



Sustainable development and agriculture



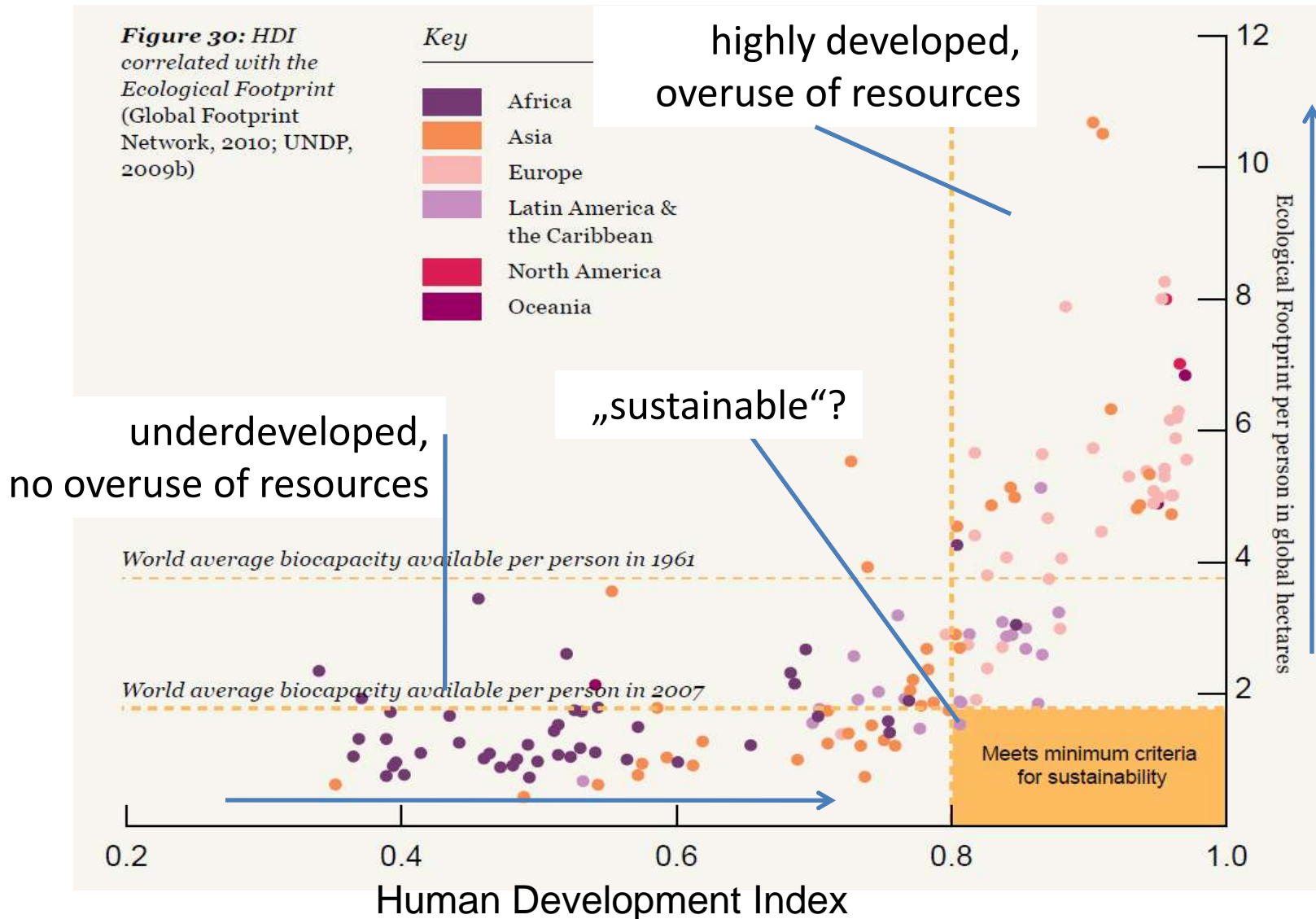
Michael Schoch
Scientific Collaborator
Bern University of Applied Science
michael.schoch@bfh.ch
(Slides composed by Jan Grenz)

1987: The „Brundtland report“

“A development that meets the needs of the present without compromising the ability of future generations to meet their own needs.“

World Commission on Environment and Development (WCED),
in its report “Our common future”, 1987

