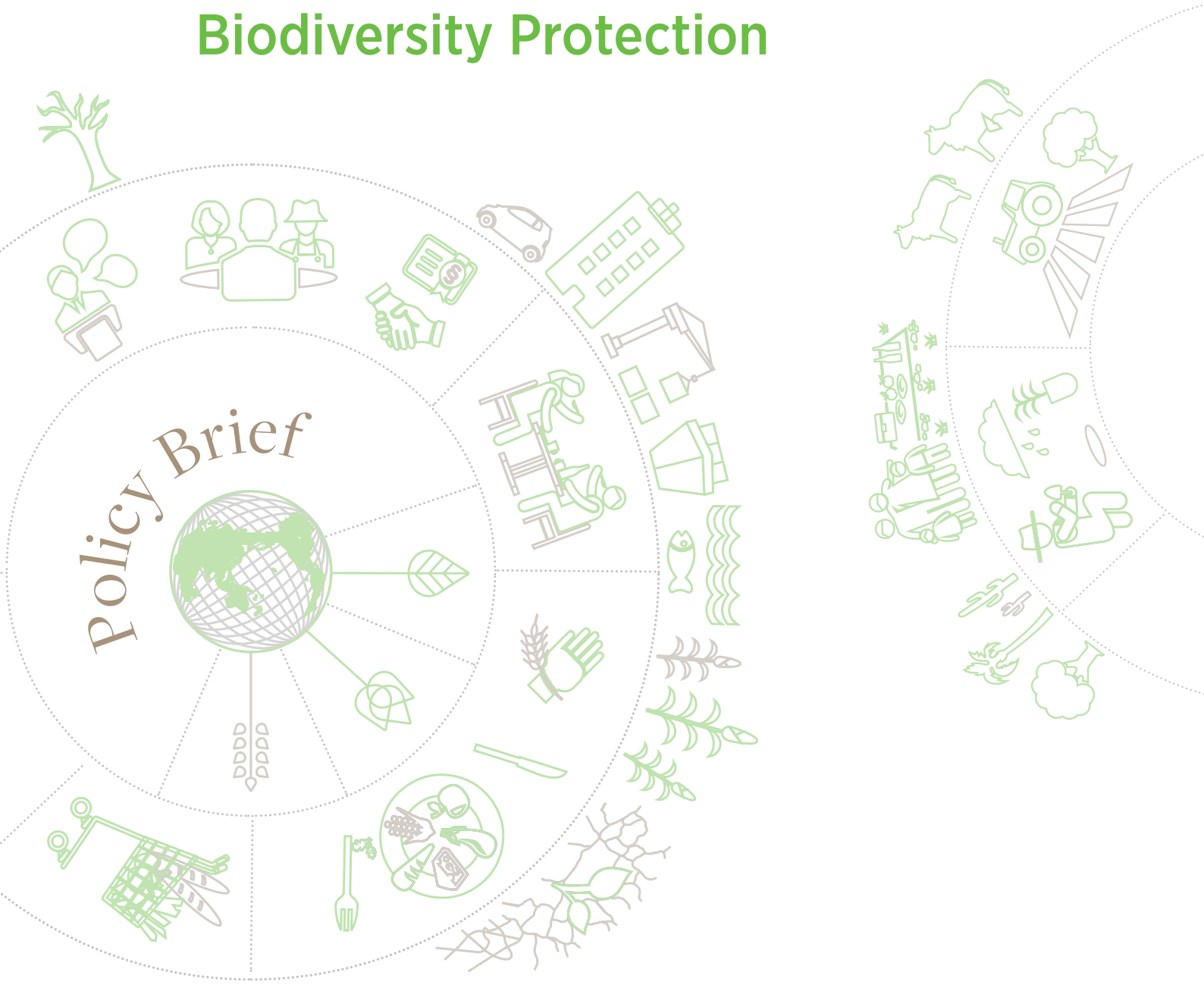
One Investment, many Benefits: Soil Rehabilitation for Poverty Reduction, Food Security, Climate Change Adaptation, and Biodiversity Protection



BMZ Federal Ministry for Economic Cooperation and Development
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
(TMG) ThinkTankforSustainability
IASS POTSDAM Global Soil Forum Institute for Advanced Sustainability Studies e.V.
IUCN
World Agroforestry Centre

