Supplementary material

Table S1. List of initiatives targeted in this study (39 in total). We recorded one interview per organization approached, except for two cases in which two interviews were conducted in two different sites of operation of the same organization (in these cases, the results presented in the article derive from merging the two interviews). Years = years of implementation of the activities described.

Name	Type of organization	Years	Descriptions of activities	Sites of intervention (province)
BANGRE RAAGA	Local NGO or association	30	Site of Yacouba Sawadogo, emblematic smallholder who rehabilitated traditional cultivation practices to conserve soil and retain water (e.g., zaï). The site works as a demonstration plot and provides an example of sustainable agricultural practices and nursery management	Ouahigouya
Association Zoramb Naagtaaba (AZN)	Local NGO or association	30	International NGO focused on dissemination of sustainable agricultural practices through the establishment of demonstration farms to raise capacity building of smallholder farmers	Oubritenga
Association de Développement SOOGR-NOOMA - BRECED (ADSN)	Local NGO or association	27	Project aiming to increase the resilience of local communities in the face of increasing variability in rainfall patterns and high temperature through the diversification of agricultural income and adapting agricultural practices to climate change	Kaya
Ass. D'Aide aux Enfants et aux Familles Démunies	Local NGO or association	24	Association focused on creating income opportunities for women through agriculture, in enable them to pay school fees for their children	Ouahigouya,
Association pour la Promotion des Initiatives Locales (APIL)	Local NGO or association	21	Local association aiming to empower smallholders in rural areas through support to their small-scale entrepreneurial activities related to sustainable agriculture and natural resource management	Kaya, Ziniaré, Ouagadougou
Réseau des Méthodes Actives de Recherche et de. Planification	Local NGO or association	21	Local NGO aiming to prevent natural catastrophes in Burkina Faso and mitigate their effect by increasing participation of different stakeholders into development-oriented activities, establishing conflict	Oauagadougou, Nahouri-Pô, Houet, Yatenga, Zondoma, Oubritenga

Participatives (Réseau MARP)			solving mechanisms and promoting assisted natural regeneration to foster vegetation recovery. Active in all 13 regions of Burkina Faso. The sites reported here are those where forest restoration is carried out.	
Burkina Vert	Local NGO or association	14	Local NGO focusing on the promotion of rural sustainable agriculture practices and sustaining the fight against desertification	Ouahigouya, Dori, Dédougou
Tiipaalga	Local NGO or association	13	Local NGO supporting rural development and management of natural resources distributing improved ovens and microcredits to women, training in agroecological practices, establishing fenced plots to foster vegetation recovery	Boulkiemdé, Kadiogo, Kourwéogo, Oubritenga, Soum
OZG	Local NGO or association	12	Local NGO aiming to rehabilitate extremely degraded common lands through mechanization of soil restoration work and establishment of mixed plantations with trees, shrubs and herbaceous speciess	Oudalan
RENAF	Local NGO or association	11	Network of farmers' organizations focused on capacity building of young farmers in sustainable agriculture	Ouagadougou (siège)
Ass, Citoyenne pour le Développement (ACD)	Local NGO or association	10	Association focused on the recovery of ecological processes, the recovery of soil fertility, the fight against soil erosion, the promotion of agrosylvopastoral production, carbon sequestration, land reclamation	Ouahigouya
Ass.Formation Développement Ruralité (AFDR)	Local NGO or association	3	Local association with the objective to set in place activities to alleviate food insecurity, mitigate the effects of desertification, prevent diseases, reduce poverty and illiteracy (especially of women)	Ouahigouya
OCADES-Sahel	Local NGO or association	3	Religious association focused on sustainable development and improved livelihoods of poor, rural communities, with a particular focus on vulnerable groups (e.g., handicapped, women and youth) and on sustainable pastoral practices	Dori. This structure is present in the 13 regions of Burkina Faso with several projects (*we conducted two*

