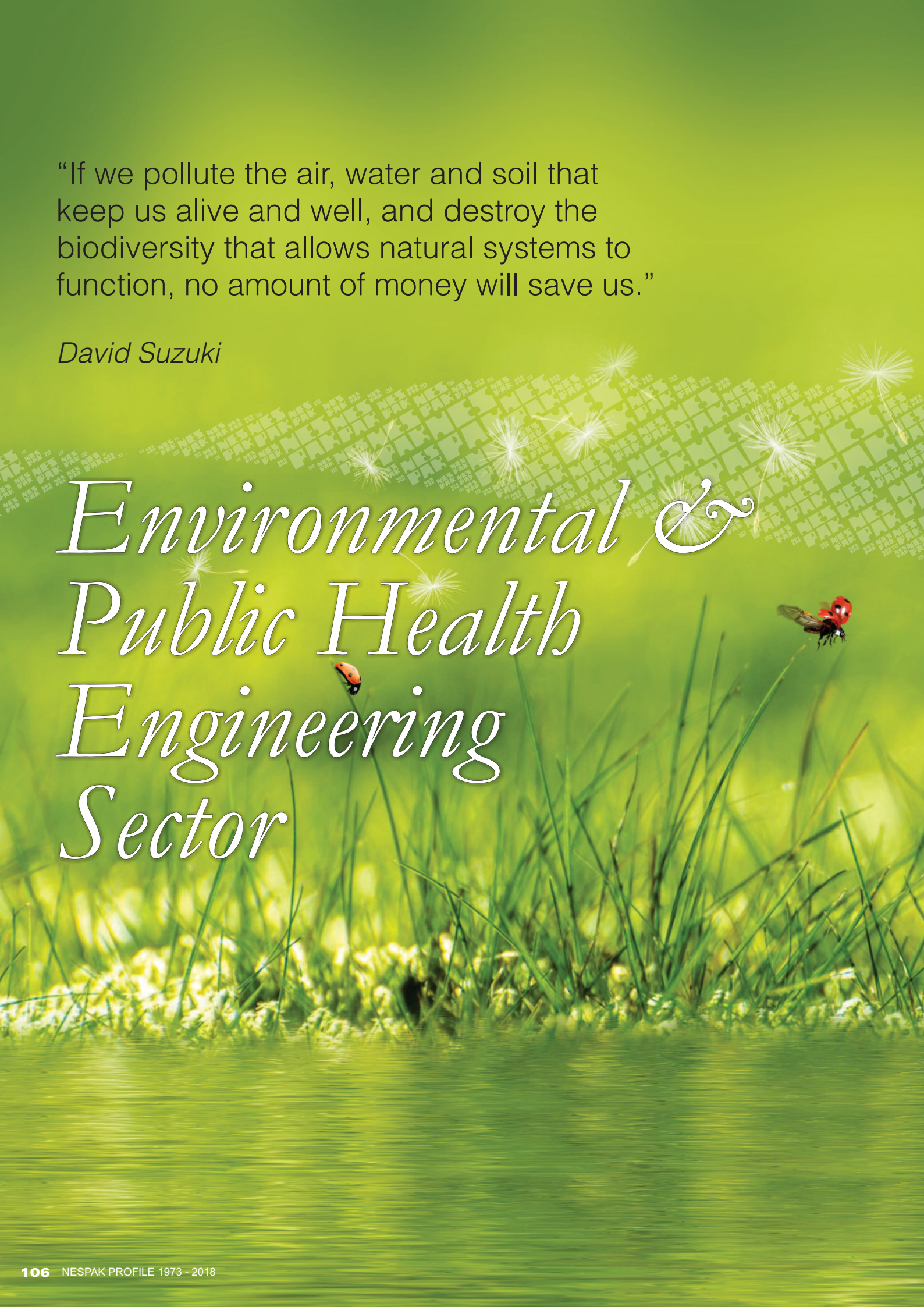


“If we pollute the air, water and soil that keep us alive and well, and destroy the biodiversity that allows natural systems to function, no amount of money will save us.”

*David Suzuki*



# *Environmental & Public Health Engineering Sector*

Human existence and public health engineering have a strong correlation which can be ascertained from the fact that no project or building is complete without water supply and sewage systems. A UNICEF document “Progress Report 2013-2015-Results for Children in Pakistan” says in recent years, the Government of Pakistan has demonstrated increased commitment to social sector development, consequently leading to some notable successes. In particular, the country is celebrating the recent achievement of the Millennium Development Goal (MDG) for sanitation, halving the proportion of the population without sustainable access to basic sanitation. However, the single and most important challenge in the public health sector of Pakistan is to end the sanitation and hygiene crisis and promote dignified lives, reduce preventable deaths, improve gender equality, contribute to the disposable income of the poor and safeguard the environment. Pakistan has made considerable progress over the last decade but substantial challenge remains as 52 percent people of the country do not have access to improved sanitation facilities, according to a research scholar at the Quaid-eAzam University, Islamabad.

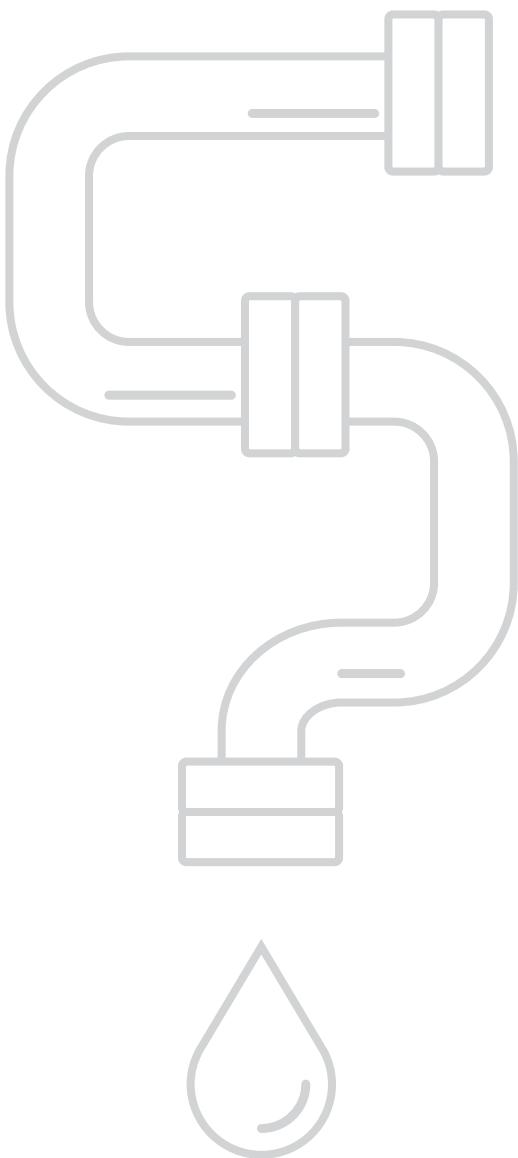
In this backdrop, NESPAK is striving to play its part in improving people's life by providing state-of-the-art consultancy services regarding infrastructure development works, specifically the water supply and sanitation systems. NESPAK's services range from master planning and design to construction supervision of the projects relating to water supply, sewerage, water and wastewater treatment plants, stormwater drainage and solid waste management.