May 2017

This Policy Brief was co-authored by

Carolin Sperk, Alexander Müller, Jes Weigelt, Global Soil Forum at IASS Potsdam
Global Programme on Soil Rehabilitation and Protection for Food Security and
Sector Programme on Combating Desertification, Gesellschaft für Internationale Zusammenarbeit (GIZ)
Jonathan Davis, International Union for Conservation of Nature (IUCN)
Ravi Prabhu, World Agroforestry Center (ICRAF)

The research project "Soil Protection and Rehabilitation for Food Security" cooperates with the correspondent program of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and receives financial support from the German Federal Ministry for Economic Cooperation and Development (BMZ).

Contact:

Carolin.Sperk@iass-potsdam.de

KEY MESSAGES

1. Without strategic investment in soil rehabilitation and protection poor and food insecure households will be left behind and global agendas will not be achieved! Targeting is of the essence.

2. Public investment in soil protection and rehabilitation must be increased; the private sector has little incentive in investing in soil rehabilitation by food insecure households.

3. Cross-sectorial coordination is pivotal to create the right incentives and to ensure that structural hindrances to SLM are addressed systematically.

4. Technologies for protecting and rehabilitating land and soil at plot and farm levels are well known but are seldom applied at larger scales. Successful adoption – and adaptation – at scale is conditional on locally owned and driven processes.

5. Supportive tenure systems and responsive agricultural advisory services are essential preconditions for achieving soil protection and rehabilitation at scale. They must be gender and youth sensitive, and create the necessary incentives to protect the soils.

Why are soils crucial to build sustainable rural futures, to achieve the SDGs, to fight climate change and to protect biodiversity?

Soils are key to sustainable "rural futures": 2.5 billion people in poor countries derive their livelihoods from the agricultural sector; 1.5 billion people of these are living in smallholder households (FAO, 2012). Therefore, agriculture is the starting point for development – for lifting rural poor out of poverty – and for creating perspectives for young people.[1] The Agenda 2063 "The Africa we want" and the German "Marshallplan with Africa" are examples in this regard. The challenge, however, is tremendous: The production of more than 90% of our food depends on the essential ecosystem services provided by soils and other natural resources. Agricultural production needs to increase to feed a growing population with changing consumption patterns.[2] Further, Africa is a "young continent". In Sub-Sahara Africa alone, the number of 15- to 24-year-olds is expected to double by 2045. It currently stands at 200 million (ibid.). Developing a thriving agricultural sector that can provide a future to these younger generations will depend on fertile soils.

Soils are under threat: Currently, degraded soils are reducing the agricultural sector's economic potential significantly:

1. Globally, more than half of the agricultural land resources are already considered degraded.[3] Agriculture is one of the biggest drivers of land use changes and deforestation.
2. According to the Economics of Land Degradation Initiative, in Africa alone, the loss of about 280 million tons of cereal crops per year could be avoided, if erosion on 105 million hectares of croplands would be reduced (ELD 2015).
3. Land degradation costs annually 10.6 billion USD worldwide. If no counter measures are taken, soil erosion will cost the most affected countries in Africa 12.3% GNP over the next 15 years.[4]

[1] "Africa's agriculture will be modern and productive, using science, technology, innovation and indigenous knowledge. The hand hoe will be banished by 2025 and the sector will be modern, profitable and attractive to the continent's youths and women."(African Union Commission 2015: Agenda 2063 – "The Africa we want.")

[2] FAO 2015: Healthy soils are the basis for healthy food production.

