coal and oil.

An advisory coordinating committee, made up of representatives of all Federal agencies of mineral administration, should be continued, and a representative of this committee should sit on any general committee for natural resource planning created under the National Resources Board or elsewhere.

The committee urges that stronger support be given to the agencies dealing with mineral resources and calls attention to the disparity between funds allotted for agricultural services and mineral services.

Section III of the Mineral report is devoted to the international aspects of a mineral policy.

The necessity for international trade in mineral raw materials is shown and some of the measures, inspired by economic nationalism, that have been set up to obstruct the natural flow of trade are recited. A chart showing the position of the leading industrial nations with respect to the principal mineral commodities is included.

With respect to minerals of which the United States has a present exportable surplus, the committee recommends the following courses of action: (1) Give fitting consideration in negotiation of commercial agreements; (2) seek fair tariff and trade treatment by foreign governments; (3) maintain the Webb-Pomerene Act; (4) facilitate American participation when desirable in international cartels; (5) avoid artificial stimulation of exports by special concessions in freight rates or shipping subsidies not extended to other commodities; (6) discourage importations which aggravate anticonservational conditions of surplus development.

With respect to minerals for which the United States is largely dependent upon imports, it is suggested that

a wise policy should include: (1) Consideration of existing tariffs in the light of domestic reserves; (2) protection of American interests against attempts to maintain excessive prices on our needed imports, by the operation of cartels, intergovernmental agreements, export duties, or other restrictions; (3) restriction or regulation of the export of scrap; (4) establishment of war reserves of imported minerals essential for national defense; (5) maintenance of trading lines carrying these minerals.

After a statement of the minerals for which we are clearly dependent on foreign sources, points of policy with respect to national defense are set forth. It is recommended that stock piles be accumulated of these strategic materials not available from domestic deposits.

Tariffs for the reasonable protection of the branches of the mineral industry with adequate domestic reserves are probably justified. Tariffs that have been imposed on commodities with inadequate reserves generally have proved unsuccessful in bringing into production new sources of any considerable size. Study of these tariffs with a view to possible revision is recommended. Investigation of possible substitute measures for controlling importations is recommended, such as tariffs in kind, or import quotas.

The effects of international cartels are briefly described and it is suggested that the subject be given further study, since the cartels are of major concern both to American consumers and producers.

The extent of American expansion into foreign fields is indicated, along with some of the difficulties encountered. It is recommended by the Mineral Committee that the American policy in such instances should be directed along the following lines: (1) To preserve American property rights abroad; (2) to seek a balance between imports and domestic production that will best suit the general welfare of this country; (3) secure equality of opportunity abroad for our nationals; (4) give greater encouragement to the development of foreign supplies which we must import than to the development of those minerals possessed in abundance at home; (5) encourage fair relationships between American firms operating abroad and foreign governments and peoples.

The question of economic sanctions and boycotts receives reference but recommendations are withheld.

### 3. Special Recommendations of the Board

Reviewing the committee's report, the Board calls particular attention to the following points:

The immediate outlook, as far as the national resources in minerals are concerned, is for abundant supplies available at low prices, lower, in many cases, than those prevailing in the twenties. There is no sign that

any serious limiting factor will emerge among the minerals to prevent the Nation from attaining a production of goods and services far above the levels of even 1929, say, for the next 10 years. The minerals for which we lack domestic deposits can be imported from abroad in any volume needed. The immediate problem of our major domestic industries is not a shortage but an unmanageable surplus, much like the surplus in agriculture. As in agriculture also, the surplus is resulting in heavy capital loss and depression of living standards. Few groups in our population have suffered greater hardships than the coal miners. Relief of these conditions is an immediate and pressing social problem.

The long-time outlook in the field of mining, on the other hand, is for increasing costs through exhaustion of the rich and more accessible deposits. The situation varies greatly in different minerals, but, in general, depletion is much further advanced than is generally realized. Known supplies of oil, natural gas, and certain of the metals (ores of present commercial grade) are sufficient for, at most, a few decades. Even in coal mining, the life of certain districts producing our finest coals is limited to about 85 years at normal rates of production. In both metals and fuels the reserves are sufficiently limited so that waste can no longer be tolerated. The long-time problem of the minerals is conservation.

At first thought the immediate problem of the surplus and the long-time problem of conservation seem to be in conflict. Actually they are due to the same fundamental cause—the destructive competition characteristic of scattered ownership and overdevelopment of productive capacity. Resource waste is most serious in those very industries with an unmanageable surplus. In oil and gas, the wastes are proverbial. At the present time in one field, enough gas is being blown into the air to supply all domestic consumers in the United States. In bituminous coal mining the avoidable loss is placed at 20 percent. Such wastes are seldom the fault of the individual operator who has small choice under existing competitive conditions. As described in the report of the technical committee, the wastes of fuel present a grave national problem. Avoidance of waste is partly a matter of technology. But very largely the prevention of waste is a legal and economic problem. As long as bituminous coal mining functions in surroundings of poverty, the operator has neither the incentive nor the means to prevent waste. The first and indispensable step to the solution of either the short-time problem of too many mines and miners or the long-time problem of preventing waste, is to place these industries on a basis of economic stability.

The States can do much in the prevention of waste. Through exercise of the police power, the States have the

constitutional authority to prohibit wasteful methods of mining, just as they have the authority to prescribe safety regulations. In the last 10 years, several of the States have made attempts to control waste in the production of oil and natural gas, which have in general been sustained by the courts. So far only a beginning has been made, but enough has been accomplished to show the possibility of replacing the wasteful rule of capture with a requirement of unitary development of the individual pool. In time, similar prohibitions of waste may be extended to coal mining. Progress in this direction can go no faster than the development of public opinion within the great mineral States. In the past, local opinion supporting such regulation has been held back by the depressed and profitless condition of many enterprises and by the competition between producers in different States. The slightest increase in production cost, caused by a local conservation law, might handicap the local industry. Similarly, the control of production by one State has been virtually impossible for lack of similar action in competing States, regardless of whether the purpose of control was to prevent waste of resources or to protect capital and living standards. The necessary prerequisite to encouraging action by the States is economic stability and some limitation on destructive competition between the States. Interstate compacts for this purpose should be encouraged, but are likely to call for complementary action by the Federal Government. In the mineral field, the problem of balancing supply and demand is essentially national and requires assistance of the National Government.

The chief service which the Federal Government can render in either the long- or the short-time problem is to assist the mineral industries to attain economic stability. Stabilization is necessary to preserve capital, to maintain reasonable wage standards and steadier employment, and to minimize resource waste. Stabilization requires a central organization and collective action. It may also require permitting control, under public supervision, of production, capacity, stocks, and sometimes of price, in ways which have traditionally been thought forbidden by the antitrust laws. Such control of competitive practices seems clearly necessary in the bituminous coal, oil, and natural gas industries. Some measure of control may also be found advisable in certain of the metals such as copper, lead, and zinc. In the case of oil, special legislation authorizing the fixing of State production quotas appears to be necessary.

Experience under the N. R. A. codes has shown the beneficial results of control and also the lines along which future action might be guided. Control of sales or of production is authorized by some of the metal codes; control of production and price is authorized by the oil code though up to the present production only has

been dealt with. In the bituminous coal code the instrument of control selected is the minimum district price. Despite numerous shortcomings, which are summarized in the committee's report, the codes have yielded impressive benefits. In coal mining, especially, the control has kept prices above production costs, wages have been greatly increased, and employers, now able to pay the wage, have taken a different view of labor relations. In most of these industries, majority opinion appears to favor a continuation of some form of control.

The limited occurrence of many minerals is known to invite concentrated ownership, in some cases creating natural monopoly. In other cases, concentrated control is effected by control of patents, reduction plants, fabricating capacity, marketing facilities, or exceptional technical and managerial ability. Despite certain economies of centralized ownership, the consumer is right in feeling that unless an industry is operating under public regulation, competition is necessary to assure a fair price. While control of production and price presents grave difficulties in manufacturing and the service industries, the Board feels that it should be permitted, under appropriate public supervision, in natural resource industries where competition is known to be forcing serious waste, and where control can be shown to offer some improvement.

We therefore recommend that permanent provision be made to authorize control of competition after the expiration of the present National Recovery Act. We shall not attempt to outline the specific steps applicable in each industry, but, in general, the authorization should cover the control of production, of capacity, of surplus stocks, and where necessary, of price. The choice of specific methods of control is a technical matter, which should be left as far as possible to the supervising authority, acting in council with the industry concerned. From the point of view of the consumer the choice of methods makes little difference, since any minimum price, if observed, necessarily affects production, and any control of production necessarily affects price. The authorization of control should be made contingent on acceptance of whatever safeguards are thought necessary by Congress to protect the interests of the mine workers and the consumer, and upon assurance by the industry concerned that action will be taken to minimize resource waste.

It should not be the intent of such limitation to create monopoly profits nor to subsidize inefficiency; the consumer interest must be protected through effective representation. Equally labor must be protected in its right of organization, and advanced in its standards of living and of working conditions. Among the pressing needs of the workers is greater continuity of employment. The labor interest also requires and the

Committee recommends that the National Planning Board shall concern itself with the rehabilitation of stranded mining populations, presumably in connection with other programs for land utilization, construction or industrial development.

Supervision of such plans for production control could be lodged either under a separate mineral code division of a permanent N. R. A. or under a separate mineral industry division of the Interior Department. In the case of oil and coal, separate acts may be necessary to provide for special problems, such as crude oil quotas or purchase of marginal mines, but supervision should be placed under the same general auspices as other mineral codes. The important point, in the Board's view, is to recognize that the special problems raised by the waste of irreplaceable resources necessitate separate consideration.

To facilitate the adjustment of production to requirements, periodic forecasts of consumption should be made by a Government agency in collaboration with representatives of producers and consumers.

The Board further recommends that in any legislation for the stabilization of the mineral industries, consideration should be given to the possibility of retiring marginal mines now in operation.

To supplement the economic attack on waste, the Government should promote scientific research and foster mineral technology. The day of easy discovery of surface outcrops by the old-time prospector is past and the burden of overcoming the growing difficulties of mining falls more and more upon science and engineering. The great advances made during the last 20 years suggest the future savings which may be hoped for in this quarter. The invention of flotation has recovered great amounts of metal, formerly wasted

because it could not be separated. Progress in oil technology has trebled the maximum depth of drilling. In power generation the fuel engineers have cut the consumption of coal per kilowatt-hour from 5.3 pounds to 1.5 pounds. The major contributions will doubtless continue to come from private sources, but the Government, through the Geological Survey and Bureau of Mines, should carry on fundamental research, testing and standardization; should aid in developing new methods of exploration such as use of geophysical instruments, and in improving methods of mining and metallurgy. Better maps and more thorough inventories of the national resources are needed. All these services should be maintained and strengthened.

Hazards to life and limb are still excessive, despite progress in the prevention of mine accidents. Since the welfare of the worker is the concern of all agencies of government, the health and safety of miners must be considered as part of any general plan. The task of those leading the safety movement is made easier because of the economic losses incident to hazard. Federal work in this field should be maintained and strengthened. The United States now has the highest mine accident rate of any country except Chile.

In addition to these immediate steps, there is need of continuous study and review of national policy in relation to the minerals, and of the results obtained. This might well be carried on by a permanent mineral policy committee working in cooperation with the National Resources Board. The present committee is already studying a number of special problems centering around mine taxation, tariffs, foreign trade, capacity, and reserves concerning which recommendations will be made later.

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## SECTION I

### IV. HYDROELECTRIC POWER

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Among the problems connected with the effective use of natural resources, none offer a more intriguing combination of splendid future possibilities and grave present difficulties than the development and distribution of water power. A power policy committee composed of Hon. Harold L. Ickes, chairman, and Messrs. Morris L. Cooke, Robert E. Healy, David Lilienthal, Major General Markham, F. R. McNinch, Elwood Mead, and T. W. Norcross is studying this field and will presumably submit recommendations to the President at a later date. Until that committee has completed its report, any detailed discussion of public policies relating to hydroelectric power may well be postponed. But the survey of the uses of land and water resources which the President directed the National Resources Board to make would be glaringly deficient if it paid no attention to this important topic. Accordingly we point out briefly certain major facts which bear upon the problem of planning for the larger use of water power.

1. In large part, the historical development of technology is the story of man's achievements in converting, controlling, and utilizing the energies latent in natural resources. Wind, water, coal, gas, and oil are all capable of being transformed into electric power—the most fluid and usable form known. Already electric power has become one of the basic determinants in our capacity to produce, distribute, and consume goods. The United States leads the world in the horsepower utilized per worker and in the units of electricity used. Much of our relatively high industrial efficiency is due to this fact. But further progress must be made in employing mechanical power if we are to realize all the advantages which science makes possible. Hence one of the objectives which national planning should strive to attain is to provide all sections of the country with all the electric power they may require at the lowest possible cost.

2. From the long-run viewpoint, the desirability of conserving natural resources makes the full utilization of all available water power seem highly desirable. Every unit of coal, gas, or oil burned is so much deducted from irreplaceable supplies. Water power, on the other hand, is a self-replenishing resource. Our rivers will continue to run so long as rains continue to fall and land surfaces are not worn down to a plain. No waste results from utilizing the power and no harm is done if the power installations do not damage esthetic values. Indeed, the power of a running stream is lost

every minute that it remains unharnessed, whereas a ton of coal not raised today is available for use tomorrow or the day after. Nor does the use of water to generate electricity harm it for drinking, or bathing, or transporting goods—coal, oil, and gas are destroyed by burning.

3. From the short-run commercial viewpoint, the comparative merits of water and fuels as sources of electric power wear a different complexion. By virtue of (1) the great improvements recently made in furnaces and engines; (2) the low prices prevailing at present for coal, gas, and oil; and (3) the possibility of building fuel-electric plants near the markets for current and yet where fuels can be delivered cheaply, it is commonly less costly to provide electricity by combustion methods than by harnessing water powers and building transmission lines.

No marked gains have been made in water power generation since the turbine wheel was perfected, for the simple reason that under favorable conditions, the turbine converts about 85 percent of the energy of falling water into electricity—a percentage of conversion not approached even now by the most efficient of fuel-burning plants. Yet the advantage in cheapness lies decisively on the side of up-to-date coal, gas, or oil plants, when they are favorably located with reference to markets and fuel supply, provided that they can operate their furnaces continuously at an even rate. The great technical advantage of water-power plants is that they can be turned on for a few hours' work and then turned off again without much loss. Their place in the present technical scheme is mainly that of a supplementary source, used to carry peak loads for brief periods, while all of the load part of the time and the bulk of the load the rest of the time is carried by the economical fuel burners.

According to the 1932 census of electrical industries, 79 percent of the total electric-generating capacity of the country is fuel burning. The 21 percent provided by hydroelectric plants comes from the water powers which, all things considered, have seemed most profitable to develop. As matters now stand, commercial enterprises seem unlikely to push the development of water power much further in the near future. It is estimated that not more than about one-sixth of the country's water power has been harnessed; but the remaining sites are mostly expensive to develop, distant from markets, unreliable in flow, or undesirable in some other respect from the strictly commercial viewpoint.

The value of a water power project by itself depends upon what it can generate in times of low water or after a long drought. Even then it is necessary to draw down water impounded in the reservoirs sometimes leaving flooded shore lines seriously exposed if not actually pestilential in order to get the last drop of power from the plant. In recent years the idea of using cheap off-peak power for pumping back water into the reservoir has in a sense made a power reservoir fill the roll of a storage battery, but even so it is increasingly evident that water power and steam power must, economically speaking, be developed so as to complement and supplement each other.


4. Government development of water power cannot overlook considerations of cost and return; but it can take a broader and a longer view of the returns than commercial companies can afford to take. The Government is concerned with the question of conserving fuel resources, touched upon in paragraph 2 above, in a fashion different from private business. Also, in developing water power the Government should reckon among the gains any social benefits that may accrue to its citizens, though the benefits might yield no financial returns to a private company. Dams are erected in numerous cases to serve one or several purposes other than generating electricity; for example, to prevent floods, to prevent streams from running too low in dry seasons, to facilitate navigation, or to irrigate farming lands. Sometimes, though not always, the water stored behind these dams can be used for power without detriment to the chief purposes of the project. Under these circumstances, the capital cost properly attributable to the generating unit is, not the cost of the whole undertaking, but merely the extra costs of installing generators and transmission lines. Then a power project which would have been unprofitable, considered purely on a commercial basis, may earn a satisfactory return upon the cost allocated to the generating unit.

5. Another factor that government must consider is the social desirability of supplying electricity to a larger number of people than now enjoy the great aid to life. It is not necessary to enlarge upon the benefits conferred by adequate lighting, or the easing of labor made possible by the many electrical devices that have been invented for the household, the farm, the community, and shop. Though our people are the world's greatest users of current, only 13 percent of our 6,200,000 farms have electricity, whereas 64 percent of the farms have automobiles. There are villages not reached by power lines, and over wide areas the per-capita consumption of current is so low as to prove that the majority of families are doing without service though it is technically available. There is thus a vast potential demand for electricity that has not yet been tapped.

6. What keeps this potential demand from becoming effective are the relatively high charges for electricity that prevail in many sections. Recent studies of domestic consumption in low-cost municipalities demonstrate that the demand for current is highly elastic, expanding rapidly as the cost declines. The national average consumption of the United States was 604 kilowatt-hours in 1933. The average charge to consumers on October 1, 1934, for the whole country is reported as 5.49 cents per kilowatt-hour. In Seattle where the average cost is 2.58 cents the average consumption is 1,098 kilowatt-hours per capita. In Tacoma, the charge is 1.726 cents and the consumption 1,550. In 26 cities of Ontario, the average charge is 1.45 cents and the consumption 1,780. Finally, in Winnipeg, where the average net charge is only 8 mills per kilowatt-hour the average per capita consumption exceeds 4,000 kilowatt-hours.

It thus seems fairly certain that, if the average costs to consumers were substantially reduced in this country, a great increase in consumption would follow. Of course, this increase in volume of sales would reduce substantially the over-head costs per kilowatt-hour. Because of the large investments in generating plants, transmission lines, and distributings systems on the one hand, and the moderate operating expenses on the other hand, overhead makes a far larger part of the total costs in electric-power utilities than in most industries. Doubling the use all but cuts the cost per unit in half.

7. The cost of serving a consumer includes the cost of generating, of transmitting, and of distributing current. Transmission refers to high-voltage lines which can carry the current long distances with relatively little loss; distribution lines start at "stepping-down stations" and carry current comparatively short distances at lower voltages to consumers. Reductions in cost of service may be effected at any of these three stages; but the stage of transmission, which ties together generation and distribution to consumers, seems to afford the best opening for systematic planning.

8. Experience indicates that marked economies  are effected when interconnecting transmission lines are built to tie all the generating units and all the consumers of a wide area into one circuit. Without such lines, each generating unit and its market are isolated. The generating unit must provide for a peak load which is much higher than the average load. The interconnecting of many markets and many generating units makes it possible for the peak loads in different uses to offset one another in the course of 24 hours, so that the maximum peak load can be brought much nearer to total generating capacity than in the isolated unit. The total investment required for a given standard of service is thus greatly reduced by interconnection, and

with the investment the necessary charge to consumers is also reduced.

9. Considerable progress has been made in this country toward the creation of such circuits. Particularly noteworthy are the networks in the Southeastern, New England, East Central, and Pacific Coast States. On January 1, 1933, according to the census, there were 58,000 miles of transmission line operating in circuits at 66,000 volts or over. But large districts are still without such advantages. For example, in an area extending from Keokuk and St. Louis to Detroit (including Chicago and Milwaukee), it is reported that the installed generating capacity is 4,585,000 kilowatts, of which only 66 percent has been in use as measured by the maximum peak load. If 15 percent of excess capacity is taken as necessary to sound operation, then 1,086,000 kilowatts of the present installed capacity would not be needed to carry the present peak loads, provided all the generating units were tied into a comprehensive system. This excess capacity is estimated to represent an investment of over \$108,000,000. That sum is included in the capital upon which the utility companies now base their rates. Studies of comparable areas in Pennsylvania, New York, and New Jersey indicate excess generating capacity over maximum peak loads ranging from 30 to 37 percent.

10. To sum up the outstanding factors which the Power Policy Committee has under consideration:

There are areas in the United States in which the power companies have excess capacity, in the sense that they cannot sell a large percentage of the power they can generate at the rates they charge. There are other areas, especially rural regions, which enjoy no electrical service.

Domestic and municipal consumption is at a level which indicates that a large part of our people go nearly

or quite without the benefits which electricity brings to a family and a community. In this sense there exists a vast latent demand that is not being tapped at present.

The large per capita consumption in areas where the cost of current is low indicates that this potential demand would become effective demand if costs could be reduced.

In many areas interconnecting transmission lines would add greatly to the efficiency of operation and enable the companies to supply a much larger demand than at present without any additional investment. The critical question for such companies is whether the expansion in demand which might follow upon a reduction of rates would increase their net revenues.

