Nestlé

Creating Shared Value

Nutrition | Water | Rural Development

Natural Capital

- Water in Agriculture -

Nestlé's mission is to meet the nutritional needs of consumers by offering safe, nourishing and healthy foods and beverages. As the world's largest Nutrition, Health and Wellness company, we purchase nearly one percent of the world's agricultural production. Together with other companies in the agri-food industry, we rely on functioning ecosystems and a healthy environment.

Water is essential to food security and nutrition, but it is also the lifeblood of ecosystems on which food security depends for present and future generations.

Water resources availability depend on climate, hydrologic cycles and on water use. Water is not distributed evenly throughout the globe, with some countries having an abundance of water while many manage conditions of extreme water scarcity.

Water, food and agriculture

Agriculture uses 70 percent of freshwater withdrawal, the remaining 30 percent goes to industry and domestic use.[7]

During the last 100 years, water use for agriculture has been constantly growing. Massive improvements in hydraulic infrastructures have put water at the service of people. Agricultural productivity has grown, thanks to new crop varieties and fertilizers, further fuelled by irrigation water. The improved use of water for irrigated agriculture benefited farmers and rural communities –

Understanding local water challenges in Ecuador to improve water management.

propelling economies, improving livelihoods, and fighting hunger.

According to the United Nations' Food and Agriculture Organisation (FAO), the world population is predicted to grow from present 7 to 9+ billion in 2050. Rising population and incomes are expected to call for 70 percent more food production globally[6].

Furthermore, competition for water is projected to grow as a result of changing consumption patterns and dietary preferences for animal protein which, in turn, will significantly increase demand for feed and fodder.

In this context, agriculture faces a complex challenge: produce more food of better quality while using less inputs (i.e. water) per unit of output; provide rural people with resources and opportunities to live a healthy and productive life; ensure environmental sustainability and conserve natural capital, while coping with constantly changing weather patterns.

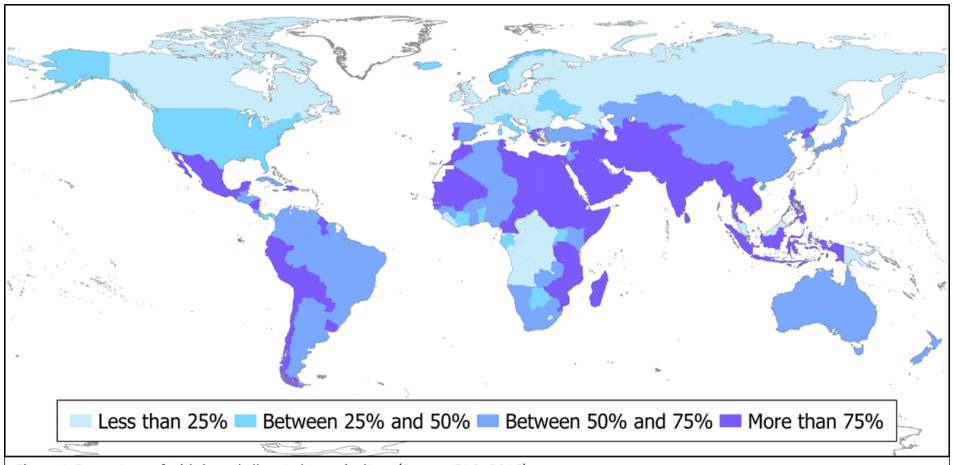

Figure 1: Percentage of withdrawal allocated to agriculture (Source: FAO, 2016).

Factors influencing the quantity of water used

Water is the key for a productive agriculture. Climatic conditions and weather patterns strongly influence water demand for agriculture. Depending on crop and livestock, requirements for water change in terms of quality and quantity.

The crop water requirement corresponds to the quantity of water required by a crop in a given period of time. It is influenced by temperature, precipitation, soil type and its water holding capacity, crop type and variety, growth stage of the crop and farming practices. The crop water requirement is also affected by stress factors including extreme temperature and water conditions as well as soil fertility/health, the nutrition status of the plant and the salinity of water and soil.