Trade-off: Environment-Development



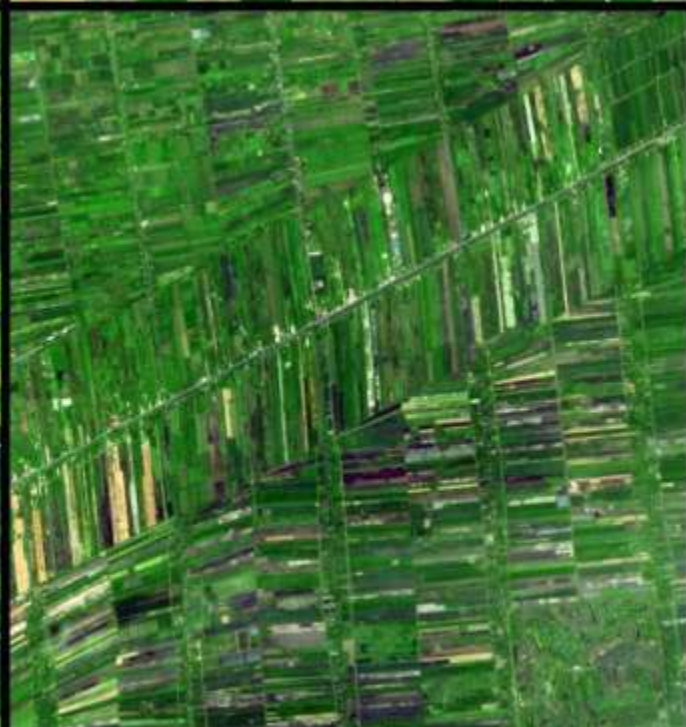


Tradeoffs... substitution is possible, but for how long?

Sustainable development in a nutshell



- o denotes a desired process of societal change
- o is based on the perception of „natural limits to growth“, yet remains a deeply anthropocentric vision. Therefore, sustainable development is about dealing with trade-offs.
- o is about intra- and intergenerational justice
- o adopts a long-term, holistic (multi-dimensional) world view, hence it is also about facing trade-offs
- o is not a scientific, unequivocally defined term, but a normative principle (like e.g. justice)

