Global Chapter 7 Figures

Box 7.1 Clarifying a bundle of rights.

Analysis of property rights on aquatic resources in Lapland (Schlager and Ostrom, 1992; Sandberg, 1994) specified the notion of access, catch, management, exclusion, alienation according to a cumulative gradient (for instance, the right to alienate includes all other rights). Each right is associated with a category of users, the *proprietor* holding the right of exclusion and the *owner* the right to alienate, which clarifies the distinction between property and ownership. This latter term only encompasses the meaning of absolute private ownership. Thus the distinction between the authorized (who has the right to 'harvest') and non authorized user (who only has right of access) enables detection of tacit rights of free access for small catches. Following this hierarchy of rights, action is organized on three levels: the *constitutional* level in which rights are being constantly elaborated and challenged, the *operational* level on which the rights of access and catches are exercised, and an *intermediary* level at which management and exclusion decisions are taken, and which the authors define as the "collective" level (Schlager and Ostrom, 1992). This denomination throws light on the individual or collective nature of rights and decisions, according to the hierarchical rank of a right but does not, however, specify the collective level concerned for each type of right. The theory of "*maîtrises foncières/fruitières*" (Le Roy, 1996) allows increased genericity on this aspect and better characterization of the diversity of actual arrangements. It enriches the typology by the added dimension of co-management modes of the holders of these property rights and distinguishes five forms of property rights, i.e. modes of appropriation linked to co-management modes. These co-management modes include: 1) 'Undifferentiated property rights' with rights of access to "a thing"

2) 'Priority property rights' encompassing access and extraction rights (notion of "having")

3) 'Exclusive property rights' encompassing the same rights as above plus the right to exclude (notion of "functional property")

4) 'Specialized property rights' encompassing rights of access, of extraction and management (notion of "ownership") and

5) 'Absolute exclusive property rights', i.e. the right to use and sell, hand over, etc., therefore to alienate what can consequently be called a "good".

These different types of property rights may be applied to public commons (belonging to all) or appropriated by "one or *n* groups" that are internal or external to a defined community, or even privately appropriated; they rely on how knowledge (on the objects, the interaction with objects and the relationship within people) is shared between the stakeholders.

Box 7.2 The Convergence of Sciences Program in Ghana and Benin. Source : Hounkonnou et al., 2006; Van Huis et al., 2007.

To ensure that the research problems chosen were based on the needs and opportunities of resource-poor farmers, CoS pioneered a new pathway for science that used technography, diagnostic studies, and with-farmer participatory experimental field research (van Huis et al., 2007). A key component was ex-ante impact assessment and pre-analytical choice making that optimized sensitivity to context and avoided cul-de-sac path dependency. Technography (Richards, 2001) was used to map the coalitions of actors, processes, client groups, framework conditions and contextual factors at a macro level, so as to identify realistic opportunities. Given the small windows of opportunity, technography identified space for change. Diagnostic studies (Röling et al., 2004; Nederlof et al., 2004) ensured that research outcomes would work in the local context, be appropriate to prevailing land tenure, labor availability and gender, and take into account farmers' opportunities, livelihood strategies, culture, and felt needs. The diagnostic studies also identified and established forums of stakeholders for learning from a concrete experimental activity, and gave farmers a say in the design of field experiments. CoS conducted 21 experiments with small farmers on themes such as soil fertility and weed management, crop agrobiodiversity and integrated pest management (IPM). The studies showed that participatory low external input *technology* development within carefully identified windows of opportunity *can* be beneficial. However, the researchers also ran into the limitations of this approach and started to include experiments with creating space for change through *institutional* innovation. Soil fertility improvement depends on land tenure (Saïdou et al., 2007). They negotiated land use

rules between migrant farmers and landowners that allowed improving soil management practices. In Ghana, an organization was established to procure Neem seeds from the North as a condition for small-scale cocoa farmers to reduce their use of synthetic pesticides (Dormon et al., 2007). This in turn stimulated collective arrangements for processing Neem seeds because their use in maize mills is unacceptable due to their bitter taste.