				interviews in Dori, related to two specific projects in the area of Dori).
Association pour la Gestion de l'Environnement et Développement	Local NGO or association	3	Project aiming to a sustainable management of natural resources and to raise productivity of ecosystems, sustain restoration of degraded lands, and improve access of smallholders to market through approaches based on production of green energy, conflict resolution and improved water access	Dori
Association Vision Action Developpement (AVAD)	Local NGO or association	3	Local association aiming at improving livelihoods through the development of value chains for agricultural and forest-related products, providing advice and training	Kaya
Association Nourrir Sans détruire	Local NGO or association	3	Association aiming to promote sustainable agriculture practices and address hunger	Fada N'Gourma
Association TIN TUA	Local NGO or association	3	Programme aiming to increase literacy rate and preservation of the local language, and to identify and spread use of sustainable agricultural technologies among smallholders	Fada N'Gourma, Diapaga, Bogandé
LAGM-TAABA	Local NGO or association	3	French associations promoting football and at the same time sustainable agriculture with use experimental parcels	Fada N'Gourma
Association pour la Recherche Formation en Agroécologie	Local NGO or association	NA	Association promoting sustainable agriculture while aiming to improve the livelihood of rural communities	Fada N'Gourma, Diapangou, Ouahigouya, Bogandé
Baobab 29	International institution	10	French NGO promoting rural development through the establishment of vegetable gardening and plantations of valuable species on degraded lands	Kadiogo, Koudougou
FAO-Action contre la désertification	International institution	3	FAO-led initiative aiming to restore degraded lands through capacity reinforcement of smallholders, mechanization of soil recovery practices and promotion of value chains for NTFPs	Soum, Seno
APEFE	International institution	3	Initiative linked to the Great Green Wall focused on strengthening governmental	no planting sites

			structures involved in land rehabilitation and sustainable management of natural resources, and supporting their coordinated action	
Programme d'Investissement Forestier (PIF)	International institution	3	The largest project set in place by the Ministry of Environment in Burkina Faso with the aim to fight deforestation and forest degradation while increasing carbon stocks in forests	Diapaga
Union International pour la Conservation de la Nature (UICN)	International institution	3	Ongoing project with the slogan "A fair world favoring nature" focused on legislation regarding forest resources and the management of wetlands.	Ouagadougou (siège)
FLEUVE (Fonds Local Environnement pour une Union Verte)	International institution	2	Project that is part of the Great Green Wall initiative, aiming to reinforce the coordination of a network of actors from the civil society already involved in the fight against land degradation and in sensibilization of stakeholders	Dori
Projet d'Amélioration de la productivité par la Conservation des Eaux et Sols (PACES)	International institution	2	Project aiming to raise the productivity of the agrosylvopastoral land, rehabilitate degraded land and improve food safety	Kaya, Ziniaré
Grande Muraille Verte/ Great Green Wall	International institution	2	International project aiming to halt desertification through promotion of sustainable agricultural practices and rehabilitation of the degraded lands, coordinating several and different stakeholders and channeling funds	Dori, Fada N'Gourma, Kaya, Ouahigouya
Conseil Danois pour les Réfugiés	International institution	1	International organization aiming to provide long term solutions for the settlements of refugees	Dori, Djibo
Valorisation du Potentiel agropastoral dans la Région	Government	12	Programme aiming to increase resilience and food security of herding communities in Burkina Faso by increasing productivity of agrosylvopastoral land and increase income of herding	Fada N'Gourma, Diapaga, Gayeri, Bogandé

de l'EST (VALPAPE)			communities, partly through the transformation of NTFPs	
NEER-TAMBA	Government	5	Project aiming to improve livelihoods and diversify income sources of rural communities through increasing agricultural productivity and empowerment, especially of young and women living in a rural context, strengthening their decision-making power in investment choices. Recuperation of heavily degraded land is a central strategy for increasing income.	Ouahigouya, Fada N'Gourma, Kaya
PAPSA (Projet d'Evaluation de la Productivité Agricole/Sécurité Alimentaire	Government	3	Governmental project aiming to increase productivity of smallholder farms engaging stakeholders from the food sector	Dori, Kaya, Fada N'Gourma
Réseau de communication sur le Pastoralisme	Government	3	Project aiming to increase the productivity of livestock herders through capacity reinforcement and common management of pastoral land	Fada N'Gourma, Diapaga, Gayeri, Bogandé
Projet d'Amélioration de la productivité Sécurité Alimentaire	Government	3	Governmental project targeting: alleviation of food insecurity in Burkina Faso by reinforcing existing institutions, an increase in productivity of agrosylvopastoral land, an increased connection of local production with the market	Tenkodogo, Manga, Dori
Centre Régional d'agriculture (CRA)	Government	2	Reforestation initiative with commercially valuable non-timber forest products (NTFPs) species (e.g., shea, locust bean, baobab); restoration of the habitat of endangered species	Fada N'Gourma
Résilience et Croissance Economique au Sahel/Résilience Renforcée (REGIS-ER)	International NGO	3	Project aiming to reinforce the resilience of local communities in the Sahel by restoring the productivity of agrosylvopastoral land and improving economic well-being of herders and farmers communities	Kaya, Fada N'Gourma, Dori
Tree Aid- Dori	International NGO	13	TREEAID-led initiative supporting the local administration in restoring the habitat of endangered species in classified	Fada N'Gourma