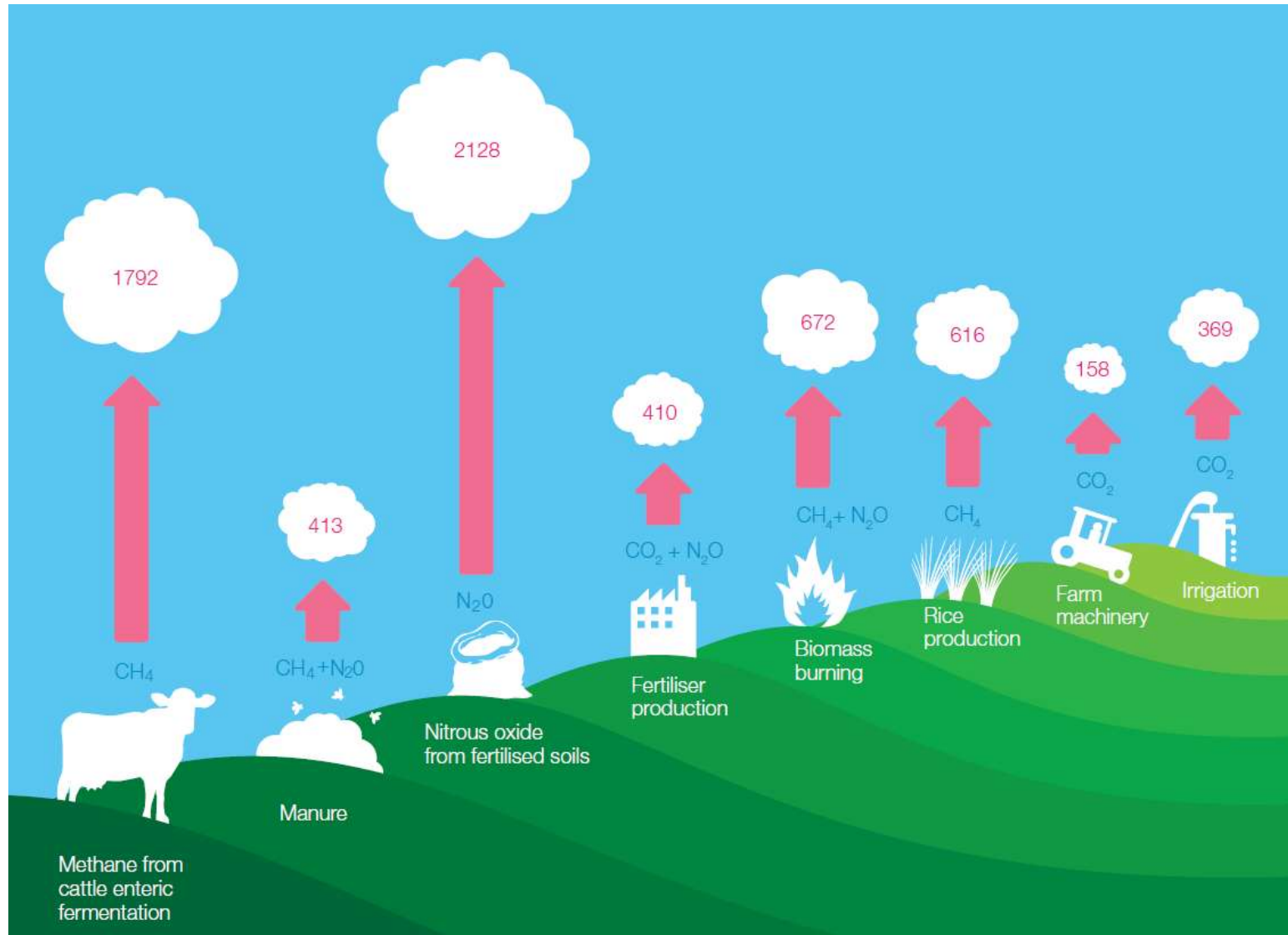








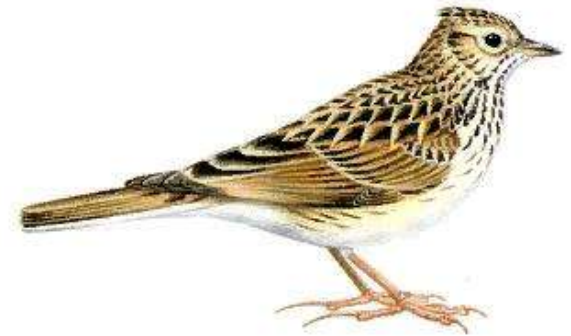
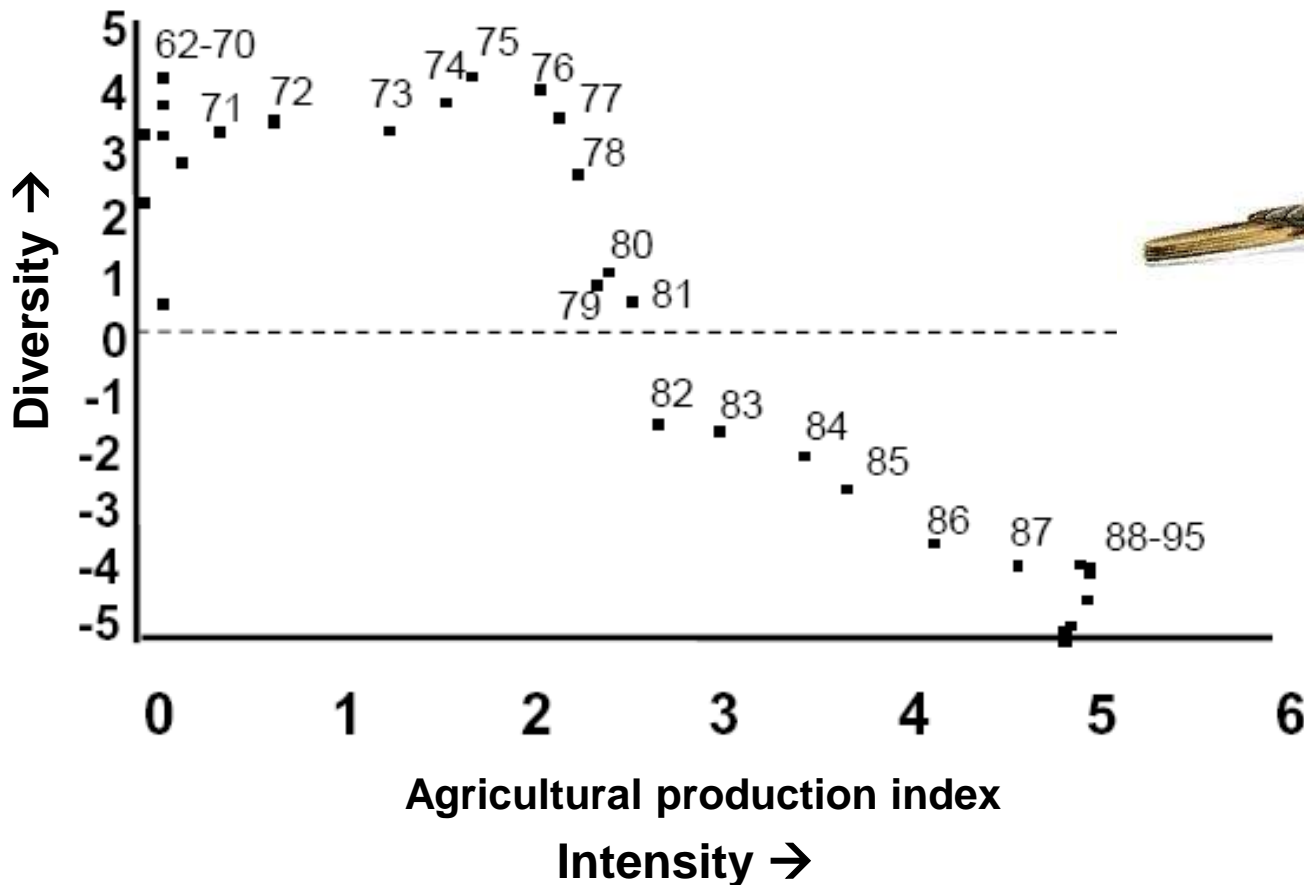
Agricultural greenhouse gas emissions