The Government has an interest in extending the use of electricity as an increasingly significant item in the American standard of living. Hence it has an interest in the reduction of rates to stimulate consumption. It has a special interest in the development of hydroelectric plants as a means of conserving the country's resources in coal, gas, and oil. In some cases its plans for flood control, or other uses of water would enable it to provide hydroelectric power as a byproduct at slight direct cost. The Government will not fail to consider as a factor in the total situation the large sums of capital actually invested by power companies. The critical questions for the Government are how far the elasticity of the demand for electricity and the economies produced by interconnecting transmission lines may make it possible to reconcile these seemingly conflicting interests, and, to the extent that reconciliation is not possible, which interests should be given preference.

The National Resources Board enters these observations in its record, and awaits with lively interest the recommendations which the Power Policy Committee will lay before the President in due season.

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**PART I—SECTION II  
PUBLIC WORKS PLANNING**

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## SECTION II

### I. THE PROBLEM

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Public construction in the United States increased during the first part of the last decade from a little over \$2,000,000,000 worth per year to a high point in 1930 of \$3,300,000,000, and dropped to a low point in 1933 of one and a third billions. This huge expenditure by municipalities, counties, States, and the Federal Government constituted approximately one quarter of the total construction bill—public and private—and almost a quarter of the total expense of Government averaged over the 10-year period.

How wisely did we spend that money? How can we secure a greater return for the 30-odd billions of dollars we seem likely to spend aside from emergency expenditures for public works during the next 10 years? How much could we wisely spend for worth-while projects?

A great variety of considerations must be weighed. What is a *public* work? What are the boundaries of the field and how are present trends likely to change our definitions? What criteria or standards have been set up to judge the value of different kinds of construction projects—both as between different kinds of desired things and as between different ways of doing the same thing? How can we maintain a proper balance of the program in relation to types of construction, timing, and location of projects?

A second series of questions involves the relations of public works to economic stabilization and the emergency problem of work relief. What part can public works play in meeting the problem of business cycles and how far can these works be made an instrument for recovery?

A third group of problems relates to the procedure followed by the Federal Government in the selection and execution of public works.

Finally, how is the distribution of public works affected by our system of local, State, and Federal governmental jurisdictions? Debt limitations and taxing authority complicate the problems faced, as well as conflicts of jurisdiction on projects which overlap political boundaries.

These and a great variety of other considerations have influenced decisions on public works in different ways at different times. Lack of understanding of the interrelations among these considerations has meant lack of policy and lack of leadership. Without a policy or a plan “pork barrel” methods of rough-and-ready decision inevitably control.

As a sample of planning work, the former National Planning Board selected *Public Works planning* as a strategic point offering large possibilities of planning accomplishment. With the allotment of a research fund from the Public Works Administration it authorized four exploratory investigations and has received the following in research reports:

1. *Criteria and Planning for Public Works*, Russell V. N. Black.
2. *Public Works in Prosperity and Depression*, Arthur D. Gayer.
3. *Economies of Planned Public Works*, J. Maurice Clark.
4. *Government Organization for Public Works Planning*, F. W. Powell.

From this material, and from information available to the board through the Public Works Administration and other sources, a report on Public Works planning was in course of preparation last June when the National Planning Board was merged with the Cabinet Committee on National Land Problems to form the National Resources Board.

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## SECTION II

# II. TYPES, VOLUME, AND CRITERIA OF PUBLIC WORKS

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### General

The great variety of activities carried on under the term "public works" and the even greater variety of considerations upon which decisions regarding public works are customarily based are nothing short of bewildering.

The definition of public works is constantly expanding—both as to what is public as contrasted with individual or group activities, and as to what is work. The strict interpretation of work in terms of construction has long since been discarded as new public demands and needs requiring government attention have arisen. As a result a great variety of services are now included under the term, such as forestry, pest controls, surveys, and planning. The limits on growth of the public works field are measured in terms of public desires, national wealth, willingness to pay.

The research report on "Criteria and Planning for Public Works" prepared during the last year presents a variety of criteria which have differing applications to various types of public works.

1. The criterion of *balance*, including considerations of proper proportion between expenditures, within a limited budget, for the several kinds of public works and based primarily upon balance and proportion in the several services rendered.

2. The criterion of *service standards*, whereby deficiencies are measured by arbitrary standards of service established at or somewhere near the peak of actual accomplishment, plus reasonable probability.

3. The criterion of *essential services*, applicable to such basic needs as those of water supply, sewage disposal, and fire protection, with the chief determinant simply that of whether physical conditions and degree of population concentration make these services essential to community well-being.

4. The criterion of *cost*, including the following factors: Amount of total available income (dependent upon community wealth, upon public opinion, and upon public view as to what represents the real cost of public improvements); funds available for a given class of public works as determined by balance; and value to be received and benefit to be derived from a given project at a given cost, in consideration of all other needed improvements of the same class.

5. The criteria of *relative need* and *relative benefit* of individual projects in relation to and in consideration of all other needed improvements, as determinable by coordinated and comprehensive plan. These criteria are the determinants of sequence of projects.

6. The criteria of *trends*, and of growth and development potentialities, by which the extent and character of future requirement improvements and serv-

ices may be measured. Such trends and potentialities in turn are determinable by exhaustive survey and analysis of conditions and trends, and by comprehensive long-range planning.

7. The criterion of *emergency*, with application varied according to whether projects involved are those for the replacement of necessary public works destroyed by fire, flood, or other catastrophe or whether these public works represent speeded-up execution of normal expansion of development of improvements and services.

8. The criterion of *social and economic desirability*, which for practical application must be based largely upon such arbitrary standards as may be established under item 2 above. (Many conceivable public works are quite without economic utility or social desirability, as determinable by applied common sense. The economic and social desirability of expansion of accepted and useful services is relative and in the last analysis limited only by public opinion and by limits set upon public expenditure by public opinion.)

These generalized criteria together provide a basis for planning—for the coordinated long-range plan itself is the summation of a series of just such decisions. Current practice in Federal, State, and local governments in the selection and programming of public works has little relation to the thoughtful application of "criteria."

Each type of public works involves additional special problems and individual projects must be judged in the light of special requirements over and above the general criteria listed above. Among the major fields where past experience has already indicated problems and possibilities a few examples may illustrate the point.

### Public Works and Transportation

The largest single item in public construction for a number of years has been for streets and highways. Unfortunately, for a large proportion of this work no comprehensive plans related to other factors of State and National development have been available. The economic justification demanded by the Bureau of Public Roads for Federal-aid projects and extensive traffic counts have provided against much waste but are hardly adequate as tests after the primary system of roads is established. Furthermore, arbitrary limitations on Federal aids to roads in respect to State mileage, mileage of rural post roads, area and population have sometimes unbalanced the program in relation to primary needs and Federal interests.

Since much more highway and street work is not only probable but in many cases desirable, it is important to

have plans ready to secure the full value for the money to be spent. The failure to look ahead to new needs and new developments is illustrated by what occurred in at least one State which put out a large bond issue to build highways. It proved an extravagant project because the work was rushed forward without sufficient advance study, and many of the highways then built are being rebuilt at considerable expense, first, because the original highways were badly located; second, because the art of road building had not been developed to a point that experience soon indicated was necessary; and, third, because the roads were crowned rather than flat. Although this was a notable, perhaps a flagrant example, it is not at all an unusual experience.

The primary network of highways for the United States is now well advanced with hard-surfaced and year-around road facilities for a large part of the more densely populated portions of the country. There is even talk of the possibility of over-building highways—chiefly from the point of view of indiscriminate construction of heavy-duty roads where planning might distinguish among uses and limit express or heavy traffic to specially constructed lines. Certainly a great saving in cost could be made by such planning.

The next steps in road development would seem to lie primarily in—

(a) Classification and development of roads for specialized uses—as heavy-duty highways without grade intersections, freeways, parkways, provisions for pedestrians, bicyclists, and horseback riders, etc.

(b) Improvement of alignment, grades, and roadsides on greatly widened rights of way for existing roads.

(c) Development of rural roads, and

(d) Abolition of grade crossings with railroads, and, where traffic demands, with intersecting highways.

Each of these four aspects of road work will absorb huge sums of money during coming years and long range plans carefully related to other methods of transportation, probable population trends and industrial development must be prepared in advance to avoid wasteful mistakes. We cannot afford many examples like the million dollar bridge in Tennessee which was located below the flood line of a proposed reservoir.

For new special-purpose roads we already have a number of examples of both expensive and inexpensive methods of procedure. Presumably, for instance, it is no longer necessary to argue the desirability of by-passing through traffic around congested centers and towns instead of forcing through them at great expense of time or money. With the successful parkway developments in Westchester, N. Y., the lake front of Chicago, and the Mount Vernon Parkway at the Nation's Capital, the value of that type of pleasure-way has been demonstrated. The new "freeway" between Norris and Knoxville in the Tennessee Valley provides another example.

Much also needs to be done to make our existing highways more useful, efficient and pleasureable. Perhaps the chief need is wider rights of way to permit expansion, better curvature and grades, or roadside improvements. It is estimated in the land report that recreational use forms at least 60 percent of the total use of automobiles, a showing which would seem to justify more attention to the control and preservation of roadside appearance.

In the third field suggested—further hard surfacing of rural roads—it is difficult to estimate how far such a program should go. Many rural roads would be vacated under a program for the retirement of sub-marginal lands, and the traffic on others would not warrant expenditures for all-weather service. If 20 percent of the unpaved rural roads are eliminated, by this reasoning there still remain over 1,750,000 miles of unimproved third-class country roads to be considered. A rough estimate of \$2,000 per mile produces the total of 3½ billions of dollars.

Finally, in the matter of grade crossings another huge outlay of funds seems probable, particularly if high-speed, light railroad trains are to become common. The American Engineering Council in a report dated April 7, 1933, suggests the early elimination of 5,000 selected railroad grade crossings at an estimated cost of \$500,000,000. It has been variously estimated that further eliminations to the amount of 12 billion dollars would be justified. The prospect of such expenditures justifies forethought and planning to concentrate attention on the most needed cases of grade separation and to avoid any construction where rearrangement of roads or rails for other causes may make a saving possible.

Many rearrangements of transportation facilities might result from consideration of the effective use of all methods of moving goods and people, instead of compartmental planning of one method at a time. For instance, the very extensive highway development in the country has already made it clear that much of the railway branch line mileage is unnecessary, and the towns on railway branch lines can be better and more cheaply served by the highways. This fact, indeed, is one reason why the railways are now suffering so seriously. A partial solution seems to be to convert some of these railway branch lines into motor highways by paying the railways a fair price for these branch-line rights-of-way and substituting for the little-used railway a good highway. This should accomplish a dual purpose, (1) permitting the railways to abandon unprofitable lines and amortizing so much railway capital, and (2) supplying a right-of-way or highway at moderate cost which will be not only very direct, but frequently on a better location as to gradients and curvature than the ordinary

highway. In our great cities a better coordination of terminals farther out from the center of city would release large areas and values for more efficient uses.

Railroad reconstruction and modernization is now a public work within the terms of the act establishing the present Public Works Administration, and again seems likely to require large sums in the near future.

Not only rail and highway, but also waterway planning must be coordinated. Estimates for river projects based on studies by the Corps of Engineers run as high as \$8,000,000,000.<sup>1</sup> Before any such program is undertaken, coordinated transportation plans should be worked out. Too often in the past expensive construction of waterways has been advocated and approved not with anticipation of their actual use, but primarily as a method of controlling transportation rates. That method of railroad rate regulation is extravagant and wasteful of public funds when administrative action can be substituted.

This brief review of some of the principal transportation agencies in relation to public works illustrates how considerations dealing with one project for one method of transportation inevitably lead to questions concerning all methods of moving goods and people and thence to other matters of human concern. Planning to get the full benefit from our expenditures on a given project must in turn depend on larger planning of related factors.

### Housing Situation

A second sample of public works is housing, only recently undertaken as a public responsibility. Already a variety of housing activities have sprung up with different governmental agencies working on them and with some resultant confusion in the minds of the public. These governmental agencies are Federal, State, and municipal. In addition there are private agencies, a few of them like the Housing Associations of Pittsburgh, Boston, Philadelphia, Cincinnati and the Washington Committee on Housing, devoted exclusively to the subject of housing; many of them, like chambers of commerce or labor organizations, express their interest through committees. There are also several national agencies of private or semi-public character whose purpose is largely to stimulate citizen interest or to disseminate information.

Among the Federal agencies that have been set up, there are:

1. *Federal Housing Administration*, which is concerned with the stimulation of private capital to enter construction enterprises.

The central aim is to make home financing, on reasonable terms to the borrower, immediately and permanently safe and attractive for private capital.

The act does not provide any new machinery for direct loans to individuals by any Federal agency. On the contrary, it is designed to enable banks, building and loan associations, and other private-lending institutions to carry the load.

In addition to the above, title II authorizes the complete insurance of a mortgage covering a low-cost housing project, the principal amount which must bear a relationship to the appraised value of the project satisfactory to the Administrator and it may not exceed 10 million dollars on a single project.

2. *Public Works Administration—Housing Division*, which has a social program involving construction along lines in which private capital has not been effectively interested.

It is the financing low-cost, low-rental urban housing in connection with the elimination of slums or "blighted areas", replacement being on the site or elsewhere as may be most advantageous in each case, and in special cases of acute housing shortages. It is not financing speculative or investment building projects.

3. *Home Owners' Loan Corporation*: The purpose of this Corporation is "to extend relief to home owners who are in immediate danger of losing their homes through foreclosure (the chief field of endeavor), although they have no mortgage on their properties, find it impossible to obtain, elsewhere, money with which to pay taxes and other encumbrances, and to provide for the necessary maintenance and repair of their homes. It also assists those who have recently lost their homes to recover them."

4. *Division of Subsistence Homesteads*: This organization "has adopted the policy of establishing homestead communities. It does not make loans to individual families. \* \* \* In general, three major types of projects are being established:

(a) Near small already decentralized industrial cities and towns, workers' garden homesteads are established within easy reach of the town where industries or other sources of employment are located.

(b) In the vicinity of large industrial centers, workers' garden homesteads are established adjacent to industrial suburbs, thus encouraging a decentralization within specific urban areas.

(c) Subsistence homesteads are established to demonstrate a means of rehabilitating stranded industrial populations such as those of the abandoned Appalachian coal fields.

5. *Federal Emergency Relief Administration*, which was established for general relief work, is now experimenting with self-supporting community developments constructed by workers on relief for their own use. This seems to be going in the field of subsistence homesteads, with the exception that the F. E. R. A. deals with a no-income group.

6. *Surveys of the problems*: Three important surveys have been undertaken and are nearing completion which will furnish important data:

<sup>1</sup> Letter of Secretary of War. House Doc. No. 395, 73d Cong., 2d sess. page 12.

(1) The Rural Housing Survey by the Department of Agriculture;

(2) The Real Property Inventory covering 64 cities, by the Department of Commerce; and

(3) The Financial Survey of Urban Housing, also by the Department of Commerce.

7. *The Alley Dwelling Authority of the District of Columbia*, as the name implies, operates only in the District of Columbia. "Within its means it has a pretty broad authority to experiment either on slum clearance or slum rehabilitation. Its importance is chiefly on account of location at the Nation's Capital and the fact that it may by nature of its experiments furnish valuable examples."

In nine States, housing authorities have been established by similar authorization of law and will operate in those cities to furnish valuable examples of what can be accomplished.

The above catalog of the organizations now in the housing field indicates the importance of the coordination of effort looking to a better understanding of the methods and scope of each endeavor.

#### Administration and Needed Legislation

The success of the housing program depends upon preventive as well as corrective measures. It is only partially effective to provide new housing of any standard if no steps are taken to eliminate existing substandard housing and to prevent the recurrence of existing conditions.

In most of our cities we have building and sanitary codes governing the construction of new housing but legislation or enforcement of legislation is lacking to govern cases of dilapidation, deterioration, and insanitation far below the standard requirements for new structures.

Many States have laws to protect the public against tubercular cattle as well as laws to insure a pure milk or water supply. Such laws require a definite standard of housing for cattle to protect the public, but laws to enforce corresponding standards for human housing are often not as definite or as vigorously enforced.

The successive steps necessary for the accomplishment of the desired results appear to be as follows:

1. Agreement of authorities on what constitutes substandard housing according to regional or sectional divisions, differentiating between rural and urban.

2. Public realization of the physical, moral, and economic liabilities represented by substandard housing.

3. The reflection of this realization in judicial decisions.

4. Enforcement of existing laws relating to the destruction of obsolete and dangerous buildings.

5. Enactment of further needed legislation.

The possibility might well be considered of requiring municipalities and States to adopt corrective and pre-

ventive measures as part of a general program to the granting of Federal funds for housing projects.

The intelligent administration of housing projects must obviously include efficient operating management. Special training for prospective managers must be provided immediately covering not only normal real estate training but also home economics, social case work, and similar courses leading to socially minded nonpolitical management.

#### Citizen Support of Housing Movement

Slum reconstruction and the provision of low-cost housing occupy a very definite part of the recovery program. The movement originated in private groups long interested and active in the improvement of housing and on the continued interest and support of these private groups the maximum development of the movement depends.

#### Water Projects

Since water projects are so fully treated elsewhere in this report, it is only necessary here to point out the importance of—

- (1) Water supply and sewerage treatment projects now handled as non-Federal projects on a loan and grant basis. Over \$550,000,000 of applications for such projects are pending before the Public Works Administration.

- (2) Flood control, irrigation, and drainage proposals that mount to huge though indefinite figures.

- (3) Power projects on a Federal or cooperative basis.

#### Rural Electrification

The report of the Mississippi Valley Committee points out that—

of the 6 million farms in the United States over 800,000 are "electrified." but only about 650,000 have "high-line" service. The balance have individual plants, expensive to operate and limited as to use. Over 5 million farms are entirely without electric service. Estimates as to the number of these which can now economically be given service range from 1 to 3 million. \* \* \*

Several reasons might be advanced to explain why only 10 percent of the Nation's farms (less than 6 percent in the Mississippi Valley) purchase electricity. These are the lack of interest by operating companies in rural electrification, high cost of line construction because of the unnecessarily expensive type of line used, onerous restrictions covering rural line extensions, and high rates. \* \* \*

In cases where it is practicable, public transmission lines utilizing either Government or private power sources could be erected. Rural distribution lines will cost from \$500 to \$800 per mile to construct, and to amortize this cost in 20 years involves a cost to each of three consumers on a mile of line of about \$1.00 per month.

### **Other Types of Public Works**

These samples should not, of course, be taken as either an exclusive or as a preferred list of types of projects—but they do illustrate the need for planning. A list of all types of worth-while public works, such as recreation facilities, public buildings, soil erosion control, etc., would take pages if it were complete and would only serve to emphasize the complexity of the problem of criteria.

### **Future Volume of Public Works**

Estimates of the total volume of worthwhile projects can be made on one or another of a number of general assumptions, such as—

1. Projection of the past rate of public works construction into the future.
2. Measuring construction requirements by demonstrable deficiencies as indicated by comprehensive plans and as measured by established standards.
3. Giving play to the imagination, with a reasonable anchorage to judgment, in possibilities of extension and expansion of public works and public service without restriction by tradition.

Based solely upon extension into the future of the average annual capital outlay for the entire United States (National, State, and municipal) of about \$2,400,000,000 for the 10 years 1921 to 1930, the total of capital outlays for the 10-year period 1935 to 1944 may be estimated as approximately \$24,000,000,000. Of course, such an extension of a past average makes no allowance or the factor of growth which has been so notable in

past American expenditures upon public works and which presumably should and will continue in the future. Hence the 10-year total suggested may be regarded as a minimum estimate.

By adjusting past rates of capital outlay for individual classes of public works according to readily available evidence as to relative need and with a degree of optimism as to possible correction of the more glaring deficiencies in service, we reach an estimate for the 10-year period, 1935–44, of approximately \$26,000,000,000. This estimate, like the preceding one, makes no allowance for growth.

Extension of public works into new fields and expansion of all public works, old and new, into the field of reasonable possibility from point of view of needful public service brings the estimate of magnitude of all public works over a period of perhaps 20 to 30 years to about 105 billion dollars or about 3½ to 5 billion dollars a year. Such an expanded program of public works would amazingly improve the public services and living standards of this country; but viewed in the light of traditional expenditures for public works the cost seems a heavy charge upon the national income. Whether 5 billions a year for roads, parks, sewers, public libraries, forests, waterways, good housing and countless such other facilities is more than we should spend is a problem which we shall have to solve in the light of future developments touching the aggregate national income, public finances, modes of combating unemployment, popular demands for pleasures and protections afforded by public works, etc.

## SECTION II

### III. PUBLIC WORKS AND "ECONOMIC STABILIZATION"

For a generation or more the possibility of using the construction of public works as a "balance wheel" to counteract the cyclical oscillations of business activity has been discussed by economists in foreign countries and the United States. One of the chief aims of those who sponsored the Federal Employment Stabilization Board in 1931 was to take a step toward "ironing out the business cycle." By advance planning of public works on a 6-year basis, they hoped that the Government might reduce the volume of contracts let in times of active business, thus accumulate a huge reserve of deferred projects, and so be ready to enlarge the scale of operations when unemployment became severe. The creation of the Federal Emergency Administration of Public Works in 1933 with a budget of \$3,300,000,000 was an attempt both to relieve distress and to promote business revival by providing employment and stimulating the demand for products of the heavy industries.