NESPAK has provided and is providing services on 438 projects in Pakistan and foreign countries, i.e., the Kingdom of Saudi

Arabia, Sultanate of Oman, Islamic Republic of Iran, State of Qatar, Islamic Republic of Afghanistan, Nigeria, Sudan, Ghana, United Arab Emirates and Syria. The cumulative cost of these projects stands at US\$ 31 billion.

NESPAK established a specialty division in 1975 to render services in the Environmental and Public Health Engineering Sector. The Company now possesses a complete expertise for all facets of project implementation from conceptual design to commissioning and operation. NESPAK professionals are fully conversant with modern design technologies and have the capability to transform them according to the socio-economic conditions of the country. This multi-disciplinary specialty group at NESPAK is capable of providing consultancy services of international standards. In the Environmental and Public Health Engineering Sector, NESPAK has on its roll a strength of more than 250 employees including highly qualified engineers, planners, environmental scientists, sociologists and para professionals who are well versed with modern technologies.

NESPAK constantly works to keep itself abreast with modern techniques and methods to improve its services. Engineers are frequently trained to improve their technical, managerial and presentation skills. Adaption of the latest tools/techniques for planning, drafting, design and construction supervision of projects is carried out for advance services by using the latest/world renowned softwares e.g. MIKE URBAN, WaterCAD, StormCAD, EPANET, e.t.c. Indigenously prepared software programmes are also used for the design of sewerage system and wastewater treatment plants. These are examined by a quality assurance team to countercheck all the planning, design and supervision



projects independently. Geographical Information System (GIS) is utilised as a tool for the development of preliminary survey and layout plans.

The Company remains in contact with the international organisations and vendors to acquaint itself with the modern knowledge, recent research and development of new technologies in the domain of Environmental and Public Health Engineering.

Detail of NESPAK scope of services and experience in the Environmental and Public Health Engineering Sector is given below:

### SCOPE OF SERVICES

**Water Supply:** Demographic surveys, study of socio-economic structure of communities, establishment of design parametres, investigations and development of water supply sources, design of intake structures and treatment works, renovation/extension of existing water supply systems, design of pumping stations, gravity and pumping mains, preparation of computer models and analysis of distribution networks, design of ground and overhead service reservoirs, design of instrumentation and control and surge suppression equipment, tariff studies, water quality studies. Preparation of detailed designs, cost estimates, tender documents, tender evaluation and appraisals, procurement, inspection, installation and commissioning of water supply machinery, treatment plants and related electrical and mechanical equipment for instrumentation, chlorination, chemical dosing, project scheduling and progress monitoring by Critical Path Method (CPM)/ Project Evaluation and Review Technique (PERT) methods and construction supervision of water supply systems, preparation of PC-Is,

third party validation and master planning of water supply schemes.

**Sewerage and Drainage:** Population forecast and socio-economic surveys, study of climatic conditions and sewage flows, infiltration rate, establishment of design criteria, planning and design of sewerage systems, sewage transport mains/ force mains, sewage pumping/disposal stations, domestic and industrial sewage treatment facilities and outfall structures, re-use of treated effluent, cost recovery and benefit ratio, design for renovation/rehabilitation of sewage collection and treatment facilities, construction supervision of sewage systems, services for inspection, procurement and supervision for installation and commissioning of sewage treatment plants, sludge disposal systems, pumping/disposal stations and related instrumentation and control equipment and chlorination and odour control facilities, chemical analysis of sewage characteristics like suspended solids, Biochemical Oxygen Demand, Acidity/Alkalinity (pH), dissolved oxygen, greasy and oily matter, chlorine demand and metals, preparation of Operation and Maintenance (O&M) Manuals.

In the domain of drainage, NESPAK carried out analysis of rainfall data, establishment of run-off, field investigations, establishment of design parametres, planning and design of stormwater collection and disposal systems, drainage pumping/lift stations, outfall structures, disposal channels and improvement in the drainage systems, services for inspection, procurement and supervision of stormwater drainage systems along with disposal pumping equipment installation.

**Solid Waste Management:** Data collection, reconnaissance survey, review of institutional setup, waste characterisation

and quantification, analysis of data and formulation of proposals for collection, transfer and disposal of solid wastes, design of sanitary landfills and compost stations, design of hospital waste management system, preparation of technical specifications for solid waste collection, transfer and disposal equipment, cost estimates and tender documents.

**Industrial Waste:** Data collection, wastewater sampling and analysis, establishment of design parameters, design of industrial waste collection and disposal systems, planning and design of treatment process and treatment works, preparation of detailed design, cost estimates and tender documents, tender evaluation and appraisal, services for procurement and inspection and supervision of installation and commissioning of industrial waste treatment plants, chlorination, odour control and related electrical and mechanical equipment.

**Plumbing:** Design of cold and hot water supply, fire protection, sewerage, wastewater and stormwater disposal systems for all types of public and residential buildings, hospitals, sports complexes, e.t.c.

## **EXPERIENCE**

**Water Supply:** As many as 165 projects comprising gravity/pumping mains and distribution networks of various materials of 15,650 kms length, 95 water works, pumping stations, treatment plants, various ground and overhead reservoirs and water supply dams.