all figures in mio. t CO₂-eq/year; Greenpeace, 2008

Intensity of agriculture and diversity of bird species in England and Wales, 1962-95

Bird diversity index



Sky lark



Private production standards



RISE 2.0: approach and philosophy



Michael Schoch
Scientific Collaborator
Bern University of Applied Science
michael.schoch@bfh.ch

What is RISE*?

*Response-Inducing Sustainability Evaluation

- A method facilitating a rapid and holistic evaluation and communication of the sustainability of agricultural production at the farm level,
- Attempting to make sustainability better comprehensible, tangible and measurable
- An ensemble of indicator system, science-based algorithms, database and software

“RISE is like a mirror of my farm.” (a farmer)

“RISE is my key to the farm” (farm advisor)

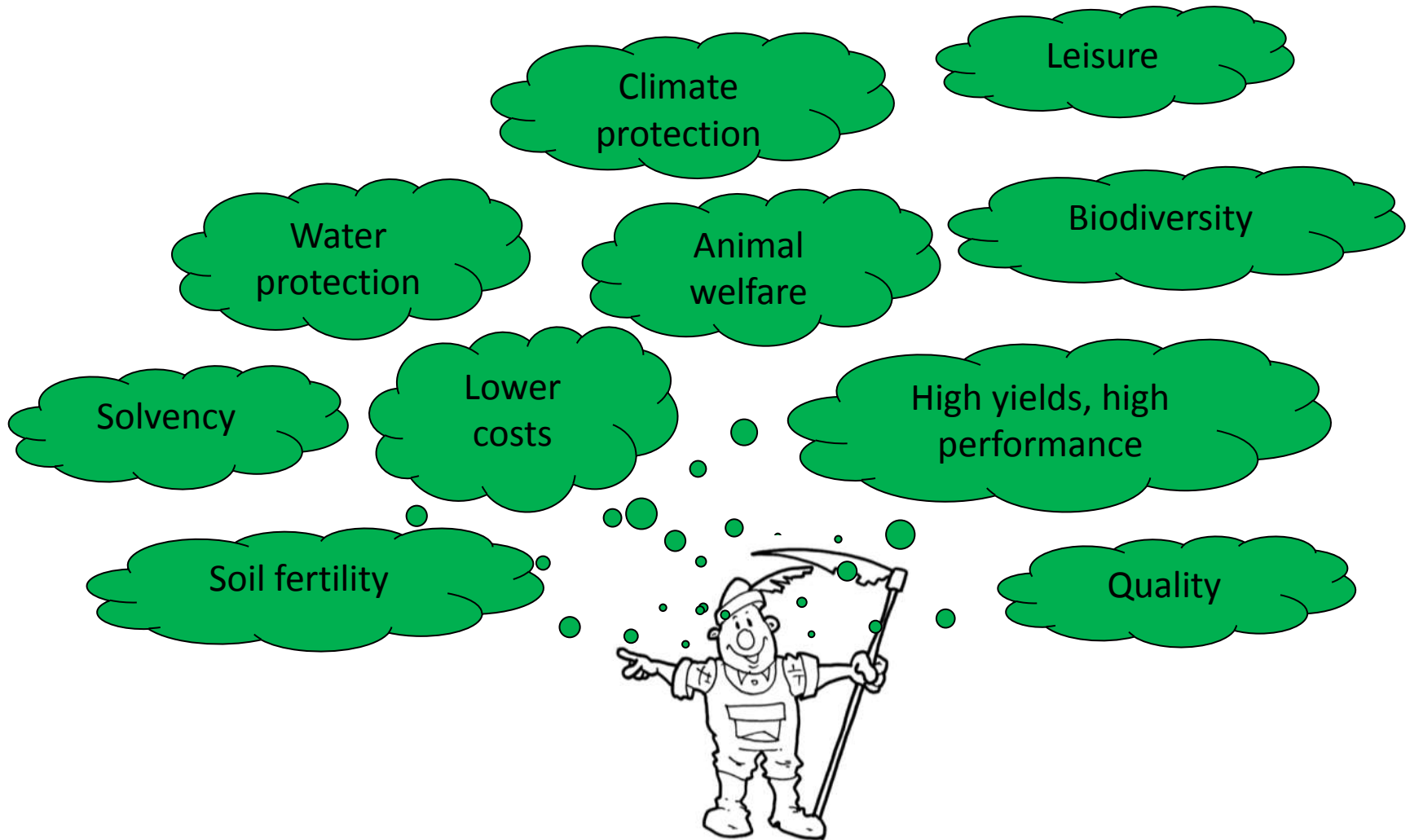
„RISE conveys the idea of sustainability to farmers.“ (an official of the Swiss Federal Office of Agriculture)