In view of the importance attributed by many men to the use of public works as a stabilizing device, the National Planning Board gave the proposals of this nature close attention. To lay a firm factual basis for

<sup>1</sup> The shifting relations between private, public-utility, and Government construction in recent years are shown by the following estimates compiled by the Federal Employment Stabilization Board. It will be seen that the substantial increase of Government construction in 1930 failed to offset the decline of private construction. The catastrophic fall in the grand totals continued to 1933. Other estimates of the total volume of construction are given in the next footnote.

*Estimated total volume of construction, by years, 1925-33*

(Millions of dollars)

	1925	1926	1927	1928	1929	1930	1931	1932	*1933
Private.....	\$5,237	\$5,365	\$5,175	\$5,416	\$4,451	\$2,746	\$1,761	\$667	\$575
Public utilities.....	2,851	2,935	2,933	2,900	3,265	3,204	*2,200	*1,332	*902
<b>Government:</b>									
Cities.....	1,283	1,302	1,482	1,422	1,339	1,495	1,302	797	400
Counties.....	788	670	885	829	556	709	329	137	600
States.....	411	404	438	502	576	700	786	551	300
Federal.....	243	230	240	270	305	390	510	680	600
<b>Total Government.....</b>	<b>2,717</b>	<b>2,612</b>	<b>3,045</b>	<b>3,023</b>	<b>2,776</b>	<b>3,300</b>	<b>2,927</b>	<b>2,065</b>	<b>1,300</b>
<b>Grand total.....</b>	<b>10,805</b>	<b>10,912</b>	<b>11,153</b>	<b>11,353</b>	<b>10,492</b>	<b>9,250</b>	<b>6,888</b>	<b>4,064</b>	<b>2,777</b>

\* Preliminary figures.  
 † Data for construction by pipe line, gas, telegraph, and water works companies first became available in 1930. The inclusion of this item would raise the estimates for the last 4 years to the following levels:

	1930	1931	1932	1933
Public utilities.....	4,062	2,988	1,629	999
<b>Grand total.....</b>	<b>10,108</b>	<b>7,686</b>	<b>4,361</b>	<b>2,864</b>

study, it asked Dr. Arthur D. Gayer to compile the best available data concerning the volume of public works constructed in recent years by American governments—Federal, State, and local. It also asked Prof. John Maurice Clark to analyze the economic results of various public-works programs, actual and proposed. What follows is based in part upon the findings of these investigators.

According to the estimates of the Federal Employment Stabilization Board, the total volume of all construction work done by American governments reached a peak in 1927 or 1928. In both years the dollar volume of all new construction was a little more than 3 billion dollars. After a slight decline in 1929, the volume of public construction rose to a new record in 1930—\$3,300,000,000. This rise was due in large part to the efforts of the Administration to master the depression in its early stage.<sup>1</sup>

Three billion dollars is a large sum. But in weighing the importance of any item in the country's business, we face a problem in relativity. At the prosperity peak of the 1920's, private construction as estimated by different experts using different materials and methods attained a level of 10 or perhaps 12 billions. In no year of the boom period did public construction make a third of the total for all construction work. A quarter of this total is a fair fraction to keep in mind.<sup>2</sup>

<sup>1</sup>The total volume of construction work done in the United States is not definitely known. The first Federal census of construction was taken in 1930; but it covered only work done by contractors, and omitted the large volume of work done by business enterprises, farmers, and others on their own account.

The leading estimates which aim to cover the whole field are as follows for recent years:

*Estimates of the total volume of construction work in the United States: By years, 1927-33*

(Billions of dollars)

Source of estimate	1927	1928	1929	1930	1931	1932	1933
Federal Employment Stabilization Board, Corrington Gill.....	11.1	11.3	10.5	10.1	7.6	4.4	2.9
National Planning Board, Arthur D. Gayer.....	12.9	13.0	12.3	10.2	7.6	4.1	.....
National Bureau of Economic Research, Simon Kuznets.....	14.9	15.9	14.4	11.9	8.9	5.5	.....

The basic figures used by Drs. Gill and Gayer are the reports by the F. W. Dodge Co. upon the volume of construction contracts let in 27 States, supplemented by estimates for the States not covered by the Dodge service, actual expenditure reported by various agencies, and estimates for construction work done without the letting of contracts. Dr. Kuznets' estimate is based primarily upon the cost of the construc-

As the next step toward getting a just impression of the role played by public works, we should set the totals for the construction industry besides those for other great branches of the country's business. A few figures may be cited for this purpose. Start with the 12 to 14 billions of construction work done by governmental and private agencies combined in 1929. According to the census, the value of farm products in that year was 12 billion dollars; the value of manufactured products reported was 70 billions; retail sales of merchandise reached 53 billions. In that same year, the aggregate money income received by the people of this country is estimated at 81 billions.<sup>3</sup>

Of course, dollar figures for the output of single branches of business hide a deal of double counting. As a corrective we might subtract the cost of merchandise bought from retail sales, cost of raw materials from the value of manufactured products, cost of seed, fertilizers, etc., from the value of farm produce, and so on. But to be consistent, we should have to subtract cost of materials used from the value of construction work, which would take off more than 40 percent of our 12 to 14 billions.

Another approach to this problem in relativity is to consider, not dollar value of output, but number of men employed. On that basis it seems that in 1929 about 3 million men were employed in construction work, the maintenance of roads, etc.; 4½ million were employed in transportation, 8 million in trade, 9 million in the service industries, 10½ million in farming, and 11 million in manufacturing.<sup>4</sup> Altogether about 49 million persons claimed gainful occupations in the census of 1930. Thus the construction workers made

tion materials produced to their users, the ratios of the cost of materials to the value of the completed structures, and a "construction cost index." Dr. Kuznets' method should catch the very large number of small construction jobs which escape any reporting service. (See bulletin of the National Bureau of Economic Research, no. 51, November 1934.)

Of the total volume of construction work done in 1927-29, almost one-half is credited to individuals and private businesses, about one quarter to public utilities, and about a quarter to governments, Federal, State, and local. By 1932, public construction had become half of the total; in 1933 it exceeded that proportion. Of course this relative gain was due primarily to the catastrophic decline of private and public-utility construction.

The break-down of public construction by type of government undertaking the work is given as follows by the Federal Employment Stabilization Board:

	Average percent-ages, 1925-29	Percentage in 1933
City governments.....	48	31
County governments.....	20	8
State governments.....	17	23
Federal Government.....	9	38
	100	100

<sup>3</sup> *National Income, 1929-32*. S. Doc. No. 124, 73d Cong., 2d sess., Washington, 1934, p. 10. The national income produced in 1929, which includes business savings, is estimated at 83 billions.

<sup>4</sup> See the estimates for 1929 based upon the Census of Occupations taken in April, 1930, given in *America's Capacity to Produce*, by Edwin G. Nourse and Associates, Washington, Brookings Institution, 1934, p. 544.

about one-sixteenth of this total, and, if a quarter of all construction workers were employed on public works, they made about one sixty-fourth of the whole number of gainfully occupied. Again one may argue that the men making building materials should be added to the builders and maintenance workers; applying the 2:1 ratio, which is probably a gross exaggeration, we should have three sixty-fourths.

The basic fact revealed by these figures is that the construction of public works formed a minor fraction of a minor fraction of American industry even at the crest of the recent building boom—one of the greatest in our history. Federal construction work made only 11 percent of all public construction in 1929, and only 3 percent of total construction, public and private.

Advocates of the long-range planning of public works as a device for stabilizing employment recognize that the factor with which they operate is not of the first magnitude. Their case rests upon two propositions: (1) construction work exercises an influence upon business cycles much greater than its relative volume suggests; (2) by wise planning and resolute administration public works might be made a much more potent factor in general business activity than it has been in the past. Both of these propositions call for analysis.

The strategic position of public works in business cycles arises from the fact that the cyclical swings in new construction have notably large amplitudes. That fact is demonstrated by statistics of building permits issued in American cities, of construction contracts let in cities and country districts alike, of ship building, and of additions to railroad mileage. Numerous records of experience covering a generation, supplemented by a few records covering several generations, show that the percentage of rise during the expansion phase of business cycles and the percentage of fall during the subsequent contraction phase are several times as great in construction work as they are in the production of perishable consumers' goods. However, construction work is by no means the only type of industry characterized by violent cyclical swings. Amplitudes as great or greater are found in the production of industrial equipment, such as machinery and railroad rolling stock, as well as in certain financial activities, such as the issue of new securities and transactions on stock exchanges. It is notable, also, that the production of quasi-durable goods for consumers is subject to cyclical swings almost as violent as those of construction and machine building. For example, the cycles in the output of passenger automobiles have amplitudes nearly as large as have the cycles in the output of automobile trucks.



In any attempt to stabilize business, it seems wise to concentrate effort upon those branches of industry in which the phenomena of boom and depression are most accentuated. Where the percentages of unemployment among the workers attached to industry run highest in bad years, there is the most need of relief; where the current rate of activity falls furthest below the average level of performance, the largest gains can be made if a revival is effected. Viewed from this angle, the construction industry appears to offer as favorable a line of attack upon business depression as any other. That it has been preferred by government planners to other industries which suffer prostration equal to that of the building trades is due to the fact that government needs roads, sewers, water reservoirs, public buildings, and the like on a vastly greater scale than it needs other durable goods.

So far as effectiveness in promoting a revival is concerned a program of equipment-buying by railroads, factories and mines would serve as well as the stimulation of public works. At the outset of the recent depression, President Hoover sought to combine both lines of attack by persuading business corporations, notably the railroads, to buy and build freely, while he also encouraged public construction. As shown by the footnote on page —, the statistical record reveals an increase of public construction in 1930, a trifling decline in public-utility construction, but a heavy falling off in private construction. The latter change much more than offset the gain in public works. In 1931 both public-utility and private construction fell heavily and public works slightly. In 1932 there was a further large decline, this time in all three categories.

The hope of increasing greatly the potency of public works as a stabilizing agent rests upon "long-range advance planning." If a large proportion of all the public works put under contract in the latest period of business activity could have been deferred without serious detriment to the general welfare, then there might have been accumulated a huge "reserve" of projects to be executed in the years of depression. To illustrate by a hypothetical example which has a statistical excuse, if not a statistical basis: Say that the total volume of all construction work in the United States averaged 12 billion dollars per annum in the 6-year period 1925-30; say also that public works made a quarter of this total; further, say that it is feasible to defer the execution of one-half of the public works for a period not exceeding 6 years. Suppose, finally, that this policy had been rigorously followed by all American Governments throughout our period, despite the mild depression of 1927 and the considerable unemployment of 1930. Then the "reserve" of public works available for letting in 1931 would have amounted to 9 billion dollars. In other words, the "reserve" of public works accumulated over a 6-year period would

have equalled the private construction of a single average year.

How gravely this hypothetical example misrepresents the possibilities, we do not know. Not until a genuine experiment is made in long-range planning by a representative group of municipalities, counties, and States, as well as by the Federal Government, shall we have a secure basis for saying whether less than half or more than half of public works can be shifted about in time. The shifting need not be limited to deferring projects that can wait without causing grave inconvenience; it may include also accelerating projects that will soon be called for. What can be shifted in one of these ways without serious detriment to the public interest is a matter of judgment, and guessing at what public authorities in different jurisdictions would decide is an unprofitable exercise. How long the postponement is endurable and how much anticipation is prudent are further questions upon which opinions will differ.<sup>5</sup> And if the authorities agreed that they could effect postponements when business was active, would they do so? Attractive plans presented to the public by persuasive projectors, when spirits are buoyant and financing is easy, might seduce aldermen, State legislators, Congressmen, and planning boards from the straight and narrow paths marked out by their programs. At times, the return of severe depression seems so remote and so unlikely that present renunciation appears a counsel of perfection. How closely American Governments would adhere to their own plans we can only guess.

Nor are the purely technical difficulties of making long-range plans for public works readily disposed of. The task of preparing a large "reserve" of public works in such form that they could be put under contract promptly in an emergency involves much work. First the postponable projects must be segregated from the projects that brook no substantial delay. Second, the locations of the postponable projects must be decided, and the often complicated problems of obtaining legal titles to the land required must be solved by purchase, condemnation, or some other procedure. Third, the engineering and architectural plans for the various projects must be prepared. To make prompt action possible, these plans should be carried to the stage of preparing specifications ready for submitting to bidders. Fourth, the methods of financing must be worked out. Since tax collections are likely to fall off just when it is desired to expand public works, and since Government

<sup>5</sup> The most detailed American study of the problem is *The Stabilization of Employment in Philadelphia*, by W. N. Loucks, Philadelphia, 1933, p. 181 and following. Mr. Loucks' judgment is that about 50 percent of the improvements financed by loan funds in Philadelphia from 1919 to 1928 could have been considered shiftable from one year to another. Had the city's public works been handled in this fashion, he estimates that 10 to 15 percent of the unemployed could have been given work. If other governmental units also had adopted the policy of long-range planning, a larger proportion of the unemployed could have been aided.

credit may suffer in consequence, the surest course is to accumulate special funds which are held in reserve until the time for release arrives.

All this sounds formidable enough, but it is not the full list of technical difficulties. The rates at which and the directions in which American communities grow keep changing. What seems an excellent project in 1 year may seem a poor choice a few years later. The kind of facilities desired by the public is also subject to rapid change. Early in our career as a Nation we spent sums enormous for those days upon canals that were presently superseded by railroads. Later the railroad net was expanded with Government aid to an extent which forced retrenchment when the automobile truck became an important factor in transportation. Perhaps many of the roads we are building today will be abandoned in favor of better locations for the high-speed trunk roads of the future. Even more rapid are the changes in methods of construction and in the materials used. Thus, to be thoroughly satisfactory a "reserve" of public works would have to be revised at intervals, in the same way that a city plan should be kept up-to-date. This means that sometimes old projects would be abandoned, that more often new projects would be introduced, and that more often still the legal, architectural, engineering, and financial plans for given projects would be worked over again. The overhead charges of doing a really good job on long-range advance planning of public works would be considerable.

A further technical problem of no slight moment concerns the management of the reserve funds. Suppose that this country gradually accumulated an aggregate fund of 9 billion dollars to be used for public works in the next period of grave unemployment. How should this fund be carried until it was used? If it were put into bonds, could these bonds be sold without heavy loss when the time for disbursement arrived? If the money were deposited with commercial banks, could they meet the calls upon them without grave embarrassment? Would savings banks be better depositories? Or could some plan of financing through the Federal Reserve System be worked out that would provide means for paying the bills and not threaten a serious "inflation"? These questions involve issues too technical for discussion in this place; but it is clear that satisfactory answers would have to be found before the program of long-range planning could be perfected.

A final set of difficulties concerns the determination of the times at which public construction shall be greatly expanded. What authorities shall make these decisions? Shall local governments be encouraged to decide on the basis of local conditions? Shall an effort be made to induce local and State governments to act in concert, under the leadership of the Federal Govern-

ment? On what principles shall the authorities base their decisions? Is the consensus of business opinion as to current conditions and future prospects, interpreted by some Government agency, a sufficiently definite guide? Or would some set of statistical indexes be safer to trust? If so, what choice shall be made among existing compilations; or what additions must be made to our present battery of figures? Should attempts be made to counteract mild contractions in business activity, like that which began in 1926 and ended in 1927? Or is it wise to husband the public-works reserve for use in serious depressions like those which followed the recessions of 1873, 1893, 1907, 1920, and 1929? If the latter policy is followed, should the aim be to increase public works when the gravity of the business difficulties is revealed? Or should the aim be to let the process of financial liquidation proceed for a considerable time, and use large public construction as a means of stimulating a revival when the situation is ripe for an upturn? Or is there some stage intermediate between the recession and the trough of depression that is the best moment to act? Before governments let large contracts, should they insist upon substantial concessions from the business interests benefited in the form of low prices of materials and modest profits for contractors? Should they also review the rates of wages prevailing in the building trades and require downward adjustments in certain cases? If so, what criterion could they apply to determine what wage rates were too high? Once again, we should need ample space to discuss these problems with the thoroughness which alone would justify definite answers to our questions. But we can scarcely overstress the importance of these questions to the policy of long-range planning.

We have set forth faithfully the difficulties which we foresee in an effort to use public construction as an economic balance wheel. Nevertheless, we recommend that such an effort be considered with care by some properly constituted agency of the Federal Government. For we believe that the technical difficulties can be gradually mastered in large measure by energetic work, and we believe that the social gains resulting from this step toward reducing the severity of cyclical depressions might be substantial. It is chimerical to hope that long-range planning of public works would suffice by itself to "iron out the business cycle"; but such planning is a promising line of effort to include in a program looking toward stabilization.

Given the will to achieve, it should not be impossible for Federal, State, regional, and municipal officials to decide what public works should be executed promptly and what can be postponed, until unemployment has become grave. Nor are the problems of anticipating future needs insoluble. State and local governments

might learn to work in unison under Federal leadership. The legal, engineering, and architectural plans have to be made sometime; it is not impossible to make them in advance, and the cost of revising plans from time to time, though appreciable, is less than the cost of reconstructing works actually built on plans that later prove to have been unsatisfactory. Advance plans for financing are hard to make, but any task that forced the financial departments of American governments to look ahead more definitely might have incidental advantages of value. Among the gains is the reduced cost at which construction contracts may be let in years of depression. Given efficient management, these savings might exceed the overhead costs of the whole planning service. Nor is the problem of carrying and later disbursing reserve funds accumulated in good times an insoluble one; indeed, it is possible that this process might be so managed as to check the excesses of booms in some measure. As for the problem of timing the release of public works on a large scale, we think that an objective, quasi-automatic guide might be developed through improvement in our statistics of employment. Even in their present imperfect state, American indexes of employment give on the whole a more faithful picture of business cycles than any other single set of figures, and of course, cyclical unemployment is the ill which the long-range planning of public works seeks most specifically to combat. When a widely representative index of employment showed a percentage decline of a magnitude to be fixed in advance by careful study of past experience and analysis of the new figures, the Federal agency charged with responsibility might advise the President that the time had come to accelerate public construction. Presumably this percentage decline would allow for a substantial reaction from the peak of the preceding expansion, but not for such a cataclysmic fall as culminated in 1932 or the early months of 1933. A considerable degree of synchronizing the policies of the central and local governments would render the policy more effective; but there should be ample opportunity for local departures from the national program in regions where grave emergencies occurred.

How much might be gained by a skillful development of advance planning along some such lines as those sketched here is the critical question. There are two reasons for rating the possible gains higher than is suggested by the rank of public construction among the country's industries. One is the prospect that the fraction of the national income spent upon public works will continue to grow in the future as it has grown in the past. Not only shall we demand more and better recreational facilities, highways, hospitals and so on; but also our working definition of what constitutes a public work will continue to expand.

The second reason for expecting substantial gains is supplied by what are commonly called the "secondary effects" of construction works.

The first effects of expending a dollar upon a job will be to pay, say 50 cents for labor (including the services of the contractor), and 50 cents for materials. The secondary effects depend upon what the workers, contractors, and dealers in materials do with their money, and upon what those to whom they pay it do. If the expansion of public contracts is not undertaken until business has receded substantially from its preceding peak, it is probable that the wage earner, the contractor, and the maker of materials all will have urgent need to spend their money promptly. (1) So far as they buy more food, clothing, etc., for their families than they would otherwise have obtained (but only insofar), they expand the retail demand for consumers' goods. If the stocks of these goods have been reduced as far as dealers deem wise, the increased purchases will call for increased production, increased employment, and increased wage disbursements. If the stocks of consumers' goods are still larger than merchants, warehousemen and manufacturers like to carry in view of the slack trade, the increased demand will at least bring nearer the day when the stocks will be reduced to a level calling for fresh production. The secondary increase of employment produced by the public works dollar is deferred; but meanwhile the merchant has a little more money which he can use in one of the ways we are tracing. (2) Not all of the public works disbursements will be spent by the first recipients for consumers' goods. Many of the wage earners, contractors, makers of materials, and retailers who get an early slice of the dollar, owe money. They use part of their receipts, not to increase consumption, but to reduce debt. This line of secondary effects need not increase employment, though probably some of the money going to creditors will pass on to retail dealers whose stocks are low enough to call for replenishments. But there is a gain from the reduction of debt in a period of depression. One of the prerequisites for revival of business is that the tangle of crisscrossing indebtedness left by the preceding period of hyperactivity be straightened out, and public works disbursements should make a modest contribution toward this desideratum.

A different line of secondary effects must be noted as possible. If the money used to finance an expansion of public works is drawn by taxation or borrowing from that had been destined by their owners to prompt investment in buildings and industrial equipment, then the total volume of construction work is not increased by governmental intervention. A business revival may be retarded rather than accelerated, under such circumstances by an increase of public and a shrinkage

of private works. That effect is not likely to occur, however, if the expansion of public works is begun at a time when individuals and business enterprises fear to invest and if the governmental expenditures are reduced as private initiative expands. Even so, it is possible that the Government may have used funds that would have gone into private investment during an early state of the revival. To guard against this contingency requires careful financial management, into the details of which we cannot enter here.

Another possibility is that an expansion of public works will retard revival of private enterprise by checking the reduction of construction costs before it has gone far enough to encourage the letting of contracts for houses, apartments, office buildings, factories, etc. This effect may be guarded against, as suggested above, by requiring concessions in costs that the depressed construction industry would be ready to make, if assured of a considerable increase in work. But to decide just how far prices and wages should be reduced would be a difficult problem.

