



FOOD AND WATER SECURITY NEXUS

Solving Soil, Water, Food and Social related problems in the World

Impact on

- Nutrition-Health
- Land development
- Land degradation
- Natural resources
- Pollution
- Migration
- Climate change

NL-FSA

Food security is one of the biggest challenges for the coming years worldwide as acknowledged by the Sustainable Development Goal: Zero Hunger. Food security challenges are exacerbated by Climate change and impact first the most vulnerable segment of the population particularly in Africa.

The NL-Food Security Alliance (NL-FSA) is a network of mainly Dutch based companies and institutions collaborating in creating exclusive, profitable and sustainable solutions for the agri-water-food business.

The NL-FSA offers a unique collaboration between the key partners from private sector, NGO's and Knowledge Institutes. The focus of the NL-FSA is to develop large, financial viable projects that are based on a business case to secure food production locally.

In close cooperation with governments from the Netherlands and the partner countries, the NL-FSA will strive for long term programmatic approach.

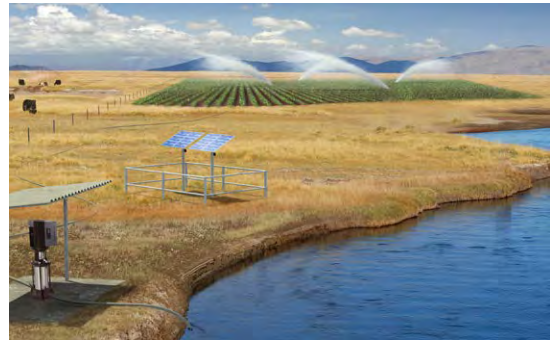
Always in close cooperation with the external stakeholders, individual funding sources can be aligned to increase the synergy and impact interventions.

Why the Alliance?

Bring together different partners case by case, country by country, because:

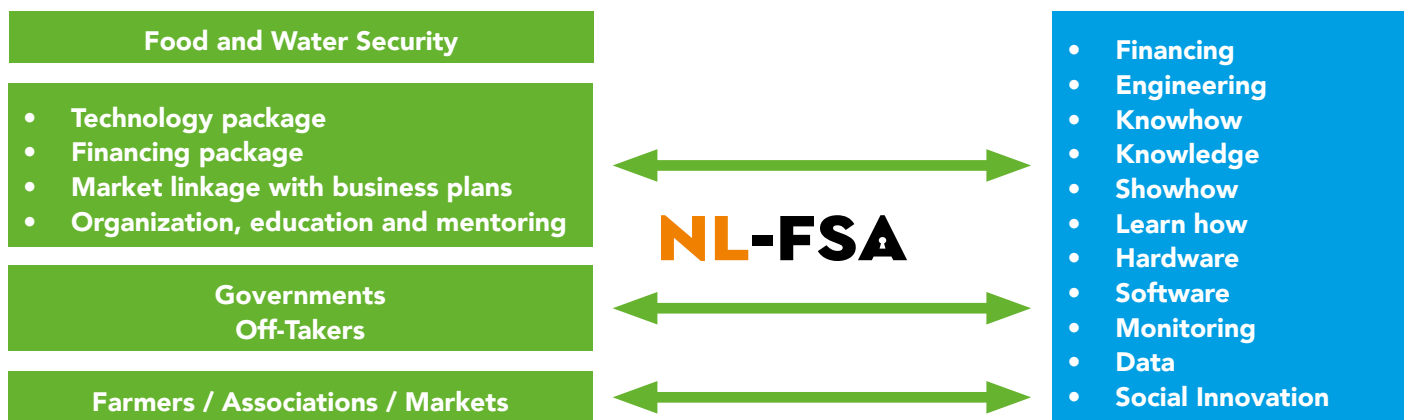
- Many companies and entities are experts in a narrow field.
- Today's world is too complex for single companies to change an industry.
- Offer an overall one-stop solution by combining these partners.
- Only work with long-term vision partners.
- The combined synergy offers better value.
- Make the difference for the World Water Food challenges.

The alliance strives to achieve its goals and at the same time contribute to the SDGs (Sustainable Development Goals). The NL-FSA performs in a sustainable manner with respect for people, the environment and climate change. Providing solutions for climate change, migration, food security and growth retardation is achieved by improving human needs, creating jobs and raising the value of water, agro and food. The NL-Food Security Alliance collaborates, in Europe as well as Africa, with finance institutions, governments, donors, local governments, businesses and private investors.



Strategy?

Complete technology to match site and local conditions for the long-term. Solutions inclusive medium-long term financing for increasing food production. Financing package for seasonal inputs and mechanization. Market linkage with appropriate business plans. Long-term organization of farmers, education mentoring and social integration.



Fields of interest

- Roads
- Farm equipment
- Housing
- Labour
- Drinking water
- Crop selection
- Seeds
- Weed, disease, pest control
- Irrigation system
- Sensoring, monitoring, data
- Training /Education Centre
- (Field-) laboratory
- Harvesting equipment
- Storage facilities
- Transport

WWW.NL-FSA.ORG

First Circle Members

Royal Eijkelkamp

Grundfos

Woord en Daad

Rabobank

Wageningen

University & Research

Smart turnkey soil & water solutions

Advanced pump solutions and a trendsetter in water technology

Building partnerships on water and food solutions

Banking for food

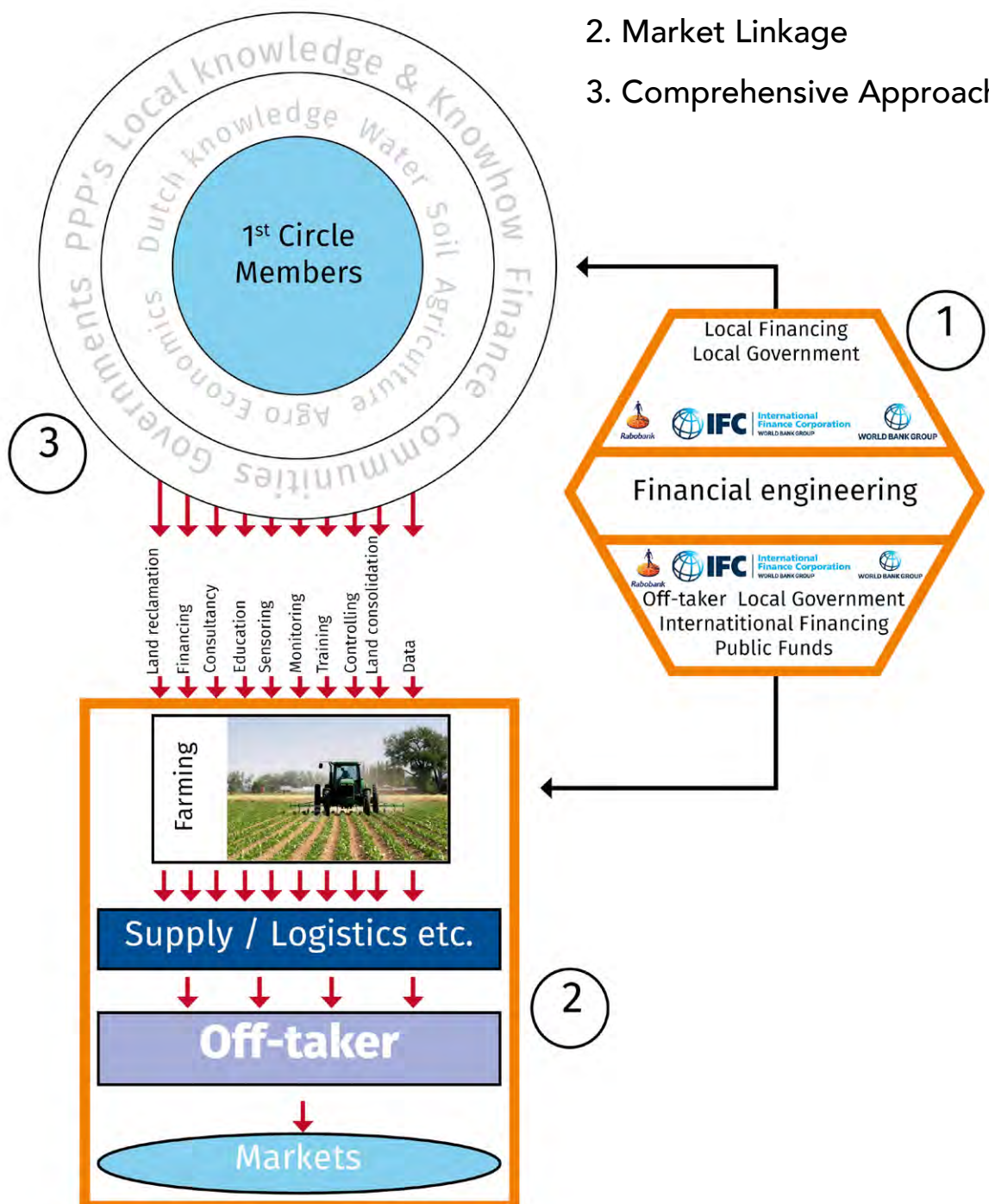
Sustainable solutions for global water, energy and food challenges

NL-FOOD SECURITY ALLIANCE

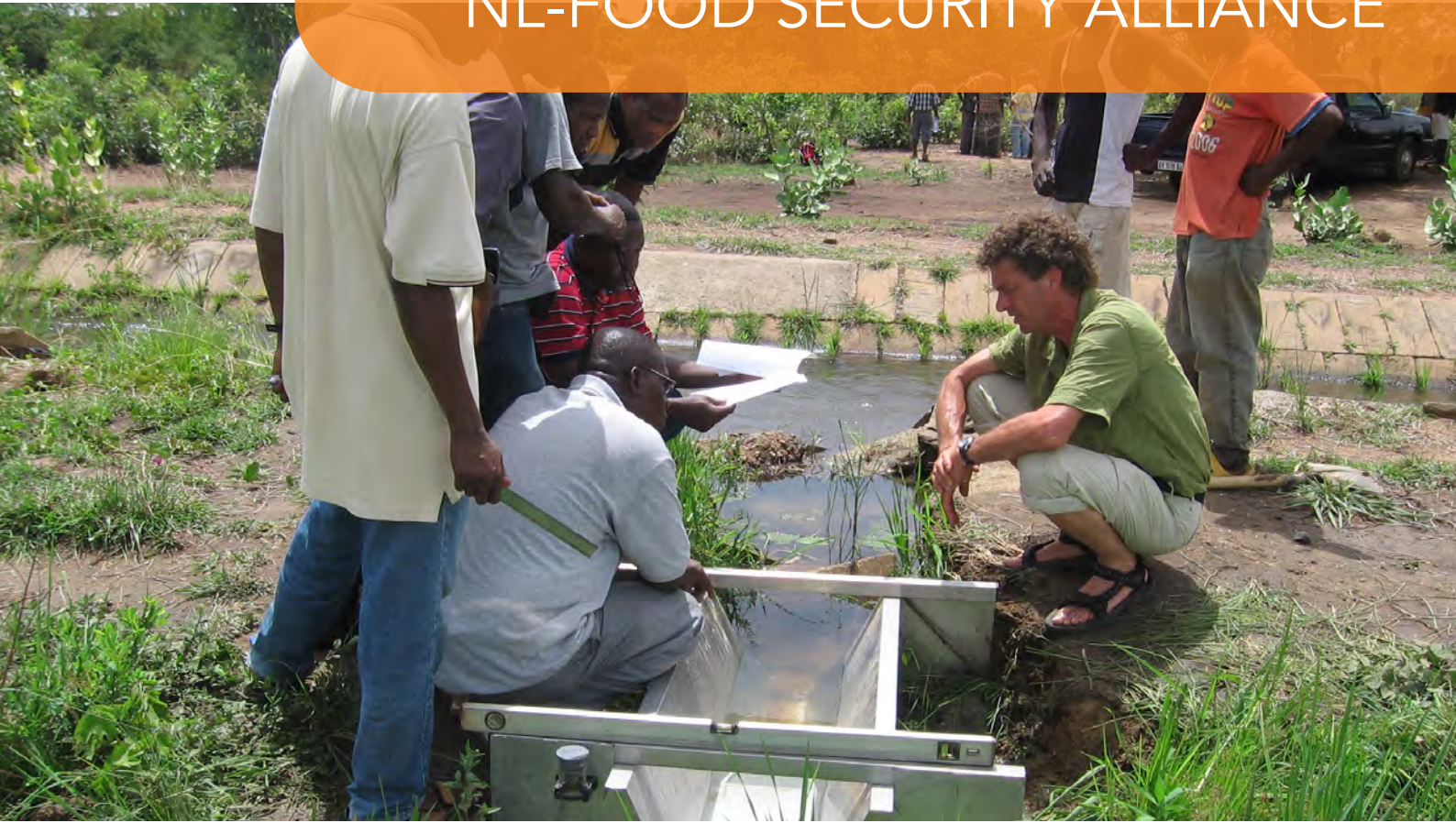
First Circle Members

The 3 Essentials

1. Financing Package
2. Market Linkage
3. Comprehensive Approach



NL-FOOD SECURITY ALLIANCE



IN 2050, OVER 9 BILLION PEOPLE HAVE TO BE FED WITH LESS AGRICULTURAL LAND AVAILABLE. THEREFORE SOIL & WATER DATA IS ESSENTIAL.

