

#### 4.1 Finding strength in differences: diversity in sustainability of animal production systems

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The main function of animals in the Western World is production of animal-source food. The majority of these animals are kept in large-scale, intensive systems (i.e. high animal productivity per unit of land, labor or capital). Is large-scale, intensive animal production the solution to feed a growing world population in a sustainable way? We don't think so. Sustainability is a complex issue, and each animal production system has strengths and weaknesses regarding sustainability. Improving welfare of laying hens or fattening pigs in intensive systems, for example, increases land use requirements and emission of greenhouse gasses (GHGs) along the production chain. High-tech industrial systems that produce with care for animal and environment are not generally accepted by Western society. These trade-offs among sustainability issues ask for moderation of production and consumption, and open and transparent systems embedded in their agro-ecological and socio-economic environment.

This is also true for developing countries in which smallholders produce the majority of current meat and milk demands. It is often stated that these smallholders produce less environmental-friendly and can't fulfill the growing demand for animal-source food. A comparison of the environmental performance of smallholders and industrial systems, however, is not straightforward. Per kg of milk, GHG emissions are lower in Europe or Northern-America than in Asia or Africa. For smallholders, the number of cows generally is just as important as daily milk production. Expressed per cow, GHG emissions are substantially lower in Asia or Africa than in Europe due to substantially lower body weights of individual animals and the limited use of concentrates. Our western animal production, moreover, can't fulfill the growing demand for animal-source food which occurs especially in Asia and Africa. Its growth is limited by its local environmental impact, and exporting animal products to developing countries paralyses sustainable development of their local economies. We advocate to stimulate local farmers to develop new production systems that fulfill the growing animal-source food demand while sustaining the environment and livelihoods of smallholders. Feeding the world in a sustainable way, therefore, uses the strength of diversity in (new) production systems worldwide.