			forests and on enhancing productivity in agrosylvopastoral systems/community forests in the area of Fada	
Tree Aid – Diapangou	International NGO	11	TREEAID-led initiative supporting the local administration in restoring the habitat of endangered species in classified forests and on enhancing productivity in agrosylvopastoral systems/community forests in the area of Diapangou	Diapangou
APAF	International NGO	11	NGO aiming to promote agroforestry distributing technological packages to smallholders, building capacity and promoting tree planting on agricultural land	Tuy
REACH ITALIA	International NGO	1	Italian NGO aiming to rehabilitate degraded lands in the Sahel through the use of the Vallerani system, a soil management method that improves water capture and reduces erosion	Dori

Table S2. Main forest and land restoration practices adopted in the context addressed by this study.

Forest and land restoration practices	Definition
Promotion of natural regeneration	Bundles of practices favoring regeneration of tree seedlings, protecting them from grazing, wildfire and other pressures.
Soil/land management	Engineering work aimed at modifying the soil microtopography to reduce erosion, retain water from precipitations and concentrate nutrients. The main practices consist in the creation of stonewalls, stone bunds and contour stone bunds (lines of stones placed to slow down and filter runoff, favoring infiltration and capturing sediment, displayed following the contour), living fences (hedgerows of multipurpose trees), half-moons (earth embankments shaped in as a semi-circle, arranged in staggered rows and placed with the tips of the bunds facing uphill, designed to harvest the runoff water for crops or planted trees), Vallerani trenches (trenches established using a tractor with a special plough called Delfino, which creates micro-basins where water, overflow, organic matter, fine soil, and seed get collected), zaï (a series of holes at fixed distances following specific patterns, dug in the soil before the rainy season, where seedling are planted together with manure. It is a traditional technique designed to capture rainfall, re-discovered and upscaled).
Fertilization	Use of mulch, chemical fertilizers, or compost to improve the nutrients content in soils and favor tree growth.
Mix planting of trees, shrubs, herbs	Planting of different types of plants, from herbs to trees, to address different needs (forage supply, wind breaking, soil fertilization), but also to facilitate recovery of fertility through the establishment of fast-growing plants, followed by trees.
Mixed planting of only trees	Planting of different tree species.
Restoration of the fire regime	Control of fires or controlled burning.
Planting using different species of the ecosystem of origin	Planting of exotic tree species to address different needs (e.g., income generation, restoration of ecosystem services).
Planting of species with ecological attributes specific to restoration work	Planting of tree species according to their specific traits matching site conditions and restoration objectives (e.g, production of abundant litter to restore soil fertility).
Establishment of structures facilitating colonization of fauna	Installation of structures that facilitate colonization by animals (e.g., beehive).
Monospecific plantation of grass	Plantation of one species of grass, aiming to enhance soil fertility, control erosion and/or divert focus of grazing animals from tree seedlings.
Fauna restoration	Restoration of the vegetation designed in a way to recreate or conserve connectivity through corridors between sites of ecological value and important habitats for the fauna.
Control of pollutants	Adoption of accepted standards for pesticide use in agriculture; and checking on use of phytosanitary products not formally approved.

Table S3. List of tree species used in the different FLR initiatives documented in this study. For each tree species we report whether it is indigenous or exotic to Burkina Faso and the number of times it has been reported across the 39 FLR initiatives characterized. The No. of citations is not indicative of the density of planting, given that some species are planted at much higher densities than others.