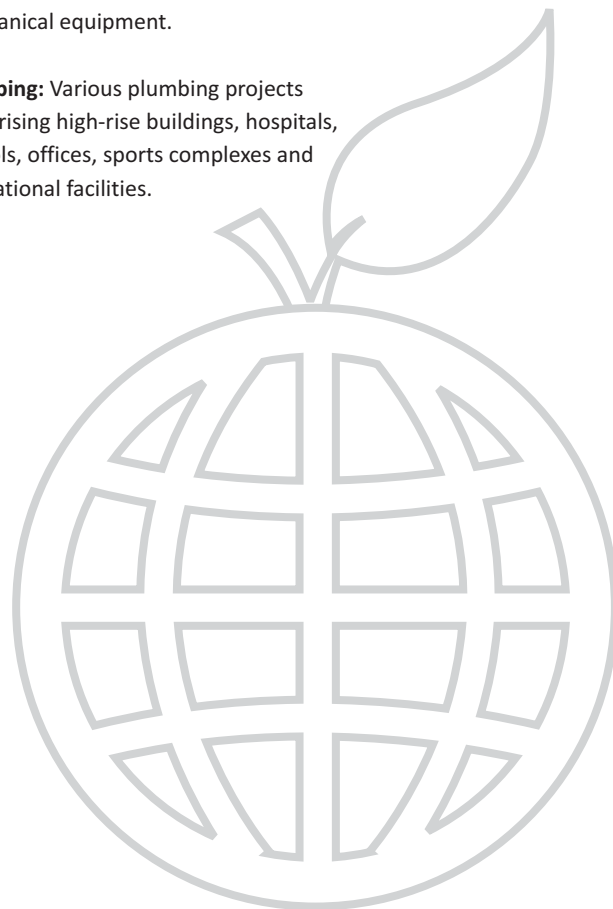
**Sewerage and Drainage:** More than 132 projects relating to sewerage and drainage, comprising trunk and collection sewers of various materials of 12,400 km length, 3,300 km long drains of different sizes along

with collection and disposal systems, 45 sewage treatment plants, various pumping/lift stations and outfall structures.

**Solid Waste Management:** As many as 12 solid waste management projects comprising studies, data collection and analysis, waste quantification and characterisation, planning and design of solid waste transfer and disposal stations, selection and design of sanitary landfill sites and design of equipment for transportation and processing for generation of fuel/gas through incineration process.

**Industrial Waste:** More than 33 industrial waste management projects comprising wastewater collection, treatment and disposal systems, wastewater treatment plants for tanneries, pulp and paper mills, reclamation of wastewater, procurement, inspection, installation of treatment plants along with their related electrical and mechanical equipment.

**Plumbing:** Various plumbing projects comprising high-rise buildings, hospitals, schools, offices, sports complexes and recreational facilities.





## Greater Water Supply Scheme, Peshawar

NESPAK has completed feasibility study (based on Warsak, Jabba, Bara and Munda Dams), detailed design, tender documentation and PC-I for water transmission lines, water treatment plants, pumping stations and grid stations under the “Greater Water Supply Scheme, Peshawar.” The project costing Rs. 50 billion was awarded by the Khyber Pakhtunkhwa Public Health Engineering Department.

## Clean Drinking Water for All Project

NESPAK prepared design and tender documents for the Clean Drinking Water for All (CDWA) Project awarded by the Government of Pakistan. The project was based on membrane technology—the latest in the field of water treatment—for bacteria, arsenic, fluoride and nitrite removal. The project was launched all over Pakistan including Federally Administered Tribal Areas, Federally Administered Northern Areas and Azad Jammu and Kashmir. This project of national importance was carried out in 2009.





## Installation of Water Filtration Plants in Lahore



The Water and Sanitation Agency (WASA) Lahore awarded to NESPAK consultancy services for design review and construction supervision for the installation of 325 Water Filtration Plants at 105 tube-wells in Lahore under four different contracts during last five years. The Rs. 600 million project aims at the establishment of water filtration plants for the removal of arsenic and biological contamination.

## Quetta Water Supply and Environmental Improvement Project



NESPAK consultancy services for the Rs. 17 billion Quetta Water Supply and Environmental Improvement Project included project planning, detailed design, tender documentation and construction supervision. The scope of work comprised laying of new conduction and distribution water pipelines (1,118km), construction of ground and elevated water tanks, replacement of 387 km long rusted/damaged water pipelines, laying of sewerage system, construction of wastewater treatment/recycling plants, rehabilitation of stormwater drainage channels (15,012 metres) and enhancement of groundwater recharge measures.



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## Wastewater Treatment Plants for Mehmood Booti/Salamatpura, Shadbagh and South-West Sites, Lahore

NESPAK has carried out feasibility study, project planning, detailed design and tender documentation for Wastewater Treatment Plants for Mehmood Booti/Salamatpura, Shadbagh and South-West Sites, Lahore. The purpose of this mega project is to provide wastewater treatment plants for the major areas of Lahore City. The Rs. 30 billion project was assigned by the WASA.

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## Larech Colony- Gulshan-e-Ravi Sewerage System, Lahore

NESPAK is providing consultancy services for Pakistan's first trenchless project "Laying of Sewerage System from Larech Colony to Gulshan-e-Ravi, Lahore." NESPAK scope of work entails detailed design, Environmental Impact Assessment Report, tender documentation and construction supervision for this Rs. 10 billion project. The entire sewerage network will be laid through trenchless technology i.e., tunnel boring machine and pipe jacking for this landmark project awarded by WASA, Lahore.

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## Lakhodair Landfill Site Project



NESPAK carried out design review and construction supervision for the "Landfill Site at Lakhodair (Lot I & II) Project" in line with the international standards. After the completion of this first-of-its-kind project in Pakistan, 4000 tonnes/day solid waste of Punjab's largest city, Lahore is being disposed of at the landfill site. The project costing Rs. 2 billion was awarded by the Lahore Waste Management Company. NESPAK is also providing design review, tender documentation and construction supervision services for the "Lakhodair landfill site Lot 3 and 4" costing Rs. 2 billion.

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## Sewerage System for UCs117, 118 and 120, Lahore



NESPAK has completed "Provision of Sewerage System for UCs117, 118 and 120, Lahore." Under this Rs. 8 billion scheme, the laying of 65km trunk sewer and allied links and construction of 4km Reinforced Cement Concrete (RCC) conduit were completed along with the construction of three disposal stations.

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## Groundwater Management System for Sheikhupura, Kasur and Nankana Sahib

NESPAK has signed an agreement with the Lahore Development Authority (LDA) for the project "Master Planning of Water Supply, Sewerage, Drainage and Groundwater Management System for Sheikhupura, Kasur and Nankana Sahib Districts."

NESPAK scope of work includes identification/prioritisation of physical infrastructure for water supply, groundwater management, sewerage, stormwater drainage systems, wastewater treatment and detailed design for this Rs. 150 billion project.

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## Haji Camp-River Ravi Stormwater Drainage System

NESPAK has signed a contract for "Stormwater Drainage System from Haji Camp to River Ravi via Lakshmi Chowk, McLeod Road, Nabha Road, Chauburji and Sham Nagar, Lahore." The stormwater drainage system for 237 hectares catchment in the Central Lahore has been proposed under this project. The project deliverables include PC-I document, detailed design, engineer's cost estimate and construction drawings for this Rs. 2 billion project awarded by WASA, Lahore.



