# ANNEX: BEST SLM PRACTICES COMPARED

For a concise overview, the 12 SLM technology groups that are presented in Part 2 of the guidelines are compared in the following tables:

Table 1: development issues addressed, e.g. production, biodiversity, water, climate change mitigation and climate change adaptation.

Table 2: Benefit-cost ratio.

Table 3: Benefits and impacts at land user and community level, e.g. yields, labour input, improvement of sol and water, community and institutional strengthening, etc.

Table 4: Key factors for adoption including inputs, materials, training and education, land tenure, access to markets, research.

## Annex table 1: development issues addressed

| | Integrated Soil Fertility Management | Conservation Agriculture | Rainwater Harvesting | Smallholder Irrigation Management | Cross-Slope Barriers | Agroforestry | Crop-Live-stock Management | Pastoralism and Range-land Management | Sustainable Planted Forest Management | Sustainable Forest Management in Drylands | Sustainable Rainforest Management |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Development issues addressed** | | | | | | | | | | | |
| Preventing / reversing land degradation | ++ | ++ | ++ | + | ++ | +++ | ++ | ++ | +++ | +++ | +++ |
| Maintaining and improving food security | +++ | ++ | ++ | +++ | + | +++ | ++ | ++ | + | + | + |
| Reducing rural poverty | ++ | ++ | + | ++ | + | +++ | ++ | ++ | ++ | ++ | + |
| Creating rural employment | + | ++ | + | ++ | + | + | + | + | ++ | ++ | ++ |
| Supporting gender equity / marginalised groups | ++ | ++ | + | ++ | + | ++ | ++ | +++ | na | ++ | + |
| Improving crop production | +++ | ++ | +++ | +++ | ++ | ++ | ++ | + | + | + | na |
| Improving fodder production | + | + | ++ | + | ++ | ++ | ++ | +++ | ++ | ++ | + |
| Improving wood / fibre production | + | na | ++ | na | + | ++ | + | ++ | +++ | ++ | +++ |
| Improving non wood forest production | na | na | na | na | na | + | + | ++ | ++ | +++ | + |
| Preserving biodiversity | + | + | + | na | + | +++ | ++ | +++ | + | +++ | + |
| Improving soil resources (OM, nutrients) | +++ | ++ | + | + | + | +++ | ++ | ++ | + | +++ | + |
| Improving of water resources | + | ++ | +++ | -/+ | ++ | ++ | + | ++ | na | ++ | +/ – |
| Improving water productivity | ++ | +++ | +++ | +++ | ++ | +++ | ++ | ++ | na | ++ | + |
| Natural disaster prevention / mitigation | + | ++ | + | + | ++ | +++ | + | ++ | + | +++ | ++ |
| Climate change mitigation / adaptation | ++ | ++ | +++ | -/+ | ++ | +++ | ++ | ++ | ++ | +++ | ++ |
| **Climate change mitigation** | | | | | | | | | | | |
| C Sequestration (t/ha/yr)<br><br>(figures for first 10-30 years of changed land man-agement) | no data | 0.57 (+/- 0.141) | 0.26-0.46 (+/-0.35) (Pretty et al. 2006) | 0.15 (+/- 0.012) (Pretty et al. 2006) | 0.5-1 (estimation) | 0.3 - 6.5 | 0.11- 0.81 up to 3 in silvo/ agro-forestry systems (Woodfine, 2009) | 0.1 - 0.3 (Schumann et al, 2002 in FAO, 2004) | 1.2 – 2 for afforestation in drylands (FAO, 2004 and GTZ, 2009) | no data | no data |
| C Sequestration: above ground | + | + | + | + | + | ++ | ++ | + | ++ | ++ | +++ |
| C Sequestration: below ground | + | ++ | + | + | + | ++ | ++ | ++ | ++ | ++ | ++ |
| **Climate change adaptation** | | | | | | | | | | | |
| Increase resilience to extreme dry conditions | ++ | ++ | +++ | + | ++ | ++ | ++ | +++ | + | ++ | + |
| Increase resilience to extreme wet conditions | ++ | ++ | +++ | ++ | + | +++ | ++ | ++ | + | +++ | ++ |
| Increase resilience to variable rainfall | + | + | + | no data | + | ++ | + | ++ | + | +++ | ++ |
| Increase resilience to rising temperatures and evaporation rates | + | ++ | ++ | + | +. | ++ | + | +++ | + | ++ | ++ |
| Reducing risk of production failure | ++ | + | + | ++ | + | ++ | ++ | ++ | + | +++ | + |

-- negative; - slightly negative; -/+ neutral; + slightly positive; ++ positive; +++ very positive; na: not applicable

