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RISE (Response-Inducing Sustainability Evaluation), version 2.0

Released on February 1st, 2011

In a nutshell

RISE (*Reponse-Inducing Sustainability Evaluation*) is an interview-based method for assessing the sustainability of farming operations across the economic, social and environmental dimension. It was developed at and is distributed by the Swiss College of Agriculture (www.shl.bfh.ch). From information collected on the farm during a ca. three-hour interview, scores of 54 parameters are calculated. These scores, which range from 0 (worst) to 100 (best), are condensed into ten indicator scores and visualised as a radar chart. Results are thoroughly discussed with farmers and should support the continuing improvement of farm sustainability, ideally in the context of extension, development or quality management programs. Since its inception in 2000, RISE has been used on some 750 farms worldwide, mostly on a fee-for-service basis. The new version, RISE 2.0, will be released in spring of 2011 and will be distributed via a training and license model.

Introduction and background

Goals

RISE serves the holistic evaluation of the sustainability of agricultural production at farm level. The vision of RISE is to contribute to more sustainable agricultural production by helping disseminate the philosophy and practice of sustainable farming. This shall be achieved by making sustainability more measurable, tangible and communicable at farm level. By pin-pointing sustainability potentials and deficits, classical economy-focused farm management is complemented by the environmental and social dimension. Our target group includes all stakeholders in agriculture, society, administration and business who share this vision.

The RISE method has been developed and refined since 2000 in cooperation with Swiss and international partners and clients from science, society, the public administration and the food and agro-industries. It has been applied on some 750 farms in more than 20 countries: from dairy farms in China and Chile to mixed farms in Switzerland and Armenia, from smallholders in Kenya and Ethiopia to tea and coffee plantations in India, Brazil and Nicaragua.

Postulates for sustainable development

In RISE 2.0, sustainable development (SD) is interpreted in line with the 1987 WCED (World Commission on Environment and Development) report and chapter 14 of the Agenda 21[1]. The overarching paradigm of SD is concretised into principles that were developed on the basis of international treaties, scientific publications and related indicator sets (e.g. on the environment: Hauff, 1987; Pearce & Turner, 1990; Daly, 1991; Enquête-Kommission, 1998; ARE, 2008; BFS, 2007; on economy: WCED, 1987; Heissenhuber, 2000; on the social dimension: UN, 1948; Rio-Deklaration, 1992; MA, 2003; SKOS, 2005; ARE, 2008).
Translated to the farm level, and harmonised with the principles of, inter alia, the FAO (UN Food and Agriculture Organisation), the SAI platform (Sustainable Agriculture Initiative) and the Swiss law on Agriculture, the following picture of a sustainably producing farm evolves. The RISE parameters and indicators basically evaluate the compliance with this idealised situation.

[1] „Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it (...) the concept of 'needs', in particular the essential needs of the world's poor (...) and the idea of limitations imposed (...) on the environment's ability to meet present and future needs." (www.un-documents.net/wced-ocf.htm)

Sustainable agriculture at farm level in RISE 2.0
The farm produces food, feed and further agricultural products and services in amounts that meet the demands of population and trade and that reflect the local production potential, as defined by climate, soils and socio-economic framework conditions.

Fossil fuels and other non-renewable resources are only used for agricultural production at rates at which a physically and functionally equivalent renewable replacement becomes available, and at which demand for non-renewables is reduced by increased resource use efficiency. The direct and indirect use of such resources, e.g. energy consumption for mineral fertiliser production, is constantly reduced. Soil and water are utilised such that their regeneration rate is not exceeded, their quality is neither heavily nor irreversibly compromised and high resource productivity is achieved. The withdrawal of water may not irreversibly disturb aquatic ecosystems. Nutrients, namely nitrogen, phosphorus and carbon, are used efficiently and recycled at farm level to the highest degree possible. The farm management employs knowledge and technology to improve resource use efficiency. Adapted production technologies are used to protect natural resources from damage. Inputs are used according to the principle „as few as possible, as much as necessary".
The production systems on the farm help preserve the diversity and functionality of ecosystems in and around the agricultural areas. Livestock are kept appropriately to the respective species' demands. No harmful substances (ozone, radionuclides, organic pollutants, substances with high eutrophicating, acidifying or global warming potential) are released to soils, water or atmosphere in amounts that exceed the intake and carrying capacity of the environment or that could harm human, animal or ecosystem health.

All those working on the farm are provided employment under decent and healthy conditions, and human rights are fully respected. This includes fair remuneration and treatment irrespective of gender, age, religion, nationality, skin complexion or ideology. Within the limits set by safety and sustainability requirements, all employees are free to choose their way of working and living. The farm management creates an environment where employees can access to resources, education and economic and societal life. Through regional purchasing and hiring, the farm makes an appropriate contribution to improved socio-economic conditions in the region. The income from farm work allows people on the farm and their families (or contributes according to their employment status) to achieve a standard of living that safeguards their mental and physical health and well-being, including food, water, clothes, medical care and social benefits.