Bridging the gap between science / food industry / consumers and application



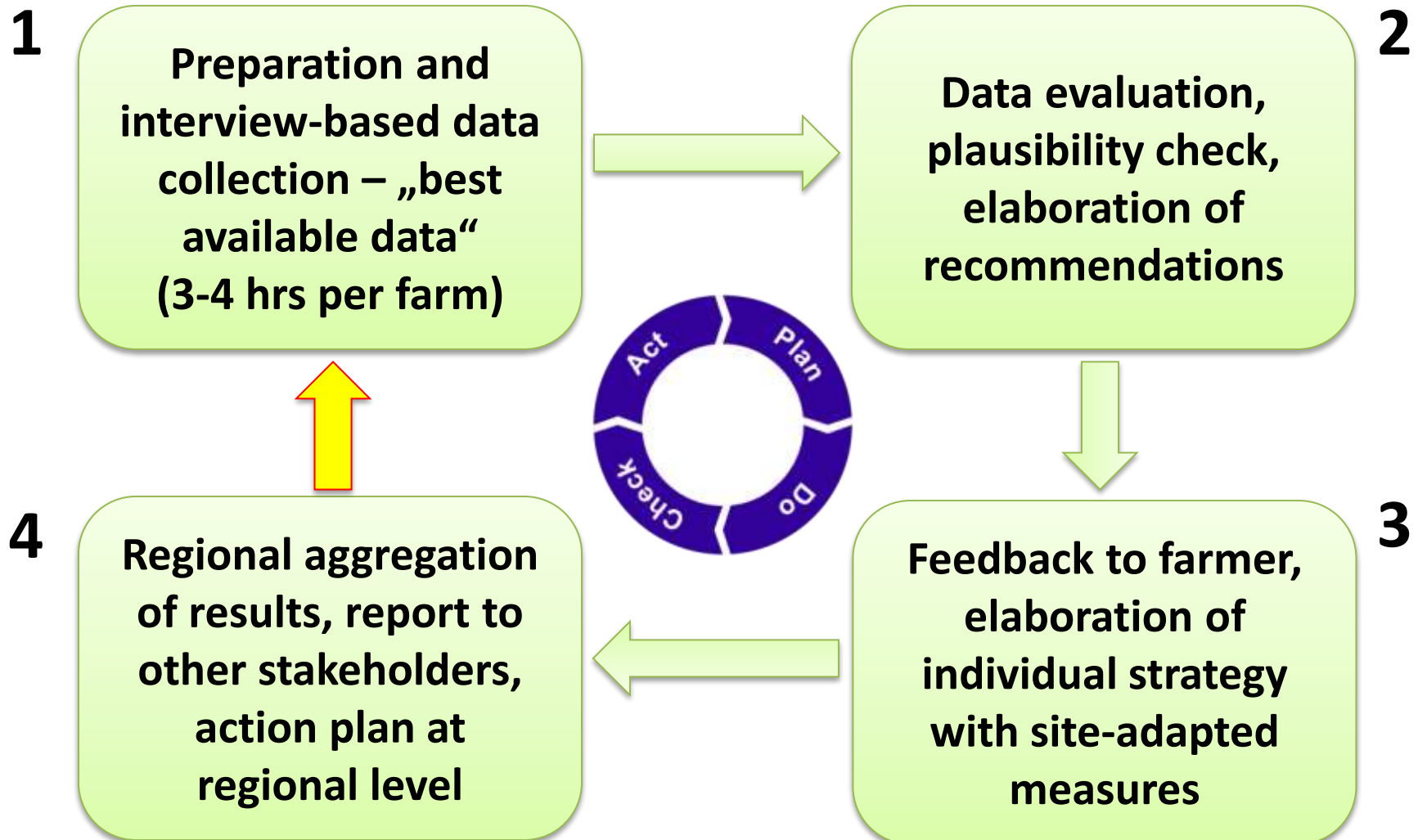
Farmers
need science-based
yet applicable
sustainable production
systems