Species	Indigenous/Exotic	No. of citations
Moringa oleifera	Exotic	24
Acacia nilotica	Indigenous	20
Acacia senegal	Indigenous	19
Adansonia digitata	Indigenous	18
Parkia biglobosa	Indigenous	11
Ziziphus mauritiana	Exotic	8
Azadirachta indica	Exotic	7
Faidherbia albida	Indigenous	6
Khaya senegalensis	Indigenous	6
Balanites aegyptica	Indigenous	5
Jatropha curcas	Exotic	4
Prosopsis africana	Indigenous	3
Acacia albida	Indigenous	2
Acacia radiania	Indigenous	2
Anacardium occidentale	Exotic	2
Carica papaya	Exotic	2
Cassia sieberiana	Exotic	2
Ceiba petandra	Indigenous	2
Tamarindus indica	Indigenous	2
Acacia macrostachya	Indigenous	1
Acacia mellifera	Indigenous	1
Albizia stipulata	Exotic	1
Annona senegalensis	Indigenous	1
Bauhinia rufescens	Indigenous	1
Combretum micranthum	Indigenous	1
Delonix regia	Exotic	1
Gliricidia sepium	Exotic	1
Lannea microcarpa	Indigenous	1
Mangifera indica	Exotic	1
Phoenix dactylifera	Exotic	1
Psidium guajava	Exotic	1
Saba senegalensis	Indigenous	1
Sclerocarya birrea	Indigenous	1
Vitellaria paradoxa	Indigenous	1

Supplementary material - Full survey

- Quel est le nom de l'organisation ou de l'initiative (projet/programme) ?
- Quel est le nom du répondant ?
- Type d'organisation ? (Options : Institution international, Programme de coopération international, ONG international, Institution de recherche locale, Association locale, ONG locale, Association d'agriculteurs, Autre (veuillez préciser))
- Année de début
- Durée de l'intervention (quatre options : Moins d'un an, 1 à 5 ans, 5 à 10 ans, 10 à 50 ans)
- Site d'intervention/ Propriétaire du site / site
- Site d'intervention /Utilisation antérieure de la terre / de l'écosystème
    - 1. l'exploitation minière
    - 2. Agriculture / plantations forestières / aquaculture
    - 3. Pastorale
    - 4. Écosystème d'origine, extraction sélective de bois / d'autres produits non ligneux ou de la pêche
    - 5. Écosystème original / coupe à blanc
    - 6. Abandonné
    - 7. Écosystème d'origine non soumis à l'extraction
    - 8. Autre_____
- Site d'intervention / Caractéristiques territoriales :
    - a. Terres publiques/ dans une zone naturelle protégée
    - b. Terres publiques/ dans la zone tampon de la zone protégée
    - c. Terres publiques/ sur des terres publiques mais non protégées
    - a2. Terres privées/ zone protégée privée
    - b2. Terres privées/ zone de production agro-sylvo-pastorale
- But principal de l'organisation/ du projet (peut-être plus d'un)
    - i. Récupération de la biodiversité ; Groupe spécifique : oiseaux, plantes, insectes, communauté biotique en général . Augmentation de la surface d'un écosystème
    - ii. Rétablissement de l'habitat pour les espèces en péril (comprend la connectivité)
    - iii. Promouvoir la connectivité écologique dans des habitats fragmentés (en général, non associés à une espèce particulière).
    - iv. Récupération des processus écologiques (fertilité du sol, amélioration de la qualité de l'eau, réduction sédimentation, pollinisation, écoulement de l'eau [zones humides], autre)
    - v. Élimination des espèces exotiques / envahissantes ou non désirées par la société
    - vi. Diminution des risques (p. ex. atténuation de l'érosion, décontamination)
    - vii. Réclamer réparation d'un écosystème après extraction minérale
    - viii. Restauration des valeurs culturelles et spirituelles

    - ix. Création d'emplois locaux (ne concerne pas les plantations de bois à des fins commerciales / industrielles)
    - x. Captage et stockage du carbone
    - xi. Promouvoir la productivité sylvopastorale (brise-vent, contrôle biologique, relations parasite-hôte ...)
    - xii. Loisirs / loisirs / écotourisme
    - xiii. Remplir le mandat du gouvernement, décret, loi ?
    - xiv. Aucun ; l'objectif initial n'est pas connu, même si des études ultérieures sont effectuées

- Quelle est la taille de la surface restaurée ?
- Quelle est l'échelle d'intervention ?
- Quelles sont les sources de financement ?