SERVICES

- Turnkey solutions soil & water projects
- Smart sensing & monitoring
- Project management
- Training & consultancy

MEET THE DIFFERENCE

Personal attention and a unique range of solutions: for more than 100 years, this has been our trademark at Royal Eijkelkamp. Royal Eijkelkamp has been devising, developing, producing and delivering smart solutions for soil and water projects worldwide.



SMART TURNKEY SOIL & WATER SOLUTIONS

Different companies, one binding factor

Royal Eijkelkamp comprises of different companies with one binding factor: the focus on soil and water. Each of the companies has its own speciality, and together with the NL-Food Security Alliance they can do complete turnkey projects.

Projects by Royal Eijkelkamp

Royal Eijkelkamp concentrates on soil and water related projects, related to the following themes: Land degradation, Food security, Natural resources, Land development, Urbanisation and Pollution.



Case - Sri Lanka

Under instructions of the Sri Lankan Ministry of Irrigation and Water Resources Management, Royal Eijkelkamp started in various regions of the South Asian country with the realisation of a groundwater monitoring network.

Like many other countries, Sri Lanka faces a variety of groundwater related problems. Groundwater is becoming scarcer, population growth increases the demand for groundwater, and a large variety of users causes fluctuations in level, quality and composition of the groundwater.

The groundwater monitoring network, consisting of 150 measuring locations, will provide the decision-makers of the ministry with timely, reliable and accurate data, based on which groundwater related problems can be monitored and managed.

This project is a perfect example of the turnkey solutions Royal Eijkelkamp offers. In addition to the equipment, Royal Eijkelkamp takes care of all activities within the project, from research, design, development, financial structuring, planning, management, implementation and training to functional delivery of the whole.

NL-FSA

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NL-FSA is a Royal Eijkelkamp initiative

 **Eijkelkamp**
Meet the difference

Contact: f.eijkelkamp@eijkelkamp.com

 **Eijkelkamp**
Meet the difference

CONTACT:

Royal Eijkelkamp
Nijverheidsstraat 30
6987 EM Giesbeek

T +31 313 880 200
E info@eijkelkamp.com
I royaleijkelkamp.com

NL-FOOD SECURITY ALLIANCE



ADVANCED PUMP SOLUTIONS AND A TRENDSETTER IN WATER TECHNOLOGY

SERVICES

- Solutions for Water Utility, Buildings and Industry
- Solar water solutions
- Energy and water system optimisation
- Precision irrigation
- Fertigation and chemigation
- Flood control

CONTRIBUTING TO GLOBAL SUSTAINABILITY

Sustainability is our way of doing business. At Grundfos, we take responsibility for making a genuine difference in the world, particularly in terms of climate change and water scarcity. We help our customers meet their needs in an ever-more energy and water-efficient manner and by reducing our own climate footprint. We are also committed to the United Nations' Sustainable Development Goals (SDGs), using our technology and solutions to make a significant contribution to sustainable water use and energy efficiency.



The world's leading pump manufacturer

With an annual production of more than 16 million units, Grundfos is the world's leading pump manufacturer, and we operate in 56 countries through 88 sales companies. Throughout our history, we have been at the forefront of innovation with the development of several breakthrough technologies serving three core segments: Buildings, Industry, and Water Utility.

Technical expertise, customer-oriented research and development, progressive innovation and digitalisation are at the core of how we deliver sustainable pump solutions, services and water technologies for a better tomorrow. What sets our pumps apart is the built-in electronics that transform them into intelligent, need-based performance systems that can significantly reduce water and energy consumption.



An intelligent approach to irrigation, on- or off-grid

From mega farms to small farms we supply pumps that meet the low-pressure and even-flow requirements for uniform and efficient irrigation. Pump efficiency is optimised to reduce energy costs, one of the highest single expenses in agriculture. For off-grid irrigation, livestock watering, or water supply for remote communities, we also supply a full range of proven solar water solutions with the high levels of reliability and viability required by water service providers. A solar-powered water supply from Grundfos provides unmatched flexibility for specific applications in the community, from irrigation and watering to safe drinking water.

Passionate about water

We go all out to close the water-cycle loop with our product solutions, from cleaning water to delivering it wherever it is needed, from cities to remote villages. A way to do this is by bringing intelligence to pump systems and water technology in a way that looks beyond individual components and optimises the entire system. Our digital services are designed and aligned specifically to your business needs and draw on over 70 years of industry and application knowledge and pioneering innovation.

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Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

Poul Due Jensens Vej 7
DK-8850 Bjerringbro,
Denmark

T +45 87501400
I www.grundfos.com

NL-FOOD SECURITY ALLIANCE



BUILDING PARTNERSHIPS ON WATER-AND-FOOD SOLUTIONS REALIZING INCOME INCREASE FOR SMALL PRODUCERS AND MARGINALIZED PEOPLE

SERVICES

- Brokering partnerships
- Plan facilitation
- Finance blending
- Contract and consortium management
- Technical support

BUILDING PARTNERSHIPS

Woord en Daad is a Dutch faith-based and entrepreneurial non-profit organization aiming at inclusive sustainable transformation of poor and marginalized people in Africa, Asia and Southern America.

We facilitate solutions and partnerships in agribusiness, water, vocational training and market oriented education.

ON WATER-AND-FOOD SOLUTIONS



BUILDING PARTNERSHIPS

Entrepreneurial and inclusive approach

Woord en Daad has a mission to enable people to take responsibility for their own development in a broken world, characterized by poverty and injustice. Our identity stands for integrity, strong and respectful relationships and quality work. We mobilize Dutch, international and local know-how and develop solutions on food and water systems with sustainable benefits for the poor. Through multi-stakeholder processes we develop inclusive approaches to initiate game-changers in local markets. We realize embeddedness in the local context through our extended partner & business network and strong ties with (local) government and communities.



Poverty impact

Our focus is on poverty impact - measured by increased income on household level. We believe that system change at a higher level is required to create enduring and scalable opportunities for rural households, mostly smallholder farmers. In a project context we work on different levels: increased food production and marketing (core value chain), an improved enabling environment for market growth (service provision), more efficient management and use of water resources, and increased and equal collaboration of farmers and processors at different levels (sector coordination). With key actors we work on professionalization of service provision, business modelling, models to finance, entrepreneurship, inclusion and sustainable and low-cost technologies and methods. With end-users we work on mind-set change and increased resilience.

Profile & Track record

We have extended experience in complex business development and implementation trajectories. Our collaboration is with civil organizations, knowledge institutes, private players, the financial sector and (semi) government in creating conducive environments and eco-systems for agribusiness. We take a lead role in a number of ongoing multi-stakeholder consortia, including public-private partnerships financed by the Dutch Government. We bring in experience from projects in 20+ countries in the fields of technical and vocational training, job placement, small and medium enterprise development, WASH and agricultural/supply chain development. We facilitate monitoring, evaluation & learning cycles, and develop showcases helping the further scaling of water-and-food solutions. We have a technical expert pool of experienced staff who typically work closely with implementers in providing advice & training.

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 **Eijkelkamp**
Meet the difference

Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

Stichting Woord en Daad
Postbus 560
4200 AN Gorinchem

T +31 183 611 800
E info@woordendaad.nl
I www.woordendaad.nl

NL-FOOD SECURITY ALLIANCE



Rabobank

EXPORT FINANCE AS THE KEY TO REALISE
INVESTMENT PLANS AND DEVELOPMENT OF
INFRASTRUCTURE

SERVICES

- Structuring of export credit-insured financing solutions
- Supporting the importer
- Arranging cash flow based solutions
- Alignment with national and international requirements
- Assisting in compliance with environmental and social impact requirements

RABOBANK EXPORT FINANCE

Export Finance entails the financing of the export of capital goods and services with support from state supported Export Credit Agencies (ECA's). Rabobank focusses on importing and exporting clients worldwide and works together with the respective ECA in the country of the exporter. We aim at offering financing solutions up to a repayment period of 12 years.



BANKING FOR FOOD

Export Finance and the NL-Food Security Alliance

Due to our origin (the agricultural sector) and our present worldwide strategy (banking for food) we are dedicated to investigate financing solutions for projects in relation to the sustainable development of the agricultural sector in recipient countries. Higher productivity, improvement of social standards and respect for the environment are key. These are the same principles as adhered to by the NL Food Security Alliance as initiated by Eijkelkamp. The combination of diversified knowledge in the alliance, entrepreneurship and cooperation of (inter) government related entities will ensure an effective strategy as to develop.



Rabobank Export Finance ECA-based solutions

- Long tenor (5-12 years)
- Relative competitive pricing
- Financing up to 85% of the investment (for government related transactions, 100% financing can be taken into consideration)
- cooperation with the Dutch government to optimise financing packages for recipient governments (grants/support under the DRIVE program, long tenored solutions (exceeding 12 years repayment)
- possibility of combined exports from various countries

Services

- Structuring of export credit-insured financing solutions for capital expenditure
- Supporting the importer in setting of credit facilities
- Arranging of cash flow based solutions for the exporter (drawdowns, guarantee facilities, working capital facilities)
- Allignment with national requirements: Atradius Dutch State Business acting on behalf of the Dutch Ministry of Finance
- Allignment with international requirements: OECD guidelines for officially supported export credits
- Assisting in compliance with environmental and social impact requirements

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Contact: f.eijkelkamp@eijkelkamp.com



Rabobank

Rabobank Export &
Project Finance
Croeselaan 18
NL-3521 CB Utrecht

T +31 30 7122535
M +31 6 53 69 30 41
I www.rabobank.com



FEEDING THE WORLD IN 2050

A lot needs to be done to address the increase in food demand sustainably. Wageningen University & Research is developing the knowledge and technology to contribute to guaranteeing worldwide food safety sustainably under the motto 'two times more with two times less'.

INTEGRATED SOLUTIONS

Wageningen Environmental Research integrates knowledge on soil, water, biodiversity and environmental management in order to address conflicting claims to natural resources, while maintaining social and economic security and preserving the environment. We develop this knowledge for partners in education, policy, private businesses and investment companies.



SUSTAINABLE SOLUTIONS

Sustainable Land Use

Sustainable Land Use ensures a fair and balanced distribution of land, water, biodiversity and other environmental resources between the various competing claims, in order to secure human needs now and in the future.



Sustainable Water Management

The daily impact of droughts and flooding is felt by industry, businesses, farmers and civilians around the world. Extreme weather events, natural disasters, failure of climate change mitigation and adaptation, water crises, and large-scale involuntary migration are amongst the most likely and impactful current global risks. By delivering innovations and strategies, Wageningen researchers increase the economic, social and environmental values of water for our partners.

Green Climate Solutions

Climate change is one of the biggest challenges of the present time. The impact of climate change and the subsequent risk of floods, droughts and heat waves on society will only increase in the coming decades. Urgent action to combat climate change and its impacts is required by reducing greenhouse gas emissions (mitigation) as well as reducing the impact of climate change (adaptation).

Biodiverse environment

Everything we eat is directly or indirectly derived from either wild or domesticated biodiversity. The bulk of what we build with, make medicines from and use as industrial raw materials comes from biological resources. Many forms of tourism revolve around nature. Biodiversity represents enormous economic value, and at least 40% of the world economy and 80% of the needs of the world's poorest depend on biological resources.

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Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

Wageningen Environmental
Research
P.O. Box 47
NL-6700 AA Wageningen

T +31 317 480 700
F +31 317 419 000
I www.wur.nl

Second Circle Members

Acacia Water

A systemic approach towards water security

Aequator Groen & Ruimte

Soil water management for farming and biodiversity

Aeres University of

Education & applied research in the field of Food, Nature and Urban Green

Applied Sciences

Agrocares

Nutrient information services

Aurea Imaging

Quality areal mapping

CERES

Innovative entrepreneurial solutions

Deltares

Independent research institute for water, soil and subsurface issues

Eijkelpark Foundation

Offering safe drinking water and entrepreneurship

Eucord

Bringing market-led solutions to the rural poor

IPC International

International vocational training & consultancy centre

ISRIC

Boosting impact with soil information!