## Clean Drinking Water, Sewerage System, P.C.C. of Streets in Lahore

NESPAK has been hired by WASA, Lahore, for “Provision of Clean Drinking Water, Sewerage System, P.C.C. of Streets and Allied Facilities in Various Areas of Lahore.” NESPAK services include Environmental Impact Assessment Study, design review and construction supervision for the replacement of defective and outlived water supply, sewerage system and provision of Portland Cement Concrete (P.C.C.) in congested areas of Lahore. The Rs. 6 billion project comprises Ravi Road, Islampura, Sheranwala Gate, Fazal Park, Allama Iqbal Town, Canal Park, Shimla Pahari, Chohan Colony, Singh Pura, Sabzazar, Shahdara, Ganj Bazaar, Gulistan Colony and adjoining areas in Lahore.

## Master Plan for Sewerage, Water Supply and Drainage System, Multan

A NESPAK joint venture has prepared inception report, GIS-based maps, sectoral assessment, master plan up to the year 2040 and detailed design of priority projects for “Master Planning for Sewerage, Water Supply and Drainage System of WASA Multan.” This Rs. 7 billion project meant for the entire Multan City has been awarded by WASA, Multan.



## Rahim Yar Khan Sewerage Scheme

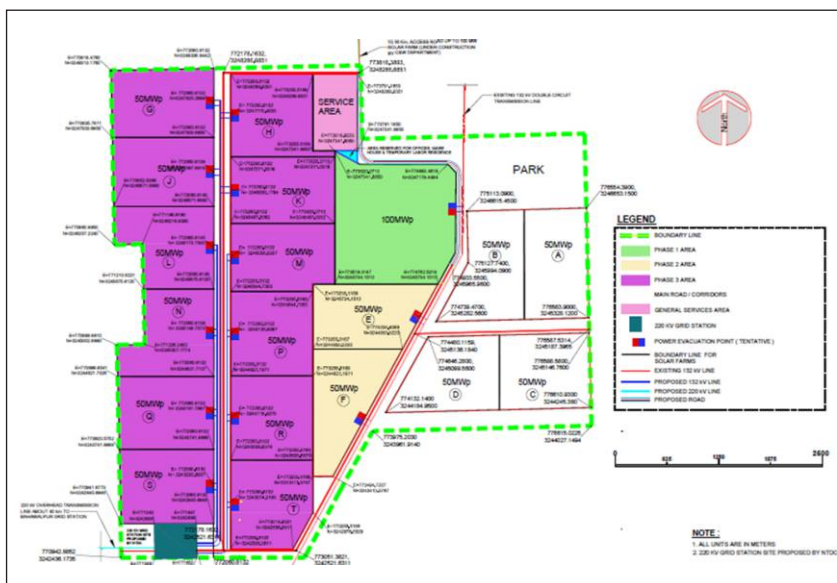
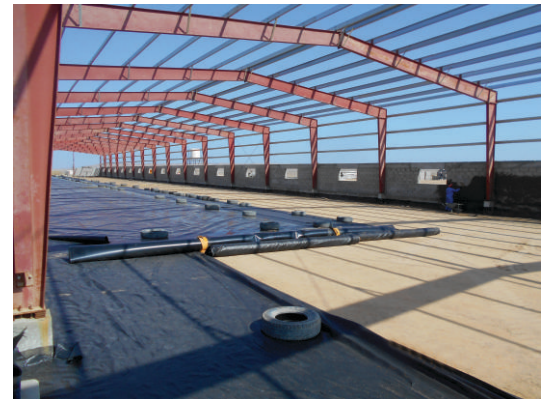
NESPAK rendered consultancy services for sewerage master planning, detailed design and construction supervision of sewerage system for the Rahim Yar Khan City with the provision of treatment facility. This Rs. 3 billion project is the first of its nature in Pakistan, containing sewerage master plan along with sewage treatment facilities.



## Quaid-e-Azam Solar Park Infrastructure Works, Cholistan

The Punjab Industrial Estates Development and Management Company has entrusted NESPAK with the project, “New Design/Vetting and Resident Supervision of Infrastructure Works at Quaid-e-Azam Solar Park - Cholistan”. The scope of work includes vetting the design of the already designed works, detailed design of new building works and construction supervision of infrastructure works for the Rs. 655 million solar park.

## Infrastructure Facilities in the Town of Duqm, Oman



NESPAK has completed detailed design and tender documentation for the Infrastructure Facilities in the Town of Duqm (Package-I) and the project is ready for construction. The four-zone project costing US\$ 604 million has been awarded by the Special Economic Zone Authority at Duqm, Sultanate of Oman.



## Water Distribution Networks, Oman

NESPAK has mobilised its team on the Water Distribution Networks for Nakhal, Awabi and Wadi Al-Maawil Wilayats in Al-Batinah Region–Phase-I” for construction supervision in the Sultanate of Oman. The project costing US\$ 248 million has been awarded by the Public Authority for Electricity and Water, Oman.

## Stormwater Drainage and Prevention of Stormwater Danger for Six Cities in Saudi Arabia

NESPAK has completed feasibility study and design for “Stormwater Drainage and Prevention of Stormwater Danger for Six Cities in Al-Baha Region and Jizan Region, Kingdom of Saudi Arabia” under two separate contracts. All the deliverables of the projects have been submitted to the Client, Ministry of Municipal and Rural Affairs, Saudi Arabia.

## Water Transmission from Khulais and Rabigh Dams to Jeddah, Saudi Arabia



M.H. Aitah–NESPAK is rendering design review and construction supervision services for the Water Transmission from Khulais and Rabigh Dams to Jeddah Project in the Kingdom of Saudi Arabia. The project is aimed at treating and supplying 140,000 cu.m/day surface water from the Khulais and Rabigh Dams to the Jeddah City and provide connection to the Makkah City. The US\$ 220 million venture has been awarded by the Ministry of Environment, Water and Agriculture, Saudi Arabia.