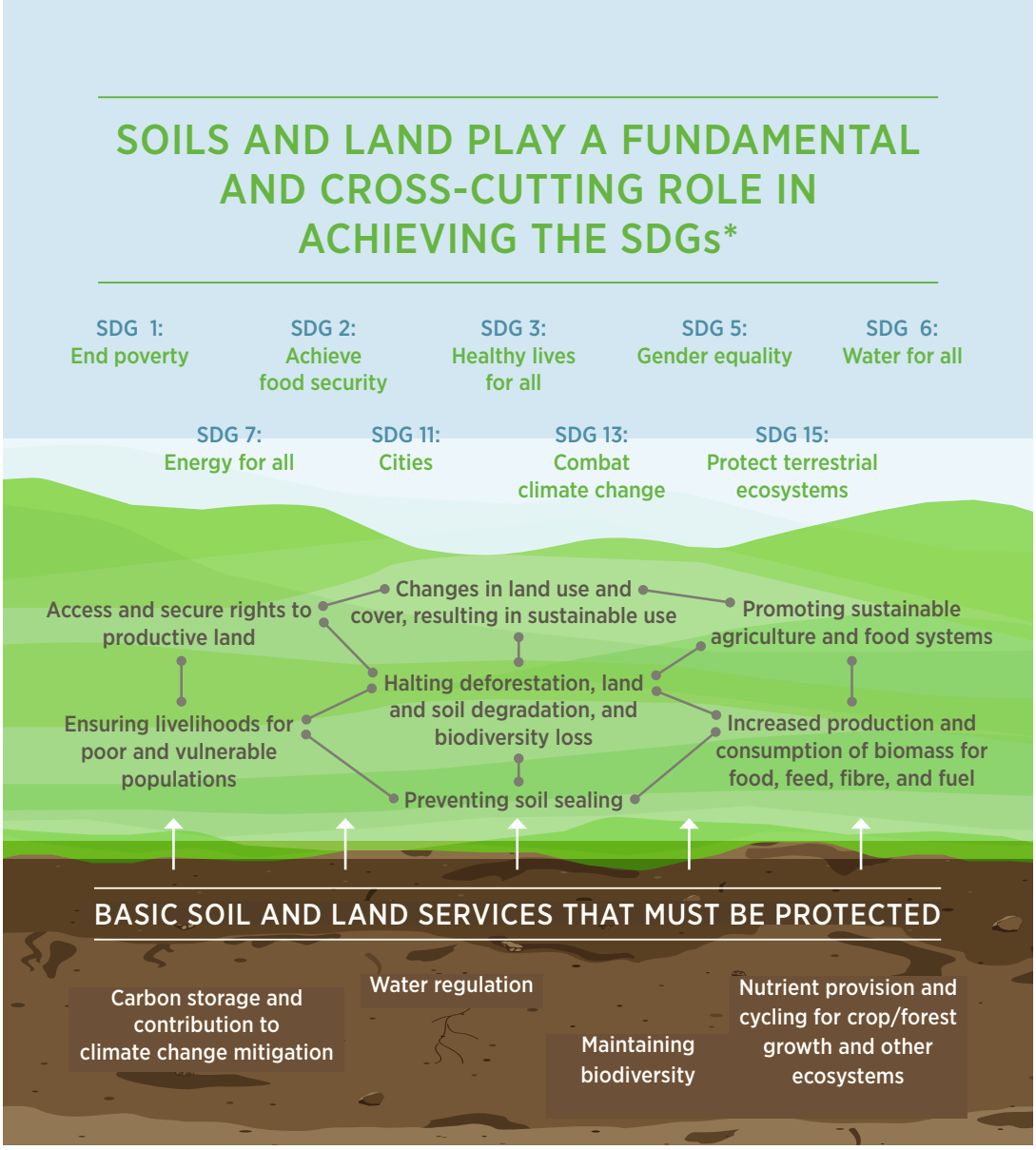
[3] Bai et al. 2008: Global assessment of land degradation and improvement.

[4] UNEP/ELD 2015: The economics of land degradation in Africa. http://www.eld-initiative.org/fileadmin/pdf/ELD-unep-report_07_spec_72dpi.pdf

Soil rehabilitation offers great potential to achieve the Sustainable Development Goals (SDGs) and the goals of the Paris Agreement while contributing to "leaving no one behind": Soils have emerged as a cross-cutting topic in global sustainable development agendas[5]. Goal 15.3 of the 2030 Agenda for Sustainable Development states that member states should "strive to achieve a land degradation neutral world" (LDN). 90 % of the Nationally Determined Contributions submitted by developing countries under the Paris agreement on Climate Change mention agriculture and sustainable use of soils as part of climate change adaptation and mitigation. The French "4 pour mille" initiative is a global initiative in support of these national plans. It aims at increasing soil organic carbon to contribute to climate change mitigation, adaptation and food security by improving soil health. Soils also play an important role in achieving the *"Aichi targets"* of the "Convention on Biological Diversity" (CBD).[6] If done right, soil rehabilitation can contribute to enhancing food security, reduce poverty, mitigate and adapt to climate change and achieving sustainable development in general.