Kucheza

Play & Entrepreneurship

Mobile Water Management

Mobile monitoring solutions for efficient water use

NL Urban Solutions

Sustainable urban & rural planning and landscape designs

Salt Farm Foundation

Saline agriculture: a practical solution to a global problem

Satelligence

Earth observation for natural capital

Valley Irrigation

Save water in arid regions

VanderSat

Satellite observed water data, globally, daily

Witteveen + Bos

Engineering the future we live in

360Blue

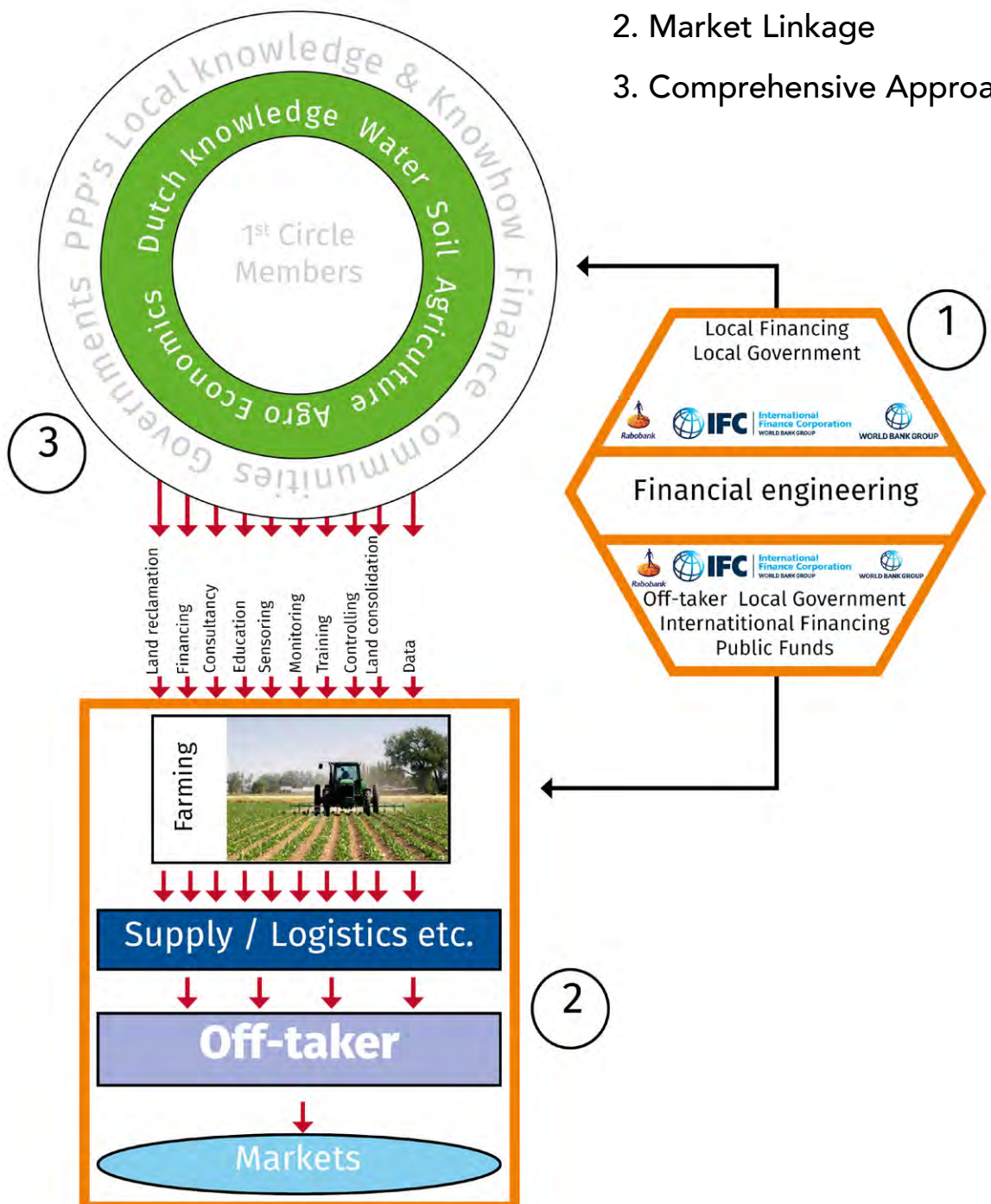
Innovative software service for water management

NL-FOOD SECURITY ALLIANCE

Second Circle Members

The 3 Essentials

1. Financing Package
2. Market Linkage
3. Comprehensive Approach



NL-FOOD SECURITY ALLIANCE



ACACIA WATER TRANSLATES HYDROLOGICAL KNOWLEDGE INTO PRACTICAL AND RELEVANT SOLUTIONS TO LINGERING WATER ISSUES

SERVICES

- Groundwater exploration
- Hydrological monitoring
- Agro-hydrology
- Hydrology in urban planning
- Building climate resilience
- Groundwater governance and economics
- Integrated water resources management

GROUNDWATER MANAGEMENT

Acacia Water is a leading supplier of (ground) water consultancy services. We continuously work to improve access to safe water, develop and disseminate innovative techniques for productive water use, and build resilience against the effects of climate change, including droughts and floods. Acacia Water is a research-oriented consultancy that builds on the latest scientific developments in the fields of hydrology and environment. In close collaboration with partners and customers, we translate this knowledge into practical and relevant solutions to lingering water issues.

WATER AND FOOD SECURITY FOR ALL



A systemic approach towards water security

Groundwater

The pumping of groundwater for domestic, agricultural and industrial use, and the unregulated disposal of waste are threatening groundwater reservoirs all over the world. Groundwater governance poses unique challenges as the status of groundwater is invisible to many, and its dynamics are complex. Through prefeasibility assessments, hydrogeological studies and the establishment of hydro(geo)logical monitoring networks Acacia Water supports authorities, non-governmental organizations and the private sector to abstract groundwater in an effective, (cost-)efficient and sustainable manner.



Integrated water resources management

At Acacia Water we aim to apply an Integrated Water Resources Management approach (IWRM) in each and every project. IWRM is then not the goal, but rather the process to increase the sustainability of our outputs. In our view, IWRM includes, amongst others, the earliest engagement of stakeholders, the protection of the environment, and the consideration of equity, social and economic aspects. Hence, we hold to a coordinated evidence-based process in which all relevant temporal and spatial scales are integrated. In our efforts to address water challenges we combine a variety of interventions, including regulation, research, technology & infrastructure, ecosystem protection and restoration, social change, and capacity building.

Consultancy services

The Acacia Water team consists of committed and enthusiastic groundwater experts with a broad international experience. We add value through flexibility, common sense, reliability, a focus on solutions and the ability to connect and switch. From agricultural plot to world scale, our experts integrate technical, social, and environmental disciplines to come to the most effective solution for your specific case.

NL-FSA

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ROYAL Eijkelkamp
Meet the difference

Contact: f.eijkelkamp@eijkelkamp.com

 **ACACIA WATER**

CONTACT:

Van Hogendorpplein 4
2805 BM Gouda
The Netherlands

T +31 (0) 182 686424
E info@acaciawater.com
I www.acaciawater.com

NL-FOOD SECURITY ALLIANCE



AEQUATOR
groen & ruimte

AEQUATOR GROEN & RUIJTE IS AN INDEPENDENT CONSULTANCY FIRM, WITH A LEADING ROLE IN SOIL AND WATER MANAGEMENT FOR FARMING AND BIODIVERSITY

SERVICES

- Extension to farmers and landusers
- Mapping of soil and water quality
- Soil management and improvement
- Drought and flooding prevention
- Climate change & circular agriculture
- Cooperation between farmers
- Land use policies and instruments
- Training and education

SOIL AND WATER MANAGEMENT

Aequator advisors are keen to match public and private goals and will always search for creative solutions that meet the ambitions of both the (local) government and the farmers, landowners and other users of the rural domain. Our expertise concentrates on the interfaces of agriculture, biodiversity, soil, water and land use planning and is based on our roots that lie in the world famous Dutch agricultural extension service. We are creative and aim to implement, to move and make things happen. Sustainability and food security are leading.

FOR FARMING AND BIODIVERSITY



SOIL WATER MANAGEMENT

Our roots

Aequator Groen & Ruimte was part of the formal Dutch Extension service of the Ministry of Agriculture and Fisheries, until its privatization in 1997. But even today, the content of our work has not really changed: we deliver extension and advisory services to farmers (both individually and in groups) on all aspects of soil and water management at the very local (square and cubic meters) to farm and regional level. Our clients nowadays include, besides farmers, water boards, regional authorities, local municipalities, national ministries and EU-bodies. In all our projects, extension and transfer of knowledge to farmers are central parts of our activities.



Soil and water management

Plants, be it agricultural crops or natural vegetation, need soil and water to grow and flourish. A healthy, well-managed soil delivers us food & fodder, regulates our water systems, sequesters carbon dioxide and delivers us nature, biodiversity and places to rest and recreate.

We advise on soil profile improvement, drainage, tillage and crop rotation. We visit your farms and forests to improve local water management, water harvesting and irrigation systems. We match farm business plans with regional water policy ambitions and find key solutions to make both work. We offer training courses at all levels (from farm to university) to discuss soil and water management and improve food production and sustainable land use.

Right place, right time, right scale!

Aequator offers services at plot and at regional level. To optimize land use, to close natural circles at the lowest possible level (such as manure, biomass and water) and to mitigate climate change, we inventory and map soil qualities and land suitability of terrains (up to scales of 1:10,000), quantify water movements in the unsaturated zone (where roots grow), advice on local cooperation between land users (e.g. the Waterholding or 'Waterhouderij') to prevent drought or flooding losses and assess measures to improve groundwater quality. Social hydrology, modelling & GIS, precision agriculture and smart (big) data analysis are key components of our work.

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Contact: f.eijkelkamp@eijkelkamp.com

AEQUATOR groen & ruimte

CONTACT:

Aequator Groen & Ruimte
P.O. Box 1171
3840 BD Harderwijk
The Netherlands

T +31 88 426 2422
E aequator@aequator.nl
I www.aequator.nl

NL-FOOD SECURITY ALLIANCE



AERES UNIVERSITY OF APPLIED SCIENCES IS ROOTED IN GREEN HIGHER EDUCATION. THE UNIVERSITY HAS THREE FACULTIES: ALMERE, DRONTEN AND WAGENINGEN. ALL FACULTIES HAVE THEIR OWN PROFILE AND SIGNATURE THAT TRANSLATES INTO A SPECIFIC TRAINING- AND RESEARCH PROGRAMME.

SERVICES

- Independent Soil Research- and Soils Teaching Team
- Soils Research lab
- Lectorate in Sustainable Soil Management
- Students at all levels work on soil-related issues in practice
- Each year, 50 students graduate in the field of Applied Soil Sciences

AERES UNIVERSITY OF APPLIED SCIENCES

Our faculty in Almere focusses on education and applied research in the field of Food, Nature and Urban Green. The main focus in Dronten is Agricultural Food Production, Sustainable Entrepreneurship and Management.

Our faculty in Wageningen focusses on educative processes and mainly educates teachers and trainers for vocational education and companies in agriculture and consumptive technique.



WATER INFORMATION SERVICES

Research

Aeres University of Applied Sciences Dronten has an excellent Soils Research Team, in which 7 Academic Soil Scientists and more than 10 soil related assistants are active. Together with Royal Eijkelpark Soil & Water the University exploits a modern and perfectly equipped soil physics Laboratory. The wide range of up-to-date equipment in this modern lab is unique in the Netherlands. The lab offers to students of Aeres University a great opportunity to work with state of art research instruments. Besides, it offers Royal Eijkelpark the possibility of showing a working and well equipped lab to their clients.



The University has the lead in many national and international projects in the field of Soils Science and cooperates with companies, governmental and non-governmental institutions.

A few examples:

- A national project on Soil Compaction. Different measuring-, detecting- and scanning methods are evaluated and assessed.
- Site-specific fertilization in the North of the Netherlands. On basis of digital soil maps fertilizing machines are controlled.
- National project 'Insight into Soil Structure' in which farmers together with soil scientists evaluate soils at the farm in order to improve soil management.
- The University in Dronten has a lead in the development of a national course for advisor in soil specific issues.
- The University was and is active in several international projects dealing with soil related issues.