The farm yields a revenue that allows the owner to fulfil his/her obligations to pay in time, to reinvest as needed to at least maintain productive capacity and to invest in new, more sustainable technologies for integrated production and farm management. The farm is economically, ecologically and socially resilient and can thus tolerate natural and socio-economic turbulence. The farm's existence does not depend on single suppliers, buyers, products or government subsidies. Farm and people are secured through a network of formal and informal mechanisms, including cooperation with other farms and institutions.

Methodology

Framework of the RISE analysis

- A questionnaire-based interview with the farm manager is the main source of information.
- Except for very big and complex farms, data collection does not take more than three hours, including a brief tour of the farm. No measurement devices are needed.
- The most precise and reliable sources of data available are used. Where documentation is present, it should be drawn upon. Certain parameters may be „ticked off" in countries with very high regulation and control density (e.g. waste disposal in Switzerland).
- The RISE questionnaire can be filled in and the results can be presented by a trained agronomist.
- Denominations and goals of all indicators and parameters, as well as the RISE polygon and tables, are easily comprehensible – possibly with a brief explanation – for all stakeholders in the agricultural sector.

- The subject of the RISE analysis is agricultural production at farm level within one year. The analysis is extended at some points to match the realities of farm management: (1) temporally from one to ten years in order to evaluate trends, (2) spatially from the farm to the landscape resp. watershed. The scope of some of the economic parameters can be modified.

Indikator calculation and analysis

RISE 2.0 evaluates the sustainability of agricultural production through ten indicators, each calculated from four to seven parameters. The main criteria of indicator selection and development are: relevance for farm sustainability, methodological soundness, reproducibility, within the farmer's scope of action, transparent valuation functions, reasonable cost-benefit ratio. For the complete list of indicators and parameters, see Tab. 1 below.

Data types in RISE include farm data, regional data and reference data. Farm data are collected individually from each farm, regional data are collected once before the first farm visit in the region. All data should be based on the best available source. Data are normalised, i.e. transformed onto a scale from 0 to 100, through comparison between farm and reference data and by using valuation functions. The values of the resulting parameters range from an optimum (100 points, completely sustainable way of producing) to a completely intolerable (0 points) situation (Fig. 1). Some valuation functions are regionally adapted at the beginning of each project, e.g. by classifying regional climate as arid or humid. Some benchmark and reference values can be determined by stakeholders; this is meant to alleviate the trade-off between global applicability and relevance under the conditions of each individual farm (von Wirén-Lehr, 2001).

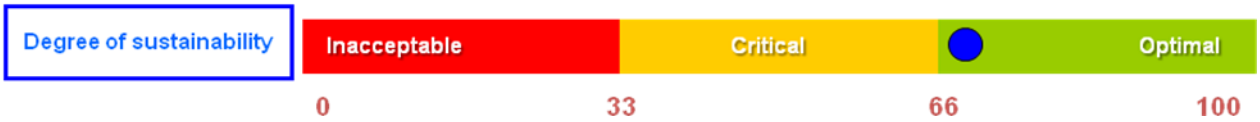

Figure 2. Significance of scores and colour code in RISE 2.0. In this example, the farm scores 65 points for an indicator and is thus rated as being on track to sustainability.

Report and feedback discussion

The RISE feedback report consists of a farm profile, the farm sustainability polygon (Fig. 2), a table with all parameter scores that is the basis for the detailed discussion, followed by further explanatory information on the indicators, their meanings and calculation. Based on the report, farm potentials and deficits are discussed with the farm manager. Farmer and consultant clarify whether the RISE results are consistent with the farmer's view and which measures for improvement could be taken. The RISE consultant provides the farmer with information to facilitate the next steps.