[5] UNCCD/ Global Mechanism (2016): Achieving Land Degradation Neutrality at the country level. Building blocks for LDN target setting.; Müller et al. (2015): Grounding the Post-2015 Development Agenda: Options for the protection of our precious soil and land resources.

[6] https://www.cbd.int/sp/targets/



*Sustainable Development Goals

Source: IASS

KEY MESSAGE # 1: Without strategic investment in soil rehabilitation and protection poor and food insecure households will be left behind and global agendas will not be achieved! Targeting is of the essence.

1.1 The long-term economic potential of agriculture depends on fertile soils: The agricultural sector holds great potential for boosting national economic development and growth. The increasing bio-economy offers additional opportunities for further agricultural development. Agricultural development strategies often rely on high input dependent farming systems to make use of this potential. The dependency on high-cost inputs like mineral fertilizers, pesticides and herbicides can have negative consequences in terms of the environment, health and socio-economy. Hence, this increasing specialization of agriculture will only be successful in the long run, if agricultural development strategies include sustainable soil management[7] that builds up and maintains soil fertility in the long run.[8]

1.2 Ensuring no one is left behind: Market oriented agricultural development strategies need to be accompanied by targeted measures to benefit food insecure, vulnerable households. The latest Human Development Report (UNDP, 2016)[9] aptly makes the case that „Leaving No One Behind" requires a focus on resource poor, vulnerable and marginal people, such as youth, women, landless, (agro-) pastoralists, migrants and ethnic minorities. It highlights that more emphasis needs to be placed on the needs of poor and food insecure during policy design and implementation and development programs. To reach poor target groups it is of the essence to complement market based approaches with specific and focused support.

RECOMMENDATION: Put soil protection at the heart of a two-tiered agricultural development approach. It is pivotal to prioritize soil health – alongside resilient production and productivity – to ensure that economic benefits at the household level and the growth effects of agriculture can be sustained in the long run. Investments in soils have to strategically target vulnerable households and have to contribute to inclusive development.

[7] FAO/ Platform for Agrobiodiversity research (2013): Biodiversity for Food and Agriculture: Contributing to food security and sustainability in a changing world.

[8] R. L. Mulvaney, S. A. Khan, and T. R. Ellsworth (2009): Synthetic Nitrogen Fertilizers Deplete Soil Nitrogen: A Global Dilemma for Sustainable Cereal Production. J. Environmental Quality, 38:2295 – 2314

[9] UN Development Programme (2016): Human Development Report – Human Development for Everyone. http://www.undp.org/content/undp/en/home/librarypage/hdr/2016-human-development-report/

KEY MESSAGE # 2: Public investment in soil protection and rehabilitation must be increased; the private sector has little incentive in investing in soil rehabilitation by food insecure households.

2.1 Sustainable land management must be prioritized within agricultural budgets and available global financing facilities must be used more systematically to increase soil rehabilitation for food insecure households. National agricultural strategies are usually geared towards growth on the basis of productivity increases in high-input systems. As a consequence, the protection and sustainable management of soils often does not feature prominently in national agricultural budgets. If soils are to contribute to sustainable development, prioritization and budgeting need to change.

In addition, the Global Environment Facility (GEF), the Land Degradation Neutrality Fund and the Green Climate Fund (GCF) can be used to increase investments in soil rehabilitation and to lever additional resources to that end. They can support moving from fragmented, small-scale pilot activities for Sustainable Land Management (SLM) to more widespread responsible investments in rehabilitating natural resources. So far, however, the role of soils and sustainable land management in the GCF is negligible: only 3 out of the 45 projects receiving funding from the GCF are supporting sustainable soil and land management.[10]

RECOMMENDATION: Agriculture budgets and public-private funds like the Green Climate Fund should establish a stronger focus on soil rehabilitation and protection as part of agricultural adaptation and significantly increase the number of projects funded in this area.