- Participation de la communauté au projet
    - 1. Principal responsable
    - 2. Partenaires importants, organisateurs
    - 3. Partenaires importants, contributeurs (connaissances, terres ou ressources)
    - 4. Collaborateurs (ils soutiennent le projet, mais ils ne sont pas indispensables à son exécution)
    - 5. Les voisins du projet, intéressés par son exécution, sont liés en tant que travailleurs
    - a. embauché pour le projet
    - 6. Les voisins du projet, intéressés par son exécution, mais ne participent pas activement
    - 7. Les voisins du projet mais sans intérêt
    - 8. Voisins du projet, ils n'ont pas été convoqués ni consultés
    - 9. Il n'y a pas de communautés dans les environs du projet

- Participation du gouvernement au projet
    - 1. Invocateurs, entrepreneurs
    - 2. Ils ne sont pas responsables du projet, mais ils soutiennent avec quelques ressources
    - 3. Aucun

- Prenez-vous en compte les aspects de genre ? si oui comment?
- Comment sélectionnez-vous des partenaires sur le terrain ?
- Qui fournit la main d'œuvre pour les activités de restauration ?

- Quelle approche technique/type d'intervention ont été utilisée pour mettre en place des activités de restauration ? (Indiquez tout ce qui s'applique)
    - i. Travaux de génie civil
        - 1. Stabilisation des sols, restauration des profils de sol ou récupération des canaux
        - 2. Lutte contre l'érosion
    - ii. Contrôle des barrières
        - 1. Exclusion du pâturage
        - 2. Restauration du régime des feux. Contrôle des incendies ou du brûlage contrôlé
        - 3. Application d'herbicides ou de pâturage
        - 4. Fertilisation
        - 5. Bioremédiation pour éliminer la toxicité du sol ou de l'eau
        - 6. Contrôle des polluants
    - iii. Restauration de la végétation
        - 1. Régénération naturelle
        - 2. Plantation monospécifique avec différentes espèces de l'écosystème d'origine / potentiel
        - 3. Plantation mixte uniquement des arbres
        - 4. Mélange d'arbres, arbustes, herbes
        - 5. Espèces ayant des attributs écologiques spécifiques aux travaux de restauration (fixateurs d'azote, habitat des espèces d'intérêt, biorémédiateurs)
    - iv. Restauration de la faune
        - 1. Mise en place de structures facilitant la colonisation
        - 2. Transfert de personnes d'autres lieux
    - v. Autres

- Quel est le coût de la restauration par hectare, pour chaque approche que vous préconisez ?
- Avez-vous un soutien scientifique ? Si oui, par qui ?
- Qui a développé les techniques ? (Cochez toutes les réponses qui s'appliquent)
    - i. Copié directement de la littérature internationale (sources ?)
    - ii. Copié directement de la littérature nationale
    - iii. Protocoles délivrés par l'institution organisatrice / contractante
    - iv. Adaptations de la littérature
    - v. Propre développement dans d'autres projets
    - vi. Propre développement pour ce projet

    - vii. Création collective avec des connaissances locales
- Qui assure le renforcement des capacités / la formation ? et comment ?
- Quelles espèces plantez-vous ?
- Quels critères ont été utilisés pour sélectionner le matériel biologique (espèces et sources de semences utilisées) ?
    - 1. Espèces connues comme résidents originaux de la région
    - 2. Espèces avec caractéristiques spécifiques pour corriger les problèmes du site
    - 3. Disponibilité commerciale des semences
    - 4. Disponibilité locale de semences ou de plants
    - 5. Facilité de propagation / reproduction
    - 6. Autre
- Quelles sont les sources de semences d'arbres utilisées ?
- Connaissez-vous l'origine génétique de semences d'arbres utilisées ?
- Combien de kilos ont été obtenus de chaque source (si plus d'un a été utilisé) ?
- Est-ce que vous réalisez des pépinières ? quelle est la production ?
- Avez-vous des problèmes avec la disponibilité de l'eau pour l'arrosage ? Si oui, comment vous les abordez ?
- Comment évaluez-vous le succès, quelle est l'approche utilisée pour le suivi ?
- Quels problèmes majeurs avez-vous rencontrés ?