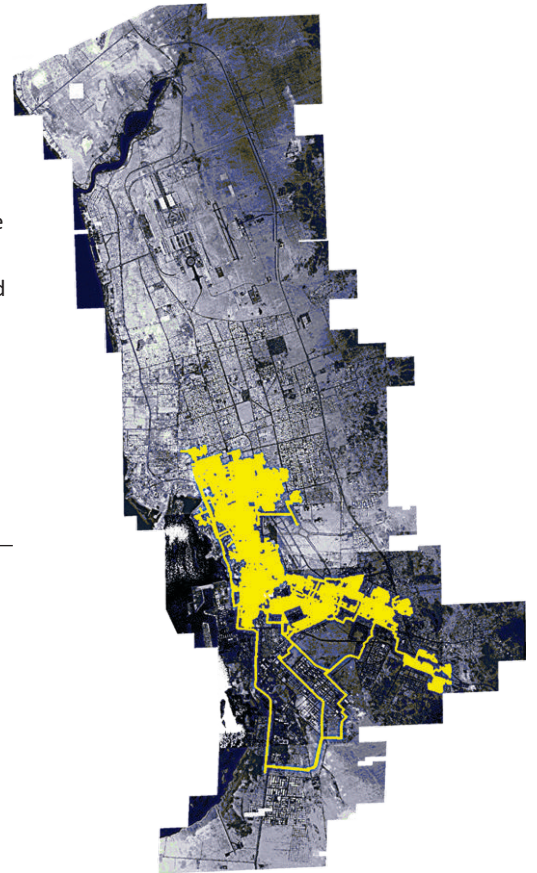
## Madinah Al-Munawwarah Water Supply Master Plan, Saudi Arabia

The scope of work for this US\$ 1.4 billion project entailed review and updating of the 1982 Master Plan for Madinah Al-Munawwarah. The review was necessitated due to the rapid expansion of the Holy City and the Prophet's (Peace be upon him) Mosque. The master plan was prepared in 1995 to meet water requirements of the Holy City for the next 45 years up to 2040.

## Khasab Sewage Treatment Plant and Sewerage System, Oman

NESPAK rendered design and construction supervision of the Sewerage Network (STP) and Sewerage System at Khasab, Sultanate of Oman. Major components of the project comprised STP, sewers, pumping stations, force mains and a 1,700cu.m/day packaged sewage treatment plant based on the Activated Sludge Technology. The US\$ 57 million project has been handed over to the Ministry of Regional Municipalities and Rural Affairs, Oman.

## Jeddah Sanitary Drainage Master Plan, Saudi Arabia



NESPAK prepared Sanitary Drainage Master Plan for Jeddah City, covering 105,000 hectares of land. The scope of work included the evaluation and formulation of proposals for the rehabilitation of the existing sewerage system in Jeddah City. NESPAK prepared a phased implementation schedule based on long-term and short-term requirements of the city, utilising large size sewers and tunnels ranging from 400 to 2,500 mm i/d. The project costing US\$ 4 billion was carried out in 2003.

## Hofuf Pipeline System, Saudi Arabia



NESPAK rendered design and project management services for the 153 US\$ million Hofuf Pipeline System to transmit desalinated water from the Al-Khobar Desalination Plant to the Hofuf City in the Al-Hassa Region of Saudi Arabia's Eastern Province. The water transmission system comprises 133 km long pipeline, pump station, interconnection for Abqaiq city and interconnection with the existing facilities at the Hofuf Terminal.

## Fune Water Supply Project, Nigeria

NESPAK completed design and construction supervision services for this US\$ 49 million project awarded by the Borno State Water Board, Nigeria in 1985.

The project comprised the construction of a weir (Phase-I) and a dam (Phase-II) across River Gokwoli, water treatment works, transmission mains and distribution system for Potiskum and Damagum Towns and nearby villages.

Raw water was drawn from weir and dam reservoirs through wet type intake structures and pumped by turbine pumps through 400 mm dia, 6.13 km long transmission main from the weir and 450 mm dia & 14.62 km long Ductile Iron main from the dam to a modern treatment plant at the Damagum Town.



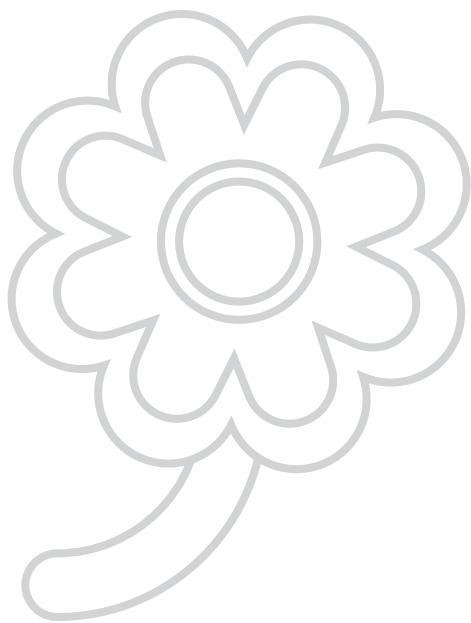
## Ahwaz Water Sector Implementation Project, Iran

NESPAK and Anjam Tarh Tadbir, Iran joint venture provided construction supervision services for this World Bank-sponsored project. The scope of work included supervision of 15 contracts for the extension and rehabilitation of water distribution networks, water transmission mains and water reservoirs at different locations of Ahwaz City in the Islamic Republic of Iran.

## Sokoto Water Supply Project, Nigeria

Sokoto Water Supply Project was aimed at supplying potable water to Sokoto, the capital of the arid Sokoto State of Nigeria. The project involved the construction of a weir, raw water intake structure, 110,000 cu.m/day capacity water treatment plant, five pumping/booster stations, five standby powerhouses, six welded steel elevated/ground reservoirs of capacity up to 7,000 cu.m/day and 80 km long transmission/distribution pipelines of sizes varying from 200 to 1,100 mm. NESPAK carried out design review and construction supervision for this US\$ 73 million project in 1991.





## *Environmental and Social Studies Sector*

“We won’t have a society if we  
destroy the environment.”

*Margaret Mead*

Environment is a relatively new domain which has gained currency during the last 20-25 years after the importance of environmentally viable projects was felt both nationally and internationally. In Pakistan, urgency of the environmental safeguards and principles was recognised to keep pace with the international norms and criteria. NESPAK has been a pioneer in providing services in the fields of environment and resettlement since its establishment in 1973 when the word “Environment” was not familiar in the consultancy world in Pakistan. The services by NESPAK became more focussed and particular after the enactment of the Pakistan Environmental Protection Act (PEPA) in 1997, the National Environmental Quality Standards (NEQS) and the availability of the international safeguards.

NESPAK has the requisite expertise and experience to provide environment, social, resettlement and rehabilitation and health and safety services for various engineering sectors such as dams, roads/highways, bridges, ports and harbours, extractives, airports, townships and urban development, irrigation, water conveyance system, water supply, sewerage, drainage, effluent treatment and disposal, hydraulic structures, land reclamation, groundwater development, drought and flood management, power generation, transmission lines and rural electrification, heating, ventilation, air-conditioning and refrigeration, agriculture, livestock, forestry and fisheries, manufacturing industries, regional planning and development, computer applications, information technology, socio-economics and Geographical Information System (GIS).