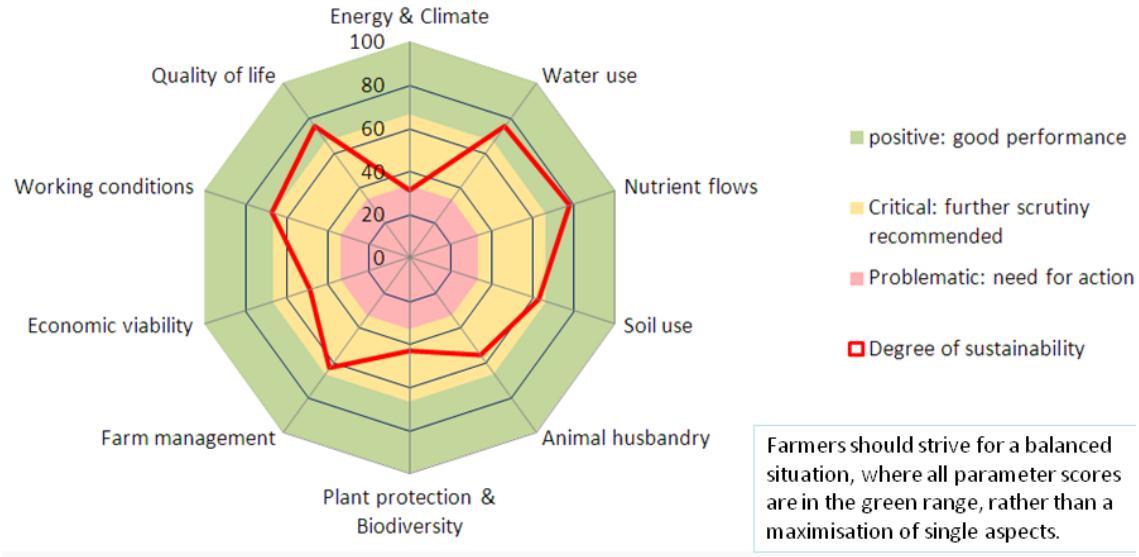

Figure 2. The RISE 2.0 sustainability polygon.

Table 1. Indicators and parameters of the RISE 2.0 indicator set.

Indicators	Parameters
Energy & Climate	• Energy management • Energy intensity of agricultural production • Share of sustainable energy carriers • Greenhouse gas balance
Water use	• Water management • Water supply • Water use intensity • Risks to water quality
Soil use	• Soil management • Crop productivity • Soil organic matter supply • Soil reaction • Soil pollution • Soil erosion • Soil compaction
Plant protection + Biodiversity	• Management of plant protection + biodiversity • Ecological priority areas • Intensity of agricultural production • Landscape quality • Diversity of agricultural production
Nutrient cycles	• Nitrogen balance • Phosphorus balance • N and P self-sufficiency • Ammonia emissions • Waste management
Animal husbandry	• Herd management • Livestock productivity • Possibility for species-appropriate behaviour • Quality of housing • Animal health
Economic viability	• Liquidity reserve • Degree of indebtedness • Economic vulnerability • Livelihood security • Cashflow turnover ratio • Usage of debt service limit
Farm management	• Farm strategy + planning • Supply and yield security • Planning instruments+ documentation • Quality management • Farm cooperation
Working conditions	• Personnel management • Working times • Safety at work • Salaries and income level
Quality of life	• Occupation + education • Financial situation • Social relations • Personal freedom + values • Health • Further aspects of life

Development and application of RISE

The previous versions, RISE 0.x and RISE 1.x, were applied in a variety of contexts. From 2000 to the end of 2010, 750 farms in 22 countries were analysed, including dairy, vegetable, arable and mixed farms as well as coffee, cocoa and tea plantations, smallholder farms and nomadic herders. The RISE method was and is developed and applied in joint projects of the Swiss College of Agriculture with Nestlé, the GEBERT RÜF Foundation, the Research Institute for Organic Agriculture (FiBL), Syngenta, the Swiss Federal Office of Agriculture and other partners. Aspects of development and application of RISE were and are the subject of more than 30 student projects, from semester to MSc theses.

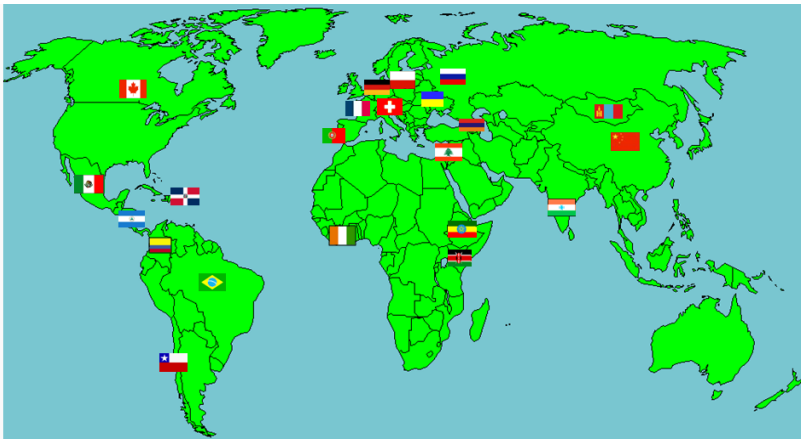

Figure 3. Countries where RISE was used from 2000 to 2010.

The new version, RISE 2.0, was developed according to the concepts of Mitchell et al. (1995) and Zahm et al. (2008): based on established definitions of sustainable development and agriculture (WCED, 1987; FAO, 1995; ARE, 2008), the RISE concept of sustainable agriculture at farm level was refined and translated to each of the ten indicator topics. During all steps of model development, feedback collected from partners, RISE users and farmers, as well the results of an external evaluation and two expert consultations were taken into account.

The indicator and parameter set was subjected to a cross comparison with an array of other indicator sets in 2010 (UN, 1992; GRI, 2006; ILO, 2008; ISEAL, 2008; Breitschuh et al., 2008; Zahm et al., 2008; Meul et al., 2008; Pretty et al., 2008; Hülsbergen, 2009). Inconsistencies and overlaps were then resolved and gaps closed were possible. RISE 2.0 will be ready for field application in the spring of 2011.

Literature

All cited publications are available on request.

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