[8] http://www.greenclimate.fund/projects/browse-projects; 17-05-2017

2.2 Private sector financing models for soil rehabilitation for food security still need to be developed. Estimating restoration costs at USD 1000 per ha, the costs of restoring 150 million ha of agricultural land as envisioned by the "New York Challenge" amounts to 150 billion USD.[11] Estimates such as these have resulted in calls for stronger involvement of the private sector in financing of SLM. They mirror a general trend towards blended financing models as envisioned by "Addis Ababa Action Agenda" for Financing Sustainable Development. The Global Mechanism of the UNCCD has set up the "Land Degradation Neutrality Fund", which is constructed as a public-private partnership. Private equity funds such as the Moringa Fund, the Althelia Climate Fund and the "Tropical Landscapes Financing Facility in Indonesia" (with a funding volume of USD 1 billion by the private sector) are potential actors in financing land restoration. However, private investments for LDN are still expected to play a minor role in the near future. This is due to low returns (particularly in resource-poor drylands), little experience or skepticism of project developers and managers with investments that could deliver equally on social, economic and environmental targets.[12] Agriculture & Food and Habitat Conservation accounts for less than 10% of overall impact investing.[13] "Bankable projects" for investing in soil rehabilitation in development and smallholder contexts are still scarce and not likely to be of real impact for food insecure households. Using soil protection as a means to achieving sustainable development in all its three dimensions does require public investments.

RECOMMENDATION: Blended finance with appropriate risk sharing can be an instrument for smallholders above the poverty line. However, smallholders at or below the poverty line need public support. Suitable financing models to that end need to be explored further.

[11] The New Climate Economy (2015): Restoring and protecting agricultural and forest landscapes and increasing agricultural productivity.

[12] Mirova (2016): Unlocking the market for land degradation neutrality.

[13] Triodos Bank (2015): Let´s talk about soil.

KEY MESSAGE # 3: Cross-sectorial coordination is pivotal to create the right incentives and to ensure that structural hindrances to SLM are addressed systematically.

3.1 Land-users are often faced with incentives that do not support sustainable soil management. Given the importance of soil resources, it is crucial that sectorial policies are checked against their impact on soil resources.[14] This applies not only to impacts of one sector on others, but also to policies referring to a single sector only. An agricultural policy, for example, that focuses on short-term productivity gains through fertilizer application does not necessarily contribute to long-term soil health, putting long-term productivity and economic success at risk. Promotion of agricultural investments without taking land rights into account, will not contribute to sustainable economic development. Urban and industrial development plans need to consider soils and land management. Cross-sectorial assessments of potential trade-offs are an important first step to identify synergies or trade-offs between soil management and other policy areas. Supporting multi-stakeholder dialogues are crucial elements for operationalizing cross-sectorial cooperation at local level.

3.2 Follow up and review processes of the SDGs offer possibilities to support cross-sectorial co-ordination. The 2030 Agenda calls for an integrated implementation of the SDGs. Its follow up and review processes can be used to strengthen cross-sectorial co-ordination. Supporting multi-stakeholder dialogues is a promising approach to operationalizing cross-sectorial cooperation at local and national level.[15]

RECOMMENDATION: The integrated concept of soil rehabilitation for poverty reduction, food security, and climate change adaptation and mitigation, and biodiversity protection needs holistic policy making and requires stronger cross-sectorial coordination. The follow up and review processes of the 2030 Agenda can be used to support this coordination.

[14] Akhtar-Schuster M, et al. (2011): Improving the enabling environment to combat land degradation: institutional, financial, legal and science-policy challenges and solutions. Land Degrad Dev, 22:299-312.

[15] Weigelt, J. et al (2015): Towards an Integrated and Inclusive Follow-up and Review of Natural Resources.

A multi-level and cross-sectoral approach for Sustainable Land Management (SLM): the example of Kenya

© GIZ/Jörg Böthling

In Kenya, an inter-sectoral task force, with representatives from Ministries of Agriculture and Livestock, Environment and Climate Change, Water and Irrigation as well as the Authority of Land has elaborated a draft soil management policy. Implementation experiences from the local level as well as latest technical and socio-economic research were reflected (e.g. Economics of Land Degradation). In a multi-level approach the Soil Programme under the Special Initiative One World No Hunger (SEWOH) supports the Ministry of Agriculture and Livestock to incorporate perspectives from the decentralized levels – through County consultations for example through inter-sectoral, regional SLM platforms. The County authorities and agricultural extension services implement together with the Soil Programme, local NGOs and self-help groups SLM activities based on a landscape approach. The objective is to rehabilitate land and thereby improve food security and climate change adaptation capacities of the rural population.

