

Module 3: Guidance on implementing management

3.1. Processes for establishing exclosures

According to Mekuria et al. (2020), establishing an exclosure requires undertaking several activities. These include:

- Putting the idea of establishing exclosure onto the government's agenda, namely by including it in the annual plan of the relevant national (e.g. Ministry of Agriculture, Ministry of Water, Energy and Electricity, Basin Development Authority), regional (agricultural and natural resources bureaus, river basin development offices) and district agricultural office. Local communities, a CWT, district agricultural offices or NGOs can bring forward this initiative, while the implementation can mainly be achieved through continuous discussion between stakeholders.
- Identifying priority areas for establishing exclosures through a joint initiative that involves local communities, a CWT, government agencies, and NGOs.
- Raising awareness of local communities on the importance of exclosures, using religious leaders and other local institutions and leaderships.
- Conducting community consultations to garner local communities' support for exclosure establishment, typically led by the district agricultural office and the CWT.
- Getting a signed letter from beneficiaries that testifies that the community is in favor of exclosure establishment.
- Demarcating areas to be protected.
- Establishing the exclosure
- Assigning the responsibilities of the day-to-day management and use of exclosures to the CWT.
- Establishing a management plan that includes a combination of the options discussed in this training manual and that details the management, use and protection of exclosures as well as benefit-sharing mechanisms.

3.2. Awareness raising

Some of the concerns that local communities express about exclosures arise from a lack of understanding of the negative consequences of land degradation and exclosures' positive effects in reducing land degradation and associated sedimentation and siltation of rivers and lakes. It is not widely understood that exclosures have the potential to restore degraded ecosystems and make degraded land productive. Therefore, raising local communities' awareness of the benefits of exclosures is a critical part of implementing exclosure management options.

The BoA can take the lead in carrying out awareness-raising activities, but national and international research institutes and NGOs working on sustainable land management issues could also contribute. Such activities should be designed to better inform and educate the community, to get feedback from local communities as well as to address commonly expressed concerns related to the management of exclosures.

Awareness-raising activities could include study tours and exchanges with other communities and farmers that have successfully implemented this approach as well as films and other interactive types of action research. This activity could also include synthesizing and repackaging science-based information on exclosures, such as in brochures and briefs (in local languages; Fig. 20); in annual newsletters to district agricultural offices, extension service centers, NGOs and local administrative bodies; and via local media, such as radio. Offering local community members educational programs through district agricultural offices could also increase awareness. Such educational programs could include information on processes of exclosures establishment, importance of local community participation and use, management and protection of exclosures as well as benefits of exclosures and benefit-sharing mechanisms.

3.4. Community participation

To date, most exclosures in Ethiopia have formally been initiated either by the state or by communities, but their establishment has been driven mainly by aid agencies and NGOs (Lemenih and Habte 2014). Further, the establishment of exclosures has been focused on physical aspects and on the protection of natural resources. The sites for exclosure establishment have generally been selected by government agencies, and the process has been dominated by development agents of the district agricultural offices and by Kebele administrators.

The management of exclosures also remains largely top down. In most cases, the participation of local communities is limited to consultation, including on ideas for the establishment of exclosures and target setting. Such poor participation of local communities in the establishment and management of exclosures affects the outcomes and sustainability of exclosures. To sustain exclosures, communities should experience the benefits of exclosures and feel ownership over their management. Therefore, local communities should participate in goal setting, planning, site selection, implementation, protection and definition of benefit-sharing mechanisms. Furthermore, the participation of local communities should not be limited to participating members of the exclosure, the CWT and/ or local administration bodies; rather, all members of the community should be involved in each phase of exclosure establishment.

3.5. Protection of exclosures

Currently, most exclosures are protected by hired guards, and the government is responsible for paying the guards. However, in some cases, the government has stopped paying the guards, assuming that the communities would pay, which means that the guards are not paid regularly, and illegal harvesting of grass has increased.

To amend this situation, it is recommended to give local communities greater responsibility for the design of strategies and norms for the protection of exclosures. One promising option is to implement a 'turn system', where each household in the community is responsible for taking a turn guarding. Initiating such a system hinges on a process of dialogue with the communities, exploring their interest in and wishes for such a system.