We have carried this analysis far enough to show that the secondary stimulus to employment given by outlays for public works in a period of business depression is intricate in character, dependent upon conditions that vary from trade to trade and hence is impossible to calculate in advance except in the roughest fashion. But there can be no doubt that the expenditure of public funds, if wisely planned, starts a series of processes favorable either to a cumulative growth of employment outside of the construction industry, or to the reduction of commodity stocks and the liquidation of outstanding debts. These processes may take

some time to produce appreciable effects, but the lags are to be reckoned in months rather than in years. If an improvement in the business situation does not occur, it must be because other and more powerful factors are exercising an adverse influence. For example, if private construction expands, the unfavorable secondary influence of the shrinkage will more than offset the favorable secondary influences of the expansion. All that one can say under such circumstances is that the total situation will not become so grave as it would have become if both private and public construction had shrunk. To be tolerably sure of producing a net gain in employment and a real impetus to business revival, the public-works program in a country as large as the United States should be planned on a huge scale. As matters now stand, a public-works "reserve" of 10 billions of dollars would not exceed the decline in private construction during a major depression.

Provided that reserves of projects on some such scale can be accumulated in shape for the prompt letting of contracts, provided that operations are timed to begin after the liquidation of financial excesses has made considerable headway, and provided that the funds can be secured without checking private enterprise or overtaxing public credit, we believe that public works can be made a stabilizing device of value. But to accomplish this result would require systematic effort, consecutively maintained over good years and bad alike, by Federal, State, county, and municipal governments. Without advance planning of this resolute sort, past experience indicates that public works can at best mitigate in some measure the sufferings and losses of depressions.

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## SECTION II

### IV. PLANNING STEPS FOR FEDERAL PUBLIC WORKS

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Every public-works project goes through a series of stages or steps and at each stage new considerations and special problems are encountered. The long-range planning of public works is the summation of the decisions made at each of these steps, which for convenience of discussion can be set down as—

1. *Planning*, involving decisions on What to Plan—an initiatory function; and The Preparation of Plans—an administrative function.
2. *Programming of projects*—a budget of construction—a long-range program for approval by Congress.
3. *Appropriation*.—The selection or approval of projects for construction—a legislative function resulting in a lump-sum appropriation for expenditure on projects within an approved program.
4. *Negotiation* with State and regional authorities for the basis of Federal participation.
5. *Allocation* of funds among constructing agencies—local, State, regional, and Federal.
6. *Construction*—the execution of projects.
7. *Payment*—for projects.

#### Planning

The planning of public works should be considered as an activity of one section of a national planning agency, working through a committee or group representing the interests most concerned and developing cooperative relations with regional, State, county, and city planning boards.

*What to Plan?*—The choice of projects to be developed—planned—has been almost entirely left to the administrative agencies of Government, and largely to the construction or service bureaus. Proposals are developed from—

- (1) The run-of-the-mill work of a bureau—as for the replacement of a lighthouse; or to meet the space requirements for a Washington office—as service items for continuation and effective conduct of the work.
- (2) The expansion policies of special types of public works as outlined by legislation under the Federal-aid highway program or by custom in the cases of river and harbor development or of Federal buildings in scattered cities.
- (3) The natural extension of other similar services performed by a given agency.
- (4) The desire of bureaus and divisions engaged in large projects to hold together an efficient organization and, of course, most of all from—
- (5) The desire of the citizens or special interest groups to secure projects for the development of their States or neighborhoods.

A measure of restraint upon the free exercise of discretion in these matters is exercised by—

- (a) Limitations on appropriations available for preparation of projects.
- (b) The budgetary prohibition against initiation of projects by Federal bureaus without approval from the Budget Bureau.
- (c) The activities of a few bureau and departmental agencies, such as the Rivers and Harbors Board, for the sifting of projects, and by—
- (d) The machinery of the “Authorizing Act.”

No one is responsible for filling up the gaps and crevices between policies and projects. This seems to be the most serious deficiency in the present arrangements, although there are many opportunities for the better organization of “sifting” agencies within the departments to obviate duplication of effort or unwarranted work. Since it is important to maintain and encourage initiative and responsibility for meeting current needs within the separate bureaus, it would probably be unwise further to restrict their activities in initiating projects. There is need for—

1. Better informational service as to what proposals are under consideration in various bureaus, and for
2. An initiating and coordinating agency to check up and follow through the various aspects of such general public-works policies as may be approved by the Administration or requested by the Congress. From a well organized information service, the needed projects to fill up the gaps would soon be apparent and a suggestion to an appropriate agency would almost invariably produce cordial cooperation.

Initiation of general studies, such as those just completed by the Mississippi Valley Committee and the water resources section of this Board, would naturally fall within the field of the proposed national planning board. A series of such studies in new fields and reviewing the coordination of projects in old fields would constitute a continuing activity for that part of its staff assigned primarily to public works.

#### Preparation of Plans

The actual preparation of plans involves radically different problems according to—

- (1) The variety of purposes to be served by the proposed project, or
- (2) The degree of specialization in the engineering art to be applied, or
- (3) The number of agencies necessarily concerned in the work.

Planning a "service" project, like the lighthouse previously cited, is obviously a job for the Lighthouse Service or some other specialized agency which knows the needs to be met and the specialized technique involved in the design—battleships, for instance, should be planned by the Navy. This simple rule will not carry very far, however, for in almost every case a variety of services or of purposes are to be served in a single project. It then becomes a problem of designing a project to serve many purposes in only one or two of which the designing agency is a specialist.

Where a number of Federal agencies or functions are concerned in a single project—as in a dam or transportation facility or a Federal building—the alternative procedures have been either:

- (1) To build up a varied staff in one office including experts in the other related fields by direct employment of new men, or borrowing from other departments, or
- (2) To work through coordinating committees which are invariably cumbersome and inefficient for this kind of work.

Neither method is entirely satisfactory, but no agreement has yet been possible toward establishing a single public works planning staff or to simplify the borrowing of technical services from a central pool or from individual agencies.

An even more difficult problem is encountered in coordinating the planning work of Federal agencies with State and local authorities. Evidences of the lack of such cooperation are too numerous to need the citing of specific cases. Thus Federal buildings are sometimes located in defiance of civic center plans of cities and towns, Federal approval of projects is sometimes used as a lever to force local approval even though contrary to well considered plans, and occasional failure of Federal officials to deal tactfully with local officials evidence lack of coordination. The trouble in such cases, paradoxically enough seems often to arise from too great emphasis on the separate fields of Federal and local government in some cases, or from misunderstanding of the division of responsibility in other cases. Some single authority must ordinarily be responsible for making plans for a given project.

The National Resources Board, as successor to the National Planning Board, is endeavoring to find a working arrangement for solving this type of problem in various combinations. Through the City Planning Commission of Cincinnati the public buildings problem is being studied; through the St. Louis Regional Planning Commission an analysis is being made of the interstate, metropolitan, and Federal interest in the Mississippi River at that point; and through the State planning boards, district chairmen, and regional planning commissions, interstate and Federal interests of great variety can be and are being planned. The Tennessee Valley Authority is an example of Federal

planning of interstate projects, while the Pacific Northwest Regional Planning Commission provides a method for securing State responsibility in planning with provision for coordinating the actions of adjoining States and of Federal agencies through a Federal officer serving as chairman of the commission.

From the limited experience upon which we can base any recommendation, it now appears that State planning boards may prove sufficiently strong to handle intrastate projects and the coordination of the municipal and county governments involved in large-scale operations wholly within its borders.

For interstate or regional operations it seems much more clear that Federal leadership, at least in the making of plans, is essential to success. Continuation in some form of the consultant assistance now given to State and regional planning organizations may prove to be the most effective form of Federal cooperation in bringing together State planning agencies to form regional groups suitable for the administration of interstate public works projects.

### Programing Planned Projects

The orderly programing of public works projects is the third step in planning public works. As in the case of the Budget in relation to financial affairs, it is or should be a responsibility upon the executive to present to the legislative branch a balanced construction program. Balance must be maintained among types of projects, among construction agencies, in the location of projects among the States, people, needs, etc. Programing involves the time element—the long-range timing of public works in relation to business cycles and a sequential relationship among the projects themselves. The Congress changed the Budget, and would doubtless change the program from time to time, but the existence of a carefully organized plan should assist the Congress as much as the executive departments.

Beginnings have been made toward the formulation of a balanced program of Federal public works, and corresponding movements have appeared in several States and cities. The Budget procedure provides one kind of program which was supplemented in the case of the Federal Government by the Federal Employment Stabilization Board. A particularly valuable contribution of this latter organization was the preparation of 6-year construction budgets by the bureaus and construction agencies instead of the prevailing single-year budget. The work of the stabilization office, however, has been very limited in scope and has left out of consideration many types of balance which are essential to a complete program.

In the preparation of the "Comprehensive program of public works" required by the Recovery Act, the lack of plans on which the program could be based

proved an insuperable obstacle to the Federal Emergency Administration of Public Works. The best that could be done in formulating criteria for the selection of projects was—

(1) A rough quota system for the geographic distribution of projects in relation to unemployment and population.

(2) A reasonable excellence of technical design.

(3) The bonding power of the governmental unit asking for a loan.

For the rest, decisions had to depend upon the judgment of a series of more or less well-informed individuals, since it was a rare exception rather than the rule when a large-scale and long-range plan was available to check the project.

One of the most disturbing elements in the Federal agencies doing construction work is the lack of a continuing program—expert staffs are constantly being assembled and dismissed. There is a special need for programming to keep expert organizations continuously busy on worthwhile projects, and this means selecting agencies and building organizations with a long-term program in view.

A valuable example of the possibilities for a program of public works in one large field was provided by the work of the President's Committee on Water Flow. This committee in the short space of 6 weeks collected current projects and proposals for development of our water resources. It acted through a series of coordinating committees representing all the agencies concerned, with the central secretarial service supplied by the National Planning Board. Perhaps the most important gain from this work was not the collecting of projects or the sifting of projects, which was originally considered the main function of the committee, but the broadening of the point of view of the participants in the many discussions within the technical subcommittees. The participants in the meetings of these committees found that there were many other angles than that of their particular specialty to be considered in judging of the value of water projects, and they soon saw that considerations controlling the choice of items in the water program were closely related to problems of land use, economics, and social significance.

A similar situation has been disclosed by the work of the Mississippi Valley Committee of the Public Works Administration, where the studies by the several experts composing the committee have inevitably led into problems of transportation, land use, population distribution, and numerous other lines of thought, all growing directly out of problems of navigation, pollution, water supply, and other factors which are normally considered as strictly water problems.

The procedure for preparing a program for a water project used for many years by the War Department

offers another example of programming in relation to the selection of projects. The first step in a river or harbor improvement is authorization by Congress for a preliminary examination and survey. In effect, this authorizes the Chief of Engineers to direct the district engineer in whose district the proposed improvement lies to make a preliminary examination and to report to him whether there appears to be sufficient merit in the proposal to justify a thorough examination.

The district engineer's report passes via the division engineer to the Board of Engineers for Rivers and Harbors (of seven engineer officers) which reviews all river and harbor improvements from an engineering viewpoint. The board report, with those of the district and divisional engineers, is passed on to the Chief of Engineers who reports to Congress that a thorough examination and survey are justified or are not.

If the recommendation is favorable, Congress usually authorizes a survey and the Chief of Engineers directs the district engineer or such other officer as he may designate to make the survey and report. When completed this report is referred to the proper committee of Congress—that Committee on Rivers and Harbors in the House and the Committee on Commerce in the Senate. Upon passage of "an authorization to improve" bill through both Houses of Congress and signature by the President, the proposed improvement becomes an adopted project. The actual construction work begins on it when Congress provides the necessary funds.

Since 1914 it has been the custom to make appropriations in lump sums each year for rivers and harbors improvements which have been authorized by Congress, and the allotments from this lump-sum appropriation to the separate projects by the Secretary of War, upon the recommendation of the Chief of Engineers of the Army. If there are any projects in the pending authorization bill upon which work should not be carried on, the President or the Secretary of War is still in a position to order that no allotments shall be made for these projects.

A somewhat similar situation exists in the field of public buildings, where the Secretary of the Treasury and the Postmaster General are authorized by the Public Buildings Act of 1926 to report annually to Congress as to needed public buildings. They are responsible for the preparation of a "program" and money is appropriated largely on the basis of the estimates submitted by the Office of the Supervising Architect.

These examples illustrate the fact that in several fields the responsibility of the executive for the presentation of a program of public works is already recognized. The apparent need now is to expand the type of projects included in the program so as to cover all of the major fields of Government construction. A central public-works authority or administration might

be made responsible for the preparation of such a program for submission to the President, just as the Director of the Budget is responsible for presenting a fiscal program for his action, and for transmittal to Congress.

To provide for the proper relationship between work projects and employment or other considerations primarily in the field of other agencies, a coordinating group such as the present Board of Public Works seems to be needed, which, like other committees of this sort, could be served by the central secretariat of the proposed national planning board.

#### Appropriation—Selection or Approval of Projects

In the days before the Budget, Congress did all the selecting of public-works projects, acting under pressure from the various bureaus and departments most concerned. The activities of the bureaus have now been funneled through the Budget so that much of the jockeying for position among Government agencies has been stopped. Congress naturally retains the basic control of the finances of the Government.

During the last 2 years an experiment has been tried through delegation of authority to the President to formulate and construct a "comprehensive program of public works." The success of that experiment cannot be judged adequately as yet. It seems certain that many unnecessary or unwise projects have been rejected and equally certain that not all the approved projects have been as carefully related as advance planning would have made possible. This situation is the inevitable result of the necessary speed demanded by a grave emergency, lack of previous experience in such programs, and lack of plans upon which to base the program.

From the experience of the last few years with rivers and harbors, public buildings, public roads, and the Public Works Administration, it would seem to be entirely practicable for the Congress to approve or amend a general program submitted by the President covering a number of years, and then to make annual appropriations to be applied to the construction of projects within the program in the discretion of an Administrator of Public Works or the President.

A certain degree of flexibility in the allocation of funds to specific projects within an approved program is desirable, if not absolutely necessary. Only through such flexibility can we secure the full usefulness of the money to be spent and prevent tying up funds in incompleting projects or in excessive reserves held for undertakings the cost of which was overestimated. By leaving some discretion to the executive branch in the handling of specific construction jobs, the work of various construction agencies can be more effectively integrated and continuity of staff maintained. If Congress abso-

lutely controls the program, it would be reasonable to place on the administration responsibility for the effective use of the money within the approved program. This method of procedure would also not encroach in any way upon the prerogatives of the Budget Bureau, but would provide the possibility of speeding up public works in time of depression because of the availability of planned projects awaiting only funds to begin actual construction.

#### Negotiation

Even if this method of securing a Federal program and flexibility within the program meets with approval and is adopted, a difficult problem will still remain in securing coordination with the States and local governmental units. In normal times their construction budgets are several times larger than that of the Federal Government.

The work of the Reconstruction Finance Corporation and the Public Works Administration provides a revolving fund for construction of public works in cooperation with State and local or even private agencies. There is need for new methods of selecting projects by a number of agencies at the same time when their several interests are involved. As shown in another chapter of this section, it seems likely that available funds from the Federal Government under appropriate conditions might facilitate cooperation with and among agencies of other jurisdictions.

#### Allocation

The actual construction of public works in which the Federal Government is directly concerned involves three types of agencies:

- (1) The service or incidental construction branch of a bureau or department primarily interested in other aspects of administration.
- (2) The direct construction bureaus building dams, roads, waterways, public buildings, etc., by contract or force account, and
- (3) The supervisory or cooperating agencies, handling construction funds and projects in cooperation with State and local governments.

An approved program of public works, suitably revised annually but always looking many years ahead, would permit allocation of specific jobs to the agency in the best position to carry on the work. There is then a question as to the best organization of these constructing agencies within the Federal administrative machine.

It is generally agreed that the numerous "service" agencies within the larger departments and bureaus are essential to the work of these agencies and if cut out they will inevitably grow again. There is always danger lest they get overgrown and become dangerous in their effect upon the parent agency. That danger can, however, be controlled through the diet provided or not provided by the Budget.



There have been recurrent proposals through the years for a consolidation of the principal construction bureaus into what might be called the "Construction Service." Such a service might combine the Office of the Supervising Architect, the construction activities of the Bureau of Public Roads, the river and harbor work of the Corps of Engineers, and the Reclamation Service. There are obvious advantages in a consolidation of these bureaus in pooling the expert services of the Army and civil engineers and in making use of the combined experience of these several offices.

It has been objected in the past that a combination of construction agencies would produce an unwieldy organization, stifle initiative and experimentation, and might seriously interfere with current work during the period of transition. If these objections are considered obstacles to setting up a single construction agency, some of the advantages of consolidation can be secured by less drastic measures, such as the organization of an engineering pool for joint use of expert services or more

effective system for borrowing assistance from one or another agency. Perhaps the most important need is a pooling of funds and a central agency for allocation of work projects to different agencies in order to secure continuity in their activities.

For the construction of projects involving interstate or intercommunity relations, new agencies are needed backed by compacts or agreements for the appropriate division of responsibilities and costs. The New York Port Authority, the Colorado River compact, the arrangements on the Sacramento River, the Capper-Cramton Act for park developments around Washington, the Mississippi River Commission, and the Tennessee Valley Authority, present a variety of methods and agencies for cooperative action. "Improvement authorities" have been suggested to obviate the difficulties encountered in handling intercommunity projects and to consolidate some of the overlapping governmental jurisdictions that now so complicate the problem.

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## SECTION II

### V. EXPERIENCE AND PROPOSALS—A PUBLIC WORKS ADMINISTRATION

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In each of the planning steps outlined in the previous section the Federal Emergency Administration of Public Works has had a part during the last year. In the choice of what to plan, for instance, numerous decisions have been made through allocation of funds to Federal and non-Federal agencies in order to prepare specific projects, such as the sewage disposal plan for the District of Columbia, plans for the withdrawal of submarginal lands, or the long-range program for the great central valley prepared by the Mississippi Valley Committee.

By an announcement early in the history of the new Administration that complete plans for projects would not be necessary to secure allocation of funds, it was made evident that a statement of need might be sufficient to secure money in order to prepare plans, as well as to carry them out. The cost of engineering and architectural services has not always been included in the cost of the project, but the Public Works Administration has influenced the choice of projects to be studied and planned.

No direct planning of structures of work has been undertaken by the Public Works Administration itself, but, as already noted, through the National Planning Board and the Mississippi Valley Committee, many efforts have been made to coordinate proposals for varieties of projects and to find the appropriate interrelation among them. Some of the allocations to Federal bureaus have been used for preparation of plans in the usual manner current in the bureaus concerned.

Programming of projects has been the primary function of the Public Works Administration as set forth in the National Recovery Act.

The procedure followed has been summarized as follows:

All projects requested by Federal agencies pass through the Projects Division in the Public Works Administration, with the exception of those involving construction of Federal buildings, such as post offices and similar structures. The Projects Division examines all projects from the standpoint of engineering, finance, and economics. In some types of work, notably river and harbor improvements, such examinations and studies have previously been made by the Corps of Engineers. In these cases, when the project has been recommended by the Corps of Engineers, no further examination along these lines is deemed necessary.

Non-Federal projects, with the exception of transportation and housing loans, begin in the office of the State engineers (P. W. A.) and pass with its recommendations to the Projects Division at P. W. A. headquarters in Washington. They are then examined from financial, engineering, and legal points of view in the divisions bearing those titles. Transportation and housing projects do not go through the State offices, but begin at once in Washington where they are examined separately in special divisions devoted to those subjects. In case a project is rejected, review is possible by the technical board of review attached to the deputy administrator's office.

#### Continuation of Certain Functions of P. W. A.

The Federal Emergency Administration of Public Works ceases to exist on June 16, 1935, unless further provision is made by Congress for its continuance. After that date the President is authorized to transfer needed activities to other agencies. Whether or not the administration is continued, some of its activities *must* be carried on to complete what has already been started. Other activities, in modified form, *might* be utilized as the nuclei for a continuing organization for public works.

Among the activities which will not be completed by next July is now the work of the Inspection, Accounting, Administrative, Engineering, Legal, Finance, and Statistical Divisions. The Inspection Division will be needed because construction work will still be under way and must be watched as a protection for the bonds taken to pay for the project. Even after the work is done inspection of maintenance may have to be undertaken. Statistics must be kept up to date, and since construction work will be in process, the Accounting Division will still be busy, and, finally, as long as the Government holds the bonds of countless States, counties, and municipalities, some parts of the Finance Division will be needed to keep track of the value of these holdings and of the effect on them of other actions by the issuing authorities.

The disposal of the bonds taken by the Public Works Administration might be turned over to the Treasury, because of the obvious relation of the sale of State or local government securities to the market for Federal bonds. It has also been suggested that the portfolio of municipal and State paper now held by the Government might be the basis for a new service to govern-

mental units by the Federal Government in the form either of advice or of financing municipal and State needs to protect the holdings of the Government, or, through the assumption by the Government, of a banking function for the floating of State and municipal bonds. There are a number of Federal agencies interested in having material on the financial position of State and local governmental units kept up to date and readily available.

