



Recherche Développement et Ingénieur



*Your Partner in  
Sustainable  
Agricultural  
Engineering  
and Consulting*



Research Development and Engineering (RDI) is a company dedicated to supporting farmers and stakeholders in the environmental sector. Specializing in soil, water, and plant analysis, as well as irrigation management and precision agriculture, RDI combines technology and innovation to offer sustainable solutions. Our mission is to enhance agricultural productivity while preserving natural resources.



# Areas of Expertise

## Rural Engineering

- Design and optimization of agricultural and rural infrastructures.

## Hydraulics

- Studies of irrigation systems and management of water resources.

## Flood Protection

- Risk analysis and development of preventive structures.

## Environmental Impact Studies

- Assessment of project impacts on local ecosystems.

## Training in Environmental and Sustainable Development Fields

- Programs focused on pollution prevention, ecosystem management, renewable energy, land use planning, health and safety, and societal environmental management.



# Agriculture

Specialized courses offered both in-person and online.

## Precision Agriculture

- Use of technologies (sensors, drones, AI) to optimize crop production.

## Drone Treatment

- Application of phytosanitary products and real-time monitoring.

## Civil Engineering

- Studies of infrastructure, urban development, and various networks (VRD).

## Geotechnics

- Soil studies and foundation design.

## Hydrogeology

- Studies and management of groundwater resources.

## VRD (Roads and Various Networks)

- Design of roads and sanitation infrastructure.

## AEP (Drinking Water Supply)

- Projects for potable water distribution and network studies.

## Groundwater Prospecting through Geophysics

- Use of geophysical methods to identify aquifers.

## Soil, Water, and Plant Analysis

- Soil fertility tests, water quality analysis, and plant health diagnostics for optimized agriculture.

## Agricultural Consulting

- Personalized advice on crop management, fertilization, and optimizing agricultural yields.



### **Modernization of Irrigation Systems in Berkane, Morocco**

"Thanks to the sensors and automated systems installed by RDI, we have halved our water consumption and increased our fruit and vegetable production." – Mrs. Fadwa, farmer.

### **Drinking Water Supply Network in Tiznit, Morocco**

"RDI enabled our village to access drinking water for the first time, improving our quality of life and health." – Mr. Omar, resident of Tiznit.

### **Precision Agriculture in Côte d'Ivoire**

"The sensors and drones implemented by RDI reduced our costs and improved the quality of our cocoa crops." – Cocoa Farmers Association of Côte d'Ivoire.

### **Rehabilitation of Agricultural Drainage in Senegal**

"RDI restored our drainage network, protecting our crops from flooding and improving our yields." – Farmer in Saint-Louis.

### **Sustainable Agriculture Training in Mali**

"RDI's workshops transformed our work methods by helping us manage our resources more efficiently." – Mr. Diarra, agricultural trainer.

### **Water Resource Management in Marrakech, Morocco**

"RDI proposed an integrated solution with sensors and drones, allowing us to optimize irrigation and conserve water." – Farmers Cooperative of Marrakech.

### **Dam Construction in Mauritania**

"The dam built by RDI guarantees a reliable water supply for our region." – Mr. Boubacar, project manager.

### **Restoration of Degraded Lands in the Rif, Morocco**

"Thanks to RDI, our barren lands now produce high-quality olives and citrus fruits." – Mr. Ziad, farmer.

### **Water Quality Monitoring in Ethiopia**

"RDI's monitoring systems allow us to quickly detect and correct water quality anomalies." – Director of the Water Office in Addis Ababa.

### **Improvement of Cereal Crops in Meknes, Morocco**

"RDI's advice on crop rotation increased our yields by 30% in one season." – Union of Cereal Cooperatives of Meknes.



## Services Offered

At RDI (Research Development and Engineering), we provide a comprehensive range of specialized services, combining technical expertise and innovative technologies to meet the diverse needs of our clients. Here is a concise overview of our main services:

### **Consultation and Technical Diagnostics**

- Conducting feasibility studies and evaluations to identify infrastructure needs.
- Providing personalized advice to optimize resource and equipment management.

### **Technical Studies and Design**

- Designing and sizing irrigation systems tailored to soils and crops.
- Conducting hydrological and geotechnical studies for sustainable infrastructure.

### **Geophysical Analysis and Surveying**

- Groundwater exploration and quality assessment using advanced techniques.

### **Precision Agriculture**

- Using drones to analyze soils and crops, offering smart irrigation solutions.

### **Environmental Impact Studies**

- Assessing project impacts on the environment and implementing mitigation plans.

### **Training and Skills Development**

- Providing hands-on and online training programs in irrigation and precision agriculture.

### **Civil Engineering**

- Designing road networks and flood protection systems.