Empowering local communities to protect exclosures will build a sense of ownership and ensure that protection of exclosures can be sustained.

3.6. Risks and mitigation

Implementing the management options included in this training manual comes with certain risks, including inadequate technical support from regional and district level experts due to over commitment; lack of professionals working in natural resources management and/or lack of access to such expertise; risk of conflicts over resource use; and lack of financial support from NGOs. These risks can be mitigated by mainstreaming management options into government plans and providing training to practitioners.

3.7. Gender issues

To ensure that all members of a community benefit, it is important to ensure that all groups participate in the exclosure establishment and management processes, including women, youth and other marginalized groups. The following measures can help ensure diverse participation:

- Providing gender awareness training in the conceptualization and planning stage.
- Developing a mechanism that ensures equal opportunity for the different groups in local communities to participate in and benefit from the management options.
- Designing modes of ownership and management that take into consideration the situation of the different groups.
- Clearly stating how vulnerable households, which may not be able to participate fully in all activities, can be supported by local communities and be involved in benefit sharing.
- Ensuring that establishment of exclosures does not lead to an increase in tasks or workload for women and children.

Conclusion

Restoring degraded ecosystems through the establishment of exclosures is an increasingly common practice in the Ethiopian Highlands, and regional states are also following this practice. The areas covered by exclosures reached about 4.5 Mha by the end of 2016, with expected annual increases of 2% per year, possibly reaching a total of around 5-7 Mha in the early 2030s. The expansion of exclosures is due to their many benefits outlined in this document. The multiple benefits of exclosures can provide opportunities for livelihood diversification, and thus enhancement, decrease soil erosion and seed loss in farmlands located downslope of exclosures, thereby helping boost agricultural productivity over the medium to long term. Overall, due to the cumulative benefits of exclosures in an agroecological setting, they can contribute to both environmental and community resilience by strengthening agricultural production at Basin and landscape scale. However, exclosures can also hamper poor households and communities from continuing their existing activities, including livestock grazing, and the loss of short-term economic benefits hence puts the success of exclosures at risk. Balancing immediate short-term economic losses with longer-term economic and environmental gains is a challenge to sustainably manage exclosures. This training manual discussed several management options that can be practiced within exclosures and generate short-term economic benefits and support local communities adopt exclosures.