The decision on what is done with these bonds, or with future bonds of minor governmental units, obviously affects the possibility of cooperation between the Federal and local governments in the use of public works as a balance wheel for the control or amelioration of business cycles. There seems to be more than a possibility that through the wise use of the bonds now held by the Public Works Administration a continuing relationship among the financial programs of local, State, and Federal Governments might be built up which could be used as another weapon to avoid or reduce the violence of another depression.

#### Desirable Public Works Functions

Besides these activities of the Public Works Administration which must perforce be continued in one form or another, there are a number of others which might be utilized in the organization of an improved set-up of public works according to the steps suggested under the headings in the previous section of this statement.

The focal point in planning of public works is the presentation to the Congress by the President of a long-range program of public works—comprehensive in the types of work included and balanced to fit the needs of all groups and parts of the country. Such a program must be revised annually to meet new needs or changed conditions, but should always look at least 6 years ahead.

#### Preparation of a Program

For the preparation of a program for action by the President, and later transmittal to Congress, the Special Board of Public Works, or its successor, the Statistical and Projects Divisions of the Public Works Administration, and the Federal Employment Stabilization Board if transferred to the administration, might all be utilized. The legal basis of the Stabilization Office is ample to serve as the foundation for a new set-up along the following lines:

(1) The organization, as one of the coordinating committees of the proposed National Planning Board, of a *committee on public works*, consisting like the present special board of public works of representatives from all the major Government departments concerned. This committee might be presided over by an *administrator or deputy administrator of public works* who

would present to it for consideration a 6-year program of public works revised annually. At a later stage, after approval of the program by Congress, proposals for the allocation of moneys to constructing agencies from any lump sum appropriated by Congress would also be referred to the committee before submission to the President for his approval.

(2) The Administrator of Public Works, in order to prepare the program and allot the appropriated funds, should have a staff under his direction including:

A Division of Projects, combining the present Projects Division with the Federal stabilization office, with duties as outlined in the Stabilization Board Act concerning collection of information on 6-year programs of Government agencies, and the further duty of recommending a coordinated and balanced program for action by the Board.

A second division would be needed to handle relations with non-Federal agencies and to negotiate agreements for the execution of projects in which the Federal Government may be concerned. This division would be set up for analysis of cooperative projects and proposed allocations to States, regions, or municipalities—such as Federal highway aid, flood-control projects, and such other aids or subventions for construction projects as may be authorized by Congress. This proposed division would be the contact agency with the National Planning Board in the development of statements of public works policy and in the preparation of plans for drainage basins or other broad categories of public works.

The present Division of Economics and Statistics could serve as the Statistical Division on public works in the sense outlined by the act establishing the Stabilization Board and would be the natural “information” center for matters relating to public works.

The coordinating committees on land, water, mineral, and power planning suggested in part I of this report, must be closely related to the proposed permanent organization of a Public Works Administration. These committees would be engaged in the stimulation, negotiation, and actual preparation of plans in cooperation with State and local agencies for public works projects involving a variety of jurisdictions and special Federal interests. River-basin projects involving Federal and local works are an example of the kind of plans which require the activity of some planning organization to secure agreements as to what should be done and how the responsibility and costs should be divided. To develop cooperation by the State and local governments, the planning committee and the proposed National Planning Board would naturally continue the stimulation and cooperative arrangements already started with State, city, and regional planning boards.

### **Reorganization of Construction Agencies**

Under the suggestions in the foregoing paragraphs the negotiations, allocations, and supervision for the cooperative projects undertaken jointly by State and Federal interests would be handled by a division of a Public Works Administration. This activity would naturally include some of the work now done by the Bureau of Public Roads, and the Corps of Engineers in relation to flood control and similar projects.

The direct construction activities of these and other offices would benefit by pooling the engineering talent and construction experience in the several bureaus and it has been repeatedly suggested that they be brought together in a single agency. One way of securing this combination might be the organization of a "construction service" in the Interior Department,

which would include the work now done by the Office of the Supervising Architect, the river and harbor work of the Corps of Engineers, the construction work of the reclamation service, and the direct construction now handled by the Bureau of Public Roads.

Since one of the purposes of such a consolidation would be to provide a pool of engineering experts, any Executive order or act of Congress setting up a "construction service" should provide for assignment of Army engineers to the service in the same manner that Army officers are now assigned to the Public Works Administration. This procedure would make possible the use of the expert services of the Army engineers and at the same time provide younger officers with opportunities for gaining experience in handling those large-scale projects to which their predecessors have previously contributed so notably.

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## SECTION II

### VI. JURISDICTION FOR PUBLIC WORKS LOCAL, STATE, REGIONAL, AND FEDERAL

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The organization for long-time planning of public works presents difficulties of the first order. In ordinary times over a 10-year period something like 25 or 30 billions would be expended for public works by various public agencies, 175,000 in number, local, State, and Federal.

These governments have independent taxing and borrowing power, subject to 48 different systems of State-local relationship. These areas, furthermore, vary widely in their financial position, ranging from comparative affluence to rigid restrictions and on into hopeless burdens of tax delinquency. Thus, all the varieties of control systems in our States and all the problems of areas in relation to property values are presented in an attempt to work out anything like an organized program of public works looking forward even for a short term of years.

These units, generally speaking—the United States Government (9 percent), the State government (17 percent), counties (20 percent), cities (48 percent),<sup>1</sup> towns and townships, school districts—common and high, plan and construct public works without special regard to each other. A city may have a well-considered city plan, but the Federal Government may set down a post office without regard to the local design of development. The State or the county may proceed to build public works at places and in a manner inconsistent with the other local programs. The school authority may disregard the city or the county. The result is often a waste of the taxpayers' money and a public-works development unsatisfactory in type.

Long-time public-works programs must furthermore be adjusted to different kinds of situations, such as a depression period, a normal period, a war-time period. In each of these instances a different policy must be adopted. But for these very reasons it is all the more urgent that the machinery be carefully set up and that it be capable of adjustment to meet changing conditions with the least possible loss and friction. A well-organized public-works system will respond to the needs of works relief or of war-time priorities without being thrown into confusion or hopelessly stalled into inaction.

In view of the wide variety of interests and jurisdictions involved, it is perhaps too much to expect a master plan for all the public works in any vicinity, but not

impossible to arrange for systematic conference on the part of the several governments concerned and for better coordination of the works projects. This assumes, of course, that there is a general understanding in the community that it is desirable to cooperate in such undertakings and that the desire for economy and efficiency in works construction is strong enough to overcome local jealousies, inertia, and vested political interests.

I. It is suggested, first, that—

The Planning Staff of the Federal Public Works Agency might well address itself continuously to the task of considering statutory or administrative devices to facilitate effective cooperation between Federal and State or other local authorities dealing with public works. The broad Federal powers over interstate commerce and navigation especially, may be reexamined in the light of recent trends and of recent decisions of the courts. At the same time the large grants of financial aid to the States and localities by the United States make necessary a reconsideration of the terms and conditions upon which the economical and effective expenditure of such funds may be made, with justice to all the parties concerned.

Federal improvement areas, districts, authorities, may be set up entirely within a State or interstate improvement districts may be organized for wider purposes, assuming, of course, that adequate study has been made of the basic factors involved and that there is assurance of the social usefulness of such plans. Advance arrangements may be made with the States and localities before the grants are made, to the great advantage of the locality and of the United States. Memoranda may be prepared setting forth these conditions so that there may be a clear understanding of the nature and limits of Federal policy within this field, and time saved on occasions when action is urgent. Whether these arrangements should be embodied in statutory form is a question on which there may be difference of opinion. A sound principle would be the statement of broad general principles in the law, with wide latitude left to the administrative officials in practice, especially during the experimental period. The past experience of the United States in the construction of public works and in recent years the experience of the Public Works Administration and the Tennessee Valley Authority is very valuable for the

<sup>1</sup> 1927-29 figures

purpose of developing standard types of understandings and conditions regarding Federal-local financial and other relationships in the field of public-works planning. Likewise, the wide-spread experience of States in the formation and operation of drainage, conservancy, irrigation, and other similar forms of areas should be examined closely with a view to discovering such valuable principles as may be drawn from it.

One important aspect of this problem is the distribution of costs between various interested parties; the locality, the State, the United States, the user of certain facilities, such as power. This should be taken from the grab-bag basis and diplomatic dickering as far as possible and reduced to a fair and equitable basis. For example, it has been found useful in practice to provide that the State or locality shall acquire land necessary for sites. Rough measures have been made of the relative benefits to be derived from the various governments concerned, allotting a percentage of cost to each agency. But whether this should be fixed at 30 percent Federal, or 50 percent or 100 percent, has been the subject of much discussion, sometimes with more heat than light. In addition, however, to the difficulty of agreeing upon suitable division of the benefits and burdens, comes the problem of unequal ability to pay. Sometimes the local governments are very heavily laden financially and sometimes they are prostrate, while Uncle Sam always seems to figure in the role of Santa Claus. Indeed, the unequal territorial distribution of taxpaying ability, the weakness of our general property tax system, the financial resources of the Nation and the national control over credit and currency, make the problem a very complex one. What is fair under these conditions?

It seems not impossible that impartial boards or panels of assessors or appraisers might be set up in some instances, and authorized either to decide the ratio of financial burdens for the several localities, or at least to make advisory recommendations, which presumably would be followed.

An adjudication by persons of competence with technical knowledge of the necessary kinds of facts might provide a way out of many difficult situations. This might conceivably be brought about by judicial determination, but often time is of the essence of the contract and an administrative procedure might for this reason be preferred. Such impartial assessors might be appointed either by the United States Government alone, or by the different authorities acting in cooperation. Obviously no one of the authorities could be coerced into paying what seemed to it more than a fair share of the improvement cost.

II. It is suggested that State planning boards canvass the possibilities—

1. Of establishing sound relations with the Federal Government in the field of public works, and preparing

such enabling acts as may facilitate the cooperation of State and Nation in public-works construction.

2. In the direction of interstate compacts and arrangements for projects running beyond State lines.

3. Of organizing programs of State-wide public works on the basis of long-time planning, with due consideration to national plans.

4. Of making easier the formation of unions of local authorities, or the formation of special forms of improvement districts either in urban or rural sections.

The States may meet the United States Government half way in the suggestion of division of authority and costs in public-works construction, and expedite the passage of such laws or the formulation of such understandings as may be necessary for this purpose. The State may also explore the possibilities in interstate compacts in advance in order to be prepared for such undertakings as may involve the joint action of several commonwealths. With such precaution taken it might be possible to avoid some of the long delays that have marked such negotiations as that preliminary to the Boulder Dam project.

The New York-New Jersey Port Authority affords an illustration of the possibility of joint action in a metropolitan area through the cooperation of separate States operating on the basis of State compact. This authority has developed a program of works and proceeded to the execution of a part of it on a grand scale. Unfortunately this authority does not cover the metropolitan region around New York in its entirety, and its activities are not tied in as closely as might be with those of the other governing bodies in the area. Other difficulties arise with regard to finances and adequate public control. While this organization is undoubtedly a step in advance, and should be welcomed as an important experiment in the coordination of some of the major public works of a great region, judgment may still be reserved as to the desirability of extension of this type of structure until there has been further opportunity to observe its trend and implications. Other State compacts have been made and these are available for study in the further development of like agencies, if, as, and where desired.

Long-time programs of public works are already under consideration by some of the State planning boards, and are likely to be the subject of discussion and action elsewhere in the near future. This proceeding will involve, of course, consideration of such a program in relation to the Federal program and to that of the various localities, rural and urban, and to regional developments as they may appear.

For local and regional coordination, a State might provide for a public works council or authority on a statutory basis and equip it with broad powers either of a consultative and advisory nature, or with powers of a

financial nature. In the simplest form such an authority might be given power to preview and preconsider all regional proposals for public works, and, if deemed advisable, to require reconsideration by the governmental body from which the recommendation originally came. In the amplest form a council might be given a qualified veto on local improvements of specified types, or the power to insist upon certain minimum requirements, or positive authority of its own to initiate and execute programs.<sup>2</sup> It might become the construction agency of districts desiring their services, or might construct and lease improvements to jurisdictions, or operate joint utilities.

Many States already have more or less complete laws permitting consolidation of local communities for one purpose or another—water supply, drainage, irrigation, conservancy, parks, schools, and other functions. These statutes are often inadequate, however, and could be restudied and recast with a view to the more comprehensive type of arrangement suggested here. A thorough revision of the local laws in the light of State planning possibilities as recently developed would make possible material progress in the direction of sounder works programs for many localities. For this purpose the services of the several State planning boards will be very important.

It has been suggested that it might be feasible to organize in many communities a public works council for consideration of the program of the community as a whole, including Federal, State, and various local agencies of government, assuming, of course, the appropriate integration of works programs with the more general aspects of local, State and national planning. Such a council might be made up of representatives from the various governments concerned and of civic or other organizations interested in the analysis of such undertakings. It might look at the program of an entire community with reference to the social utility of works proposed, their expense, their location, their style or symmetry of construction. It might consider and outline a long-time program of works, for a period of any 6 years, and recommend it to all of the governmental bodies involved.

It might be understood that no new public works should be undertaken unless the plan had first been submitted to this council and its report and recommendation received by the projector. The action of such a council might not, of course, be binding upon any of the Governments legally, but if its broad view of the situation met the approval of the people of the community, the effect might be material and the recommendation might indeed acquire as great force as a law.

The initiative in the construction of such an agency might come from any one of the several governments

interested, but in any case the dignity and especially the leadership of the United States Government would be of great value. The technical advice of the Federal Government, its willingness to submit its own plans, and perhaps in some instances its financial assistance, would all have a substantial meaning in building up the necessary support and organization. If the particular community involved the cooperation of two or more States, the good offices of the United States would be especially useful.

Perhaps the metropolitan regions with their scores and even hundreds of independent taxing bodies offer the easiest road to the establishment of such agencies. Indeed, in cities like New York, Chicago, Boston, Los Angeles, Philadelphia, St. Louis, and elsewhere, official and unofficial regional planning associations have already been organized and have been of very great advantage at many points, even though only advisory in nature.<sup>3</sup> It has been suggested, however, that another step be taken in setting up a branch dealing with the particular problem of public works as a special part of the larger and more inclusive regional interest with which these planning bodies deal. A metropolitan public-works council might be of very great value in setting up a long-time works program, in considering particular works in relation to such a program, and in making the appropriate recommendations to all the jurisdictions involved.

Practical beginnings have been made in Boston and Cincinnati, whose experience in this field is most illuminating to all students of regional public works. Comprehensive consideration of a regional-works program and long-time budgeting of works has actually been set in operation in Hamilton County around Cincinnati, and with excellent results.

The problem is especially difficult where a metropolitan region flows over into two or more States, as around New York, Chicago, Kansas City, Cincinnati, and in a number of other cases. An economic and social community breaks through and over the earlier political boundaries and finds extreme difficulty in adjusting itself to the new conditions and organizing its structure and functions on a present-day basis. The historic survivals in the form of outlived jurisdictions persist with great force, strengthened at this point by the leadership of exclusive suburban groups ordinarily found in the forefront of movements for municipal reform but uniting for the moment with vested local political interests in common defense of their antique political ox carts.

As one-half of the population of the United States is included in the 96 metropolitan regions having a population of over 100,000, an important step would have been taken in the direction of balanced programs of works and of master plans for the greater part of the

<sup>2</sup> See Merriam, Parrat & Lepawsky: *The Government of the Metropolitan Region of Chicago*.

<sup>3</sup> See list of regional planning agencies—Eleventh circular letter, National Planning Board

country, if such metropolitan councils came to be the rule. This would be true whether the councils were merely advisory in character or endowed with larger legal and financial authority. If now these metropolitan councils were brought together in conference with the planning board of the Federal Public Works Administration, there would be opportunity for consideration in a large way of the public-works program of a great part of the United States. It would, of course, be possible to assemble special regions for conference with each other and with the central public-works agency.

The same principle of organization would apply with equal validity to other types of region than the metropolitan. Indeed in the sparsely settled sections of the country, where governing bodies are often small and financially weak, concerted action in the planning and construction of public works is of the very greatest importance. These communities are usually as deficient in competent technical advice on planning and in construction as they are in financial strength. If their capacity for cooperation is equal to the emergency however, it would be possible for them, especially with the help of the United States Government, or without as might be, to put together an organization of distinct value from the point of view of finance as well as of technical service.

Many of these smaller governing bodies might well be brought together under some legal framework authorized by the State, but if this is not feasible, the wide road toward cooperation is always open. State planning boards might well take the initiative in calling attention to the possibilities at this point, in aiding in the formulation of the necessary agencies, and in further relationship of the local works program to the larger planning program of the entire State.

Furthermore, forms of organization such as the Tennessee Valley Authority must be carefully scrutinized as they develop with a view to discovering the soundest form of organization and procedure adapted to the special needs of different localities and to the various functions performed, such as power, production, flood control, and water supply. The adequate planning of our national resources is not unlikely to require the construction of a variety of jurisdictions adapted to the new problems arising. Fortunately our system of Government is flexible enough to permit many diverse and experimental forms of political structure and is adequate to any emergency that may arise.

Our experience with the Tennessee Valley Authority may well serve as a basis for consideration of other like or varying types of large-scale organization of governmental functions or authorities in other areas. The various relations with States, with county and other local governments, with private and quasi-private agencies, will prove of inestimable value in the inevi-

table regrouping of our governmental agencies and functions that is demanded alike by considerations of economy and of public service.

It is altogether too early to draw dogmatic conclusions regarding the best methods of organization for the protection and development of our national natural resources, and for the accompanying improvement of our American standards of living, but it is already plain that we must follow the problem wherever it leads, whether across State boundaries or into the intricacies of outworn local government or the equally difficult complexities of metropolitan life. It is one of the functions of the National Resources Board to observe carefully all such trials, to assemble the basic facts, to interpret them, from time to time as occasion warrants.

Nor can we omit consideration of such organizations as the county associations for purposes of crop control under the A. A. A., or the forms of community life clustering around the newly created subsistence homesteads; for these are important developments of the democratic governing process. It is useful to bear them in mind constantly in the formation of agencies for the development of our national resources. Nor can the formation of types of industrial self-government and discipline such as the National Recovery Administration be left out of the picture even of natural resources. These groups are intimately and inevitably related to the use of our resources, as is clearly evident in the case of lumber, minerals, and public works involving the organization of intercommunication, transportation, or the application of forms of power, electrical or otherwise. These groups are forming novel types of association, but well within the scope of our political system, and in any case highly important to consider in the formation of governmental agencies designed to promote the highest and best use of our natural and all our national resources.

Quasi-governmental agencies are likewise of significance in the prospectus of the possibilities of reorganization of our resources. The Panama Zone and the Inland Waterways are examples of organization and activity worthy of close study in the systematic effort to provide the most promising mechanisms for cooperative action, notably in such fields as power and transportation. The border line between government and industry is rich in unexplored possibilities or reorganization.

Some of the emerging relationships in our national life are likely to require cooperation not only of national, State, and local authorities, but private and quasi-public agencies as well, and we may use our best constructive imagination and practical skill in order that this task may be most efficiently performed. In power production, transmission and distribution, there is an



important illustration of a problem which may require the joint organization of a variety of governmental and quasi-governmental units.

Our governmental system lends itself to an abundant variety of arrangements varying widely from State to State, in accordance with varying constitutions and customs. The limits of possibilities in such undertakings have never been approximated. Viewing the rapidly shifting conditions of our time, and especially the changes in means of transportation which revolutionize our local idea of distance, it is important that those situations be thoroughly recanvassed with a view to recasting structures that have become obsolete with the rush of modern events.

The local governments, urban and rural, are no longer isolated largely from the Federal Government, but are united by ties of increasing number and strength. The Rural Mail Delivery, the county agent, the cooperative associations, the Health Service, the Federal Bureau of Roads, the Department of Agriculture; these and other Federal agencies are binding the United States more and more closely to the parts of which it is made up. The Federal services rendered to municipalities are many and important and increasingly significant for the life of the city,<sup>4</sup> notably in relief, in housing, in relations with industry and labor.

A small measure of ingenuity and a large one of good will would make possible many comfortable arrangements between governments otherwise indifferent to each other, and perhaps forgetful of the fact that they serve the same people. It would be possible, for example, to unite several types of official duties on different jurisdictional levels in one and the same person, who might become an agent of three or more masters at one and the same time—a local official with State duties as well, or with some national duties which could be conveniently carried on his official shoulders without weakening his backbone; or a State or Federal officer as the case might be.

In rural communities the county agent has served a very useful purpose in drawing together various forms of governmental agency, and uniting them for emergency purposes at least, although the county is obviously an awkward area under modern conditions. No similar center has developed, however, in the urban communities, where a multitude of local, city, county, State, and Federal authorities operate side by side, but often without that degree and type of cooperation desirable in the interest of economy and of public service. This carries us however, into the broad field of closer cooperation among officials of different governmental levels—a topic of large and increasing importance in the movement toward the elimination of excessive governmental costs and the development of effective

cooperation between levels of government and official personnel. This is a subject which requires thorough study in the immediate future with an eye to the development of constructive proposals reflecting the emerging governmental problems. In dealing with our natural and our human resources alike, the invention of new and flexible arrangements will save both time and money.