## Annex table 2: Benefit-cost ratio

| | Benefit-cost ratio | | |
|---|---|---|---|
| | **short term** | **long term** | **Comments** |
| Integrated Soil Fertility Management | ++ | +++ | A small input in the form of organic and / or inorganic fertilizer can have a significant and immediate impact on crop production. However the profitability depends closely on price and availability of fertilizer. |
| Conservation Agriculture | + | +++ | The short term benefit-cost ratio is mainly affected by the initial cost of purchasing new machinery and tools. The availability and the affordability of these tools can be major obstacles, especially for small-scale land users. |
| Rainwater Harvesting | – /+ + | ++ / +++ | RWH techniques can include high initial labour and material input – though there is a wide range. In the long term the benefit-cost ratio depends on the level of maintenance work needed. |
| Smallholder Irrigation Management | + / ++ | +++ | The establishment costs for smallholder irrigation management (SIM) vary considerably. Micro-irrigation systems like drip irrigation require relatively high initial investments, which need to be covered though micro-credit. SIM can help farmers to move towards a mixed subsistence and more commercial system. |
| Cross-Slope Barriers | – | ++ | Usually require high initial investment and labour input, therefore the short term profitability is often negative. However vegetative strips can be used as cheap cross-slope barriers option, with much lower establishment costs than terraces, stone lines, etc. Vegetative strips often develop into terraces over time. |
| Agroforestry | – /+ + | ++ | Analyses mostly take direct utility values of integrated trees into account, because indirect use values, such as environmental functions, are much more difficult to evaluate. Furthermore, benefit-cost estimates are complicated by the many sources of annual variation affecting tree and crop production and tree-crop interactions. Hence benefits may be in general underestimated. Impact over different temporal scales is an issue that is especially relevant to agroforestry. |
| Integrated Crop-Livestock Management | + | ++ / +++ | Integration of livestock with crops improves farm productivity and income; and the benefits can be observed quite rapidly as well as appreciating over time. |
| Pastoralism and Rangeland Management | no data | no data | Pastoralism has considerable economic value and latent potential in the drylands but little is known or has been quantified. Multiple products and species can make pastoral systems significantly more cost-effective and productive than meat-focused ranching. The value of livestock production in the drylands is probably greatly underestimated in official statistics. |
| Sustainable Management of Planted Forests | – / – – | + / ++ | Short-time benefits from planted forests are usually negative due to the long establishment period of the trees. Environmental plantations are usually outside the financial perspective of small-scale land users and need therefore financial incentives and / or support for their establishment. The efficiency of plantation management and success in achieving sustainable wood supply depends mainly on whether a plantation is publicly, or privately, owned and managed. |
| Sustainable Forest Management in Drylands | – | ++ | Sustainable forest management in drylands is mainly based on community forest management, therefore an estimation of the benefits-costs ratio is very difficult. |
| Sustainable Rainforest Management | – | ++ | Once again this is mainly based on community forest management, therefore an estimation of the benefits-costs ratio is very difficult. |

– – negative; – slightly negative; – /+ neutral; + slightly positive; ++ positive; +++ very positive

## Annex table 3: Benefits and impacts at household and community level

| | Benefits | Integrated Soil Fertility Management | Conservation Agriculture | Rainwater Harvesting | Smallholder Irrigation Management | Cross-slope Barriers | Agroforestry | Crop-Livestock Management | Pastoralisms and Rangeland Management | Sustainable Planted Forest Management | Sustainable Forest Management in Drylands | Sustainable Rainforest Management |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Production benefits | Increased crop yields | +++ | ++ | + + | +++ | ++ | ++ | +++ | + | na | na | na |
| | Increased fodder production | ++ | na | ++ | na | ++ | na | ++ | ++ | na | na | na |
| | Increased wood production | na | na | + | na | + | ++ | na | na | +++ | + | + |
| | Increased production of NWFP | na | na | na | na | na | + | na | na | + | ++ | ++ |
| | Production diversification | + | + | + | ++ | + | +++ | ++ | ++ | + | ++ | ++ |
| Economic benefits | Labour reduction | +/ – | +(+) | – | + | – | +/ – | + | +/ – | na | na | na |
| | Farm income | ++ | ++ | ++ | +++ | + | ++ | ++ | ++ | + | + | + |
| Ecological benefits | Improved soil cover | ++ | ++ | + | + | + | ++ | ++ | ++ | ++ | ++ | +++ |
| | Reduced soil erosion (by wind / water) | ++ | ++ | ++ | + | ++ | +++ | ++ | ++ | ++ | ++ | +++ |
| | Improved water availability | + | +++ | +++ | +/- | ++ | ++ | + | + | +/- | + | +++ |
| | Increased organic matter/ soil fertility | +++ | ++ | + | + | + | +++ | +++ | ++ | + | ++ | +++ |
| | Biodiversity enhancement | ++ | + | + | + | + | +++ | ++ | ++ | + | +++ | +++ |
| | Improved micro-climate | + | ++ | + | + | + | +++ | + | + | ++ | +++ | +++ |
| Socio-cultural benefits | Improved SLM/ conservation/ erosion knowledge | ++ | ++ | ++ | na | +++ | ++ | ++ | +++ | na | ++ | ++ |
| | Changing the traditional gender roles of men and women | + | + | + | ++ | na | na | na | na | na | na | na |
| | Community institution strengthening | + | na | ++ | na | + | + | na | + | + | +++ | +++ |

-- negative; - slightly negative; -/+ neutral; + slightly positive; ++ positive; +++ very positive
na: not applicable

## Annex table 4: Key factors for adoption

| **Enabling environment:** Key factors for adoption | Integrated Soil Fertility Management | Conservation Agriculture | Rainwater Harvesting | Smallholder Irrigation Management | Cross-Slope Barriers | Agroforestry | Crop-Livestock Management | Pastoralisms and Rangeland Management | Sustainable Planted forest Management | Sustainable Forest Management in Drylands | Sustainable Rainforest Management |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inputs, material incentives, credits | +++ | ++ | ++ | +++ | ++ | ++ | ++ | + | + | + | + |
| Training and education | ++ | ++ | ++ | ++ | ++ | na | ++ | + | ++ | ++ | ++ |
| Land tenure, secure land use rights | ++ | ++ | +++ | +++ | ++ | ++ | +++ | +++ | +++ | +++ | +++ |
| Access to markets | ++ | ++ | ++ | +++ | + | + | ++ | ++ | ++ | ++ | ++ |
| Research | + | ++ | ++ | + | ++ | +++ | ++ | ++ | + | ++ | ++ |

-- negative; - slightly negative; -/+ neutral; + slightly positive; ++ positive; +++ very positive
na: not applicable

## References to Part 1

*Note: Only references used for Part 1 are listed here. References of Part 2 are listed after each SLM group and case study.*


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