Promoting advanced irrigation techniques for maize cultivation to enhance water productivity in Pakistan.

About 60% of global crop water requirements are covered by rainfed agriculture, depending only on rainfall and no permanent source of irrigation. The remaining is irrigated (water extracted from rivers, lakes and aquifers). The area of land under irrigation is continuously expanding. Approximately 40% of irrigated land relies upon groundwater.[2]

The livestock water requirement corresponds to the quantity of water required by a each type of domesticated animal over a given period of time. It is influenced by temperature, relative humidity of the air, animal type and breed, size and age of animal, and intensity of production system. Furthermore, the water require-

ments will depend on the quality of the water (e.g. temperature, salinity and impurities affecting taste and odour) and the feed and fodder offered to the animal.

Besides livestock's water requirements for drinking, water is used in feed and fodder production and may also be used in the husbandry system. Thus, water requirements may be influenced by the type of housing, the manure management as well as cleaning and cooling uses.

Factors influencing the water quality

Agriculture can be affected through the use of wastewater or polluted surface and groundwater. But agricultural practices can also generate water pollution through the application of pesticides, spreading of slurry and manure or inappropriate cultivation and irrigation practices. All of these can lead to nutrient leaching, erosion and salinization and may result in water and soil contamination.

The extent to which these agricultural practices pose a risk of transferring pollutants to water depends on several factors such as, but not limited to: (i) the weather, in particular the intensity of rainfall; (ii) the soil type and the underlying geology; (iii) the connectivity of the land to a water body; and (iv) the topography.

There are two types of water pollution origins: nonpoint source and point source pollution. It is generally accepted that most pollution from agricultural practices is treated as nonpoint source pollution as there is no obvious point of entry of pollutants.

Visiting farmers near Vittel, France, to discuss farming methods that avoid polluting groundwater.

Advising dairy farmers on water management techniques in Moga, India.

In agriculture, the biggest factors influencing water quality are related to nutrients and pesticide use. Excess loads of nutrients entering water bodies, originating from synthetic fertilizers and manures can pose a significant threat to water quality due to the enrichment of phosphorus and nitrogen levels, which can lead to eutrophication (i.e. enhanced plant growth and depleted oxygen levels in aquatic systems).

Pesticides, on the other hand, consist of compounds which are relatively soluble, most of them degradable, but remain potentially harmful to ecosystems and human health. Pesticides are either carried as dust by wind over very long distances or may enter water bodies as runoff following application to crops or inappropriate disposal. The degree to which a pesticide can contaminate water resources depends on its solubility and degradability as well as its level of toxicity – a function of dosage and time of exposure – of the particular pesticide and its breakdown products.

Salinization is another significant and widespread form of environmental degradation related to the use of water in agriculture. Salinization may either be caused by the use of saline irrigation water, shallow saline groundwater tables, or a combination of several.

Given the rising demand for food, declining water quality and differences in water availability across the globe calls for the promotion of a **smarter use of water in agriculture**.

Water stewardship

Definition: "Water stewardship is the use of water that is socially equitable, environmentally sustainable, economically beneficial, achieved through a stakeholder-inclusive process that involves site and catchment-based actions". *(Alliance for Water Stewardship)*

Water stewardship builds on the widely known integrated water resource management. It defines the stewardship role of each stakeholder in the water catchment. Water stewards understand that physical processes and activities in a particular site may impact neighbours and the entire catchment. They act accordingly and contribute to the development and implementation of an integrated water resource management plan. Such a plan may be developed at different levels such as **watershed, catchment, basin level** and may involve many different stakeholders e.g. farmers, landowners, real estate and industry players, governmental agencies, civil society organizations, and inhabitants.