### **Soil, Water, and Plant Analyses**

- Performing comprehensive laboratory analyses to optimize fertilization and crop quality.

### **Personalized Agricultural Consulting**

- Supporting farmers in optimizing fertilization and irrigation practices.

# Projects Completed and Testimonials

At RDI, we have undertaken several major projects in Morocco and across Africa in the fields of agriculture, hydraulics, and infrastructure. Here are some examples:



## Irrigation System in the Souss-Massa Valley

Installation of 3,000 hectares of drip irrigation with moisture sensors, saving 50% of water and doubling yields.  
Testimonial: "A sustainable and profitable solution."  
Agricultural Cooperative of Taroudant.

## Flood Protection in Gharb

Construction of dikes and canals to protect 10,000 hectares of land.  
Testimonial: "We secured our land and increased production." - Farmers' Association of Gharb.

## Groundwater Prospecting in West Africa

Identification of new potable water resources for 200,000 people.  
Testimonial: "A reliable water source thanks to RDI." - Agricultural Cooperatives of Senegal.

## Environmental Studies for a Dam in Guinea

Integration of sustainable solutions to protect the ecosystem.  
Testimonial: "Professionalism and sustainability." - Ministry of Water Resources of Guinea.

## Soil Rehabilitation in Morocco and Tunisia

Soil optimization and fertilization benefiting 50,000 farmers.  
Testimonial: "Improved yields thanks to RDI." - Mrs. Latifa, farmer.

These projects illustrate our commitment to innovative and sustainable solutions for agricultural and hydrological development.

# Technologies and Partnerships

At RDI, we integrate cutting-edge technologies and collaborate with strategic partners to maximize the impact of our projects.

## Advanced Technologies

Use of drones to map land and precisely apply phytosanitary products.

IoT sensors to monitor soil moisture and optimize irrigation.

Modeling software to design hydraulic infrastructure and assess climate risks.

Remote sensing and satellite imagery to analyze water resources.

AI to predict crop needs and optimize agricultural practices.

## Strategic Partnerships

Collaboration with universities, government agencies, and NGOs to develop sustainable agricultural solutions.

Partnerships with agricultural technology providers to integrate innovations into our projects.

## Results

Improved water access for over 500,000 residents.

Increased agricultural yields by 40% in certain regions.

Innovative pilot projects testing new soil and irrigation management techniques.



# Hydrological Studies

At RDI, we offer comprehensive hydrological studies to support effective water resource management and infrastructure planning. Our services include:

## Surface Water Analysis:

Assessing the quantity and quality of water stored or conveyed on the land surface, as well as in soils and rocks near the surface.

## Flood Risk Assessment and Mitigation:

Developing conceptual stormwater management plans, designing stormwater management infrastructure, and implementing sustainable urban drainage systems to mitigate flood risks.

## Hydraulic Modeling

- Conducting hydraulic modeling of flood lines and dam break analysis to inform the design of flood protection structures and ensure the safety of water-related infrastructure.

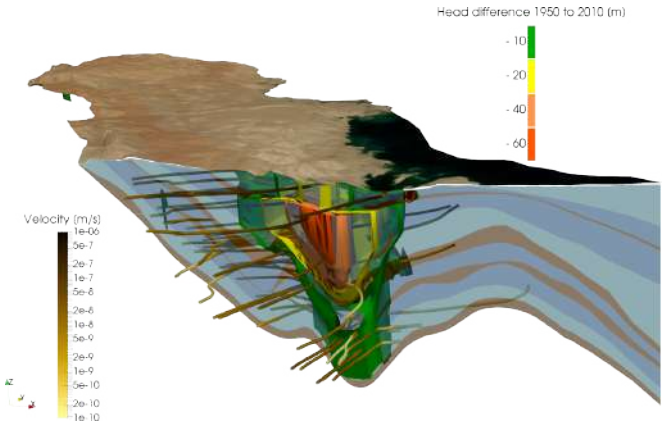
## Groundwater Characterization:

- Performing hydrogeological characterizations to understand groundwater flow and develop practical solutions for water extraction and contamination issues.

## Environmental Impact Studies:

- Evaluating the impact of projects on local ecosystems and water resources, and developing strategies to minimize adverse effects.

Our team utilizes advanced technologies, including remote sensing, GIS mapping, and computer-based hydrological models, to provide accurate and reliable data for informed decision-making. By integrating these tools, we ensure that our hydrological studies contribute to sustainable water management and the resilience of communities and ecosystems..



# Dam Design

We specialize in the comprehensive design of dams, offering tailored solutions to meet diverse needs. Our services encompass:

## **Feasibility Studies and Site Assessments:**

Conducting thorough evaluations to determine the most suitable dam type and location, considering geological, hydrological, and environmental factors.