Education

Aeres University of Applied Sciences focusses on an intensive and integral cooperation between companies, education and applied research. The University in Dronten invests already for many years in soil science and in soil related research. Our lectorate Sustainable Soil Management is active in soil related research and - projects and the curricula of relevant Bachelor courses are provided with actual, practice-oriented and current soil science at all levels. Students participate in projects and work for instance on precision- fertilization of organic fertilizers or assessing and evaluating soil profiles together with farmers. They can be involved in soil mapping and analysing soil scans and in proposing measures in order to improve sustainable soil management. Each year about 50 students graduate as Bachelor soil scientists.

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Contact: f.eijkelpark@eijkelpark.com



CONTACT

Aeres University of Applied Sciences
De Drieslag 4
8251 JZ Dronten

T +31 88 020 6000
E international.uas@aeres.nl
I aeresuas.com

NL-FOOD SECURITY ALLIANCE



CLOUD-BASED SENSOR TECHNOLOGY FOR SUSTAINABLE FOOD SECURITY

SERVICES

- SoilCares - in-depth soil analysis
- FeedCares - extensive feed analysis
- LeafCares - profound leaf analysis
- InsectCares - digital insect scouting

SOIL, FEED & LEAF ANALYSIS

AgroCares is an agritech company, based in Wageningen. At AgroCares, we contribute to solving the world food gap by providing the people who produce our food with the means and services to achieve a sustainable yield and production increase. From bringing basic soil fertility knowledge to small holder farmers to enabling large agro holdings to monitor field variation of soil nutrients or on-site management of nutrients in animal feed. AgroCares provides services to measure nutrients in soil (SoilCares), feed (FeedCares) and leaf (LeafCares).

TECHNOLOGY WITH GLOBAL IMPACT



NUTRIENT INFORMATION SERVICES

SoilCares & sensor technology

By developing and deploying innovative soil sensor technology (NIR, MIR & XRF), in combination with our unique Soil Global Database, we are able to provide quick and affordable on-site soil testing and fertilizer recommendation services to farmers. Our vision is to ultimately reach millions of farmers worldwide with our global distribution network of partners that employ our products and services.

The core of our testing services is formed by two products: the Scanner and the Lab-in-a-Box.

AgroCares Scanner

AgroCares Scanner is a handheld device using a single NIR sensor, providing (via a mobile application) quick, on-the-spot monitoring of nutrients in soil, feed and leaf.



AgroCares Scanner

AgroCares Lab-in-a-Box

AgroCares Lab-in-a-Box provides direct on-site access to testing services that only wet chemistry laboratories could provide until now.

The Lab-in-a-Box (or LIAB) is a mobile, customized suit of equipment using MIR and XRF sensors, that is designed to be a substitute for a traditional laboratory. The LIAB contains all the equipment to prepare and analyse soil samples, and to provide real-time results by consulting our Global Soil Database for the best match for the obtained sensor readings.



AgroCares Lab-in-a-Box

Database-driven technology

The real intelligence behind our soil testing services is in our Global Soil Database and the algorithms it employs to generate reports and recommendations based on sensor readings. This database is now operational in 22 countries, including 7 in Africa. The database is continuously being expanded in our Golden Standard Laboratory (GSL), where 10 thousands of calibration soil samples from all over the world are being analyzed with different wet chemistry methods using strictly standardized protocols. Each sample is also analyzed using our sensor technology to make comparison and incorporation in the database possible.

NL-FSA

The NL-Food Security Alliance (NL-FSA) is a network of mainly Dutch companies and institutions developing exclusive and sustainable solutions in the agri-water-food-business.

NL-FSA IS A ROYAL EIJKELKAMP INITIATIVE



Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

AgroCares
Nieuwe Kanaal 7C
6709 PA Wageningen
The Netherlands

T +31 6 11 76 77 89
E info@agrocares.com
I www.agrocares.com



OUR CROP INTELLIGENCE GROWS

SERVICES

- Organizing and execution of drone flights
- Benchmarking crop production and soil moisture at plant level
- Detection of anomaly spots and alerting stakeholders
- Provision of maps with variable rate application tasks
- Crop yield factor analysis
- Soil surveying and mapping

OUR CROP INTELLIGENCE GROWS

Spectral measurements from drones provide spatial information at the level of individual plant leaves. This information reflects the actual growing conditions and health of crops. By comparing pixel values against their reference values, growers and breeders visualize spots with possible problems that require actions. Task maps on variable rate planting and spraying fertilizers, agro-chemicals and water are created for appropriate handling.



QUALITY AREAL MAPPING



Agricultural challenges

The agricultural sector is challenged by producing more food, while land and water resources are not sufficiently available. It is known that the production variability within and between fields is significant. This shows scope and opportunities to increase harvestable yield and net income, if proper actions are taken. Field and crop conditions cannot longer be observed from the farmers' eyes walking around; instead flying sensors are needed to survey crop and soil health of large fields on a regular basis.

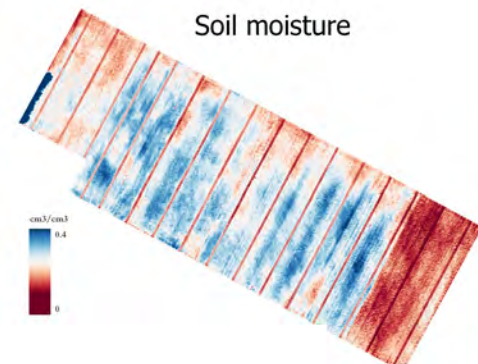
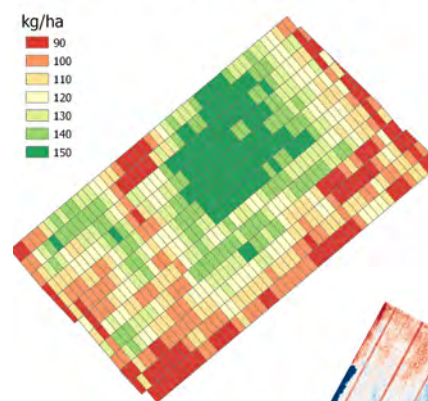
Quality aerial mapping using drones

Drone flights under cloudfree and clouded conditions will timely detect problems with crop and soil health. The information gathering process should be proceeded by timely actions to stop stunted crop development. Soil with more organic matter or higher plant density will require more fertilizers than spots that are less physically favourable for crop production. Locations with a higher water holding capacity can be irrigated with more water. Precise drone measurements will steer the variable rate applications, reduce operational costs and saves the environment.

Aurea factor analysis

The Aurea factor analysis of crop yield will reveal the local constraints to production. Historic information on soil properties, terrain elevation and crop yield information help to evaluate agronomic decisions on for instance variable planting, selection of specific varieties among others. Just to prevent the same mistake is being repeated. In addition, factor analysis may yield to longer term strategic investments in land levelling, ripping of soils, drainage maintenance, investing in drip irrigation systems, etc.

Variable rate application



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Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

Aurea Imaging
Bert Rijk

T +31 6 53 39 80 66
E bert@areaimaging.com
I www.areaimaging.com



BRINGING INNOVATIVE ENTREPRENEURIAL SOLUTIONS FOR BOTTOM OF THE PYRAMID

SERVICES

- Public private partnership courses
- On(off) line entrepreneurship courses
- App building school
- Women Agropreneurship program (2 for 1 formula)

PROVIDE EXPERTISE

Ceres foundation is a Dutch non-profit organization. Its mission is to contribute in social and economic development of the global south. It does this with a core strategy in inclusion of women and vulnerable groups of a society in food and nutritional security.

We respect and use existing structures, while creating state-of-the-art tools and facilitate a practical solution by combining agro economics, biotechnology, space technology and ICT.

FOR MAXIMIZING VALUES

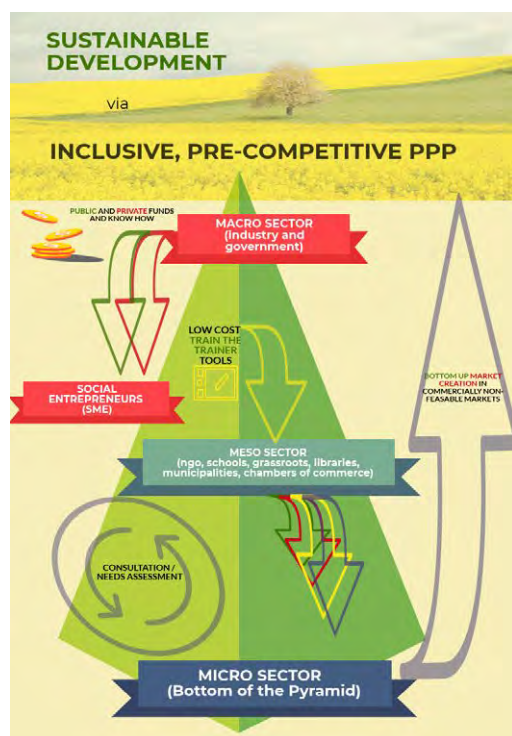


INNOVATIVE ENTREPRENEURIAL SOLUTIONS

Connecting Earth Role-models, Ensuring Supply (CERES)

Women play a significant and crucial role in agriculture and account for 50 to 80 % of the agricultural workforce in emerging economies. They further account for most and important consumer's decisions. Yet, they are often represented or seen as micro oriented.

CERES aims at the so-called Meso Sector to address this matter. We base our activities on an innovative "Model for Successful Sustainable Public Private Partnerships for Inclusive Development, on a Pre-competitive basis". This unique model focus on the Meso Sector: Chambers of Commerce, Libraries, NGO's, Public and Private Schools, Universities, women networks, service organisations, grass roots organisations and social entrepreneurs (SME) to mobilize resources and achieve a sustainable impact.



CERES offers training and advice with a focus on entrepreneurship, independence, social inclusion, autonomy and balance. We contribute to development issues in Africa by addressing food insecurity, climate change, migration, and water scarcity.

Public private partnership and women entrepreneurship for development

Since 2011, we work together with various women networks and sustainable initiatives. We address the instrumental manner that women used to be discussed in politics and within larger food companies by advocating the transformative role of education and vocational training.

Our success on the involvement of women's network at the theme of food security and the deepening of the discussion using 'early adopters' allows us to step into a new phase, which we had as our goal from the beginning: we encourage setting up sustainable international Public Private Partnerships (PPP) according to a holistic model. In that model a crucial role is laid out for the education sector and for women entrepreneurs (called 'meso sector').

App-schools for informal agribusiness training

The objective is to create region-specific apps in the different localities that contribute to informal education, that provide agribusiness information essential under local circumstances, and that provide new business chances and improve livelihood.

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ROYAL Eijkelkamp
Meet the difference

Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

Nieuwe Zeeweg 46
2201 TK Noordwijk
The Netherlands

T +31 651 111 418
E info@cerescs.com
I www.ceresacademy.com

NL-FOOD SECURITY ALLIANCE



A DUTCH INDEPENDENT RESEARCH INSTITUTE
FOR WATER, SOIL AND SUBSURFACE ISSUES

SERVICES

- Water and soil quality
- Hydraulic engineering, including modelling of drainage and dredging
- Spatial planning and ecology
- Operational warning and management systems of water resources
- Integrated water resources management
- Integrated coastal zone management
- Climate change and adaptation including flood and drought management
- Innovation management & strategic studies in the Water-Energy-Food nexus

EXCELLENT KNOWLEDGE

Deltares supplies state-of-the-art consultancy and expertise about water, soil and the subsurface. We lead in the development and application of knowledge for the sustainable management of deltas, coastal areas and river basins. As such, we are a strategic partner to the food producing sector.



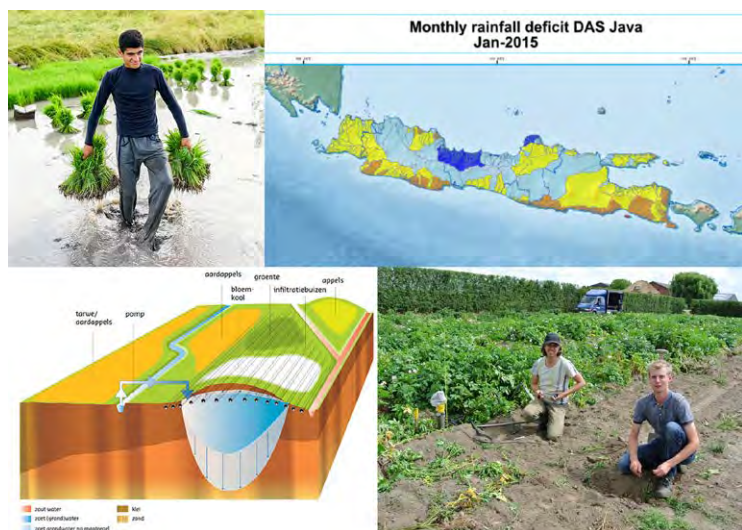
EXCELLENT KNOWLEDGE

Enabling delta life

Climate change, subsidence, population expansion and environmental pressures all impact our food systems and living environment. Deltares stands for a good balance between specialist consultancy and applied research. Our strength is an integrated approach which brings together societal considerations and innovative technological solutions. For the Water-Energy-Food nexus this means taking into account spatial, economic and administrative consequences of the use and management of water and soil. Our work results in more sustainable, liveable, and often more economic solutions. We enable delta life with 'delta technology'.

