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RESEARCH ARTICLE

EFFECTS OF WATER RESOURCES MANAGEMENT ON ENVIRONMENT

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ABSTRACT

Water as the most important and vital need of human and all of creations on the earth plays an unexpected role in live. Water resources are effective in economical progress in countries; why some industries, factories and companies require to use water to produce their outputs. Water is used to motivate many machines, cool engines and protect productions. Water resources like rivers and seas are essential since influencing on live. We should establish instruments and use methods to reach availability and improvement the resources. The around spaces about water resources like floodplains and lands near them are influenced directly and indirectly by water resources and affecting on environment without any damage will be studied and at least, an improves and useful pattern of water resources management would be presented.

INTRODUCTION

Economical and industrial developments of a society need some factors; water resources as covering more than 70% of the earth surface play essential and applied requirement in many industrial, agricultural and manufacturing cycles. Fresh waters include less than 3% of total waters on the earth; on the other hand, polar ices are near to 74.4% of fresh waters and the remaining surface waters involves about 24.4% of groundwater. Industrial factories face to danger of waste and agricultural trashes. Useless materials from home and groundwater resources are added to the waste (1). Water resources influence on environment in some methods such as farming plants, watershelding and floodplains when rain and flood happen. Water is an essential and unexpected material for human, plants and animals. So we should protect its resources and use an improvement and applied pattern for water resources management. Damages and lateral dangers through this management method must be minimized to some extent possible.

Water and Environment Challenges

The 2003 Water Resources Sector Strategy committed the World Bank to re-engage in high risk and high reward water resources infrastructure projects (including large dams) for water supply, irrigation and drainage, hydropower and flood control. Figure 1 shows the global trend in dam development over the past century and the growth in Bank lending for dam related projects between 1950 until 1980 and the subsequent decline due, in part, to increased complexities associated with changing societal values and attitudes and external pressures resulting from poor environmental and social performance. The recent re-engagement, based on better understanding of the vulnerabilities of poor nations to climate variability and change and the role of water in growth and poverty alleviation[1], lessons learned from the World Commission on Dams, and the Bank's experience on water and environmental issues will include support for investments in small, medium and large dams, inter basin water transfers, conjunctive use of surface and groundwater, as well as institutions and systems for improving the management of water resources. Support will be provided via individual projects, sector-wide programs and development policy based lending, all to be delivered in an environmentally and socially responsible manner.

Sustainable Development Network Vision

The vision statement for the Bank's Sustainable Development Network (SDN) has elevated the institution's commitment to environmental responsibility. It not only calls for mainstreaming the environment, but entrenches environmental sustainability as a core element of the Bank's work for enhancing the quality of growth and reducing poverty while safeguarding the needs of the future generations. It has also reinforced adaptation to climate change as an important priority in the Bank's water resources agenda. To realize this vision, much greater emphasis will need to be placed on mainstreaming the environment into upstream processes such

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as policy, programmatic and investment dialogue. This will require the Bank to have the capacity, policies and procedures for supporting this dialogue, and client countries to have institutions, systems, procedures and human capacity that are capable of incorporating environmental concerns into policy, planning, management and investment processes and decision making.

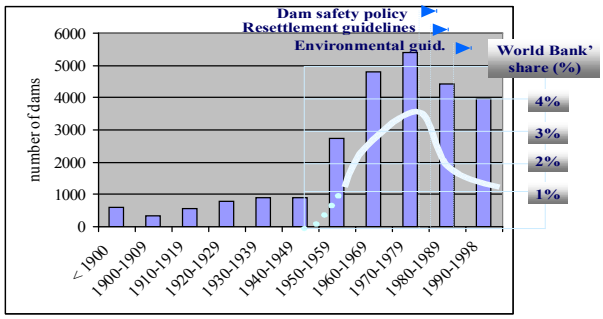

Fig. 1. World Bank contribution to global dam development

Using water resources applied

As it was mentioned through this paper before, water are used in many fields like drinking, agriculture, industries and mills. We should protect, conduct and manage water resources in good methods. The first step in using water resources usefully is recognizing and defining them in an engineering way on applied fundamentals (4). Also we should prevent polluting water resources and entering trashes and unwanted materials in water; the water cycle through productive or intermediate process in factories (5). In fact equipping the process on special and engineering fundamentals by experts, productive line will be improved away from any damaging affairs. By this method we could use water resources by the best means. Management and protection the appointed resources would help them conservation and availability access in the most useful way.