Far from injuring local or central government, such readjustments would in reality strengthen them, by allocating functions and powers to appropriate agencies and units. Instead of leaving the smaller units of government to starve or eke out a miserable existence in many cases, it is possible to revive and restore them by setting them up in a vital relationship in which they may function practically instead of theoretically.

It follows further that if regional councils, agencies, or authorities, both urban and rural in scope, were set up throughout the country, they might be given a form of national coherence and coordination through the friendly initiative of the central public works agency of the Federal Government. The great fund of technical knowledge of the United States engineers could be pooled with that of the States and cities. The financial problems of public works could be analyzed in comparative fashion. Inventive minds might well devise ways and means of using more effectively that portion of our national resources now devoted to public works. Naturally these groups would be in close touch with the Public Works agency of the United States composed of responsible governing officers in this field. They would also find it important to keep in close touch with (1) the American construction industry as a whole, (2) with those agencies of Government responsible for the time of public works in periods of industrial depression, as well as (3) with the relief agencies interested in works relief. Such centralized consideration of public works would, of course, be only distantly related to the work of the President's Planning Board, through which works would be tied in with the general welfare of the Nation. The President's board would deal with those activities in relation to over-all planning, and chiefly through the instrumentality of the Federal works agency. In this way, while local initiative might be preserved, the President's board would be spared the danger of suffocation by the dust of detail.

In a still broader sense these activities and plans would raise important questions among credit agencies regarding capital allocation to construction—a problem of interest to the fiscal branch of the Government, to the National Recovery Administration perhaps, and to the banking and credit organizations of the country. The place and balance of public works might be considered along with the broadest aspects of the National Budget.

<sup>4</sup> See Paul V. Betters, *Federal Services to Municipal Governments*, Brookings Institute, 1931.

Our costly experience with devastating public confusion, with waste of all kinds, with projects inadequately investigated and planned—with political scandal, with inartistic outcomes, caused by the independent action of 175,000 governing bodies, indicates the urgent need of prompt steps in the direction of more affective concert of action. Even the most rugged of individualists cannot insist upon the general freedom of spending involved in such unlicensed liberty to build. Every proposal in this field is worthy of sympathetic consideration on the part of those concerned with important national problems. There is nothing in the American situation, except inertia, to stand in the way of far closer relationship on the part of public works authorities. We may realize far-reaching advantages from the comprehensive view of the whole field, from the free interchange of information and experience, from the pooling of technical knowledge and facilities, from mutual consideration of credit situations, from such general advice and supervision as is not inconsistent with the requirements of vital self-government.

Indeed in no aspect of American public affairs is there better opportunity for broad consideration of local and regional phases of planning, and at the same time of fertile relationship between these regional points of view and associations with those of the Nation as a whole. All the way from the local advisory council to the Federal Public Works Planning Organization, there is opportunity for free interchange of planning ideas and programs, and for the growth of adequate forms of cooperation, which the law cannot readily set down in advance but which right goodwill may translate into effective understandings, into going concerns, and perhaps eventually into the forms of law.

It should be clearly understood that the organization of local and regional agencies is and should be primarily the responsibility and opportunity of the localities themselves, and that any aid rendered by the Federal Public Works agency should be collateral and incidental. In a national program of public works, soundly conceived, there is abundant room for the development of local initiative and activity, and indeed without this the fullest results cannot possibly be attained. It is in a skillful balance between the overhead role of the Federal Government and the role of the localities and regions that wisdom lies. It cannot be too often reiterated that national planning does not involve or permit the centralization of all planning at the center, but presupposes a free flow of ideas, experiments, experience from circumference to center and back again to the circumference.

While in the preceding paragraphs attention has been directed especially toward the possibilities of coordination of authorities dealing with public works, it is also important that such agencies should be developed in close relation to other types of local authority dealing with other governmental functions, not primarily classified as public works. Local planning and coordinating agencies of many kinds are likely to develop in the necessary process of reorganizing our local governments to meet the conditions imposed by modern transportation on the one hand and present-day local finances on the other.

Public works is one aspect only of local government, and it is not desirable that works authorities should stand in the way of other and more inclusive planning agencies growing out of the needs of various communities or regions.

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STATE AND REGIONAL PLANNING

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## SECTION III

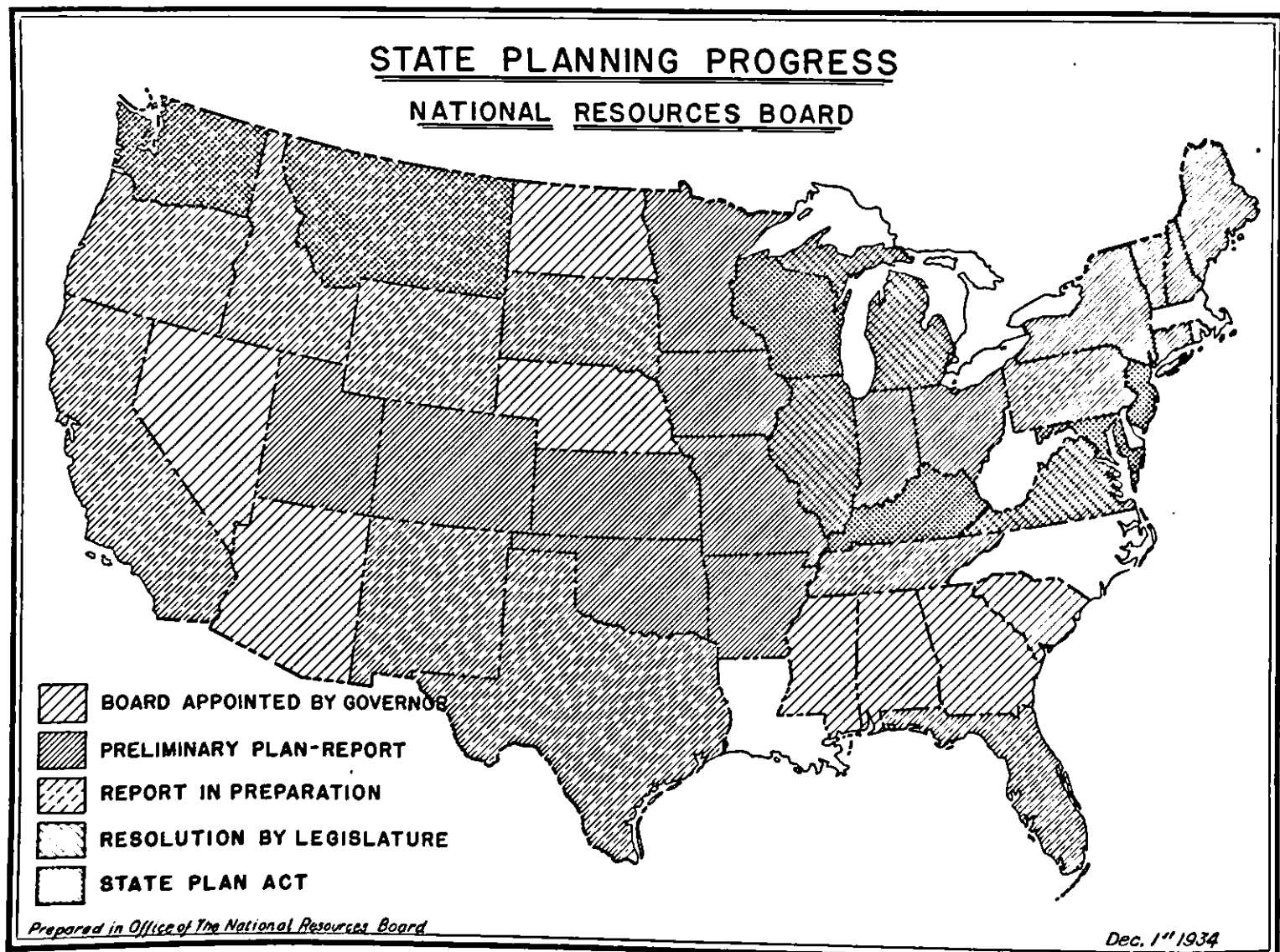
### I. STATE AND LOCAL PLANNING

Some of the potentialities and difficulties which may be encountered by an advisory planning agency have been explored during the last year through the development of over 40 State planning agencies and several interstate planning organizations. Our Federal system makes possible laboratory experiments under a variety of circumstances in the several States, and this possibility has been fully used.

When the National Planning Board suggested to the governors of the States the possible desirability of State planning work, and offered the assistance of consultants, it was hoped that perhaps as many as 10 States would set up planning boards and that four or five good reports might result. Forty-two States

now have official boards appointed by their governors. To these boards, consultants were assigned by the National Planning Board and the National Resources Board when certain reasonable conditions were met by the governors concerning office space, staff, and assurances of sponsorship and continuity. Most of the boards have received further assistance through the relief organization in the form of stenographic, drafting, and other technical help.

The consultants to State and regional planning agencies assigned by the National Resources Board, have been asked to submit a report on their first 6 months' work, and these reports, which are now being



assembled in the office of the Board, show a remarkable and healthy variety of approach and of interests.

### Variety of Sponsorship and Support

Republican and Democratic governors alike have appointed State planning agencies to plan for the future of their respective States. Politics seem to have played little or no part in the choice of planning board members. Business interests have been active in the movement through the State Chambers of Commerce in such States as Montana, Kansas, and Texas, and through the New England council in the case of the New England Regional Planning Commission. In a number of States, the universities and colleges have taken a leading part so that university officials appear as chairmen of the planning boards of Ohio, Missouri and Minnesota, and have representation on practically all of the boards.

### Organization Differences

Not only is there variety in the sponsorship of these new planning agencies, but there are also great differences in their membership and organization. The largest board, for instance, has 22 members, and the smallest numbers only 5. Most of the State planning boards were originally appointed with some members drawn from among the department heads most concerned with current planning proposals serving *ex officio*. Opinion varies as to the advisability of that method of selecting members, and some of the boards are recommending in the bills to be submitted to the State legislatures this winter that provision be made for citizen members only who can give practically full time to the work. From other States, word comes that the membership of State officials on the board has been a major influence in securing much needed coordination within the State government on a number of important projects.

Similar differences are found in the present organization of the various boards as well as in opinions on desirable staff. Most of the States are using personnel furnished through the State relief administrators—on a part- or full-time basis. Estimates for minimum budgets to carry on the work vary all the way from \$10,000 for a biennium to \$50,000 annually. Besides the help received from the Emergency Relief Administration and the universities, several State planning boards have secured aid through grants from foundations and from other sources.

One of the most encouraging features of the State planning work has been the diligence with which the people employed have applied their talents and the personal interest they have taken. With the fear of unemployment temporarily removed, the constructive

nature of the work stimulated their imagination and enthusiasm. Whether or not they were on a part-time basis and in spite of the meager salaries they received, the staffs have labored devotedly. By giving work to these engineers, architects, draftsmen, statisticians, and others of the white-collar group on work in their own or related fields, the Federal Emergency Relief Administration has been making a most valuable contribution not only to the planning movement but also to the restoration of the morale of this important class of unemployed, an achievement of no small consequence.

Already several bills<sup>1</sup> and resolutions<sup>2</sup> have been passed by State legislatures to put the work of these boards on a permanent basis, and endorsements of proposed bills for presentation in the next sessions of the legislatures have been forthcoming from almost all of the governors to whose boards consultants have been assigned.

### Interests and Recommendations

A wide variety of interests and recommendations naturally appears among the State planning boards, for obviously conditions in densely populated and well-watered eastern sections are radically different from those found in the dry, sparsely settled mountain States of the West. As a result of these natural conditions, water resources loom largest in the reports from the Western States, and population problems figure prominently in reports from New England, New York, New Jersey, etc. Yet there are features common to many or all of the reports.

In all of the reports the relation of the State planning agency to local planning units and their problems is given some consideration. There are now over 800 city planning commissions, though many lack authority and financial support. It seems certain that interest and progress in State planning will have a salutary effect on city planning which in many places was quiescent or moribund. Many of the preliminary reports of the State planning boards recommend additional authority and powers for local planning efforts, and the suggestion is made that one of the functions of the State planning board should be to serve as a clearing house for exchange of information and to provide assistance to local planning agencies. Experience in Massachusetts and Pennsylvania over a period of years has revealed both the possibilities and the dangers of that procedure.

A second similarity among the reports now coming in from the consultants assigned to the State planning boards is emphasis upon population studies. Interest in the problem of decentralization of industry and in the movement for housing and subsistence homesteads appears to be Nation-wide.

<sup>1</sup> Maryland, New Jersey, Kentucky, Wisconsin, Washington, and Montana.

<sup>2</sup> Illinois, Virginia, and Michigan.

These interests have led naturally into problems of land use, which fill many more pages than any other single subject treated by the State planning boards. Land planning consultants have been assigned by the National Resources Board first to gather material needed for the land section of this report and second to develop land use studies for the State planning boards. As a basis for adequate land planning, several State agencies are urging completion of the national mapping program for further work on the soil survey, census of farm structures in problem areas, and study of soil erosion. One State planning board is advocating the establishment of a new public domain, while others have recommendations for extensive forests and park purchases. In several cases recommendations are made for withdrawal of submarginal lands. The possibility of using submarginal areas for recreation has been fully developed in reports on conditions in such recreation States as New Hampshire and Minnesota, and other States have made special studies of their historical and scenic sites from the recreational standpoint.

In accordance with suggestions from the National Planning Board, and owing to the interest of the Public Works Administration and the Emergency Relief Administration, some excellent programs of public works and emergency works have been prepared under the auspices of the State planning agencies. One of the most complete statements in this field which has come to our attention was worked out by the Indiana State planning board, which has presented a program of public works, relief works with funds for materials, and straight work-relief projects. All kinds of public works are recommended in the various reports, ranging from housing, grade-crossing elimination, surveys and traffic counts, to flood and power projects—in fact, the whole gamut of public construction activities. Two States for instance, have made exhaustive studies of the future needs of various counties for schools and educational plants.

Water planning is still another general subject dealt with in practically all State planning reports in the broad sense in which such studies have been defined by the water planning committee of the National Resources Board. Recommendations in these cases naturally overlap those in the field of land use dealing with forestry and soil erosion, but include such novel suggestions as the zoning of river flood ways.

A final field of common interest seems to be that of transportation, particularly in relation to highway construction and programs of State highway com-

missions. Much interesting material on competition among methods of transportation and overlapping services appears in the reports, and indicates the necessity for coordination of transportation methods.

The need for integration of State policies has been recognized for some time, and planning work has been carried on by various agencies in efforts to secure coordination. The movement for legislative councils bringing together executive and legislative policy is one example of such planning. A variety of experiments by such councils and by planning boards is desirable and there is no reason to fear serious conflict among them. In fact, it would be a natural development for planning agencies of various sorts to combine, as they have already done in Kansas and Virginia.

The experience of the last 6 to 9 months of State planning board activities has demonstrated the possibility of further development of local agencies to decentralize planning work and to stimulate local and State interest in and responsibility for the future of towns and counties, regions, and State or interstate areas. It seems probable that if further assistance is available from Federal sources, State planning boards can be utilized individually or in combination for the coordination of State activities and for initiating programs, policies, and projects in the same manner as the proposed National Planning Board outlined in the following chapter of this report would operate.

In the preceding sections of this report reference has repeatedly been made to the need for a central agency in each State with which Federal land, water, mineral, and public works organizations can deal. Various cooperative projects, surveys, and planning proposals have been suggested which involve Federal assistance to State agencies and which fully justify the Federal Government in encouraging and aiding State planning boards.

Conditions under which assistance may be provided will naturally vary from case to case, and certainly should not take the form of interference in State affairs. If there is an official State planning body, it would seem entirely proper to have consultants available from the proposed National Planning Board who could advise and assist them in the organization of special studies and suggest methods of procedure found helpful in other States. One consultant might serve more than one State in this general capacity especially if a regional organization of several states has been set up.

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**SECTION III**  
**II. INTERSTATE AND REGIONAL PLANNING**

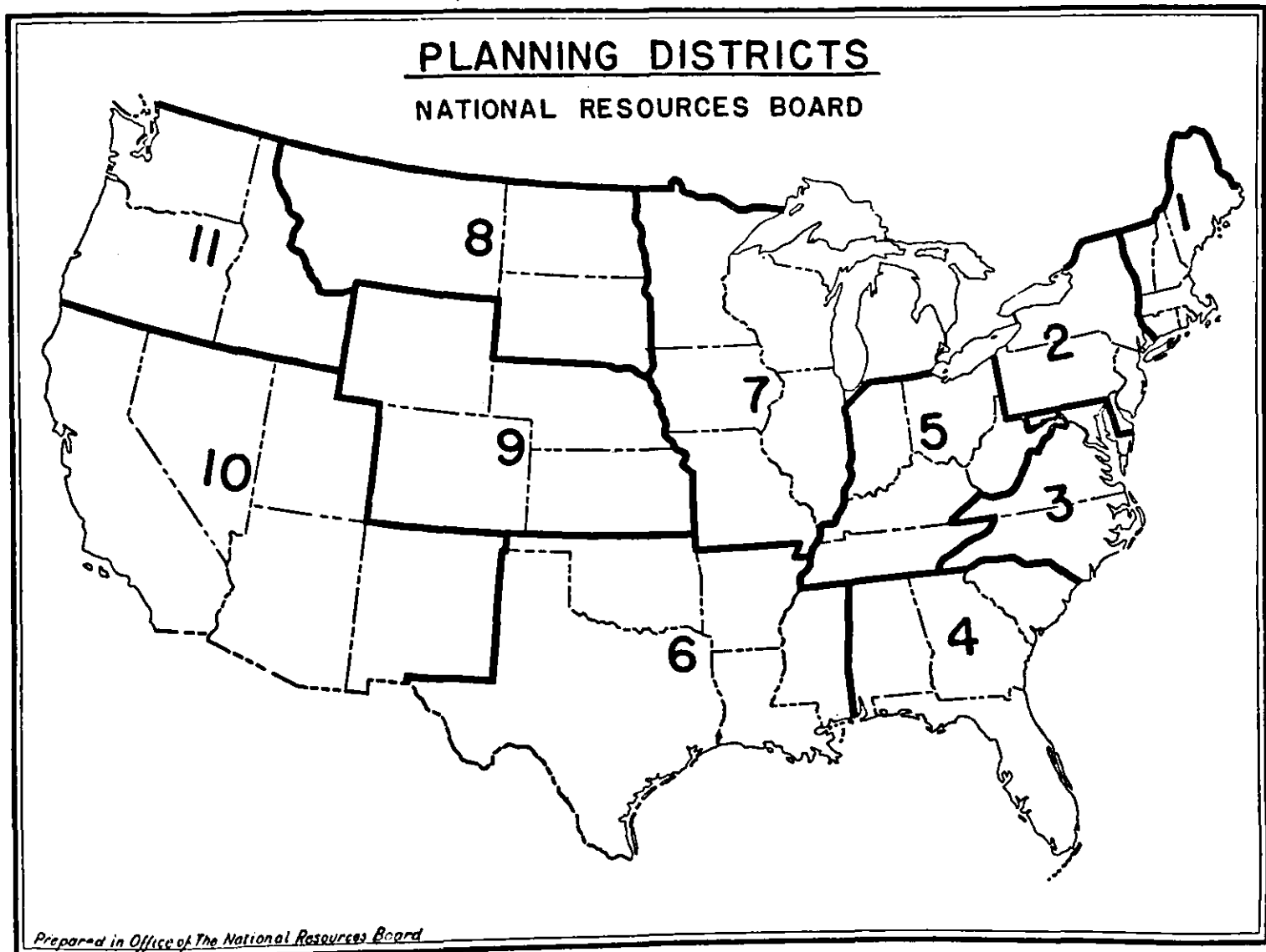
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Besides the extraordinary growth of the State planning movement in the last year, or perhaps because of it, new interest has been aroused in interstate or regional planning organization.

Through regional advisers of the Public Works Administration, and later through the district chairman of the National Resources Board, an informal contact was established for interstate collaboration on joint planning projects. In two regions these informal contacts developed into more complete organizations or regional planning commissions. Both the New England and the Pacific Northwest planning agencies are composed of representatives of the State planning agencies with other interested citizens, and in both

cases large advisory committees have been set up to keep in touch with public opinion and to secure the help of Federal, State, and private organizations. Both of these commissions are served by consultants assigned from Washington, in the same manner as State planning consultants are assigned to State planning boards.

The New England Regional Planning Commission is loosely organized to adjust interstate problems rather than to initiate regional projects. It has grown directly out of previous planning studies fostered by the New England council and by the conference of governors of the six States. It has no authority, but has already proven its value as a coordinating agency.



The planning work in the Pacific Northwest is much more centralized in the office of the district chairman because the major problem of the area affecting all four States is the Columbia River development at Grant Coulee and Bonneville. The organization developed by Mr. Marshall N. Dana is another agency again without specific legal authority but actively engaged in planning for the Columbia Basin although in a fashion widely different from that of the Tennessee Valley Authority in the southern section of the United States.

These two new agencies, one based on history and custom, and the other on the unity of a great drainage basin, have been aided in the last few months to the previous experiment going on in the Tennessee Valley and to such arrangements as the Colorado River compact, the Port of New York Authority, and similar agencies which have legal buttresses to support their planning work.