Management and safety

We assess risks to crops and infrastructure using our own models and other research methods. We reduce uncertainty by integrating knowledge at local levels, river basin and global levels. We combine technical knowledge of the subsurface with knowledge of natural processes.



Facilities

Our research facilities range from laboratories and field studies to test arrays and simulators: we study the quality of water and the morphology of rivers, lakes and the coast.

We also study the strength of soil and the subsurface, and the effects of waves and currents on physical structures.

Our combined facilities allow us to conduct small- and large-scale integrated studies in these fields on your behalf.

In addition, our Biogeochemical laboratory Utrecht Castel allows the assessment of a complex range of microbiological and geochemical processes that have a major impact on the quality of soil and water. Monitoring, modelling and field studies have supported the development of salt-resistant potatoes and other crops in the Netherlands, while research on the flow of brackish and saline water continues to improve crop yields in Dutch polders.

Open Source Software

Deltares develops and makes available a wide range of software and models which are relevant for the Water-Energy-Food nexus. Operational forecasts are for example facilitated by Delft-FEWS, while policymakers use Touch Table simulation products. RIBASIM for example, has been applied to model allocation of water between sectors, allowing farmers in Indonesia to monitor their expected crop yields.

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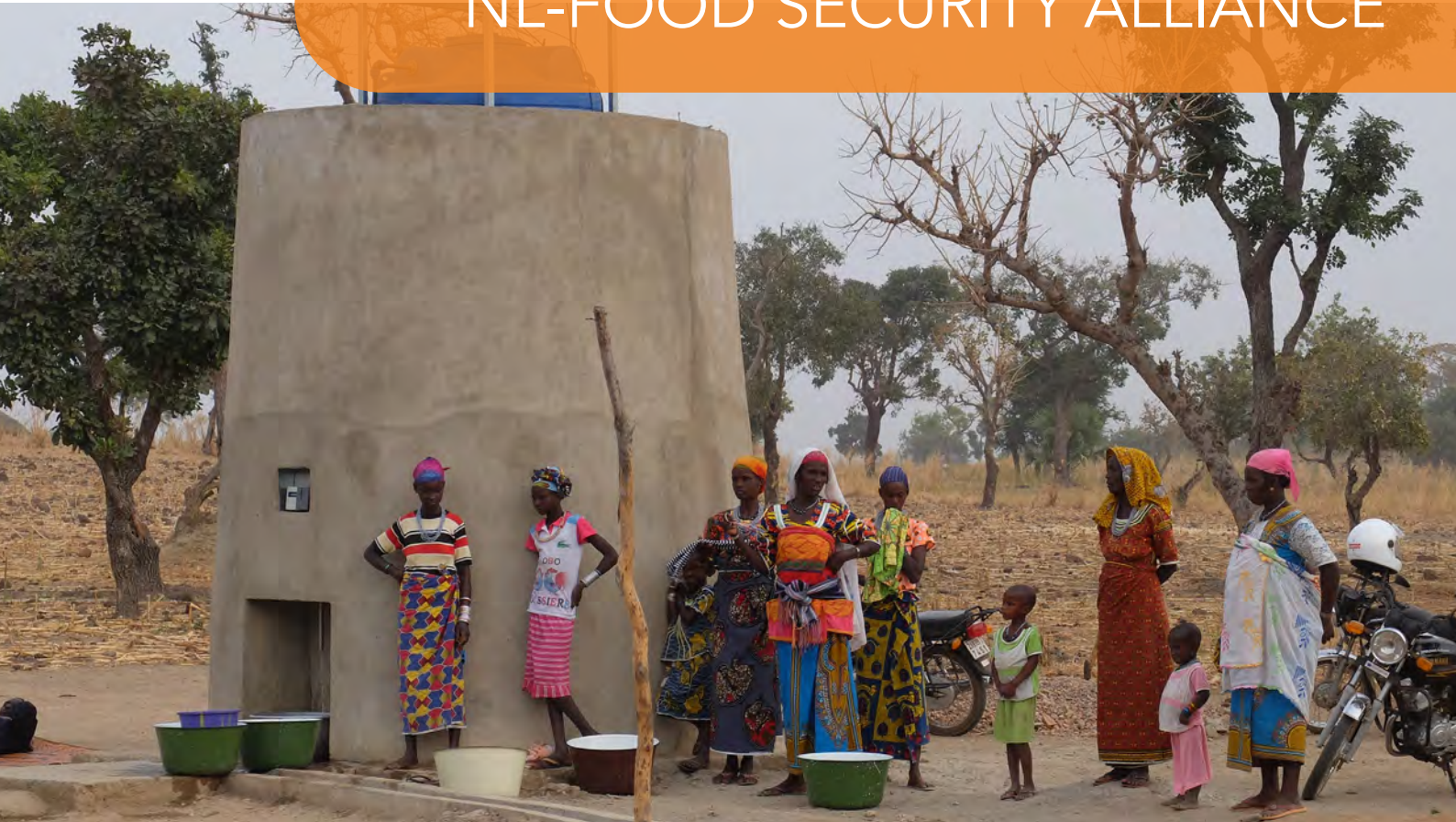


Contact: f.eijkelpark@eijkelpark.com



CONTACT:

Deltares
P.O. Box 177 T +31 655 409 987
2600 MH Delft E Philippe.KerRault@deltares.nl
The Netherlands I www.deltares.nl



THE EIJKELKAMP FOUNDATION OFFERS SAFE DRINKING WATER AND ENTREPRENEURSHIP TO COMMUNITIES IN REMOTE AND RURAL AREAS.

SERVICES

- The Water Entrepreneur concept
- Project management
- Training of entrepreneurs
- Supply of equipment
- Financing

BE THE DIFFERENCE

The Eijkelpamp Foundation has been founded on the occasion of Royal Eijkelpamp's Centenary jubilee in 2011. The foundation has the disposal of knowledge, means and equipment which is meant for a good cause, related to soil & water.

The Eijkelpamp Foundation does not only donate money, it goes further than that. It invests its 100 years of knowledge and entrepreneurship to the benefit of the community.



THE WATER ENTREPRENEUR

The Water Entrepreneur concept

In 2014 the Eijkelpark Foundation launched the Water Entrepreneur concept. The objective of this concept is to support people to develop a water enterprise with which they offer sustainable access to safe drinking water, preferably in remote and rural areas.

The idea behind The Water Entrepreneur is to create a situation in which income can be generated from installing and maintaining Water Access Points, an off-the-grid water solution. Above all, it will provide homes in remote and rural areas access to safe drinking water against a reasonable price. The entrepreneurs will also contribute a percentage of their income to an investment fund to help train and support new so called Water Entrepreneurs.

Case - Benin

Approximately 45% of residents in Benin, West Africa, have to use unsafe (drinking) water from rivers, pools and wells. Contaminated water is one of the biggest threats to public health, particularly for children.



With the first Water Entrepreneur project in Benin the Eijkelpark Foundation aims to support 40 unemployed graduates to manage their Water Access Points. With these points 100.000 people in the Alibori region in Northern Benin can be offered sustainable access to safe drinking water.

The Eijkelpark Foundation's aim is to apply the Water Entrepreneur concept to other remote and rural areas. The concept has already been introduced in countries like Sri Lanka and Indonesia. Hopefully many more countries can benefit from the Water Entrepreneur concept in future.

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Meet the difference

Contact: f.eijkelpark@eijkelpark.com


Foundation

CONTACT:

Eijkelpark Foundation T +31 313 880 200
Nijverheidsstraat 30 E foundation@eijkelpark.com
6987 EM Giesbeek I eijkelparkfoundation.com

NL-FOOD SECURITY ALLIANCE



EUCORD IS A NON-PROFIT ORGANIZATION
BRINGING MARKET-LED SOLUTIONS
TO THE RURAL POOR

SERVICES

- Access to finance
- Capacity building
- Climate smart agriculture
- Enterprise development
- Market assessment
- Nutrition
- Value chain development

INTEGRATING FARMERS

The European Cooperative for Rural Development (EUCORD), formally registered in The Netherlands as "Coöperatieve EUCORD U.A.", is a Brussels-based non-profit organization. EUCORD operates as an autonomous non-profit organization in affiliation with Winrock International and ICCO Cooperation. EUCORD's mission is to increase farmers' capacity to sustainably grow quality crops matched to the commercial needs of the agribusiness sector and in doing so, increase food security, develop the private sector and improve the livelihoods of rural communities.

IN AGRIBUSINESS VALUE CHAINS



CREATING SHARED VALUE

Expertise

EUCORD aims to improve the livelihoods of farmers and benefit local consumers by developing an efficient, competitive agri-sector that stimulates the rural economy. Our work helps farmers reach their full potential while allowing businesses to rely on locally sourced materials. EUCORD has over 15 years of experience implementing Public Private Partnerships, 40+ employees and has partnered with over 50 000 farmers and their 300 000 family members. We have worked in 15 countries with 35+ partners on crops including cereals, oilseeds, roots and tubers, and vegetables.



EUCORD's capacities are articulated between its staff in Brussels, the Netherlands, the US and several African countries. Over the past two decades, EUCORD has built a strong and reliable project implementation experience in countries such as Burundi, DRC, Ethiopia, Ghana, Guinea, Kenya, Mali, Nigeria, Rwanda, Senegal, Sierra Leone and Uganda.

Public Private Partnerships

Most farmers in developing countries practice subsistence agriculture. They are food insecure and have little cash income. The lack of a consistent surplus hinders the

development of a market. This keeps agro-processors from buying locally, while the absence of secure markets prevents farmers from devoting more resources to crop production.

To remedy this vicious circle, EUCORD seeks to actively promote Public Private Partnerships (PPPs) between farmer groups, companies that are investing in developing countries, and public development agencies. Among the vast array of NGOs in Europe, EUCORD has a unique experience in actively facilitating PPPs in the agribusiness sector by setting up contract farming arrangements.

EUCORD implements public and private funded agricultural development project, as well as offering end to end value chain services such as value chain assessments, technical assistance, organizational capacity development etc.

Institutional partners

EUCORD is a cooperative structure, working with institutional and associate members to bring market-led solutions to the rural poor. ICCO Cooperation and Winrock International are EUCORD institutional members: they have a seat on the Supervisory Board as well as the Member Council and have a say in EUCORD's strategic development. Associate members are partner NGOs from the countries where we work. They are project implementation partners and participate in project opportunities that EUCORD pursues. In addition, EUCORD is committed to supporting the capacity development of its associate members.

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Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

Avenue Louise 500
1050 Brussels
Belgium

T +32 (0) 26 48 89 37
E info@eucord.org
I www.eucord.org



IPC GROENE RUIMTE (IPC) IS AN INTERNATIONAL VOCATIONAL TRAINING CENTRE AND PROVIDES PRACTICAL VOCATIONAL TRAINING AND CONSULTANCY IN SUSTAINABLE LAND- & WATER MANAGEMENT, IRRIGATION, EROSION CONTROL, (AGRO-) FORESTRY, NATURE- AND FAUNA/WILDLIFE MANAGEMENT.

SERVICES

- Develop and conduct vocational practical training on the job
- Curriculum development
- Develop and implement practical training facilities
- Analyse problems on the operational level to propose practical, direct and best applicable solutions in de the field

TRAINING - CONSULTANCY

Land- & water management, irrigation, erosion control, (agro-)forestry, nature- and fauna/wildlife management demand qualified skilled employees in many areas, who apart from a profound theoretical knowledge must have also possess practical immediately applicable skills and experience. What is the best way to learn how to maintain an small scale irrigation system then to go outside and to learn it in practice? And what would be a better way of learning how to operate machinery and use equipment than by learning by doing: learning in de real situation.