Joint local level workshops and interventions by GIZ and the IASS-accompanying research lead to a process of intensive exchange with the County authorities responsible for agricultural extension. One highlight set by the accompanying research at the local level are questions of access to land and improved targeting of SLM activities for marginalized or vulnerable groups. This includes youth, women, landless. A core element of this process is the development of community driven land lease guidelines, to increase security of access to tenure by these groups and at the same time increase transparency and accountability for all involved.

With this partnership approach adaptive research, implementation and policy advisory cross-benefit each other, learn together and raise awareness of the decision makers for inclusive models in SLM.

KEY MESSAGE # 4: Technologies for protecting and rehabilitating land and soil at plot and farm levels are well known but are seldom applied at larger scales. Successful adoption – and adaptation – at scale is conditional on locally owned and driven processes.

4.1 Soil rehabilitation technologies are available but must be adapted to the needs of food insecure households and complemented by access to inputs, finance and services. There is a wide variety of soil rehabilitation technologies available that are adapted to different agro-ecological circumstances. Supposedly, many of them are available at low costs. Findings show, however, that they still are not sufficiently adapted to the needs of food insecure households. They may be highly labor intensive (e.g. stone bunds, terracing) or rely on inputs that are needed for other household needs (e.g. manure as fuel). Other constraints include the specific needs or situation of women in agriculture: they often do not have the means or the rights to apply certain technologies. Lack of secure access to land and time availability are frequently occurring constraints. In addition, the interplay of labor availability, access to extension and advisory services, as well as financial services and adapted technologies determine whether food insecure households can apply soil rehabilitation measures.

These constraints are often well known. Yet, soil rehabilitation and land management technologies and services often remain ill-adapted to the needs of women and other marginalized groups. If the specific needs of these groups are not taken into account when designing and promoting a technology, adoption will remain low or miss those who are intended to benefit in the first place.

Workshop on sustainable land management with farmers in Burkina Faso. (© L. Stiem, IASS)

4.2 One-size-fits-all must be replaced by locally-led approaches focusing on structural hindrances. By now, it is widely acknowledged that there are no blue-prints to (rural) development. Local conditions vary. The same holds true for interventions in sustainable soil and land management. Sustainable solutions will remain futile, if the structural hindrances specific to a locality are not addressed through adapted responses. Hence, locally-developed and locally-led approaches to overcoming these hindrances are needed. Interventions need to be embedded in local contexts, planned with communities and local actors and build upon existing structures and processes in order to fully unfold their potential for sustainable development.[16] Local level problem solving needs to begin with perceived needs by the intended beneficiaries of soil rehabilitation. This will also serve to increase ownership of identified interventions and support feedback loops and learning cycles.[17] In order to implement sustainable land management at scale, it is important to mirror these locally driven processes with changes in the regulatory environment.

RECOMMENDATION: The needs and capacities of food insecure households must become the reference point for the further development and adaptation of soil rehabilitation technologies. Locally driven processes are key to tailor soil rehabilitation technologies to the needs of food insecure households.

Community based resource mapping in India. (© K. K. Bandru, IASS)

[16] Yawson, D., et al. (2016). „Putting Soil Security on the Policy Agenda: Need for a Familiar Framework." Challenges 7(2): 15

[17] Wild, L. et al. (2015): Adapting development. Improving services to the poor. Overseas Development Institute

KEY MESSAGE # 5: Supportive tenure systems and responsive agricultural extension services are essential preconditions for achieving soil protection and rehabilitation at scale. They must be gender and youth sensitive, and create the necessary incentives to protect the soils.

5.1 Soil rehabilitation presupposes security of tenure: Soil rehabilitation measures are investments into the land. Such investments will only be made if the investor can be sure that he or she will reap the benefits of these investments. Research provides abundant evidence that insecure land rights to land and other resources (such as trees) constitute one of the most serious obstacles to adoption of SLM.[18] Hence, up-scaling soil rehabilitation for food security requires taking land and resource tenure rights into account right from the beginning.