The Tennessee Valley Authority is in marked contrast to the New England and Pacific Northwest experiments in that its centralized planning is conducted entirely at an initial Federal expense to be later recouped. It is decentralized in area but not in jurisdiction, for it is a Federal authority without State participation. The Colorado River compact, on the other hand, has encountered difficulties because of failure to secure unanimous State cooperation. It is too soon to judge the relative merits of these or other ways of developing regional and interstate planning programs, but it is encouraging to find a variety of methods and a similarity of ultimate aim, and such enthusiasm in widely separated parts of the country.

If further assistance is to be provided in the form of consultants to State planning boards, some kind of regional organization would seem to be essential to

secure interstate cooperation. Until greater experience has been obtained in the various laboratories where trials are now being made, it would seem wise to try a variety of methods with Federal backing rather than to commit any large sum to repetition of the same experiment in several regions before the relative advantages of the various methods now under trial have been clearly demonstrated.

#### Variety of Regions

Federal agencies have divided the country into regions or districts for administrative, planning, and other purposes with little or no attention to the divisions used by other bureaus. It is natural and perhaps inevitable that the special situations and needs of different agencies should result in drawing different boundaries for regional subdivisions of the "field." Studies of water, for instance, logically must be laid out along the lines of drainage basins, while others can use State lines and combinations of States. The Federal Reserve districts were arranged to include a certain number of banks of given capital.

If coordinated planning is to be successful, some degree of order must be brought out of the present chaos of regions and districts. It seems reasonable to suppose that a large number of Federal agencies could use the same regional divisions without serious detriment to their work. A careful analysis of the advantages and difficulties of using more uniform district boundaries in Federal planning and administration is a next step. It would be pedantic, of course, to let a desire for uniformity interfere with the varying requirements of different tasks; but many of the present confusing divisions of the country appear to have no justification beyond the traditions of the bureaus by which they are used.



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**PART I—SECTION IV  
BASIC DATA FOR PLANNING**

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## SECTION IV

### BASIC DATA FOR PLANNING

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Wise planning for our national resources—human and natural—depends upon the adequacy and integration of the factual data and surveys upon which it is based. Great quantities of research material have been collected and millions of dollars expended by our Government agencies, universities and scientific organizations, and still there are yawning gaps in our information. New methods of making available material in forgotten pigeonholes and data in new fields are both needed.

Among the many kinds of basic data needed for wise planning, the following major requirements deserve immediate attention:

#### I. A Financial Balance Sheet

For appraisal of our national resources, a statement of the financial position of the United States as a whole should be available. This should begin with a balance-sheet statement of resources and commitments, or assets and liabilities. The preparation of such a statement was provided for by the act of Congress which set up the Federal budget system and created the office of Comptroller General, but as yet no balance sheet has been set up for the Federal Government. It is realized that the task is not an easy one, but for all that, we believe that such an analysis of financial resources and commitments is not only desirable but essential.

The Institute of Government Research, a department of the Brookings Institution, has for upward of 10 years worked on this problem and has printed a number of reports on the subject. Several of our States have set up balance sheets of this kind, notably New Hampshire. Important cities of the country very generally have adopted this form of statement as a basis for their bookkeeping, and it is unnecessary to say that every corporation of importance in the country, whether a public utility or a wholly private organization, begins by making a balance-sheet statement. Some 70 units of the United States Government have set up such statements, but there are no corresponding figures for the Government as a whole.

The National Resources Board believes it is necessary that such a statement be set up by the Comptroller General and that the facts presented would provide a basis for sounder thinking about national resources and expenditures for permanent, as distinguished from temporary purposes. No large business enterprise

would be satisfied with a mixed account of capital expenditures and current operating expenses such as the Federal Government uses today. A clear distinction must be drawn between current operating expenses on the one hand and investments for which repayment is provided on the other hand.

For the same reasons, the Board urges the need for corresponding balance sheets showing the situation of cities, towns, counties, and States. Current data on these matters should be available not only for local use by interested citizens but also for Federal departments and bureaus.

#### II. Population—Composition and Movement

Through the decennial census, a record of population changes has been kept since 1790 covering many aspects of our human resources. The cost of making the detailed classifications which would meet the various and minute demands of social scientists and statisticians has prevented the Government from developing the full value of its data, and requests are continually made for more adequate information. Not only is the classification incomplete in some lines, but the 10-year interval is over long in periods like the present when weighty decisions of policy must be based on guesses as to trends since the last census was taken.

In the judgment of most experts, far-reaching changes have probably occurred during the last few years in the distribution of population between city and country. Planning for human use of natural resources must be make-shift planning if we do not know where the people are for whom we are proposing new developments or more effective use of present plant.

There is no need to enlarge upon the lamentable fact that accurate figures on unemployment are not available despite our sore need of them. In this connection, it may be noted that the taking of a census itself would provide useful employment for several thousands of people.

A special census of population and employment was proposed last year, to be taken in connection with the Census of Agriculture, at an estimated cost of approximately \$7,500,000.<sup>1</sup> A separate census for 1935 may

<sup>1</sup> See hearing before Committee of the Census, 73d Cong., H. R. 9391; H. Rept. No. 1680, 73d Cong.; and S. Rept. 1105, Calendar No. 1241.

prove somewhat more expensive, but from the planning point of view it would be well worth the cost.

New techniques should be developed for making estimates of population and unemployment in the intervals between the five- or ten-year periods when the census is taken.

### III. Mapping

In both the land and water sections of this report, frequent references are made to the need for completing the topographic mapping of the United States. Less than half of this country is now covered by topographic maps, and only 25 percent of the United States may be termed "adequately mapped" according to the Federal Board of Surveys and Maps.

Adequate maps are absolutely essential to land and water planning and are valuable in scores of different ways. The great value of maps to highway officials has been forcefully stated by their national organization, and similar values would accrue to a variety of other engineering and industrial activities if adequate maps were available. A long list of Federal agencies add their requests for topographic data covering areas not yet mapped.

With this situation before it, the Board of Surveys and Maps of the Federal Government has prepared a report on a "National mapping plan" which comprises part V of this volume. In brief, the plan proposes the prompt completion of a topographic base map of the United States at scales of 1:62,500 (inch=1 mile, approximately) and 1:125,000 (inch=2 miles), through the use of air photography and other modern methods at an estimated cost of \$117,531,000 over a period of 10 years. The Board of Surveys and Maps includes representatives of 28 map-making agencies, and its recommendations are the outcome of long experience.

The Science Advisory Board has also realized the importance of an adequate map of the United States, and in its report on "The mapping services of the Federal Government" says that "It would be difficult to exaggerate the importance of providing for the entire country at the earliest possible date a standard topographic map adapted to the most urgent needs of the people." The Board's report suggests reorganization of some of the mapping services in an effort to increase efficiency and to reduce the cost of making such a standard map.

The National Resources Board adds its endorsement of the proposal for an adequate map and urges its early completion by the most economical methods and the most suitable form of organization.

### IV. Climatology and Climatic Risks

For both land and water planning, new research is needed in climatology to define climatic risks. This

need has been clearly set forth in the land and water sections of this report in connection with statements concerning the zones of hazard in agriculture and grazing and concerning the amount of water available for use in power, irrigation, and other projects. A year ago, the Science Advisory Board in a "Preliminary report of the special committee on the Weather Bureau" laid down a program for research in this field. Among the important elements is a study of air mass methods of forecasting weather and a phenologic survey. Phenology deals with the seasons at which certain critical plants or trees begin to put forth their leaves. A phenologic survey would provide valuable information on the length of the growing season in different parts of the country.

### V. Water Studies

Additional research and data are needed for the water program as shown in the report of the water planning committee. That committee emphasizes the need of—

- (a) Extension of the system of permanent gaging stations on important rivers.
- (b) Systematic inventory of water resources.
- (c) Studies of ground water.
- (d) Studies of water supply and sanitation in relation to public health.
- (e) Research in respect to water quality and standards.

### VI. Soils

The land report stresses the need of immediate action to control erosion and, as one of the important elements in that effort, suggests further study of soil in relation to slopes and surfaces. This type of work has been experimentally carried on by the Soil Erosion Service during the summer of 1934 on the Navajo Indian Reservation.

Soil-fertility surveys and soil classifications also need to be carried further. Only one-half of the agricultural area of the country has so far been covered by soil surveys. A beginning has been made on the classification and inventory of land types according to inherent physical productivity. Both types of work are basic to land planning, and the land report suggests that both should be rapidly extended.

### VII. Vegetation

As further aids in the campaign to check erosion and other types of deterioration of range lands, studies are recommended of the types of vegetation best adapted for such uses in various parts of the country, on soils of different composition and in locations of different character. Primitive or planted reserves in each vegetation region of the United States are considered essential in studying ecology and the natural grouping of vegetation

in relation to the soils and uses of areas. Overworked and exploited tracts should receive analysis and study with a view to developing economical methods for their regeneration.

#### VIII. General Research

Finally, it should be noted that most of the scientific bureaus of the Government have continuously in process a wide variety of research projects, many of which may contribute toward wise planning for the use of our national resources. The National Academy of Sciences and the Social Science Research Council in their statements upon "The contribution of science to

national planning", published in the report of the National Planning Board, indicates the variety and importance of the studies conducted by Government bureaus, universities, scientific organizations, and private investigators. Proposals for extending certain lines of research and initiating new lines are under consideration by the Science Advisory Board.

While new data are needed in certain directions, perhaps the most pressing immediate need is to bring together and coordinate the immense quantities of data already available or now being gathered by many bureaus and departments of the Government.

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**PART I—SECTION V**  
**A PLAN FOR PLANNING**

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## SECTION V

### A PLAN FOR PLANNING<sup>1</sup>

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A review of the problems encountered in the examination of land, water, minerals, and other natural resources, and of a public-works program indicates the necessity of advance planning in these fields, if the best results are to be obtained. When attention is directed to other aspects of national policy the same conclusion becomes increasingly apparent. It is important, then, to consider the most practical forms of organization for dealing systematically with national resources, both natural and human.

In 1931, Gov. Franklin D. Roosevelt, when addressing the New York State Agricultural Society on the subject of agricultural planning, declared that "in the long run, State and national planning is essential to the future prosperity, happiness, and existence of the American people." He made it clear that the planning needed is cooperative planning for the common good that does not force industry or citizens into a fixed pattern of conduct. As President of the United States, Mr. Roosevelt has on numerous occasions, and particularly in his message to Congress of June 8, 1934, repeated and amplified this notable declaration.

The report of President Hoover's Research Committee on Recent Social Trends, published early in 1933, considered at great length the developments in the United States during the last quarter of a century, observed especially the uneven role of advance in our social growth, and concluded by emphasizing the dangers of a policy of drift in the face of confusion and distress.

"Unless there can be more impressive integration of social skills and fusing of social purposes than is revealed by recent trends", said the committee, "there can be no assurance that the alternatives of force and violence, with their accompaniments of violent revolution, dark periods of serious repression of libertarian and democratic forms, the prescription and loss of many useful elements in the present productive system, can be averted."

"Fully realizing its mission, the committee does not wish to assume an attitude of alarmist irresponsibility, but on the other hand it would be highly negligent to gloss over the stark and bitter realities of the social situation and to ignore the imminent perils in further advance of our heavy technical machinery over crumbling roads and shaking bridges."

In the course of its findings, the committee recognized the importance of economic and other types of planning, but admitted that we are still in the stage of

making plans for planning. It concluded its recommendations by suggesting the desirability of organizing a National Advisory Planning Board.

Since the publication of that report, events have moved rapidly and sharply in the dangerous direction of which the committee gave warning. In Germany and Austria the parliamentary and democratic balance of authority has been violently overthrown, and an entirely different system substituted. In the United States the financial crisis of 1933, with the closing of every bank in the land, with 13 millions of unemployed, and with the general prostration of industry and agriculture, brought the Nation face to face with stern realities. Prompt and bold action to prevent complete collapse was necessary, and was taken by President Roosevelt and Congress.

The series of measures, national and local, commonly characterized as the "New Deal", indicate, however, more vividly than ever before the importance of a deliberate study of our basic national policies as a whole and in their relations to one another.

#### I. American Planning

Planning is a distinctly American idea. The Constitutional Convention gave us our national plan of Government. Hamilton's "Plan of Manufactures", Jefferson's and Gallatin's "Internal Improvements", Clay's "American System", the American Homestead Policy, the Conservation Movement, and the "economic mobilization" of the World War are all examples of national planning. Business planning is similarly a distinctively American idea in the form of "scientific management" and "management engineering."

#### II. Present Types of Planning in the United States

A long series of planning agencies is already at work in the Federal service, and in State and city governments as well. In addition to such significant developments as the Bureau of the Budget and the Federal Employment Stabilization Board, there have sprung up, especially within the last year, an array of other instrumentalities for systematic consideration of one area or another of Federal activity. The great financial crisis and the policies of the "New Deal" called for hasty improvisation of ways and means of action, and the inevitable consequence has been the rise of a number of unrelated planning agencies put together as speedily as possible in order to meet the urgency of the situation. The striking feature in Federal activity is not the

<sup>1</sup> Abbreviated and revised from Report of National Planning Board, June 1934.

absence of planning, but the number, variety, and profusion of plan and their lack of adequate coordination.

Some of the many planning agencies follow departmental lines rather carefully; others follow such topical classifications as water, land, minerals, forests, power; others follow geographical and jurisdictional lines, such as Federal, State, local, and regional.

The most recent additions to this group of planning activities are the Economic Security Committee and the study on taxation now in progress in the Treasury.

The detailed description of all these agencies, or even their charting, would be laborious and confusing, and could serve no other purpose than that of illustrating the importance of closer coordination in types of planning.<sup>2</sup>

*Business Planning:* This emphasis upon planning by public agencies should not obscure the fact that, at least in modern times, business has been the stronghold of economic planning, and the "center of diffusion" from which that practice has spread to activities organized in governmental units on the one hand, and in family units on the other hand. Accounting provides an admirable method of ordering complicated activities insofar as the values can be expressed in dollars. Aided by this technique, the business man has become the world's most systematic and inveterate planner. His incentive is supposed to be pure self-interest, but it is self-interest enlightened by the teachings of experience. He learns to count costs, to look ahead, to provide against contingencies. As his opportunities have grown larger, his technique has improved and the scope of his planning has expanded. Dr. Frederick W. Taylor's pregnant scheme of "scientific management", enlarged by the work of Gantt, Emerson, and others, is becoming a widely inclusive art of "management engineering" that calls for continual reviews of current practice and adjustments to meet anticipated conditions. Many of the inventions of today, whether of mechanical devices or of products, or of business methods, are "made to order" by the research departments of business enterprises. Upon market research, industrial research, and even upon "pure science", American corporations spend huge sums annually. Their financial and legal departments, also, are planning organizations in large measure. Trained specialists are in charge of buying, maintenance, production and marketing, so that every detail of the business may be directed with skill. As a nation, indeed, we put far more of our intelligence into business planning than into household or government planning. The harder the times the more business planning we do. The difficulty of meeting budget requirements and the necessity of paying high taxes are sharp spurs to efficiency.

<sup>2</sup> See Digest of National Planning in the United States Today Report of National Planning Board, June 1934.

In view of these patent facts, it is not surprising that many citizens believe that almost if not all of our economic planning should be left to business enterprises—the most skillful and the most interested exponents of the art. The public interest, it is argued, is safeguarded, provided that free competition is maintained. But practical experience has demonstrated that, great as are its contributions to social welfare, business planning has certain inherent limitations that are making it more and more necessary to improve planning in household management on the one side and planning in government activities on the other.

(1) Business planning can secure effective coordination of effort only within the limits of each independent business enterprise; that is, each group of business activities subject to a single financial control. It cannot effectively coordinate the activities of independent enterprises. "Coordination within an enterprise is the result of careful planning by experts; coordination among independent enterprises cannot be said to be planned at all—rather it is the unplanned result of natural selection in a struggle for business survival. Coordination within an enterprise has a definite aim—the making of profits; coordination among independent enterprises is limited by the conflicting aims of the several units. Coordination within an enterprise is maintained by a single authority possessed of power to carry its plans into effect; coordination among independent enterprises depends on many different authorities which have no power to enforce a common program, except so far as one can persuade or coerce others. As a result of these conditions, coordination within an enterprise is characterized by economy of effort, coordination among independent enterprises by waste".<sup>3</sup>

(2) The planning of business enterprises aims at making money. If the ultimate test of economic efficiency is that of satisfying the most important social needs in the most economical manner, then business planning must be warped by inequality in the distribution of income. Where a few have money enough to gratify almost any whim and where many cannot buy things required to maintain their efficiency or to give proper training to their children, it can hardly be argued that the goods which pay best are the goods most needed.

(3) From the viewpoint of business itself, planning to make money is a precarious undertaking that often ends in heavy losses or financial ruin. To enlarge upon the hazards of business enterprise in the modern world is superfluous. However skillfully the internal affairs of a corporation are managed, the whole venture may be wrecked by circumstances beyond the control and even beyond the knowledge of the managers. As markets grow wider, investments heavier and financial interrelationships more complicated, it becomes harder

<sup>3</sup> See Wesley C. Mitchell, "Business Cycles: The Problem and Its Setting," National Bureau of Economic Research, New York, 1927, p. 172.

for the ablest management to anticipate the conditions which the next few years will bring forth. The movement toward business combinations is largely a business man's remedy for uncertainty—his effort to extend the number of factors which he can control. All business is hazardous and the wise business man is always trying to diminish the risks by combinations or otherwise. But combination by one group of enterprises increases the hazards for other enterprises. It is not surprising that with growing frequency business men have turned to the Government for aid and demanded that it protect them against hazards which they cannot control, including the hazard of combinations among other business men. Many of the plans for legislation or administrative action to rectify or stabilize business conditions come from business men themselves. The extension of economic planning by the Government is becoming a more urgent business need as the scale and the complexity of business plans grow greater. Protests against "too much government in business" are no more familiar than demands from business that government assume burdens that private enterprises cannot carry.

(4) The frequent recurrence of economic crises and depressions is acknowledged evidence that the automatic functioning of our business system is defective. In view of recent events no one longer holds that the business cycle is being ironed out. Instead, it appears that the difficulty of maintaining the necessary equilibrium among different factors in the enormously complicated mechanism is becoming greater rather than less. Aside from the widening of markets and the growth of combinations mentioned above, we face the fact that an increasing part of the annual output consists of semidurable goods which people can stop buying for a time if times are bad. The trend of population from farms to cities, and the diminishing dependence of farm families upon what they can make for their own consumption, their increasing dependence upon selling farm produce to get the wherewithal for buying other goods, mean that general economic maladies afflict more people more seriously than they did in past generations. Business planning has found no effective means of preventing the growth of these factors that tend to make the business-cycle hazard more serious. Rather, the hazard grows graver in large part because of business planning.

(5) As Secretary Wallace has pointed out, recovery from grave economic depressions is being retarded by the divergent policies followed by corporations in highly organized industries and the policies forced upon farmers and other producers. Formerly, when demand for products declined, prices fell in almost all markets and output was checked. As a result, existing stocks of commodities were reduced rather rapidly, costs of production declined with the price of raw materials, and it soon became possible to resume production on

an increasing scale with a good prospect of making profits. Balance was restored through the automatic operations of markets which no producer could control. In recent decades this "natural" process of recovery has become less and less effective. Great corporations often find it possible and advantageous to maintain prices during depressions and to cease production. But if farmers are to live they must continue to produce and to sell for whatever price they can get. Then the low-price group cannot buy what they need from the high-price group, and the latter have small inducement to enlarge their output. Recovery under such conditions is a far slower and more halting process than when all prices were flexible in much the same degree.<sup>4</sup>

It thus appears that there is need for Government economic planning, not to replace business planning, but to render services to the general public and to business itself, which business cannot render. Business cannot satisfy the wants of people who are unable to pay prices that are profitable in the long run, however pressing and important these wants are. Business cannot master the troubles it produces for itself by the widening of markets and the spread of combinations. Business cannot protect itself effectively against the business-cycle hazard. Business cannot maintain equilibrium when the automatic mechanism of markets in which all prices are flexible has been thrown out of gear by the development of a large group of inflexible prices. When the Government attempts planning in these fields it is attacking problems of enormous difficulty with which men can learn to deal effectively only by careful analysis and well-designed experiment. But in trying to find solutions for these problems the Government would not be making inexpert attempts to do what business accomplishes. So far as government succeeded in finding solutions, it would be broadening and making safer the field of private enterprise.

*Coordinated Planning:* The weakness of our American planning in the past has been the failure to bring the various plans and planners, public and private, into some form of concert with one another, to develop public interest planning in concert with planning in the private interest. The plans of business, the plans of labor, the plans of agriculture, the plans of science and technology, the plans of social welfare, the plans of government, have not heretofore been aligned in such manner as to promote the general welfare in the highest degree attainable. Much of the unbalance, insecurity, and suffering which our country has experienced in the past might be avoided in future by a more perfect coordination of the knowledge which we already possess.

Much remains to be achieved in bringing together a complete and rounded view of important planning programs actually in progress, and in avoiding the adoption of plans which are incompatible with each other, by the construction of designs for more skillful adaptation of

<sup>4</sup> See Henry A. Wallace, "New Frontiers", New York, 1934.



different programs to each other and to the national interest. Unless vigorous and intelligent action is taken there is grave danger of heavy loss from the lack of planning among the planners themselves.