IPC MAKES IT POSSIBLE ALL OVER THE WORLD



WATER INFORMATION SERVICES

Example of our practical method of approach

In projects IPC is conducting practical vocational training on design, build and maintain irrigation and drainage systems. To make successful projects like designs of small-scale irrigation systems, it is important to first collect the essential data and to choose the best fitting designs. Data such as elevation, soil type and quality, water quality, infiltration capacities and crop choices. In fact, IPC and the participants in the training first create a Program of requirements and preconditions and then start the design. Through practical training by IPC, the target group (teachers, farmers, students) collect the aforementioned data and then design, calculate, compose material lists, purchase materials and then have the systems installed by local contractors. All that as practical as possible and with simple (help) resources. And all this under the supervision of IPC, in the way of learning by doing.



Sustainable guarantee for the future: 'maintaining the project result'

Thanks to this approach, the target group learn to work in a project-like manner with competences of all needed parts of it. After the training they can perform the tasks by themselves and they are no longer dependent on support from third parties. This is the most sustainable way of support and create sustainable food security in the future.

Teamwork

Many tasks in a specific job demands teamwork. Wouldn't be it a better teamwork experience when you can practice a specific task by directly cooperation with the members of the training group? These aspects apply to all training and courses provides by IPC by learning by doing and by training on the job.

Expert trainers, consultants, networks

IPC has a direct access to a reservoir of up-to-date knowledge, skills and professional national and international experience. IPC also has national and international networks so that collaborations, necessary for an even better project result, can be organized well.

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 **Eijkelpark**
Meet the difference

Contact: f.eijkelpark@eijkelpark.com



CONTACT:

IPC International
Koningsweg 35
6816 TG Arnhem,
The Netherlands

T +31 26 355 0100
E info@ipcgroen.nl
I www.ipcgroen.nl



BOOSTING IMPACT WITH SOIL INFORMATION!

SERVICES

- Soil information services
 - Quick assessment on resources and needs
 - Support on Digital Soil Mapping
 - Impact assessment of Sustainable Land Management options & Land Degradation Neutrality
- Agriculture and Forestry
 - Prepare site & crop specific fertilizer recommendations
 - Develop soil property maps
 - Support land use planning for sustainable agriculture and forestry
- Capacity building
 - Yearly Spring Schools on Soil Classification & Digital Soil Mapping
 - Taylor-made courses

SOIL INFORMATION FOR FOOD SECURITY

ISRIC - World Soil Information is an independent, science-based foundation located in Wageningen. ISRIC has a mission to serve clients with information about the world's soil resources to help addressing major global issues. ISRIC produces and serves quality-assured soil information together with our partners at global, regional and national levels. ISRIC has been elected in 2017 to host the soil data facility for the Global Soil Partnership (GSP). For 25 years ISRIC is a consortium member of the World Overview of Conservation Approaches and Technologies (WOCAT). ISRIC is a member of Global Open Data on Agriculture and Nutrition (GODAN).

AND COMBATting LAND DEGRADATION

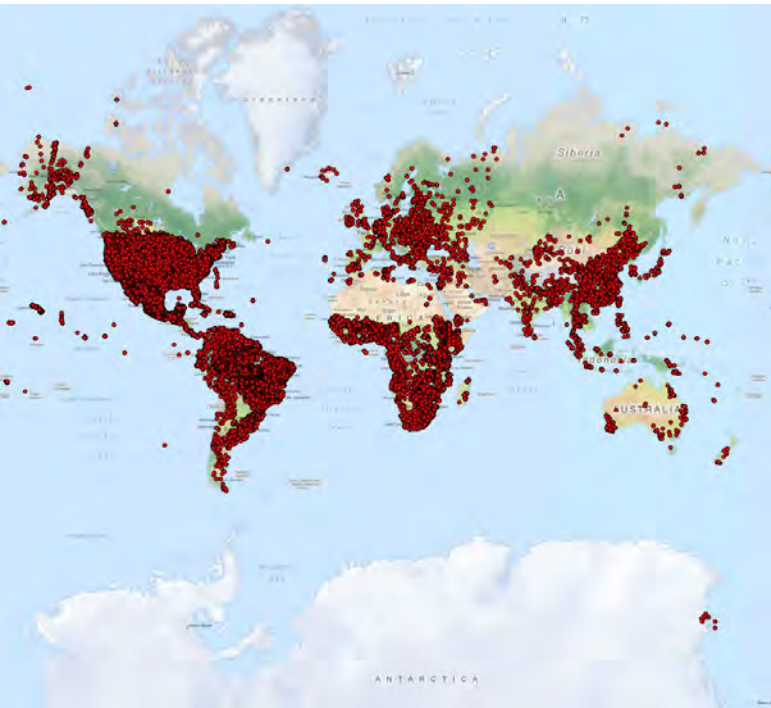
BOREAL

MAN AND SOIL



APPLICATIONS OF SOIL INFORMATION SYSTEMS

World Soil Information System

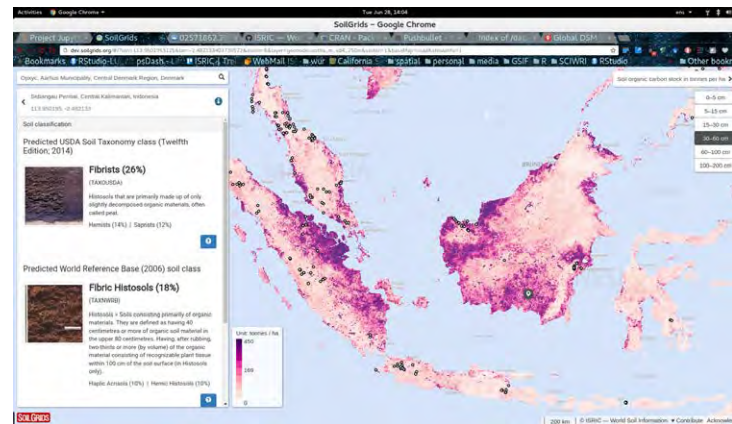


ISRIC has developed the World Soil Information System (WoSIS) with at the moment 150.000 standardised and harmonised soil profiles which is freely available through our website.

Taylor-made applications

Based on these resources we can develop taylor-made applications such as site specific fertilizer recommendations for specific crops or soil property maps for improved irrigation water management. On the topic of Sustainable Land Management and achieving Land Degradation Neutrality (LDN) ISRIC develops maps by combining local knowledge and soil information systems to assess where an SLM option is the most effective.

SoilGrids



Furthermore we have developed with use of machine learning and geo-statistics (> 120 co-variates) a 250 m grid soil map of the world called SoilGrids with physical and chemical properties such as CEC and SOC.

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Contact: f.eijkelkamp@eijkelkamp.com



CONTACT:

ISRIC - World Soil Information
Droevendaalsesteeg 3
6700 AJ Wageningen
The Netherlands

T +31 317 483 735
E info@isric.org
I www.isric.org



PLAY & ENTREPRENEURSHIP

SERVICES

- Game-based training in:
 - Farming
 - Financial Management
 - Cooperative Entrepreneurship
- Developing digital tools
- Attracting youth to farming

PLAY AND ENTREPRENEURSHIP

Kucheza is a Dutch software company that develops digital tools for the agri-, food- and water sector. The digital tools are used to stimulate entrepreneurship and increase income of small producers. Kucheza uses game-based learning because games add experience to the learning material.

Kucheza has a mission to unlock entrepreneurial talent all around the world.



PLAY & ENTREPRENEURSHIP

Farming, financial management and cooperative entrepreneurship

The tools we develop, address three pillars:

A. Agronomical education

We motivate farmers to see their farms as a business.

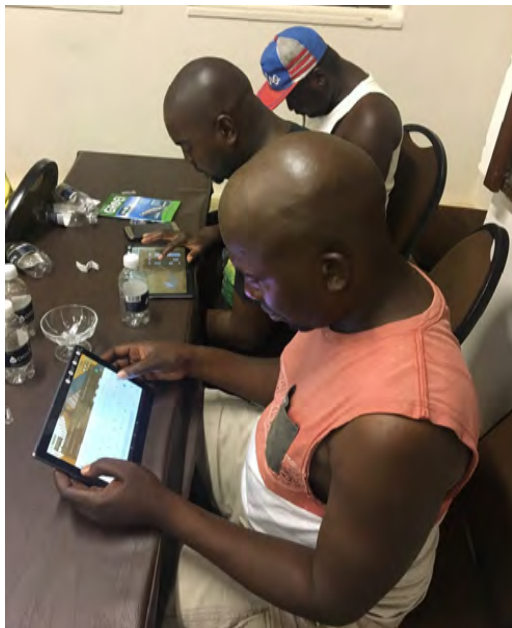
B. Business and financial education

To regard farming as a business, it is of crucial importance to integrate the financial and the agronomical framework. A businessman is not only growing crops but also wants to make a living out of it and grow the business.

The bookkeeping application that Kucheza developed, is used by farmers to keep track of their own business.

C. Cooperative entrepreneurship

When farmers work together they have bargaining power, economies of scale and the advantages of knowledge exchange. A cooperative is a business which is driven and owned by the members; both for 100%.



Game-based learning

Kucheza is conducting trainings with the help of games because game-based learning adds experience to the learning material. Students can only remember 10% of what they read, 20% of what they hear, 30% if what they hear is visualized, 50% if they watch someone model something while explaining it, but almost 90% if they engage in the job themselves, even if it is just a simulation. That's why games are very effective education tools.

Besides, playing games increases dopamine levels in the brain, a neurotransmitter that gives fun and helps people to motivate and focus.

Kucheza is experiencing very positive feedback and experience with this game-based approach with African small-scale farmers. Participants recognize their own life while playing and they try out new solutions.



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Contact: f.eijkelkamp@eijkelkamp.com

KUCHEZA

CONTACT:

Kucheza BV
Europalaan 20
NL-3526 KS Utrecht

T +31 61 83 94 546
E roef@kucheza.nl
I www.kucheza.nl



Mobile Water Management

MOBILE MONITORING SOLUTIONS FOR EFFICIENT WATER USE

SERVICES

- (Ground) Water level reading
- Flow meter reading
- Participatory water management
- Calibrate sensors
- Ground truth satellite data

DIGITIZE FIELD DATA

Present-day agricultural practices and drinking water utilities are facing significant challenges; climate change and population growth are threatening food security and require smart monitoring and use of vulnerable water resources.

By combining smart observations, advanced modelling methods and local human intelligence we can contribute to increased water efficiency and productivity.



WATER INFORMATION SERVICES

Smartphones as an intelligent monitoring device.

Mobile Water Management (MWM) is driving the complete digitisation of field measurements and control operations in various sectors: utilities, water/flood/irrigation management, research, engineering.

We achieve this by making use of rapidly expanding mobile networks and low-cost investments in infrastructure.



Phetchaburi river basin (Thailand) 2018

Optimizing irrigation using software that continuously monitors staff gauges using locally available webcams. An application was created to monitor tidal movements to predict saltwater intrusion and respond effectively.

Water Utility FIPAG (Mozambique) 2018

Higher quality of field data reduces non-revenue water for water utilities. Smartphones are used by the national water operator to collect water consumption data and reduce operational costs of meter readers. In addition, the demand and infrastructure can be assessed with collected data.

Farming Tongaat-Hulett (Mozambique) 2018

Improve water efficiency of sugar cane multinational using smartphone monitoring and control combined with advanced remote sensing technologies.

Mobile Water Management

Our applications are currently being used by water boards, farms and drinking water utilities to monitor water levels, gate positions and water meters.

MWM combines its expertise in mobile app development and monitoring algorithms to empower users in the field and make them more productive.

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Contact: f.eijkelkamp@eijkelkamp.com



Mobile Water Management

CONTACT:

Mobile Water Management	T	+31 6 42 71 99 01
Van der Burghweg 1	E	info@mobilewatermanagement.com
2628 CS Delft	I	www.mobilewatermanagement.com

NL-FOOD SECURITY ALLIANCE



NL URBAN SOLUTIONS OFFERS
THE OUTSTANDING COLLECTIVE EXPERIENCE IN
URBAN PLANNING AND LANDSCAPE DESIGN

SERVICES

- Regional plan - Urban and rural development strategic plan, Agriculture cluster development strategy, Economic and spatial strategy;
- Ecological plan - Urban and rural ecological system plan, Sponge city, River ecological plan;
- Urban Design - Concept plan, Detail plan, Urban design and Design guidelines;
- Landscape architecture design - Public space design, Landscape design, Detailed landscape design.

INTEGRATED SUSTAINABLE

In the urban and landscape framework NL Urban Solutions integrates the physical, human, social, bio-physical and environmental characteristics in one multilayered plan/design. The internationally-oriented and multidisciplinary team offers the best collective expertise and experience in regional planning, large-scale master plans, and Agro park and food clusters projects in both Europe and China. We strive for creating a sustainable, social and commercially feasible development plan.