NESPAK has been providing environment and resettlement services not only in

Pakistan but also in the foreign countries like Ethiopia, Saudi Arabia, Oman, Azerbaijan, Qatar, Afghanistan, Iran, Gambia, Uzbekistan, Nepal, Nigeria, Bangladesh, Bahrain, Sudan, Syria and Ghana. So far, NESPAK has carried out 175 domestic and foreign projects related to Environment and Resettlement.

NESPAK has highly trained professional staff strength of about 60 in the field of environment and resettlement which include environmental engineers, sociologists, resettlement specialists, Health, Safety and Environmental Specialists (HSEs), environmental scientists and ecologists in addition to full support of other experts from various specialty divisions of NESPAK.

Under the environmental protection laws of Pakistan and other countries, it is mandatory for all the industries and developmental projects to obtain approval from the relevant authorities to meet the environmental standards before the commissioning of the projects and during all the stages of project implementation.

In Pakistan, PEPA (Review of IEE and EIA Regulations 2000) and the NEQS are the major environment-related legislations to be complied with at the federal level along with provincial laws and standards. Whereas, various standards and guidelines of the World Bank, the Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA), the United States Environmental Protection Agency (USEPA), United States Agency for International Development (USAID) and other international financing and development agencies/organisation are also complied wherever required.

NESPAK has taken lead in training and capacity building in the fields of environment, land acquisition, resettlement and rehabilitation. The Company has been conducting professional training programmes on environment, management of land acquisition, resettlement and rehabilitation in Pakistan as a continuous practice.

Following are the scope of services and experience of NESPAK in the Environmental and Social Studies Sector.

## SCOPE OF SERVICES

### Environmental and Social

#### Assessment/Environmental and Social Impact Assessment/Initial Environmental Examination:

The Environmental Assessment (EA), Environmental and Social Impact Assessment (EIA), the Initial Environmental Examination (IEE) studies depend on the nature and scale of the project. These studies include environmental assessment requirements (legislation, EPA requirements, e.t.c.), baseline data collection for physical, ecological and socioeconomic and cultural domains. Identification and assessment of potential impacts and mitigation measures and the Environmental Management Plan (EMP) are also being carried out.

**Social Assessment:** Social assessments and stakeholders consultations cover population and settlement patterns, land and resource use (land rights, impact on land and resources, archaeological and historical sites, etc.), resettlement, economy, employment and income, facilities and services (housing, water, sanitation, power, education, health, emergency services), transportation, life style, culture, attitude, aesthetics and recreation.

### Land Acquisition, Resettlement and

**Rehabilitation Plans:** NESPAK provides services for Resettlement Action Plan, Land Acquisition and Resettlement Plan covering resettlement assessment surveys, land acquisition, stakeholders' consultations, inventory development, identification of alternative land for resettlement, monitoring, evaluation and reporting plan, e.t.c.

### Clean Development Mechanism Studies:

The Clean Development Mechanism (CDM) was initiated under the Kyoto Protocol of the United Nations Framework Convention on Climate Change to explore cost-effective options to mitigate the impacts of climate change. The CDM has the potential to assist

developing countries like Pakistan in achieving sustainable development by promoting environment-friendly investment for the industrialised states and businesses.

**Air Dispersion Modelling:** NESPAK is one of the few users of USEPA-approved and licensed Air Dispersion Modelling (ADM) packages to predict the dispersion of pollutants in the ambient air. NESPAK has a team of highly experienced experts to perform the ADM by using simulation software including Industrial Source Complex-Short Term-3 (ISC-ST-3), Industrial Source Complex, Plume Rise Model Enhancements, (ISC-PRIME), Industrial Source Complex American Meteorological Society/Environmental and Protection Agency Regulatory Model (ISC-AERMOD).

**Environmental Monitoring and Testing:** Monitoring and testing during baseline data collection. Monitoring of noise pollution, gaseous emissions, stack suspended particulate matter, ambient air quality, water and wastewater, solid waste, soil pollution and hazardous materials and safety aspects.

### Weather Data Recording and Analysis:

Monitoring and analysis of meteorological data such as wind speed, wind direction, temperature, humidity, barometric pressure, solar radiation, e.t.c.

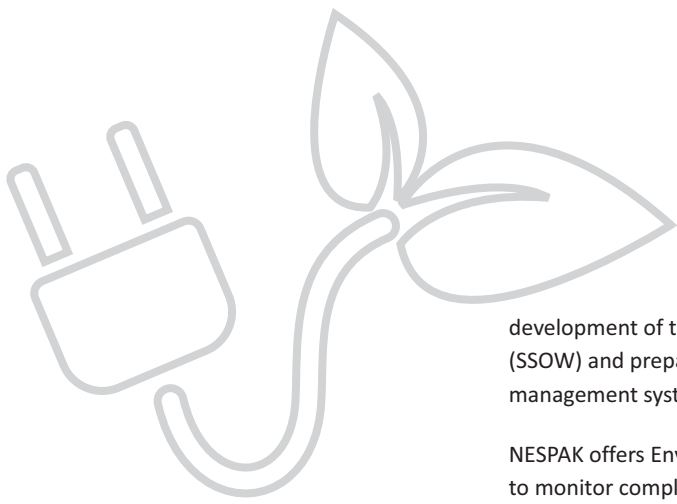
### Waste Management Services:

NESPAK services range from designing of collection and storage of municipal solid, clinical and hazardous waste and its management through intermediate treatment to ultimate disposal. NESPAK experience in waste handling and management covers strategic planning, preliminary design, environmental assessment, detailed engineering design and implementation.

### Health, Safety and Environment and

**Environmental Management Audit:** Health, Safety and Environmental (HSE) Audit is a global approach to risk management and assurance of environmentally sustainable technology use in industry. NESPAK offers audit services comprising the identification of HSE issues, risk assessment,





development of the Safe System of Work (SSOW) and preparation of HSE management system for industrial projects.

NESPAK offers Environmental and HSE Audit to monitor compliance according to the latest standards, guidelines and procedures along with the use of state-of-the-art software. Environmental Management and Monitoring, Quantitative Risk Assessment (QRA), Hazard and Operability (HAZOP) studies, Hazard Identification (HAZID) studies, Cost Benefit Analysis (CBA) and other related tasks are also performed by NESPAK.

**Training and Capacity Building:** Provision of professional training and capacity building services to stakeholders from various ministries, departments, independent organisations, project staff, academia, e.t.c., on environment and management of land acquisition, resettlement and rehabilitation. NESPAK professionals are also invited by the Pakistan Engineering Council (PEC) and the World Bank as experts to deliver lectures and impart training.