With very small windows of opportunity, it is not easy to reduce poverty by enhancing productivity at the farm level, even through PTD. The challenge is to *stretch* those windows through access to markets, better prices, the development of services, and the removal of extractive practices and patrimonial networks. Given opportunities, West African farmers have time and again considerably increased their production without major technical change. Technology becomes important once framework conditions begin to improve.

Box 7.3 Farmer field schools

The invention of the Farmer Field School (FFS) by the Indonesian FAO team that introduced IPM in rice after the emergence of the Brown Planthopper was an enormous breakthrough, given the prevalence of the TandV system of extension at the time (Pontius et al., 2002). The FFS turned the linear model upside down: instead of ultimate users, farmers became experts; technology transfer was replaced by experiential learning; and instead of teaching content up front, the agent stayed in the back and facilitated the process. Evaluations of FFS programs (Van de Fliert, 1993; Van den Berg, 2003) indicate that FFS participants increase their productivity, reduce pesticide use, lower costs, and show remarkable signs of empowerment, in terms of speaking in public, organizational skills, and self-confidence. The effect is so remarkable that the most effective ways to convince politicians and senior civil servants of FFS impact is to expose them to an FFS in action. Such visitors quickly grasp what the FFS can do in terms of enlisting the elusive small-scale farmer in the national project.

It is one thing to implement an effective FFS pilot, quite another to scale it up to the national level. A certain set of practices determine FFS quality. Erosion of these practices soon leads to loss of fidelity and loss of the remarkable effects. Vulnerabilities include the curriculum (e.g., use of a field as the main tool for teaching), process facilitation (e.g., avoiding reverting to technology supply push or promoting government agendas), training facilitators in non-directive methods, timeliness (i.e., coinciding with the growing season), financing (e.g., utilizing public funds for snacks for farmers). FFS programs are vulnerable to corruption by the pesticide industry (e.g., Sherwood, 2005).

The FFS does not fit a bureaucratic, centralized, hierarchical government system. The FFS is a form of farmer education rather than a form of extension , that is not ‘fiscally sustainable’ in the short term (Feder et al., 2004).

Table 7.1 Estimated global burden of infectious animal diseases indicating the relative magnitude of the burden (losses of production and labor and costs of control and medical treatment). Source: Wierup and Ebi.

Classification of infectious animal diseases	Qualitative estimation of relative number	Qualitative estimation of relative cost and importance for major stakeholders			
		Public sector cost		Producers cost	
		Animal health	Public health	Developed countries	Developing countries
Major epizoootics	+	+++++	-	-[1]	++
Other major diseases incl. major zoonoses	++	+++	+++	++	++
Endemic diseases including "neglected" zoonoses	+++++	+	+++++	+++++	+++++

[1] Diseases eradicated or absent. Elimination policy applied in case of outbreks when significant costs may occur.