Food industry and science
need scientific knowledge on
effects of production
practices
Consumers
ask for sustainable food

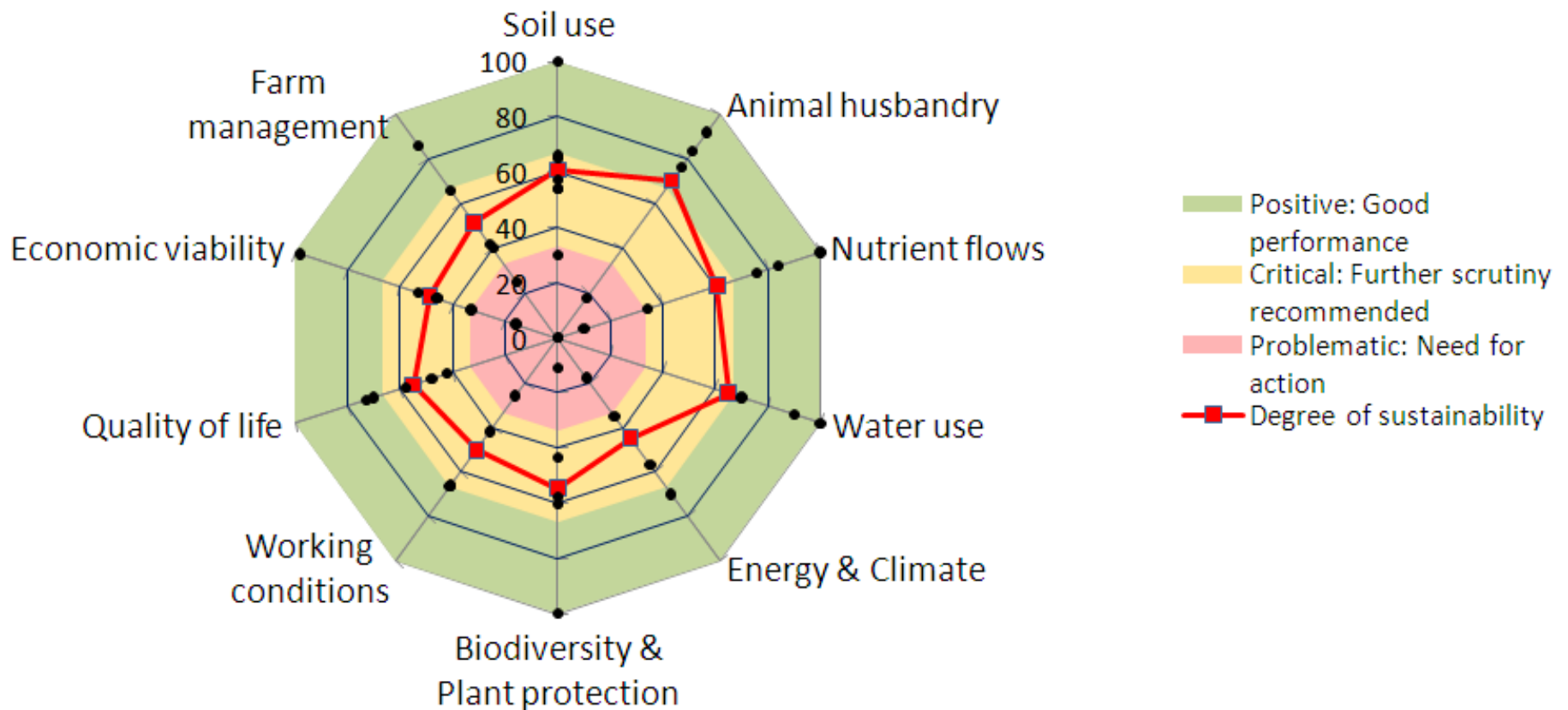


What is relevant? What has priority?
How to bring sustainability „down to Earth“?