Some applied solutions to improve the management process

Managing water resources in useful without some damages and dangerous ways need equipments and instruments to be done whatever applied to be effective in live through industrial cycles. Some important solutions in a good management of water resources are as the following items:

1- Using watershelding systems under pressure -1
2- Preventing pollution of surface resources and groundwater
3- Artificial feeding/injection of groundwater resources (3)
4-Recognizing new resources
5-Utilizing effective techniques to artificial rain
6-Using agricultural salty waste
7-Improving old water piping in cities
8-Using equipment and instruments to decrease water consumption

Effects of water resources on environment

Environment is defined as surrounding spaces and lands around water resources, rivers, seas, oceans and groundwater (2). Of course apart of the case study subject, water resources and water current canals are parts of environment; why they influence on live, and we need them through industries and live affairs. Improving this effect and indeed, water resources management.

Involves their protection and holding them in a good method away from damages and losses. This work should be conducted by experts or at least, on the basis of their guidance. Of course environment engineering faces to energy, agriculture, geo technique and civil engineering facts, particularly in water branches. Managing water resources by experts to improve water resources conducting affect on water use positively. The only basic concept of this management is obeying applied engineering fundamentals.

Strategic Environmental Assessments

1. Strategic Environmental Assessments (SEAs) have been developed by the environment community as instruments to bring environmental concerns into the strategic levels of decision making – policies, legislation, strategies, plans, and programs (PLSPP). SEAs were developed to tackle concerns that Environmental Impact Assessments (EIAs) were not fully effective because many of the environmental issues resulted from earlier, strategic decisions.
2. SEAs have been used for a variety of purposes, including developing a shared understanding of environmental issues, building a consensus on the way to tackle these issues, identifying issues to be tackled in depth in project-level EIAs, developing investment plans, in national, regional and transboundary settings. Essentially SEAs allow decision makers to take advantage of environmental and social opportunities while managing environmental and social risks in a strategic setting.

Environment and Water Resources

3. The environment and water resources have a dual relationship. On the one hand the environment is a water using sector - terrestrial and aquatic life requires good quality water in sufficient quantities and qualities for survival and productivity. On the other hand, the environment provides services that maintain the water resource in a useable state for all sectors.
4. Water resources are becoming degraded from a variety of human activities:
    - flow patterns are disrupted through water abstractions, return flows and barriers across rivers and streams;
    - lake levels drop through excessive abstractions and interceptions in source areas;
    - water quality declines through point and diffuse source discharges of industrial, urban and agricultural pollutants;
    - wetlands are being lost through land use conversion and poor management;
    - groundwater resources are being drawn down through over-use, or polluted through seawater intrusion, agro-chemicals or human wastes.

All these insults degrade the services offered by the environment to water dependent sectors.

5. Climate change further complicates the management of these issues. Flows will change further as regions receive either more or less precipitation, and temperature rises increase evaporation; groundwater recharge will increase or decrease; and water quality will be affected. Adaptation to climate change will put further stress on water resources with shifts in land use; population movements; and increasing disputes over access to water.

Integrated Water Resources Management

6. Within the water resources community, Integrated Water Resources Management and Development (IWRM) is now the accepted paradigm. (From here on IWRM will include both management and development) According to the Global Water Partnership IWRM consists of three principles:
   - a multi-sector approach to water resources management;
   - participatory methods; and
   - treatment of water as an economic good.

Under IWRM, water for environmental purposes is regarded as both a legitimate use of water, equivalent to water for consumptive purposes as irrigation, water supply/sanitation, and hydropower, and fundamental to the provision of environmental services.

7. The World Bank has supported IWRM in its 2003 Water Resources Sector Strategy. However, the latter recognized that few countries were interested in adopting all IWRM principles and that an approach of principled pragmatism was needed, whereby IWRM principles should be pursued when opportunities arose.
8. The Bank has helped introduce IWRM through three entry points – policy reform, river and lake basin management institutions, and investment projects.

Effectiveness of IWRM

9. The evidence from global surveys and regional assessments shows that IWRM is increasingly being accepted at national level, with water resources policies and legislation incorporating IWRM principles. However, there is much slower operationalization of these principles at regional and local levels in developing countries. Where implementation has happened, it has been piecemeal with some principles being adopted and not others.

   The limited information indicates that provision of water for environmental purposes has not been widely practiced in developing countries[2].

SEA, applied in the water sector, offers an additional mechanism to promote environmental concerns within water resources management. There is a family of approaches to SEAs, ranging from impact-centered SEAs to institution-centered SEAs – the former assess the potential environmental impacts of the PLSPP, whereas the latter assess the capacity to identify and manage environmental impacts.

Conclusion and discussion

The main conclusion of this study includes two clusters, methods and result of water resources management. The applied and useful method to the purpose is involving the following items arrangement.

1) Recognizing resources
2) Forming an expert team
3) Setting an engineering pattern
4) Removing damages and dangerous factors

Therefore the main purpose of the case research study will be the following items:

1) Water resources management
2) Environment protection
3) Minimizing water consumption

   Thus on an applied engineering pattern using water resources, the effects on environment and life would be useful and more effective.

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