Figure 7.1 Trends in real commodity prices. Source: FAO, 2006c

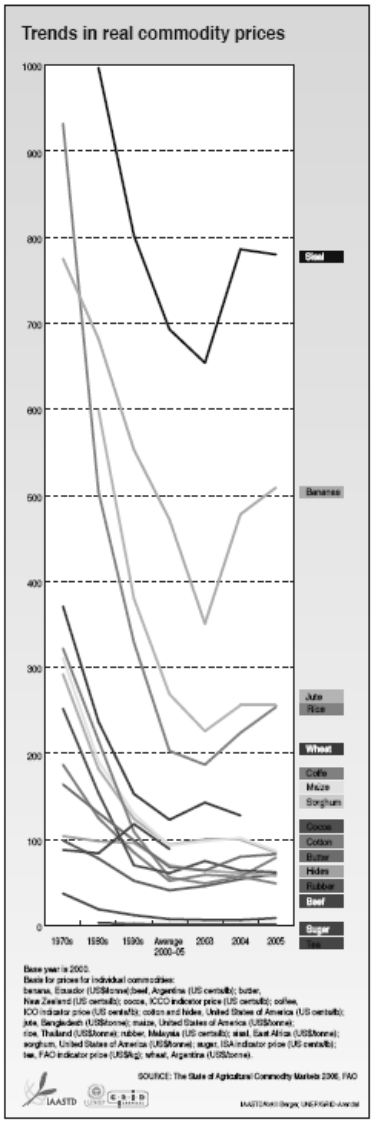

Figure 7.2 Projected gains (losses) for developed and developing countries under Doha scenarios for agriculture. Source: Polaski, 2006.

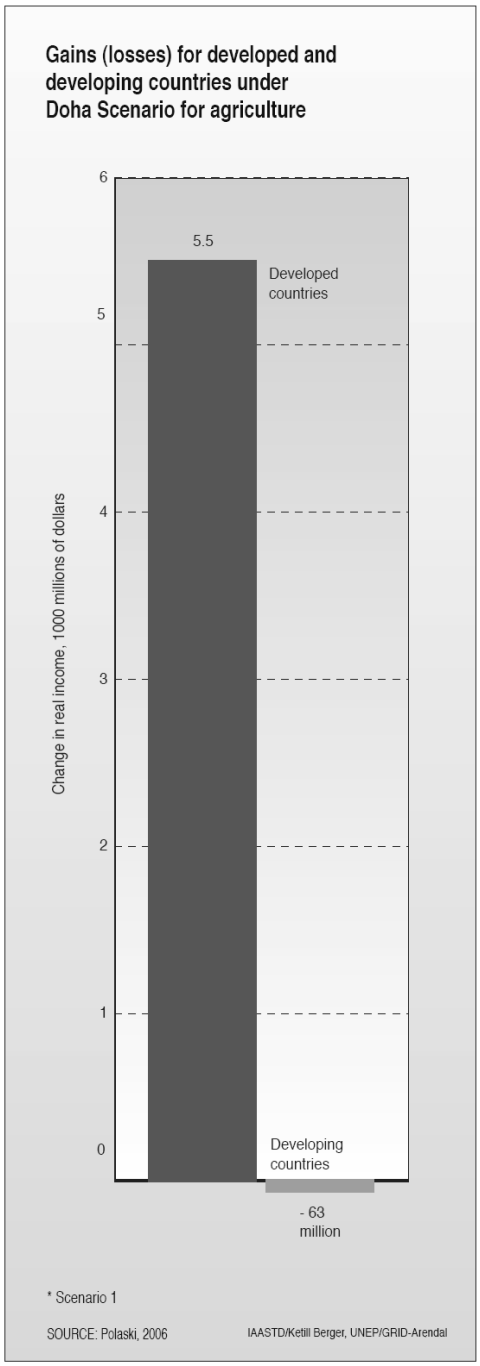

Figure 7.3 Developing countries: Share of agricultural exports (HK scenario). Source: Polaski, 2006.