**Technical Due Diligence:** Technical Due Diligence/Plant Integrity Assessment services for the industry, particularly the Oil and Gas Sector. NESPAK services include assessment of Fitness for Service (FFS), structural integrity of the plant and machinery and residual life of the plant. Spectrum of services also includes testing, analysis and interpretation of Non-Destructive Testing (NDT), Electrostatic Discharge (ESD) review, analysis and recommendations and fire loop testing.

**Technical Assistance:** Technical assistance to its clients for approval/No Objection Certificate (NOC) from the Federal or Provincial Environment Protection Agencies and/or the donor agencies. Presentations at public hearings, addressing technical queries and incorporating comments during the approval process.

**ISO-14000 Consultancy:** Complete consultancy services to the industry in order to achieve ISO-14000 Certification for

addressing the environmental impact and subsequently setting up an effective environmental management system.

**Laboratory Testing:** Making best use of various standard labs in Lahore, Rawalpindi and Karachi for the specific analyses in environmental monitoring and testing. Close coordination and top supervision of all lab testing work is carried out by NESPAK specialists to ensure strict compliance to test specifications, calibration procedures and testing methods.

## EXPERIENCE

**Environment Studies and Audits:** In the field of environment studies, HSE audits and environmental management, NESPAK has so far completed more than 175 projects both in Pakistan and abroad in addition to various ongoing projects in different sectors like transport, water supply, sustainable development, extractives, process and manufacturing industries, urban development, dams and hydropower projects, irrigation and drainage, power and energy, transmission lines, oil & gas and ports. The clients of these projects include local, provincial and federal governments, private/autonomous organisations, multi-sector industries, international governments, ministries and donor agencies like the World Bank, the Asian Development Bank, JICA, USAID, e.t.c.

**Social Assessment and Land Acquisition, Resettlement and Rehabilitation Studies:** NESPAK possesses a vast experience in conducting studies related to socioeconomics, land acquisition and resettlement and rehabilitation. The Company has so far undertaken about 50 projects in Pakistan and abroad in this domain. NESPAK has always been on top in incorporating national guidelines as well as specific guidelines and regulations by donor agencies related to the social and resettlement aspects. NESPAK is a certified trainer for the subject of land acquisition, resettlement and rehabilitation for Pakistan and other regional countries.





## Neelum-Jhelum Hydroelectric Project



Under the 969MW Neelum-Jhelum Hydroelectric Project, NESPAK updated the Environmental Impact Assessment (EIA) report prepared by Norconsult, Norway, during the feasibility stage prior to the submission to the Azad Jammu and Kashmir Environment Protection Agency for getting a No Objection Certificate (NOC) for the project. Updating was made in the collection of physical environmental baseline data, Muzaffarabad Hydrogeology Study and other studies related to the environmental impacts, socioeconomics, agricultural soil, terrestrial and aquatic ecology and wildlife in the project area. An Environmental Management Plan and assistance to the client in public hearing and the NOC issuance were also provided.

## 1000-1500MW RLNG-based Thermal Power Plants

NESPAK has prepared the Social and Environmental Impact Assessment (SEIA) of three power plants and top supervised the Environmental and Social Management Plan (ESMP) implementation. The major tasks under SEIA studies included the planning on a very fast track, conducting meetings with stakeholders, development of baseline conditions, impact identification, quantification, assessment, and preparation of environmental and social management plan for physical, ecological and socio-economic domains and other sensitive ecological elements.



## Ravi Riverfront Urban Development Project

NESPAK has submitted report on geotechnical investigations, socioeconomic survey and topographic survey for "Feasibility Study of Ravi Riverfront Urban Development Project." This unique job was awarded by the Strategic Planning Unit of the Lahore Development Authority (LDA). The project will be executed at a total cost of Rs. 179 billion.



## E & SIA for Diamer Basha Dam Project

NESPAK has carried out the Environmental and Social Impact Assessment (E&SIA) for the Diamer Basha Dam Project. NESPAK submitted various plans on health, safety and environment, traffic management, monitoring and emergency and preliminary environmental assessment report of transmission lines for this project awarded by the United States Agency for International Development (USAID).

## Environmental Assessment of Kurram Tangi Dam

NESPAK in a joint venture has completed the "Environmental Assessment of Kurram Tangi Dam Construction Project." The Client, USAID, approved the Environmental and Social Impact Assessment of this Rs. 60 billion dam project located in the North Waziristan Agency, Federally Administered Tribal Areas (FATA) near Bannu City in the Khyber Pakhtunkhwa Province.

## Delineating Negative and Positive Mining Areas in Salt Range

NESPAK has carried out a project titled "Delineating Negative & Positive Mining Areas for Installation of Cement Plants in the Salt Range" by the Punjab Mineral Company (Pvt.) Limited.

The scope of the project included identifying the negative and positive areas with respect to installation of new cement plants in view of water resources availability, environmental pollution, infrastructure congestion due to transportation and socioeconomic conditions of the project area. NESPAK, as per client's requirement, sub-contracted part of the assignment related to the cement sector to some well renowned international consultant. The project Area falls in the Salt Range and Trans Indus Range comprising District Jhelum, Chakwal, Khushab and Mianwali over an area of about 800 sqkm.



## Iron Ore & Associated Minerals, Mining & Establishing Steel Mill in Chiniot

A NESPAK joint venture undertook Transaction Advisory Services for “Feasibility Study and Selection of Concessionaire/Investor (s) for Iron Ore and Associated Minerals and Mining and Establishing Steel Mill in Chiniot, Punjab, Pakistan.” NESPAK conducted Preliminary Environmental and Social Impact Assessment as part of the Transaction Advisory Services. The project investment including mine and processing facilities as well as steel mills is estimated around Rs. 103 billion as initial capital.

## 1,320MW Coal-fired Power Plant, Sahiwal

NESPAK has carried out an EIA of 1,320MW Coal-Fired Power Plant near Sahiwal. This is the first EIA study for a coal-based power project by NESPAK. The EIA study included document review, baseline data, environment and social impacts, public consultations with stakeholders, mitigation measures, environmental management plan, public hearing and the finalisation of the EIA report.



## Atlas Honda Projects, Sheikhupura

NESPAK has been awarded eight projects of Initial Environmental Examination (IEE) for the Atlas Honda Sheikhupura. The projects include Atlas Vocational Training Institute, Waste Heat Recovery Project at Atlas Honda Factory, Installation of Paint Shop in Atlas Autos Factory, Atlas Honda Auto Parts Unit, Extension in Atlas Honda Factory, Extension of Assembling Unit, Welding Shop & Canteen at Atlas Honda Plant, Extension of Plant Shop, Warehouse & Canteen and Environmental Monitoring at Atlas Honda Plant, Sheikhupura. The scope of work for this Rs. 16 billion assignment includes reconnaissance survey, detailed site visit, identification of environment-sensitive receptors, establishment of environmental and social baseline, identification/anticipation and characterisation of impacts and formulation of Environmental Management and Monitoring Plan.