Steps of the RISE process



The RISE 2.0 polygon (Swiss farm)

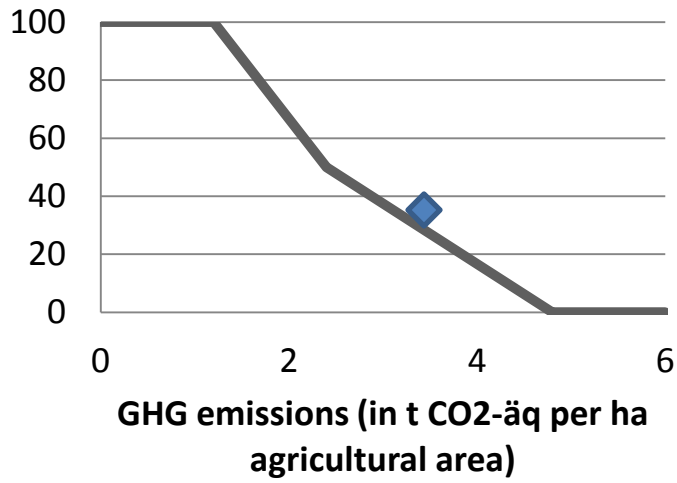
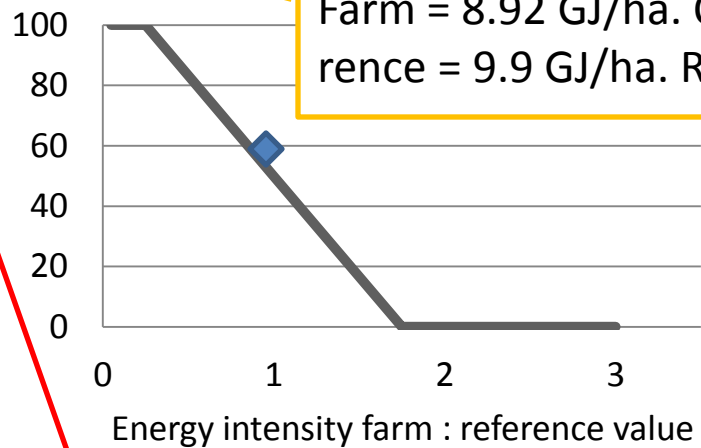


A closer look at parameter scores

5.1	Energy management	70
5.2	Energy intensity of agricultural production	57
5.3	Share of sustainable energy carriers	18
5.4	Greenhouse gas balance	35

Farmer tracks energy use, diverse energy saving measures: direct seeding of some crops, use of slow power take-off etc.

Farm = 8.92 GJ/ha. CH reference = 9.9 GJ/ha. Ratio = 0.9.



Total energy use = 156 GJ. Sustainable = 28.1 GJ (Swiss Hydropower). Ratio = 18%.

Farm = 3.54 t CO_{2-eq}/ha. Global reference = 2.4 t CO_{2-eq}/ha. 54% of GHG from livestock, 46% from fuel combustion

From smallholdings in Kenya, Ivory Coast, Columbia...