Sustainable urban & rural planning and landscape designs

Team Capabilities

NL Urban Solutions has a track record of successfully implementing planning and development projects related to urban and rural development, Agro park & food industry development. Our highly qualified team provides 'one chain' service, including strategic plans, feasibility studies, concept plans, detailed planning and design, management and organization.

With our multitalented team we can add quality in social, economic, tourism, recreation, ecologic development, and the spatial quality of the place.



Sustainable Planning Solutions

We believe that water is often the leverage for the Resilient rural and urban social economic development. The sustainable development in our vision includes a balance & complementary system of profit, people, planet and place. The result of Our planning and design is aimed at maximizing stakeholder corporation, maintaining and reflecting characteristics of the place to create a competitive advantage and brand identity, while matching the scope and scale of development activities to the capacity of the natural and social environment.

High Quality Designs

- Quality of design in all dimensions: experience the beauty of space, future value, and contribute to the specific identity of the place
- Long-term economic benefits with ecological and social benefits
- Active local development

Awards Selection

- 2018: Honorable Mention in the Analysis and Planning category in IFLA Africa, Asia Pacific and Middle East (AAPME) award, Haidong City ecological plan for Huangshui River Basin
- 2018: Gold prize 8th Yuan Ye Award International Competition, Haidong City ecological plan for Huangshui River Basin
- 2018: Silver prize 8th Yuan Ye Award International Competition, Concept masterplan Slow traffic design Hualong County

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 **Eijkelpark**
Meet the difference

Contact: f.eijkelpark@eijkelpark.com



CONTACT:

NL Urban Solutions
Groenhovenstraat 2
NL-2596 HT Den Haag

T +31 703 633 126
E info@nlurbansolutions.com
I www.nlurbansolutions.com

NL-FOOD SECURITY ALLIANCE



Open-air lab, Texel: Testing crops' Salt tolerance with 7 different salt concentrations in 8 repetitions



SALINE AGRICULTURE: A PRACTICAL SOLUTION TO A GLOBAL PROBLEM

SERVICES

- Soil & land management
- Water management
- Research & development
- Training & setting up test farm
- Open-source sharing of knowledge
- Marketing & communication for saline produces

SALINE AGRICULTURE - A PRACTICAL SOLUTION

Salinization is one of the major threats to agriculture worldwide. Globally, about 20% or 63 million ha of all irrigated arable land is salt affected (about the size of France).

This number increases with 2000 ha every day and crop damage in the irrigated areas is estimated at US\$ 27.3 billion every year.

Together with salinization, frequent occurrence of drought due to climate change all around the world is contributing to poverty and loss of livelihood for many smallholder farmers.

TO A GLOBAL PROBLEM



A

PRACTICAL SOLUTION

Solution:

Saline agriculture makes use of the saline resources of the world. This can either be salt affected soils or saline water. If all saline water can be used than it is possible to double the amount of water that is available for agriculture. Moreover, if salt-affected soil can be re-used, it will contribute to the arable lands required to support the growing population and for the world food security.

We can help to grow salt tolerant varieties of crops such as potatoes, carrots, cabbages, onions, etc. on saline land, using specific soil management, fertilization, and irrigation techniques.



Picture: Participating farmer in the Bangladesh project - The salt solution

Practical:

Salt Farm Foundation together with its partners has been working on the identification of salt tolerant crops for more than ten years, with results that have been scientifically validated.

While there is a lot of research going on to find a solution for drought and salinization, Salt Farm Foundation has already put saline agriculture methods into practice.

Proven:

In Pakistan our method delivered 50% more yield as compared to conventional methods (2014-2017). In Bangladesh, we are currently training 5000 farmers together with ICCO-cooperation on saline agriculture, where they can grow crops all year around and not just during the season.

We are also working together with our EU north-sea region partners from the project "Interreg SalFar" to research further to mitigate the effect of salinization.

Awareness & Knowledge sharing:

We have setup a knowledge centre for saline agriculture with the aim of creating awareness and sharing of open-source knowledge to help struggling farmers worldwide. The online platform of the knowledge centre can be accessed at www.salineagricultureworldwide.com

About us:

Salt Farm Foundation was established for the (open source) sharing of our knowledge and solutions with small-scale farmers worldwide. Our foundation aims to facilitate saline agriculture to solve food shortage, to contribute to poverty reduction, and to provide a solution for the adverse consequences of climate change.

NL-FSA

The NL-Food Security Alliance (NL-FSA) is a network of mainly Dutch companies and institutions developing exclusive and sustainable solutions in the agri-water-food-business.

NL-FSA Is a Royal Eijkelkamp initiative



Contact: f.eijkelkamp@eijkelkamp.com



Salt Farm FOUNDATION

CONTACT:

Mokweg 41

1797 SB

Den Hoorn- Texel

T +31 12 42 66 39

E info@saltfarmfoundation.com

I www.saltfarmfoundation.com



EARTH OBSERVATION FOR NATURAL CAPITAL

SERVICES

- Deforestation risk & alerts
- Plantation location & area
- Plantation age & performance
- Crop distribution & rotation
- Cropping intensity & performance
- Agricultural risk

EARTH OBSERVATION

Right now, somewhere on the planet, a satellite is detecting change. Satelligence uses that data to protect forests and increase agricultural production.

Join us in smart analytics for:

- Responsible supply chain monitoring
- Investment and portfolio management
- Sustainable development goals
- Certification

FOR NATURAL CAPITAL

SMART FOREST COMMODITY ANALYTICS

Smart forest & commodity analytics

Satelligence creates actionable information from space data to enable our clients to feed the world while protecting the world's natural resources.

We know satellite data and how to transform it. Into information, knowledge, insights. We add value. We understand the risks and impacts affecting people, the environment and businesses. We know forest and land use change, biomass, agricultural crop performance, flood and drought risks. We help make a positive, sustainable impact on biodiversity, water, agriculture, climate and people by capturing historical to near real-time changes, patterns and trends. With our analytics you can be assured that you are always up to date, timely and accurately.

Approach

Satelligence adopts an iterative approach that starts with listening to you. Based on your needs and questions we create the insights that you need. Our maps and analytics feed into your existing decision making processes in order to support you managing agricultural performance and risk.



What sets us apart

Satelligence cares about data because we care about the planet. Forests disappear, population growth increases demand on food production and climate change challenges everything. Contact us for our services containing the exact date, location and size of changes in and around your supply base.

First to know: Are you at risk? Radar technology allows us to see through clouds and provide daily updates. So you can act before problems arise and demonstrate compliance with corporate zero-deforestation commitments.

Reliable and unbiased: Make your supply chains more transparent and sustainable with independent facts. Our algorithms are developed and verified by world leading Wageningen University scientists in cooperation with World Resources Institute.

Prioritized: We prioritize risk alerts based on your situation. We create timely reports condensed to the essential changes and reduce the cost of on-site assessments by directing your ground team to the areas that matter.

Smart analytics

Realtime, be the first to know, nobody does it as fast as us.

Reliable and unbiased, be sure of what you know.

Relevant, know what **you** need to know.

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 **Eijkelkamp**
Meet the difference

Contact: f.eijkelkamp@eijkelkamp.com

 **SATELLIGENCE**

CONTACT:

Oorsprongpark 12
3581 ET Utrecht
The Netherlands

T +31 30 227 2679
E info@info.nl
I www.satelligence.com

NL-FOOD SECURITY ALLIANCE



TRANSFORMING SUBSISTENCE FARMING'S
CYCLE OF POVERTY INTO PROSPERITY AND
SUSTAINABILITY

SERVICES:

- Precision Irrigation Installations
- Water Management
- Remote Irrigation Management
- Durable Aftermarket Parts
- Responsive Technical Service
- Site Evaluations

THE LEADER IN PRECISION IRRIGATION

Valmont pioneered the center pivot irrigation industry in 1954, and continues to innovate as the global leader in center pivots and linears. The Valley® brand provides the most reliable precision irrigation equipment and technology for agriculture, and offers advanced solutions to meet the world's growing demand for food.

CONSERVING WATER THROUGH
SUPERIOR IRRIGATION

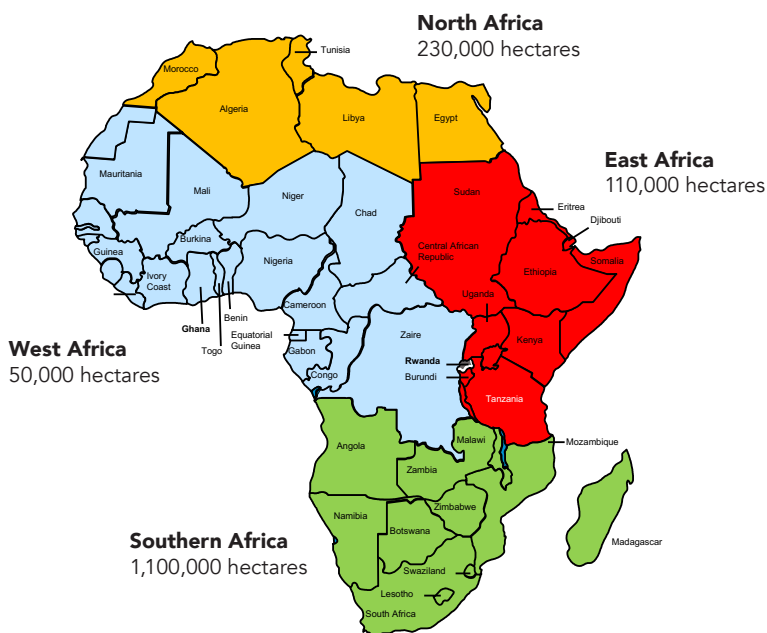


SAVE WATER IN ARID REGIONS

1.5 Million Hectares in Africa Irrigated by Center Pivots

Center pivot and linear irrigation systems allow precise water, chemical and fertilizer applications that can result in improved crop yields, reduced labor costs, better water conservation, more efficient energy consumption and reduced runoff.

Valmont currently operates seven factories located on five continents, and markets the Valley brand in more than 100 countries. Valley dealers and representatives are the most dependable and trusted in the industry.



Worldwide Network, Foundation of Success

With its worldwide support network of irrigation manufacturing facilities and commercial dealers, Valmont is uniquely positioned to provide high-efficiency irrigation equipment and technology to rural Africa. Building upon this foundation of center pivot irrigation, groups of smallholder farmers can then be organized and introduced to advanced seeds, fertilizer, pest control and mechanization for planting and harvesting as a pathway to commercial farming and an exit out of poverty.

In addition to its worldwide manufacturing and support structure, Valmont Irrigation also provides engineering services and equipment for water delivery, chemigation and fertigation, remote monitoring and control, and prescription application of both water and chemicals.

Teamwork and Transformation

Valmont first introduced center pivot and linear irrigation to farmers in South Africa in the early 1970s, distributing equipment through farmer cooperatives. These cooperatives then became dealers and service providers for their members, establishing center pivots as the preferred irrigation technology for commercial farming in South Africa. Due to this success in the commercial farming sector, Valmont established manufacturing facilities in Johannesburg and Dubai, locations that now supply equipment and services for the entire continent of Africa.

Valmont is prepared to leverage its investments and knowledge, as well as the experience gained in the commercial sector, in collaboration with other private companies, academic institutions and non-government organizations. The goal is to bring about a transformational change from reliance on subsistence farming and break the cycle of poverty so prevalent in rural Africa.