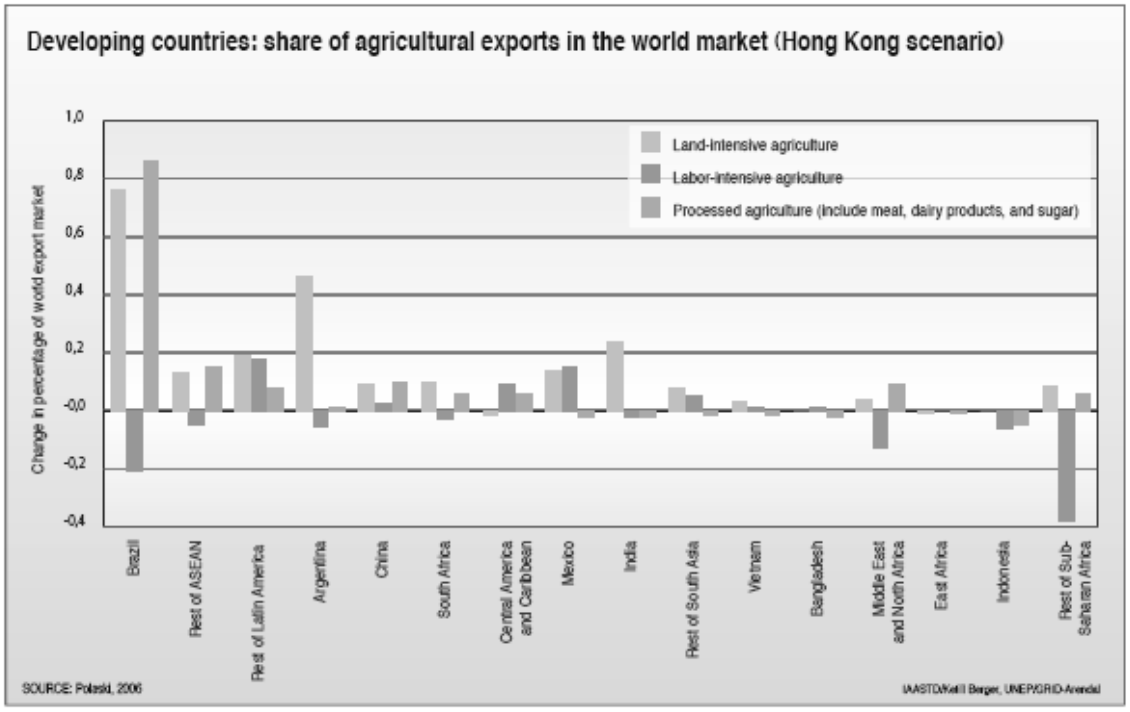

Figure 7.4 Percentage price change of key commodities. Source: Lundy et al., 2005.

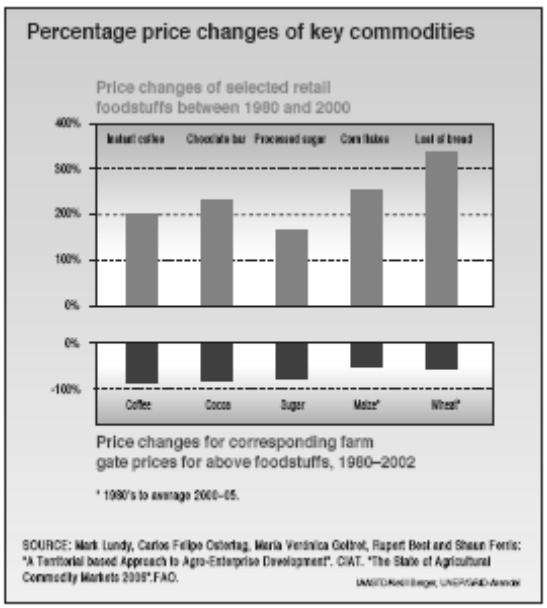

Figure 7.5 Level playing field. Source: Barsotti, 2004.