References

- Abebe, K.M. (2008) Multipurpose fodder trees in Ethiopia; Farmers' perception, constraints to adoption and effects of long-term supplementation on sheep performance. PhD thesis, Wageningen University, Wageningen, the Netherlands. ISBN: 978-90-8504-818-3.
- Alemayehu, M. (2002). Forage production in Ethiopia: A case study with implications for livestock production. Ethiopian Society of animal production, Addis Ababa, Ethiopia.
- Alemayehu M. (2006). Forage seed Production and Marketing in Ethiopia. Addis Ababa, Ethiopia.
- Amede, T.; Kassa, H.; Zeleke, G.; Shiferaw, A.; Kismu, S.; Teshome, M. 2007. Working with communities and building local institutions for sustainable land management in the Ethiopian highlands. *Mountain Research and Development* 27(1): 15-19.
- Anwar, A.A.; Aynalem, D.W.; Tilahun, S.A.; Mekuria, W.; Azeze, M.; Steenhuis, T.S. 2016. Effectiveness of land and water management interventions in reducing runoff and soil erosion in the northwestern highlands of Ethiopian [Abstract only]. Paper presented at the First African Ecosystem Services Partnership (ESP) conference, Nairobi, Kenya, November 21-25, 2016.
- Babulo, B.; Muys, B.; Mathijs, E. 2006. Economic valuation methods of forest rehabilitation in exclosures. *Journal of Drylands* 1(2): 165-170.
- Bello R. S. (2012). Horticultural Machinery Operations & Safety. https://www.researchgate.net/publication/275642333_Horticultural_Machinery_Equipment_and_safety/download <https://www.easylimu.com/high-school-notes/agriculture/form-1/item/469-farm-toolsand-equipment-garden-tools-and-equipment>.
- Bose, T.K., Mitra, S.K., Sadhu, M.K. and Das, P. 2001. Propagation of Tropical and Subtropical Crops. NayaProkash Publishers, Calcutta.
- Braatz, S. (2012). Building resilience for adaptation to climate change through sustainable forest management. Building resilience for adaptation to climate change in the agriculture sector, 23, 117.
- Chanana Y.R., 2008. General Horticulture Propagation and Nursery Management. Gill Department of Horticulture Punjab Agricultural University Ludhiana- 141004.
- Descheemaeker, K.; Amede, T.; Hailelassie, A. 2010. Improving water productivity in mixed crop-livestock farming systems of sub-Saharan Africa. *Agricultural water Management* 97(5): 579-586.
- Djenontin, N., Djoudi, H., Zida, M. (2015). Forest land restoration enhances food security in Sahelian landscapes. CIFOR. blog.cifor.org
- Elisabeth, D., DeVries, B., Herold, M., Verchot, L., Müller, R. (2014). Fuelwood Savings and Carbon Emission Reductions by the Use of Improved Cooking Stoves in an Afromontane Forest, Ethiopia. *Land* 2014, 3, 1137-1157; doi:10.3390/land3031137.
- FAO (2020). Good beekeeping practices: Practical manual on how to identify and control the main diseases of the honeybee (*Apis mellifera*). TECA – Technologies and practices for small agricultural producers, 1. Rome. <https://doi.org/10.4060/cag182en>.
- Gebregziabher, G.; Abera, D.A.; Gebresamuel, G.; Giordano, M.; Langan, S. 2016. An assessment of integrated watershed management in Ethiopia. Colombo, Sri Lanka: International Water Management Institute (IWMI). 28p. (IWMI Working Paper 170). Available at http://www.iwmi.cgiar.org/Publications/Working_Papers/working/wor170.pdf.
- Gebremedhn, H.; Darcha, G.; Mezgebe, K. 2017. Distribution and abundance of *Hypoestes forskoolii* (Vahl) in the exclosures of Tigray, Northern Ethiopia. *Livestock Research for Rural Development* 29(8). Available at <http://www.lrrd.org/lrrd29/8/haft29148.html>.
- Hailelassie, A., Mekuria, W., Schmitter, P., Uhlenbrook, S., Ludi, E. (2020). Changing Agricultural Landscapes in Ethiopia: Examining Application of Adaptive Management Approach. *Sustainability* 2020, 12, 8939; doi:10.3390/su12218939.
- Hailu, H. 2017. Analysis of vegetation phytosociological characteristics and soil physico-chemical conditions in Harishin rangelands of Eastern Ethiopia. *Land* 6(1): 4. <https://doi.org/10.3390/land6010004>.
- Ibrahim, M.A. 2016. Impact of enclosure on plant species composition and biomass production in Ewa Woreda of Afar Region State, Ethiopia. *Journal of Biodiversity and Endangered Species* 4(1): 157. <https://dx.doi.org/10.4172/2332-2543.1000157>.