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Meet the difference

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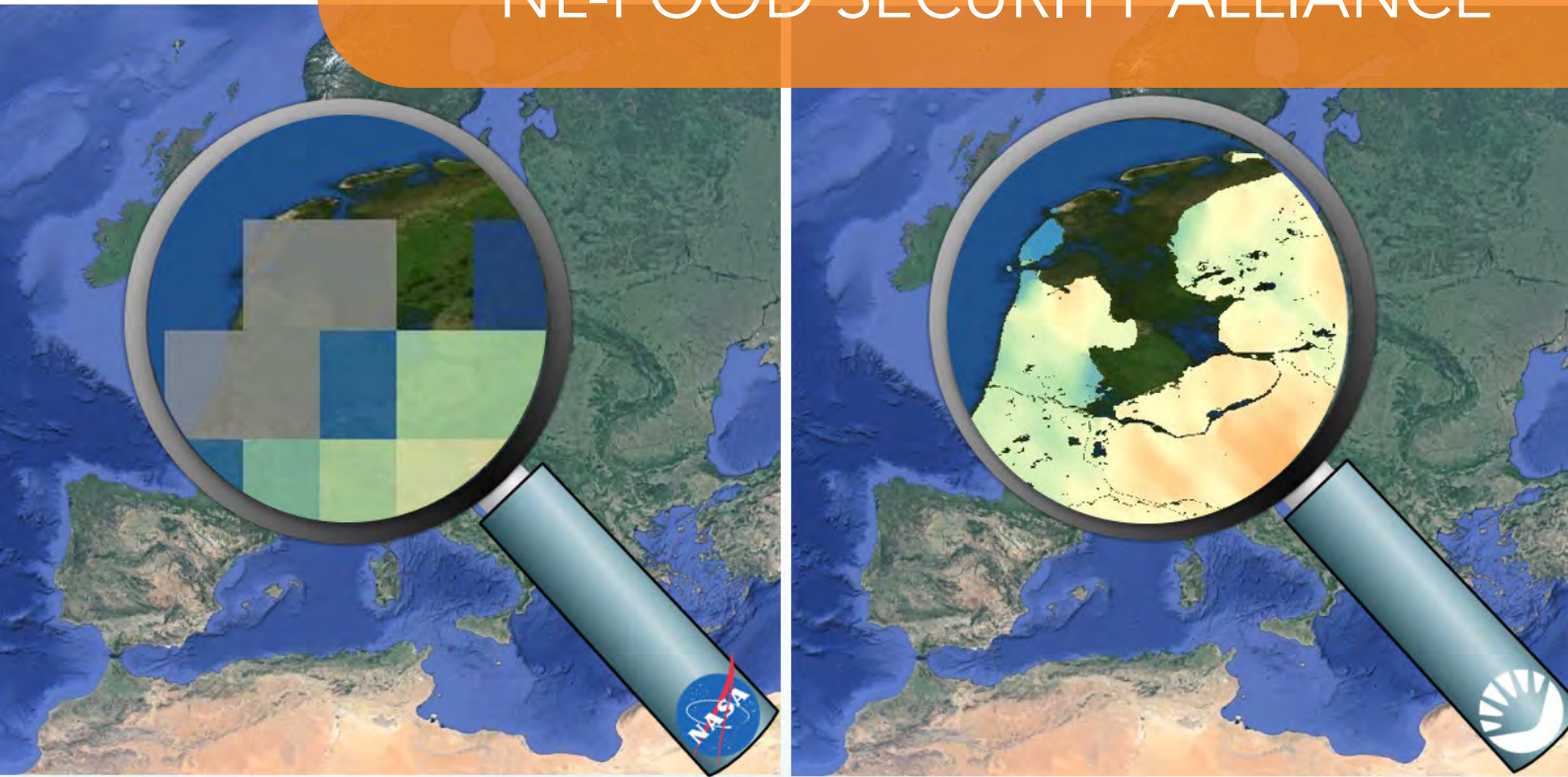
VALLEY

CONTACT:

Valley Irrigation
28800 Ida Street
Valley, NE USA 68064

T +1 402.359.2201
E irrigation@valmont.com
I valleyirrigation.com

NL-FOOD SECURITY ALLIANCE



VANDERSAT - SATELLITE OBSERVED WATER DATA.
GLOBALLY. DAILY

SERVICES

- Soil moisture monitoring
- Land temperature monitoring
- Plant water content monitoring
- Inundation monitoring

Key input for the water and agricultural sector, with a strong emphasis on food security and water safety.

SATELLITE OBSERVED WATER DATA

VanderSat is a leading global provider of satellite observed water, temperature and vegetation data products. From small farmers to multinationals: we understand the crucial role water plays.

By combining microwave data obtained from different satellites VanderSat is revealing a revolutionary data set that is global, daily and has unmatched accuracy.



SATELLITE OBSERVED WATER DATA

Drought application

VanderSat soil moisture, surface temperature and vegetation water content data are key drought indicators.

Combining these in the VanderSat drought index provides an **optimal predictive skill for crop growth**.

Crop yield application

VanderSat Drought Index strongly correlates with crop yield and can predict yield up to 2 months.

"The VanderSat data service is fully operational and near real time. As such, it is possible to warn farmers when a drought builds up, giving them a chance to react".

– Hans Feyen, head of Agriculture Reinsurance and Innovation at Swiss Re.

Our technology is extensively validated and documented in scientific peer-reviewed literature.

Similar accuracy as ground sensors is found for our data. With better spatial representation and consistency.

Clients & Partners

Selection:

- NGO's: 510 Red Cross, ICCO
- Agriculture: Verstegen Spices & Sauces B.V., Tongaat Hullet
- Insurance: Swiss Re, ACRE Africa, Rabobank and fintech
- Water: Dutch Water Authorities, European Commission

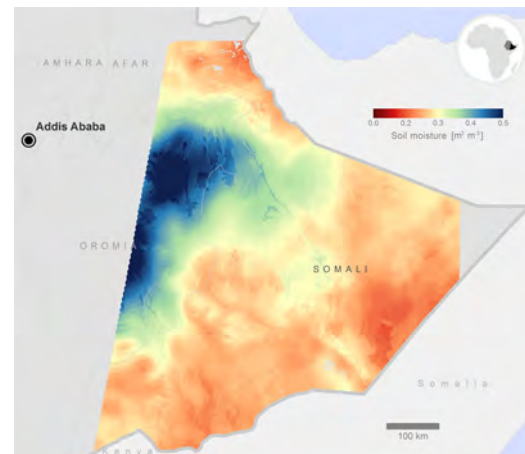
VanderSat data

The patented methodology of VanderSat provides multiple data services at unprecedented resolution:

- Soil moisture 100 x 100 meter
- Land temperature 100 x 100 meter
- Vegetation water content 100 x 100 meter
- Inundation 10 x 10 meter

Key features:

- Coverage: Global
- Frequency: Daily
- Availability: 2002 - present
- Cloud and darkness proof



Detailed information on the current soil moisture status could lead to more precise flood and drought forecasting – especially in countries with a sparse ground sensor network”, says Stefania Giodini, Team Lead of Red Cross’s 510 data initiative.

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Contact: f.eijkelpark@eijkelpark.com



VanderSat CONTACT:

VanderSat B.V.
Wilhelminastraat 43A
2011 VK Haarlem

T +31 (0) 233 690 093
E cnobel@vandersat.com
I www.vandersat.com



“BOOSTING SUSTAINABLE AGRICULTURAL PRODUCTION THROUGH STATE OF THE ART ENGINEERING SOLUTIONS”

SERVICES

- Project management
- Master planning and feasibility studies
- Process and Infrastructural design
- Tendering, planning and policy support
- Social and environmental impact studies
- Value chain and business case development
- Soil, hydrologic and topographic assessments
- Ecological and environmental system analysis
- Monitoring and data analysis

INTEGRATED APPROACH

Witteveen+Bos is there for farmer cooperatives, private companies, governmental agencies and NGOs to find practical and sustainable solutions to the challenges placed on agricultural production by the rapidly changing environment. For each project we select a multidisciplinary team from our large pool of experts working in agriculture, agro-economy, climate adaptation, integrated water resource management, soils, irrigation and drainage, to meet the specific project demands and find a custom solution.

CUSTOM SOLUTIONS



ENGINEERING THE FUTURE WE LIVE IN

Challenges of today

To meet the increasing demand for food, agricultural production is to be doubled by 2040. At the same time production is threatened by the adverse impacts of climate change such as drought, torrential rains, cyclones and salinity intrusion. Meeting these challenges requires efficient and sustainable agricultural production systems.

Solutions of tomorrow

Witteveen+Bos is specialized in solving complex agriculture, water management, development and sustainable land use challenges. Due to strategic cooperation with specialized knowledge providers, such as Wageningen University, our solutions always build on the latest scientific insights.



Experience

We have extensive experience assisting clients from an initial project idea to full implementation. Including the project examples below;

Hydrological survey, water demand assessment, reservoir, drainage and irrigation design - mixed crop farm (16,000 ha) - Ghana

Business case analysis, production of fodder out of duckweed - The Netherlands

Feasibility study: soil, (geo)hydrologic topographic and flood assessments - sugarcane plantation (480,000 ha) - Indonesia

Irrigation design and tendering - pineapple plantation (500 ha) - Sierra Leone

"Biocascade", closing the loop by extracting phosphate out of agricultural waste water - The Netherlands

Aquaculture farm, smallholder scheme, water quality assessment, layout (7 ha) - Ghana

Eel stock assessment and pilot with sustainable fishery - The Netherlands

Feasibility study dam, water treatment facility, and piping for water supply and local (food) industry - agroforestry - Indonesia

Our Company

Witteveen+Bos is an engineering firm based in the Netherlands, established in 1946. We currently employ over 1100 professionals worldwide, working in the fields of Water, Infrastructure, Environment and Energy. From our offices situated in the Netherlands, Belgium, United Kingdom, Latvia, Russia, Kazakhstan, Dubai, Ghana, Singapore, Vietnam and Indonesia, we serve our clients all over the world.

Let us know how we can help you!

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NL-FSA IS A ROYAL EIJKELKAMP INITIATIVE



CONTACT:

Phone +31 620945034
Adress herman.mondeel@witteveenbos.com
Website www.witteveenbos.com



52impact

360BLUE IS AN INNOVATIVE SOFTWARE SERVICE THAT ENABLES COMPANIES AND GOVERNMENTS TO MANAGE WATER RESOURCES

SERVICES

- Physical water risk monitoring (quality and quantity)
- Water footprint assessments
- Water optimisation

MEASURE - MONITOR - MONETISE

360blue is an information and software suite to determine water-related risks, support the optimisation of water management, and assess water footprints. We acquire, process, integrate and visualise various types of water-relevant data to provide insight into water resources, usage and associated risks. The service can be deployed worldwide, and is easily adaptable to the local situation.

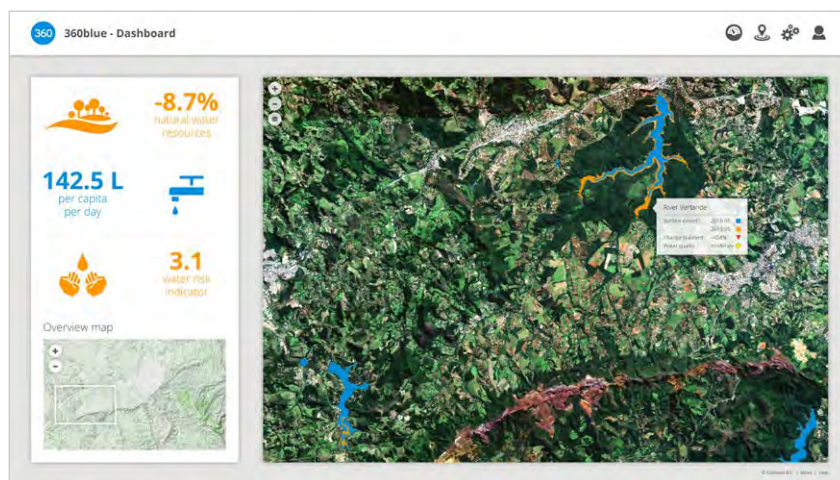
SAVING WATER STARTS WITH DATA

WATER INFORMATION SERVICES

Software

360blue offers an integrated software platform for water resource management. It gathers Internet of Things (IoT) sensor data and combines this with satellite imagery and infrastructure information to deliver real-time insight into water usage, water quality and environmental effects.

360blue provides tailored information to our customers through an intuitive web application, task-based mobile apps and automated alarm subscriptions.



Internet of Things

360blue captures, processes and visualises quantitative IoT sensor data such as level and flow as well as qualitative sensor data like temperature, turbidity, conductivity and other chemical elements in water. This provides important information on the status of water bodies and groundwater reservoirs.

Earth observation

New space-based technologies enable a yearly, monthly, or even weekly update of the area of operation by using satellite imagery. With optical and radar data, one can measure changes in ground structures, environmental effects caused by water level changes, soil moisture, temperature and various chemical elements. Correlating water IoT data with Earth observation is one of the unique features of 360blue.

Partnerships and white label

360blue is developed by 52impact. We work with key partners within the water industry like hydro-engineering agencies, sensor manufacturers and research institutes. Together we create solutions to optimise water resources.

The 360blue software is delivered as a secure, cloud-based service that is customised for partners in a white-label model.

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ROYAL Eijkelkamp
Meet the difference

Contact: f.eijkelkamp@eijkelkamp.com

52impact

CONTACT:

52impact B.V.
Van Nelleweg 1
3044 BC Rotterdam
The Netherlands

E info@52impact.nl
I www.52impact.nl

Notes:

NL-FSA

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NL-FOOD SECURITY ALLIANCE

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Interested? Contact: f.eijkelkamp@eijkelkamp.com

WWW.NL-FSA.ORG