## **Structural Design:**

Developing detailed designs for various dam types, including earthfill, rockfill, gravity, arch, and roller-compacted concrete dams, ensuring structural integrity and longevity.

## **Hydrological and Hydraulic Analysis:**

Performing in-depth analyses to understand water flow dynamics, sediment transport, and flood risks, which are crucial for effective dam design and operation.

## **Environmental and Social Impact Assessments:**

Evaluating potential impacts on local ecosystems and communities, and formulating mitigation strategies to promote sustainable development.

## **Regulatory Compliance and Safety Evaluations:**

Ensuring all designs adhere to national and international safety standards and regulatory requirements, prioritizing the safety of surrounding communities and environments.

Our multidisciplinary team utilizes advanced modeling tools and collaborates closely with stakeholders to deliver dam designs that are safe, efficient, and environmentally responsible. By integrating innovative technologies and best practices, we aim to provide solutions that not only meet current needs but also anticipate future challenges.





# Meteorological Studies

RDI offer comprehensive meteorological studies to support effective planning and management of agricultural and environmental projects. Our services include:



## **Collection and Analysis of Climatic Data:**

Utilizing automatic weather stations, radars, lidars, and satellites to gather precise atmospheric condition data.

## **Customized Weather Forecasts:**

Developing forecasts tailored to our clients' specific needs, considering local particularities and sectoral requirements.

## **Climatological Studies:**

Analyzing long-term climate trends to assess potential impacts on projects and agricultural activities.

## **Meteorological Risk Assessment:**

Identifying and analyzing risks associated with extreme weather events, such as floods, droughts, and storms, to develop mitigation strategies.

## **Training and Awareness:**

Organizing training sessions for local stakeholders on the use of meteorological information and the implementation of adaptation measures.

Our team of experts employs advanced technologies and collaborates with renowned research institutions to provide reliable meteorological information tailored to the specific needs of each project. By integrating this data, we assist our clients in optimizing their operations and enhancing their resilience to climatic hazards.

# Hydraulic Studies

We provide comprehensive hydraulic studies to support effective water resource management and infrastructure planning. Our services include:

## **Water Resource Analysis:**

Evaluating the availability and quality of surface and groundwater resources, essential for sustainable water management.

## **Hydraulic Modeling:**

Utilizing numerical models to simulate the behavior of hydraulic systems, enabling precise design and efficient management of water-related infrastructure.

## **Design of Hydraulic Systems:**

Planning and designing water distribution networks, irrigation systems, and stormwater management infrastructure, adhering to current standards and regulations

## **Flood Risk Assessment:**

Identifying areas vulnerable to flooding and developing mitigation strategies to protect communities and infrastructure.

## **Environmental Impact Studies:**

Analyzing the potential effects of hydraulic projects on local ecosystems and proposing measures to minimize negative impacts.

Our team of experts employs advanced technologies, such as remote sensing, Geographic Information Systems (GIS), and computer-based hydrological models, to provide accurate and reliable data. By integrating these tools, we ensure that our hydraulic studies contribute to sustainable water management and enhance the resilience of communities and ecosystems.





## Methodology and Approach

At RDI, our methodology combines international best practices, cutting-edge technologies, and deep local expertise to deliver effective and sustainable solutions. Our approach is structured into several phases:

### **Preliminary Assessment and Diagnosis**

#### **Feasibility Study**

Preliminary analysis of existing project conditions, evaluation of available resources (water, soil, climate), and identification of potential constraints.

#### **Data Collection**

Leveraging modern technologies (drones, IoT sensors, remote sensing) to gather accurate, real-time data.

#### **Stakeholder Engagement**

Consulting with local stakeholders (farmers, communities, partners) to understand specific needs and expectations.

### **Design and Modeling**

#### **3D Modeling and Simulation**

Utilizing specialized software to create virtual models of infrastructure projects, irrigation systems, or geotechnical analysis.

#### **Hydrology and Geotechnics**

Simulation of hydraulic flows, soil stability studies, and prediction of environmental impacts.

#### **Integrated Design**

A collaborative approach among our experts in rural engineering, hydraulics, geotechnics, and environmental studies to ensure coherence in solution development.

### **Development of Tailored Solutions**

#### **Data-Driven Optimization**

Analyzing collected data to adjust and personalize solutions (e.g., tailoring irrigation to water quality and soil characteristics).

#### **Innovation and Green Technologies**

Integrating eco-friendly and sustainable solutions, such as smart irrigation systems, precision agriculture techniques, and IoT technologies for real-time monitoring.

#### **Advanced Technical Calculations**

Precise sizing of hydraulic networks, flood protection structures, and sanitation systems, adhering to international standards.

By following this structured methodology, RDI ensures the delivery of impactful, sustainable, and data-driven solutions tailored to each project's unique challenges and goals.