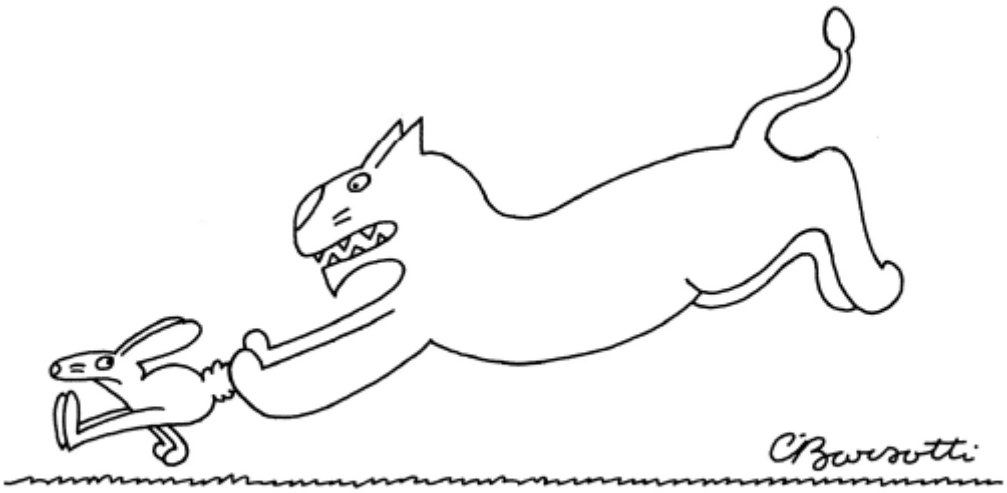

Figure 7.6 A breakdown of the cost of coffee between Uganda production and UK retail. Source: Ferris and Robbins, 2003

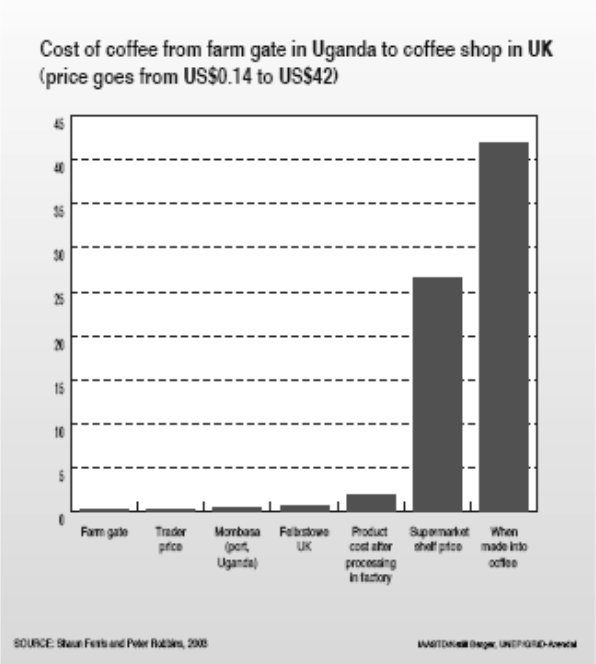

Figure 7.7 Agricultural market concentration. Source: IAASTD, 2008.

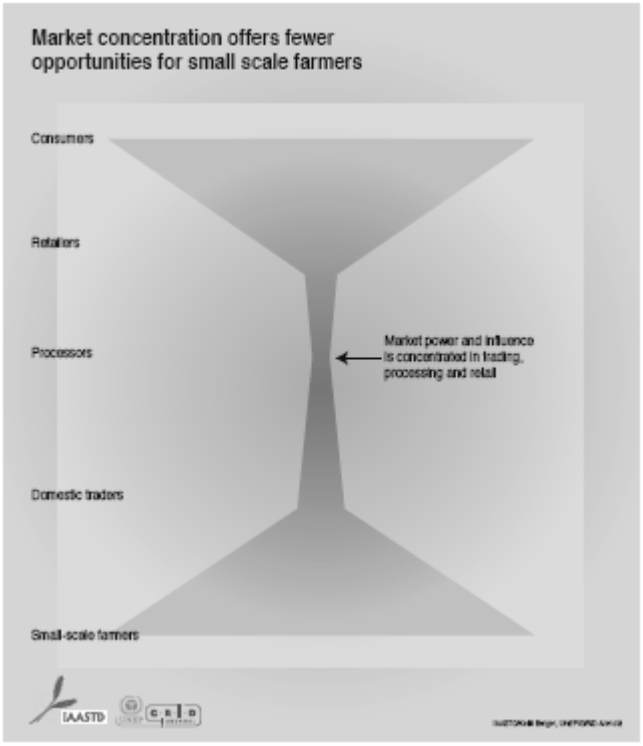

Figure 7.8 Infectious animal diseases. Source: Wierup and Ebi.