First of all, beginning with the local jurisdictions, the plans of cities, counties, and States may well be brought together far more closely in a better form of relationship. Doubtless the State planning boards which have recently come into being will do much to improve the situation at this point. Next, the plans of the several States have little relation to each other, even though their problems may often be found in common, as in the case of highways. Further, the plans of the Federal Government and those of States and cities are developed independently of one another in large measure and without regard to any unity or consistency of program.

At the same time various types of governmental planning must be related to industrial planning, to semi-public planning, to the types of planning developed by technical and professional groups.

### III What is Involved in Planning?

Planning consists in the systematic, continuous, forward-looking application of the best intelligence available to programs of common affairs in the public field, as it does to private affairs in the domain of individual activity. In every well-directed home, in every business, in every labor or agricultural group, in every forward-looking organization, social planning goes on continuously, and in the world of government is no exception.

Several considerations are important in looking at plans for planning:

(1) The necessity and value of coordinating our national and local policies, instead of allowing them to drift apart, or pull against each other, with disastrous effect.

(2) The value of looking forward in national life, in advance rather than afterward, of preventing the fire rather than putting it out.

(3) The value of basing plans upon the most competent collection and analysis of the facts.

In any case, not all planning is or should be national planning. There is local and State planning, and planning by quasi-public and private agencies and institutions all over the land. The city planning boards thus far chiefly concerned with physical plans and the State planning boards just beginning their work, to say nothing of scores of industrial and other organizations, will continue to develop their special points of view. The centralization of all planning in Washington is not contemplated, and even if possible would not be desirable, since planning is an attitude and practice that must command the confidence and cooperation of wide groups of people to ensure successful operation, must come from the bottom up as well as from the top down, from the circumference as well as the center.

It may reasonably be anticipated that many of the most useful suggestions regarding types of planning will emerge from jurisdictions outside the Federal Government, and outside the governmental group altogether, from detached individuals and associations of individuals, industrial, scientific, or otherwise.

Planning then does not involve the preparation of a comprehensive blueprint of human activity to be clamped down like a steel frame on the soft flesh of the community, by the United States Government or by any government.

Second, planning does not involve setting up a fixed and unchangeable system but, on the contrary, contemplates readjustment and revision, as new situations and problems emerge. Planning is a continuous process, and necessitates the constant reexamination of trends, tendencies, policies, in order to adapt and adjust governmental policies with the least possible friction and loss. The national life is like a moving wave in which a new equilibrium must constantly be found as it sweeps forward. Even physical planning is subject to continuing revision as new factors such as the motor vehicle appear to supersede old ways, while planning, in the broader sense of the term, is likewise subject to change as new inventors come in to disturb older calculations.

Stubborn adherence to an outworn plan is not a mark of intelligence but stupidity, whether in the life of individuals or of nations. Prudence would, of course, dictate that reasonable stability should not be endangered by capricious or arbitrary shift of plans, but would with equal force insist that policies must be promptly modified as emerging trends and new situations necessitate recasting.

Third, it is false and misleading to assert that all planning involves wholesale regimentation of private life. Sound planning on the contrary brings about a fresh release of opportunities rather than a narrowing of choice. Street planning and traffic regulation operate for freer use of the highways than unplanned streets and uncontrolled traffic. Laws regulating unfair trade practices release the energies of fair-minded men for other activities than that of guarding against fraud and trickery.

It cannot be forgotten that regimentation is a brutal fact in many private industries now. The modern type of nation was set up in order to break down the old private or semiprivate tyranny over roads, justice, taxation, and to establish public and national control over robber-baron situations that became unendurable. An individual business man may be absolutely regimented by a ruthless monopoly, just as an individual worker would be helpless against terms dictated by an employer. Over and over again in the United States, as elsewhere, the community has been obliged to intervene to protect the weaker against the insolence and oppression of private citizens who perpetrated injustice and outrage upon their weaker brethren.

Indeed it may be found that some of those who cry "regimentation" when public planning is mentioned foresee interference with their own practices of private regimentation and exploitation of otherwise helpless persons under their private control. Those with special privileges to protect and preserve naturally object to any public planning that may dislodge them from a preferred position where they are able to exact tribute from their fellow men. This is by no means the only type of opposition to planning, but it is one to which attention must from time to time be directed, since it arises from a type of exploitation from which explosive reaction is most likely to result.

The truth is that it is not necessary or desirable that a central system of planning actually cover all lines of activity or forms of behavior. Such planning overreaches itself. Over-centralized planning must soon begin to plan its own decentralization, for good management is local self-government under a centralized supervision. Thus wise planning provides for the encouragement of local and personal initiative, realizing that progress may as easily be smothered by over-centralization as by its opposite. Not all government can ever be central government, or all life public life. Experience shows that there must be wide ranges of affairs in which independent criticism, independent judgment, independent initiative is given opportunity for free growth and development in associations as in individuals. One of the recurring tasks of statesmanship is to cultivate and encourage decentralization. In the excited discussion over this subject, it is often forgotten by both sides that genuine planning really includes planning to preserve and even create noncontrolled free areas of activity. Planning is not an end, but a means, a means for better use of what we have, a means for emancipation of millions of personalities now fettered, for the enrichment of human life in ways that will follow individual interest or even caprice. We may plan indeed for fuller liberty and are so planning now.

When men express sincere opposition to all governmental planning, it can only mean a grave misunderstanding of what planning really is, or an opposition to some special detail of planning that seems undesirable, rather than to the general principle.

Wise planning is based on control of certain strategic points in a working system—those points necessary to ensure order, justice, general welfare. It involves continuing reorganization of this system of control points from time to time. The number of controls is never as important as their strategic relations to the operation of the society in which they work. At various times, the community has found it necessary to deal with landowners, with slavery, with the church, with the army, with industrial or labor captains, with racial groups, adjusting control points to meet special situa-

tions, and restricting some privileges at one point while releasing other forces and individuals at other points.

It is this shift in the form of planning, the change in strategic planning points, as social and economic conditions change, that leads some to the erroneous conclusion that we have never planned before in America, when in point of fact our planning has been continuous and varied as conditions varied.

The essence of successful planning is to find these strategic points as new situations develop, without too great delay, and without seizing more points than are necessary for the purpose—or for longer time than is necessary for the purpose. Insight, sagacity, inventiveness, cooperative spirit, are far more important at this point than the club.

Some of these strategic planning points developed in the history of this Nation have already been mentioned. In more recent times, national attention has been directed toward land and water utilization, conservation of natural resources, flood control, regulation of public utilities, unfair trade practices; still more recently to the banking and financial structure of the Nation, to industrial insecurity, both on the part of worker and investor, to unemployment, to social insurance and welfare problems, to un-American living standards—these among a wide variety of emerging issues of national significance.

In the organization of planning undertakings, the cooperation of the natural and social sciences is of the highest importance. The highest scientific talent of the Nation would be available for the purpose of systematic national planning and the Government could count upon the cordial and unremitting cooperation of impressive agencies of investigation and exploration already organized to render effective service such as the American Academy of Science and the Social Science Research Council. The guaranty of such assistance is of deep importance in considering the possibilities of planning. In the natural science field arise many of the inventions and technologies which while increasing our possibilities for weal, also make possible much woe if they are not fortunately set in the framework of the social and economic structure. The cooperation of scientists in this field should make possible a wiser and sounder adaptation of technology to economic and social advancement. The cooperation of the social scientists with their research in the field of human behavior should correspondingly facilitate the making and perfecting of social inventions, keeping pace with those in natural science. The memoranda presented by those organizations are impressive in nature and full of promise for technical cooperation in the national planning of the future. In the previous chapter of this report attention is given to the basic data indispensable for the purpose of scientific mapping and planning.

It cannot be too strongly stated that we do not approach the planning of natural and other American resources in any spirit of defeatism. The present emergency may have hastened the growth of systematic planning, but the careful inventory and appraisal of our resources, and the consideration of how we may most effectively utilize these resources, could not in any case have been long delayed, after our frontier had been closed and the progress of mechanical invention established as a permanent factor in our civilization.

We do not stand at the broken end of a worn-out road, but look forward down a broad way to another era of American opportunity. Among the nations of the world, America has stood and still stands for discovery, for pioneering across a great continent, for fearless experiment in directions where others had failed, for achievement in mechanism and management, for ready adaptation to new conditions and easy adjustment to new ways of life. When we are resigned to drifting and too weary to plan our own American destiny, then stronger hands and stouter hearts will take up the flag of progress and lead the way out of difficulties into attainment.

#### IV. Organization and Functions of a Permanent Planning Board

In view of the facts set forth in the report of the National Planning Board, the National Resources Board recommends that the Federal Government create a permanent national planning board, directly responsible to the country's Chief Executive. The function of the proposed board would not be to supplant the numerous planning agencies now active in various departments of the Federal Government or elsewhere but to supplement their work and to promote closer coordination among the plans they severally prepare for submission to the President.

The necessity of consultation with labor, agriculture, and industry and the presentation of their respective points of view at all stages of the planning process has already been stressed. It is to be assumed that these points of view will be presented to a national planning board. Effective technical planning must be related to social directives. The interests of all groups can be furthered only if there is intimate experience of the needs to be served.

The outlines of the structure, activities, procedure, and relations of such a permanent national planning board are indicated in the following paragraphs:

##### (1) Organization:

It is recommended that a national planning board be set up consisting of not more than five members, appointed by the President of the United States; and, in addition, a rotating panel of consultants, appointed by the board. Responsibility for board action would rest with the five members, and the panel would con-

stitute an advisory group with a voice but not a vote in the findings and recommendations of the board.

It is recommended that the term of the board members be made indefinite, as in the case of the present Civil Service Commission. A long term of office is no adequate protection against an unfriendly or indifferent Executive and Congress; and in any case a deadlock between the board and the authorities would make the success of the board very dubious. A board may be swept out of existence by Congress at any time, or it may be ignored by the Executive and the administration.

On the other hand, the indeterminate tenure does not lead to the removal of board members without some excellent reasons as readily as a fixed term; for the arbitrary removal of men commanding the public confidence and respect would not tend to strengthen the Executive with the Nation.

Life tenure of office for such a board, even if it were possible to obtain it, would not be desirable; for it would tend to widen gaps between the Government and the board, or between the public and the board. In a rapidly changing situation such as is involved in modern planning, the fossilization of a board of this type would be disastrous.

Continuity in the personnel of such a board is useful as a means of preserving and utilizing the accumulating knowledge and experience of its members, and there is nothing to prevent the realization of such advantages in the proposed arrangement. On the other hand, it is indispensable that such a board of strategy command the confidence of the Chief Executive of the Nation, if it is to function in any other than a perfunctory manner. Even the most competent board, however well fortified in a statutory position, could accomplish little in the face of indifference or hostility on the part of the responsible governing officials.

It is recommended that the compensation of the board be fixed at an amount consistent with the importance of the service rendered, and sufficient to make it possible to obtain the services of the high type of competence necessary for such a branch of public service. It is recommended that the panel of consultants be paid at a per diem of \$25, with a minimum annual retainer. It is important that these competent and carefully selected persons be interested in the planning service, so that national planning may be considered from many points of view, and that planning be made a cooperative undertaking in which ideas and suggestions flow freely into as well as out from the center.

The personnel of the board should bring together insight, experience, and judgment in the analysis and interpretation of national planning policies, skill in the invention of ways and means of utilizing the national resources in material and men, and social vision in the fusion of American interests, techniques, and ideals into sounder and more satisfactory national policies.

The guaranty of the selection and the continuity of persons equal to such responsibilities must be found in the judgment of the President of the United States.

Such a rotating panel may well include men or women from various groups able to contribute to national planning—as governmental bureaus, labor, agriculture, industry, the home, technical and scientific societies, and other groups directly concerned with the sound formulation of the lines of our national progress.

While not responsible for board conclusions and action, or for collective research, their advice and council would be of high value in the organization of inquiries, in the analysis and interpretation of data assembled, and in the interrelation of technical conclusions to national spirit and ideals.

It is recommended that there be a director appointed by the board, in general charge of the staff, and a secretary of the board; and that the further organization of sections and divisions of the work be left to the determination of the board.

It is further recommended that the board prepare and present to the President an annual report setting forth and summarizing the work of the board during the preceding year.

It would be necessary to have ample provision for the maintenance of a staff, equal to the performance of the heavy tasks imposed upon it. If national planning is really of substantial importance and value to the Nation, as we believe, it goes without saying that generous support of such an undertaking is indispensable. In general, the staff of such a board as is proposed would consist of:

(a) A permanent skeleton staff of men of undoubted competence with their assistants, possibly organized as a secretariat to a series of committees somewhat like the present technical committee of the National Resources Board.

(b) Government personnel with special skills detailed from time to time for the work of the board.

(c) Experts and assistants brought in from time to time to deal with special problems as they arise. A free fund for this purpose should be available, but inevitably the amounts required would vary widely from one period to another, as different types of assistance were required.

In addition to this, the board should be in close touch with a great variety of agencies engaged in research pertinent to the problem of planning. Among those are the universities and research institutions, the occupational groups, business, labor, agriculture, the professions interested in special lines of inquiry, and the planning and research agencies of other governmental jurisdictions, State and local or regional. A vast amount of material is available from these sources, and a skillful board with the requisite qualities of leadership and with a gift of cooperation would be able

to utilize the research and planning program of other groups for national purposes.

(2) Functions:

The Board and its staff would serve as a clearing house for significant plans of many types developed in Federal, State, or local service—by public or private or quasi-public agencies. Appropriate powers of fact-finding and facilities for plan analysis would be granted to the Board. At present no such national agency exists and there is often serious difficulty in obtaining the necessary data regarding important plans or projects in actual operation among 175,000 governmental bodies and many other quasi-public groups, industrial, research or otherwise.

A mere card catalog of all projects would be of little value for this purpose, but an intelligent understanding of the main lines and types of planning research would be of high value, not only for those engaged in such tasks but to governing officials charged with the final duty of formulating and administering policies.

The Board would have the function of tendering its friendly offices as a coordinator of various Federal plans, and of Federal and State or local plans, or other types of plans where closer cooperation might seem desirable and feasible. For this purpose conferences and consultations would be useful through individuals and through continuing committees for the analysis of conflicting or unrelated plans, and towards constructive efforts to bring into closer harmony broad plans of action not adequately organized with reference to each other.

The coordinating activities of the Board would lie in several overlapping fields of which two may be cited.

(1) Functional coordination such as that recommended by the water resources section in part I of this report and exemplified in the work of the water planning committee.

(2) Geographical or jurisdictional coordination as between local, State, regional and Federal planning agencies. In a two dimensional figure of this sort it is obviously impossible to put any one activity under a single heading, and groups or committees set up to further coordination in general must function to some extent in other fields.

Planning agencies have already been developed in a number of Cabinet and other Federal offices, and it is to be anticipated that more will be set up. Since the division of functions among the several departments is a result of historical growth rather than of planning, "departmental planning" may run counter to "functional" planning. This same difficulty exists in Bureau organization but to such a small extent as to be practically negligible. The establishment of interbureau or other planning divisions would contribute greatly to the sound development of national planning. A

national board and ~~where~~ would encourage and welcome such agencies where they are not now found, cooperate with those in active operation, endeavor to bring together lines of planning that seemed to run too far apart or even unwittingly at variance with each other, and in general use its good offices to bring about the best understanding among planners, and the highest and best use of all such research agencies for the common national welfare as seen in the domain of planning. In this field it may be observed in passing that the intelligence and vision of a board and its staff, the respect and confidence they enjoy among groups whose intimate cooperation is indispensable, will be far more effective than statutory powers or bristling governmental sanctions.

The various planning activities going on within departments will continue on an even greater scale than heretofore. The Government bureaus will always be planning in their special fields. Further there are many questions which cut across the boundaries of established departments as in the case of land, water, and mineral resources which are discussed in the text of this report. In such cases the necessary planning requires cooperation and the very existence of a central planning agency facilitates cooperation in many ways.

But every Cabinet member is the head of a huge going concern which he must administer and for which he is responsible. Cabinet members are overburdened with a bewildering variety of administrative duties and are confronted with an overwhelming mass of decisions which cannot be postponed. They are also drawn into the discussion of urgent national problems upon which action is imminent, and in which their relations to the President, to Congress, and to the public are such as to entail upon them the heaviest and gravest responsibilities.

In the sense of having ultimate political and administrative responsibility, the Cabinet members are themselves a final planning council acting with the President and the Congress; but in the technical sense they may advantageously be served and strengthened by an agency more detached from the stress of daily commitments and obligations. A technical general staff has already been found useful both in public and in private business, and might well be adapted to national governmental purposes.

It is equally important that attention be directed to the planning enterprises and studies under way in various quasi-public enterprises and institutions, and to the desirability of relating those different plans to each other more rationally.

Some of the possibilities in coordinated planning of all three types—administrative, functional, and jurisdictional—have been explored during the last year by the National Planning Board and the National Resources Board. Through the land-planning committee with representatives from Agriculture and Interior, interdepartmental coordination in land-use studies has

been pushed forward. Through the Mississippi Valley committee and the water planning committee a functional approach to planning has been developed; and through the Board's interest in State planning new coordination of State and Federal programs has been facilitated.

The flexibility and economy of these types of planning organization have been proven through the efforts of the last 2 months to prepare the land, water, and mineral reports contained within these covers. With a small central staff, necessary funds, and the hearty cooperation of numerous Federal, State, and private agencies, needed basic data and policy recommendations can be developed with speed, economy, and assurance.

One of the duties imposed upon the previous National Planning Board, and now on the National Resources Board, is that of encouraging and stimulating interest in various forms of planning—State, local, and regional. Judging from the experience of the last year, this is a field of very lively and keen interest. Over 40 State planning boards sprang into existence almost as if merely awaiting the suggestion. Regional planning agencies were likewise developed with great enthusiasm, while the work of city boards was rejuvenated, especially during the period of assistance afforded by the generosity of the Civil Works Administration. It is clear that there is a wide range of necessary activity in the interchange of information and experience regarding planning systems, and in assisting groups anxious to undertake planning in the most effective manner.

Decentralization of planning activity is essential to the healthy growth of those local and individual interests upon which public support and understanding rests. It is also essential in the development of the planning movement to develop responsibility in State and local officials and to find new leaders and enthusiasts.

It would further be the function of the board to initiate independent lines of inquiry into various aspects of a national program, contemplating the wisest use of our national resources, and to present the results of its work to the President with such findings and recommendations or alternative recommendations as may be indicated by comprehensive research and mature reflection; and for such use as the responsible governing agencies of the Nation might deem appropriate under all the circumstances. A discussion of some possible types of inquiry is found in earlier paragraphs of this report.

If successful, such efforts should make it possible to apprehend more clearly and promptly the emerging trends and problems of the Nation, and should contribute to the formulation of sound national policies adapted to the technological, economics and social changes in the American life.

It cannot be too strongly emphasized that the function of such a board as proposed is not that of making

final decisions upon broad questions of national policy—a responsibility which rests firmly upon the elected representatives of the people of the United States. Such a board would be useful in proportion as it was detached from immediate political power and responsibility, as a general staff gathering and analyzing facts, observing the interrelation and administration of broad policies, proposing from time to time alternative lines of national procedure, based upon thorough inquiry and mature consideration, constantly preparing and presenting to the authorities its impressions, findings, conclusions, recommendations for such disposition as those entrusted with governmental responsibility may deem appropriate. How keenly such a board might observe what is happening, how wisely it might judge, how intelligently it might invent, how shrewdly it might interpret the national interests and values—such considerations would in the long run determine its usefulness and permanence.

The role of a national planning board in American life might become of great importance and value in helping to find the difficult way toward the realization of that union of popular control in Government and wide-spread diffusion of welfare and well-being which has been the promise of American life, not yet attained but constantly the goal of undaunted American endeavor.

Such a board if composed of men gifted with the rare qualities necessary for such high enterprise, amply

supported by indispensable planning and equipment, might well prove an important factor in the difficult period of transition through which we pass—a period in which there is reason to believe that change will be more rapid than ever before in human history, that social adjustment will be more urgent than ever before. But by the same logic, a period in which the possibilities of human advancement are greater than ever before.

A planning board might facilitate the interchange of experience and information regarding a wide variety of planning devices in many lines and on many levels; it might help to bring together planners and their plans, lest they drift apart or fall afoul of each other; it might reach out in pioneering spirit and explore new possibilities or suggest new devices by which America might advance more swiftly and surely.

Standing apart from political and administrative power and responsibility, but in close touch with the chief executive and under the control of the political powers that be, such a group of men would have large opportunity for collecting the basic facts and for mature reflection upon national trends, emerging problems and possibilities, and might well contribute to those in responsible control, facts, interpretations and suggestions of far-reaching significance.

It is easy to underestimate the possibilities of the wise use of a competent general staff for our Government in peace as well as in war.

#### ACKNOWLEDGMENTS

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The staff of the Board, under Mr. Charles W. Eliot 2d, executive officer, has been organized in sections with several units of the Land Section working directly in the offices of cooperating bureaus. The necessity for rapid selection and appointment of the staff, both in Washington and in the field, placed a heavy burden upon Mr. E. K. Burlew and the Office of the Secretary of the Interior, as well as on the central office of the Board. Long hours of overtime work have been volunteered by members of the staff in all units.

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