Water stewards in agriculture recognize how water is used at the farm level, understand quantities and qualities of water available, where it comes from and where it flows to. Hence water stewards also care for appropriate drainage, wastewater

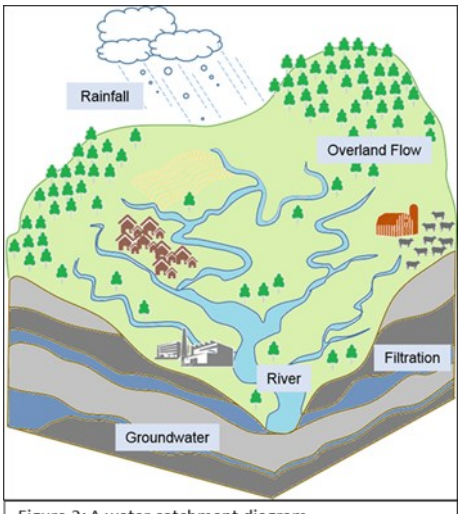

Figure 2: A water catchment diagram.

and manure management, and monitor corresponding flows for sound decision making.

Irrigation and drainage of fields impact water flows well beyond the farm premises. Through water stewardship, a well-managed irrigation system leverages all stakeholders' interests. In some regions, irrigation and drainage is realized through large scale infrastructure projects usually put in place accompanied with determined irrigation schedules. However, in many places, well managed irrigation system are missing. In such environments water stewardship plays a key role in raising awareness and facilitating the development of integrated water resource management plans.

Improving rural communities knowledge on water through the Farmer Water Awareness Programme in India.

Water stewardship may be further supported through new innovations in technologies that allow for smarter management of water in agriculture. These technologies may offer on-line information on the water availability status at catchment level, automatically monitor water flows at farms and provide information and guidance on site and crop-specific irrigation management.

As a major water user, great opportunities exist to improve the agricultural sector global water use through water stewardship. Intrinsically linked to agriculture, the food and beverage industry has a keen interest in fostering a responsible use of water along the entire value chain.

Nestlé's actions

Water is an important natural resource for Nestlé. As one of the worlds' largest buyer of agricultural raw materials, water is fundamental to our entire value chain. For Nestlé, water stewardship is about implementing collective water management practices and move towards a broader understanding of the catchment within which we and our suppliers operate.

Back in 2001, Nestlé initiated the Sustainable Agriculture Initiative (SAIN). The initiative is interlinked with a variety of internal programs, such our direct sourcing program Farmer Connect, the Nescafé Plan, the Cocoa Plan, the Nespresso AAA program, Responsible Sourcing and other sourcing operations. These contribute to the production and supply of safe, high quality raw materials for Nestlé brands. SAIN promotes more sustainable agricultural practices through education and training. It aims at developing lean and efficient supply chains and enables us to address key challenges in water management and irrigation, such as resilience to drought and flooding as well as wastewater and manure management.

The importance of water has led us to complement our Policy on Environmental Sustainability in 2014 with a specific commitment on Water Stewardship.

In the latter appendix, we commit to engage with farmers and suppliers to incorporate requirements for water management into the sourcing of agricultural raw materials. Where water is scarce, we prioritize interventions for sourced raw material, and provide training and support to farmers. We also undertake R&D activities on drought tolerant plant varieties and post-harvest processing to further reduce water usage.

For operational guidance, we make use of the SAI Platform documents on Water Stewardship in Sustainable Agriculture 'Beyond the farm towards a catchment approach' and 'Farm and catchment level assessment' as well as the tool 'Response-Inducing Sustainably Evaluation' (RISE) to assess water use and support the development of appropriate solutions.

Promoting better water management practices to Vietnamese coffee growers.

Nestlé continues to advocate for effective policies and stewardship through the Alliance for Water Stewardship (AWS), the UN CEO Water Mandate and the Sustainable Agricultural Initiative (SAI) Platform. We support activities of the World Business Council for Sustainable Development (WBCSD) and partner with the Stockholm International Water Institute (SIWI). We have established collaborations with local organizations, universities and government agencies in Nestlé markets which help us make a real difference on the ground.

More information, including previous publications on Nestlé's Commitment to Natural Capital, and details on how to contact us, is available at: www.nestle.com/csv

2016, Vevey, Switzerland

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