5.2 It is particularly vulnerable groups who suffer from tenure insecurity: Tenure insecurity can take many different forms and affects different social groups differently. For example, intra-household tenure insecurity primarily affects women and youth. In many contexts, women hold no or very limited rights to land and resources. They therefore run the risk of being dispossessed by their husbands. This risk increases when women improve the fertility of their land. As women mostly make use of the land to produce food crops, this increases food insecurity. It is further a strong disincentive to undertake measures for improving soil health and fertility. Apart from women and youth other vulnerable groups affected include indigenous people and migrants.

5.3 The prevailing land tenure regime may inhibit specific types of land management: Some soil rehabilitation techniques are considered to constitute ownership claims or even change of ownership in some local contexts. Establishing permanent structures such as stone bunds, terraces or even planting trees in some contexts is considered claiming or even changing the ownership of land. Thus land users may not want to venture on such investments or simply may not be allowed to apply the respective technology. These regimes may be very localized and not always known before starting the process of selecting and rolling out SLM technologies. To ensure effectiveness of soil rehabilitation interventions, prevailing land and resource tenure regimes need to be considered from the design and planning phase onwards.

RECOMMENDATION: Land and resource tenure strongly influence the uptake and the outcomes of investments in soil rehabilitation. Any intervention to achieve sustainable land management must go hand in hand with measures to address the security of tenure for the intended beneficiaries, be it through formal or informal instruments.

[18] Economic Commission for Africa (2004): Land Tenure Systems and their Impacts on Food Security and Sustainable Development in Africa; Maxwell, D. and Wiebe, K. (1999) Land tenure and food security: exploring dynamic linkages. Development and Change 30, 825–849.

Advisory services and intercropping with Mucuna in ProSol Benin. (© GIZ/Klaus Wohlmann)

5.4 Extension services are key to soil rehabilitation. Yet, they are often ill suited to support food insecure households: In many countries, agricultural services and technologies do not match the needs of a majority of smallholder farmers. The structural adjustment programs of the 1980s and 1990s have often resulted in cut-backs and privatization of agricultural extension services, leaving a huge capacity gap of extension services especially for resource poor households in remote areas. Food insecure households and other vulnerable groups often find it difficult to access demand driven extension services.[19] Similar challenges apply during technology diffusion. Deliberate measures to reach food insecure and vulnerable groups are needed to make them benefit from new technologies. This also involves agricultural advisors working with a diverse set of farmers groups instead of continued cooperation with the same group of farmers. Considering scarce resources and cost-benefit considerations, partner governments and development strategists often focus primarily on the "market-ready" segment of farming households. Thus, value-chain approaches need to be complemented by targeted support measures for poor, vulnerable target groups.

5.5 Commodity specific extension and advisory services mostly do not support sustainable soil management. In many countries, especially where a few cash-crops provide the majority of the income, extension services are geared only to the needs of these commodities. These services often do not cover food crops or the entire farming system, let alone provide advice on sustainable soil management.

5.6 To achieve soil rehabilitation, public extension services must complement commercially operating extension services. Commercially operating extension and advisory services alone are not sufficient to reach food insecure households. Hence, other non-state actors and state-services must complement those commercially operating extension services. Soil rehabilitation for food security needs to rely on a pluralistic extension and advisory service system. Coordination between a multitude of private actors and enhanced accountability between service providers and food insecure households are core elements of such a pluralistic system.

RECOMMENDATION: Strengthening of quality rural advisory service provision is catalytic for the future of rural areas and for sustainable soil management; apart from the need to better resourced, pluralistic extension and advisory systems also require coordination and accountability mechanisms.

[19] Rauch, T., Kersting, D. (2016) Rural Service Systems for Smallholder Sustainable Land Use – Focus on Sub-Saharan Africa and India (to be published).

The IASS is funded by

SPONSORED BY THE

Federal Ministry
of Education
and Research

FONA
Research for Sustainable
Development
BMBF

LAND
BRANDENBURG
Ministerium für Wissenschaft,
Forschung und Kultur