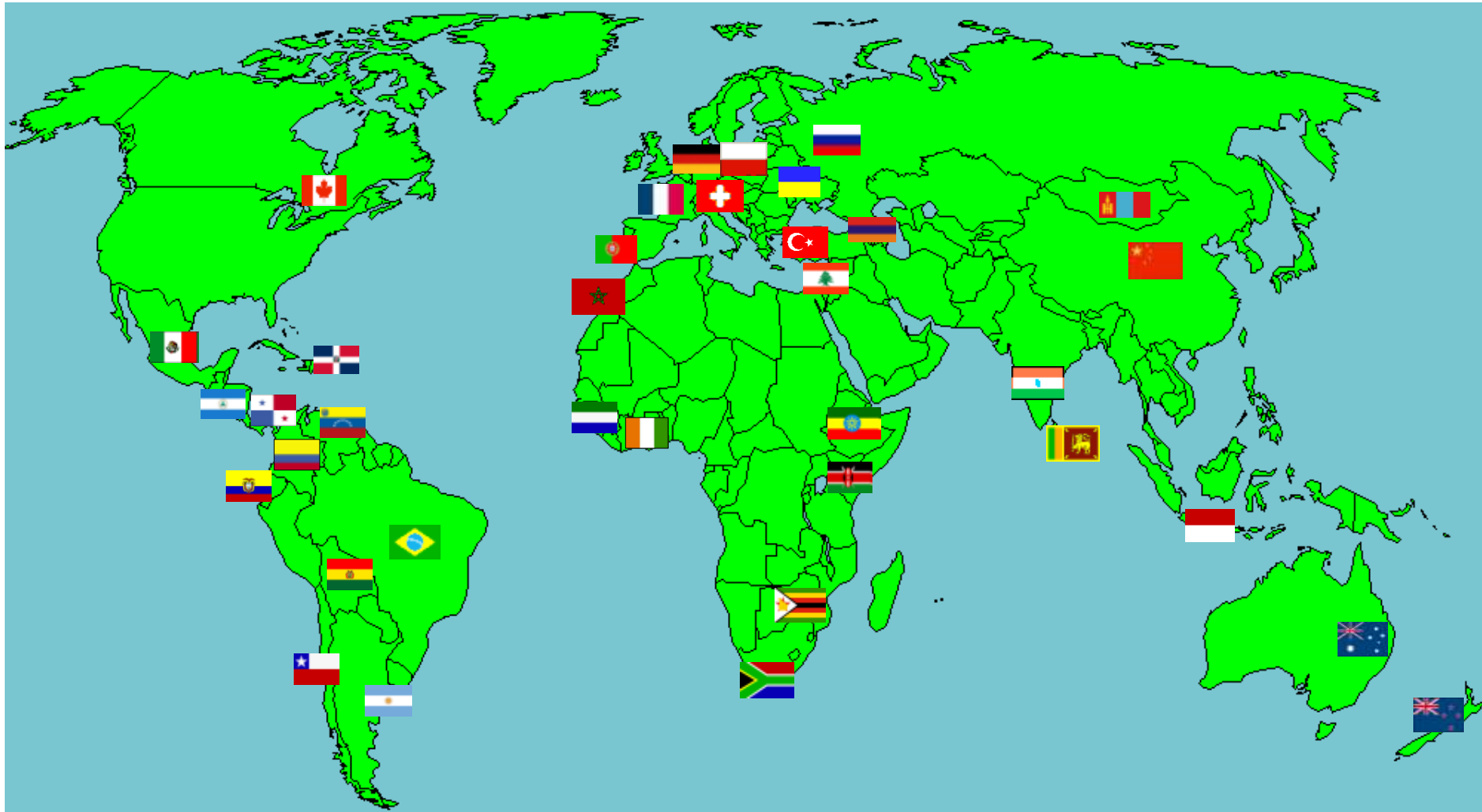
...to dairy farms in the Swiss mountains, in China and Canada ...



... from tea plantations in India, to coffee plantations in Brazil.



About 1'300 farms analyzed since 2000



— GEBERT RÜF STIFTUNG —
WISSENSCHAFT.BEWEGEN

KFH

Rektorenkonferenz der Fachhochschulen der Schweiz
Conférence des Recteurs des Hautes Ecoles Spécialisées Suisses
Conférence dei Rettori delle Scuole Universitarie Professionali Svizzere
Rectors' Conference of the Swiss Universities of Applied Sciences

FNS NF

SCHWEIZERISCHER NATIONALFONDS ZUR FÖRDERUNG DER WISSENSCHAFTLICHEN FORSCHUNG



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Umwelt BAFU



Bundesamt für Landwirtschaft
Office fédéral de l'agriculture
Ufficio federale dell'agricoltura
Swiss Federal Office for Agriculture

DEZA DDC DSC SDC COSUDE
DIREKTION FÜR ENTWICKLUNG UND ZUSAMMENARBEIT
DIRECTION DU DÉVELOPPEMENT ET DE LA COOPÉRATION
DIREZIONE DELLO SVILUPPO E DELLA COOPERAZIONE
SWISS AGENCY FOR DEVELOPMENT AND COOPERATION
AGENCIA SUIZA PARA EL DESARROLLO Y LA COOPERACIÓN



Universität Zürich

zhaw

HOCHSCHULE RHEIN-WAAL
Rhine-Waal University of Applied Sciences



Nestlé



DANONE



Fonterra



IUNG

syngenta
GLOBAL



ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich



CARD
center for agribusiness & rural development

giz



INFORAMA
BILDUNGS-, BERATUNGS- UND TAGUNGSZENTRUM



Forschungsinstitut für biologischen Landbau
Institut de recherche de l'agriculture biologique
Research Institute of Organic Agriculture

EXCELLENCE FOR SUSTAINABILITY

UNIVERSITÄT HOHENHEIM




International Livestock Research Institute

Better lives through livestock

iisd

International Institute for Sustainable Development

Institut International du Développement Durable



Thank You for Your
attention!