## Landfill Site at Lakhuana, Faisalabad

NESPAK has completed the EIA of a landfill site at Lakhuana Faisalabad. The project costing Rs. 1 billion was awarded by the Faisalabad Waste Management Company.





## Wastewater Treatment Plants in Jacobabad, Peshawar

NESPAK was engaged by USAID for the consultancy services of "Environmental Assessment of Wastewater Treatment Plants in Jacobabad and Peshawar and Drinking Water Treatment Plant in Jacobabad." The scope of services included the preparation of Scoping Statement and Environmental Assessment (EA).

## National Conservation Strategy Project

NESPAK carried out "Pakistan National Conservation Strategy Project" for the Asian Development Bank in association with the Overseas Projects Corporation of Victoria, Australia. Under the project, selected feasibility studies and field assessments of the environmental problems in the Khyber Pakhtunkhwa, Balochistan, Punjab and Sindh Provinces were carried out. These included cleaning of Kabul River, pollution and monitoring survey of River Ravi and environmental assessment of toxic emissions in the industrial areas of Kotri, Jamshoro and Hyderabad districts of Sindh.

## First National Centre on Resettlement and Rehabilitation



The World Bank, NESPAK and the Punjab University collaborated to establish the First National Centre for Management of Land Acquisition, Resettlement and Rehabilitation in Pakistan at the Institute of Social and Cultural Studies, University of the Punjab, Lahore. The Centre will be dealing with the policy advocacy, support for planning and implementation of land acquisition, resettlement and rehabilitation and capacity building.

## Quick Impact Projects

NESPAK conducted Environmental Assessment, Initial Environmental Examination, Environment Mitigation and Monitoring Plan, Environmental Data Form, Environmental Review (ER) and Scoping Statement for the Quick Impact Projects funded by USAID for roads, power and water sector projects in the Federally Administrated Tribal Areas (FATA) of Pakistan.





## Palm Oil Extraction Mill, Thatta

NESPAK carried out an EIA study for the pilot project planned to extract oil from palm trees along the coastline in Thatta, Sindh. The study included the preparation of baseline data related to physical, ecological and socio-economic parameters. The EIA report suggested mitigation and remedial measures for adverse impacts, Environmental Management Plan and Institutional Plan for the environment-friendly implementation of the project.



## Pakistan Resettlement Plan Improvement Project

This national study was aimed at reviewing the past and present resettlement plans, operational policies and safeguards of the World Bank and the Asian Development Bank to suggest improvements in the resettlement planning and implementation for the construction of large water reservoirs and hydropower projects in Pakistan. The project included field work country-wide data processing and desk study by experts, consultative sessions and a stakeholders' workshop. Water sector resettlement case studies from over 40 countries were reviewed and incorporated in the study. The recommendations proposed long, medium and short term actions for improvement in resettlement planning and implementation process.

## Margalla Hills National Park and Surrounding Areas



The purpose of this EIA study was to evaluate physical, biological, ecological and socioeconomic conditions of the area comprising Margalla Hills National Park and surrounding areas to preserve and rehabilitate the ecological environment of the Park. NESPAK services included a detailed survey of the baseline environmental conditions of the project area of 12,000 hectares.

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## Evaluation of Past and Present Resettlement Plans in Pakistan

NESPAK undertook a World Bank-funded study titled "Evaluation of Past and Present Resettlement Plans in Pakistan in the context of International Best Practices Leading to Formulation of Improved Resettlement Plan." The study was aimed at reviewing the salient features of the old and new national as well as international resettlement plans and policies to make recommendations for the improvement in the

resettlement planning and implementation process for the future hydropower projects in Pakistan. The project was awarded by the Project Management and Policy Implementation Unit and Water Sector Capacity Building and Advisory Services Project under the then Ministry of Water and Power.

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## HSE & Technical Audit of POL Rig and Production Facilities

NESPAK performed Health, Safety and Environmental (HSE) audits for selected Oil and Gas Development Company Limited plants/fields. The services included hazard and risk assessment control measures, environmental monitoring and management plan, environmental and safety audits, risk management plan and HSE staff training programme.

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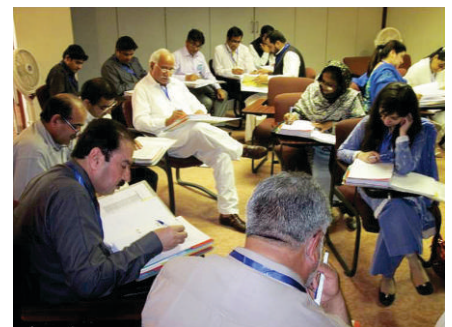
## Environmental Audit, EIA for Nestle Sheikhpura, Kabirwala

NESPAK conducted Environmental Audit for the Water Purification Plant of Nestle Pakistan at Sheikhpura. The Company also carried out an EIA study for the extension of Nestle plant at Kabirwala, Khanewal.



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## Professional Training and Capacity Building Programme



NESPAK has been conducting a World Bank-funded professional training programme on the Management of Land Acquisition, Resettlement and Rehabilitation in Pakistan as a continuous event. The primary objective of this training is to conduct a resettlement and rehabilitation training programme for institutions engaged in infrastructure planning and development.



## Wadi Dayqah Dam Project and Water Supply Scheme, Oman

NESPAK rendered environmental services for the Wadi Dayqah Dam Project and an EIA report was prepared containing baseline data related to physical, ecological and socio-economic parameters. The report recommended mitigation and remedial measures for adverse impacts, Environmental Management Plan and Institutional Plan for environment-friendly implementation of the project.



## Alborz Integrated Land and Water Management Project, Iran

Under this World Bank-funded project in the Islamic Republic of Iran, NESPAK rendered environmental services including the establishment of water quality monitoring network, GIS database development, preparation of resettlement plan, pest management plan, water quality monitoring plan, environmental profiles and environmental monitoring and management plan of 12 ecologically sensitive lakes, environmental guidelines manual, ecology, monitoring and management plan of the Babol River, monitoring of resettlement, forestry and wildlife mitigation measures, river and lake ecology survey and training of client staff.

## Gambella Irrigation/Drainage System, Ethiopia

NESPAK conducted Environmental and Social Impact Assessment studies as part of the detailed engineering design of the Gambella Irrigation/Drainage System. The services comprised desk studies, baseline surveys, review of local laws and regulations, data analysis, environmental sampling, monitoring and testing, stakeholders' consultations, identification of adverse impacts and mitigation measures.