- Lemenih, M.; Kassa, H. 2014. Re-greening Ethiopia: History, challenges and lessons. *Forests* 5(8): 1896-1909. <https://doi.org/10.3390/f5081896>.
- Lukuyu, M., Romney, D., Ouma, R. and Sones, K. 2007. Feeding dairy cattle: A manual for smallholder dairy farmers and extension workers in East Africa. SDP/KDDP, Nairobi, Kenya. 62 pp.
- Mekuria, W.; Veldkamp, E.; Haile, M.; Nyssen, J.; Muys, B.; Gebrehiwot, K. 2007. Effectiveness of exclosures to restore degraded soils as a result of overgrazing in Tigray, Ethiopia. *Journal of Arid Environments* 69(2): 270-284. <https://doi.org/10.1016/j.jaridenv.2006.10.009>.
- Mekuria, W.; Barron, J.; Dessalegn, M.; Adimassu, Z.; Amare, T.; Wondie, M. (2017). Exclosures for ecosystem restoration and economic benefits in Ethiopia: a catalogue of management options. Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Research Program on Water, Land and Ecosystems (WLE). 28p. (WLE Research for Development (R4D) Learning Series 4). doi: 10.5337/2017.204.
- Mekuria, W.; Gebregziabher, G.; Lefore, N. (2020). Exclosures for landscape restoration in Ethiopia: business model scenarios and suitability. Colombo, Sri Lanka: International Water Management Institute (IWMI). 62p. (IWMI Research Report 175). <https://doi.org/10.5337/2020.201>.
- MoARD (Ministry of Agriculture and Rural Development). 2009. Agricultural investment potential of Ethiopia. Addis Ababa: MoARD.
- Nedessa, B.; Ali, J.; Nyborg, I. 2005. Exploring ecological and socio-economic issues for the improvement of area enclosure management: A case study from Ethiopia. DCG Report No. 38. Oslo, Norway: Drylands Coordination Group (DCG).
- Ratner, B.D., Smith, W.E. (2014). Collaborating for Resilience: A practitioner's guide. Manual. Collaborating for Resilience.
- Rossiter, J.; Minale, M.W.; Andarge, W.; Twomlow, S. 2017. A communities Eden – Grazing exclosure success in Ethiopia. *International Journal of Agricultural Sustainability* 15(5): 514-526. <https://doi.org/10.1080/14735903.2017.1352059>.
- Sim, H. C., Appanah, S., & Youn, Y. C. (2004). Forests for poverty reduction: opportunities with clean development mechanism, environmental services and biodiversity. Proceedings of the workshop, 27-29 August 2003, Seoul, Korea.
- Smith, O.B. (1995). Using fodder from trees and shrubs to feed livestock in the tropics. FAO Better Farming Series, no. 42. ISBN 92-5-103476-1
- SNV (2017). Forage production and management. Training Package for Extension workers. SNV Netherlands Development Organization, Addis Ababa, Ethiopia.
- SNV (2019). Fruit crop production and management. Instructors practical guidebook. SNV Netherlands Development Organization, Addis Ababa, Ethiopia.
- Stirzaker, R.J.; Roux, D.J.; Biggs, H.C. (2011). Learning to bridge the gap between AM and organisational culture. *Koedoe*, 53, 1–6.
- Tekalign, M. 2010. The role of area exclosures for biodiversity conservation and its contribution to local livelihoods: The case of Biyo-Kelala area exclosures in Ada`a wereda. MSc thesis, Addis Ababa University, Addis Ababa, Ethiopia.
- Webb, J.A.; Watts, R.J.; Allan, C.; Warner, A.T. (2017). Principles for Monitoring, Evaluation, and AM of Environmental Water Regimes. In *Water for the Environment*; Avril, C., Horne, J., Angus, W., Michael, J., Stewardson, B.R., Mike, A., Eds.; Elsevier: Amsterdam, The Netherlands; Academic Press: Cambridge, MA, USA, 2017; pp. 599–623.
- Yayneshet, T.; Eik, L.O.; Moe, S.R. 2009. The effects of exclosures in restoring degraded semi-arid vegetation in communal grazing lands in northern Ethiopia. *Journal of Arid Environments* 73(4-5): 542-549. <https://doi.org/10.1016/j.jaridenv.2008.12.002>.

Contact Details:

Wolde Mekuria (PhD)

Senior Researcher – Environment and Development
International Water Management Institute (IWMI)
P.B.Box 5689, Addis Ababa, Ethiopia.
Mobile: +251- 906 - 899262
w.bori@cgiar.org

Anna Tengberg, PhD

Senior Adviser - Swedish Water House
Stockholm International Water Institute (SIWI)
Mobile: +46 (0) 760 060406
anna.tengberg@siwi.org



Headquarters

127 Sunil Mawatha
Pelawatta
Battaramulla
Sri Lanka

Mailing address

P. O. Box 2075
Colombo
Sri Lanka

Telephone

+94 11 2880000

Fax

+94 11 2786854

Email

iwmi@cgiar.org

Website

www.iwmi.org

Headquarters

Linnégatan 87A
Sweden

Mailing address

Box 101 87
100 55 Stockholm
SWEDEN

Telephone

+27 76 563 2229.

Fax

+46 8 121 360 01

Email

siwi@siwi.org

Website

www.siwi.org