



Food and Agriculture
Organization of the
United Nations

Implementing SLM to reach land degradation neutrality (LDN) – how to link local actions with the United Nations Convention to Combat Desertification?

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Asian knowledge hub on sustainable soil and land management



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About WOCAT

The World Overview of Conservation Approaches and Technologies (WOCAT) is a **global Network of organizations and individuals established in 1992.**

WOCAT supports the compilation, documentation, evaluation, sharing, dissemination, and application of standardized **sustainable land management (SLM) knowledge and its use for decision-making and scaling up.**



World Overview of Conservation Approaches and Technologies

The Global Network on Sustainable Land Management

Consortium Partners



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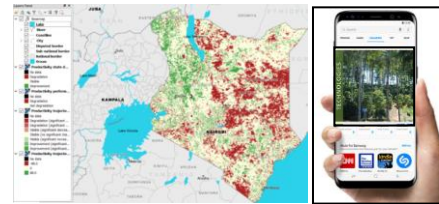


Swiss Agency for Development and Cooperation SDC



About WOCAT

WOCAT supports innovation and decision-making in SLM by:



maintain global, open
SLM network



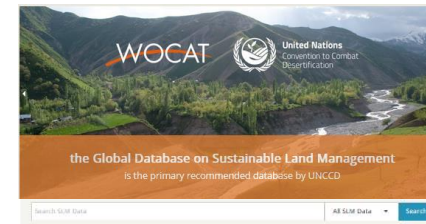
harmonize and
further develop
tools and methods
with partners



provide open access
global SLM data
repository



build capacities at
local, regional and
national level



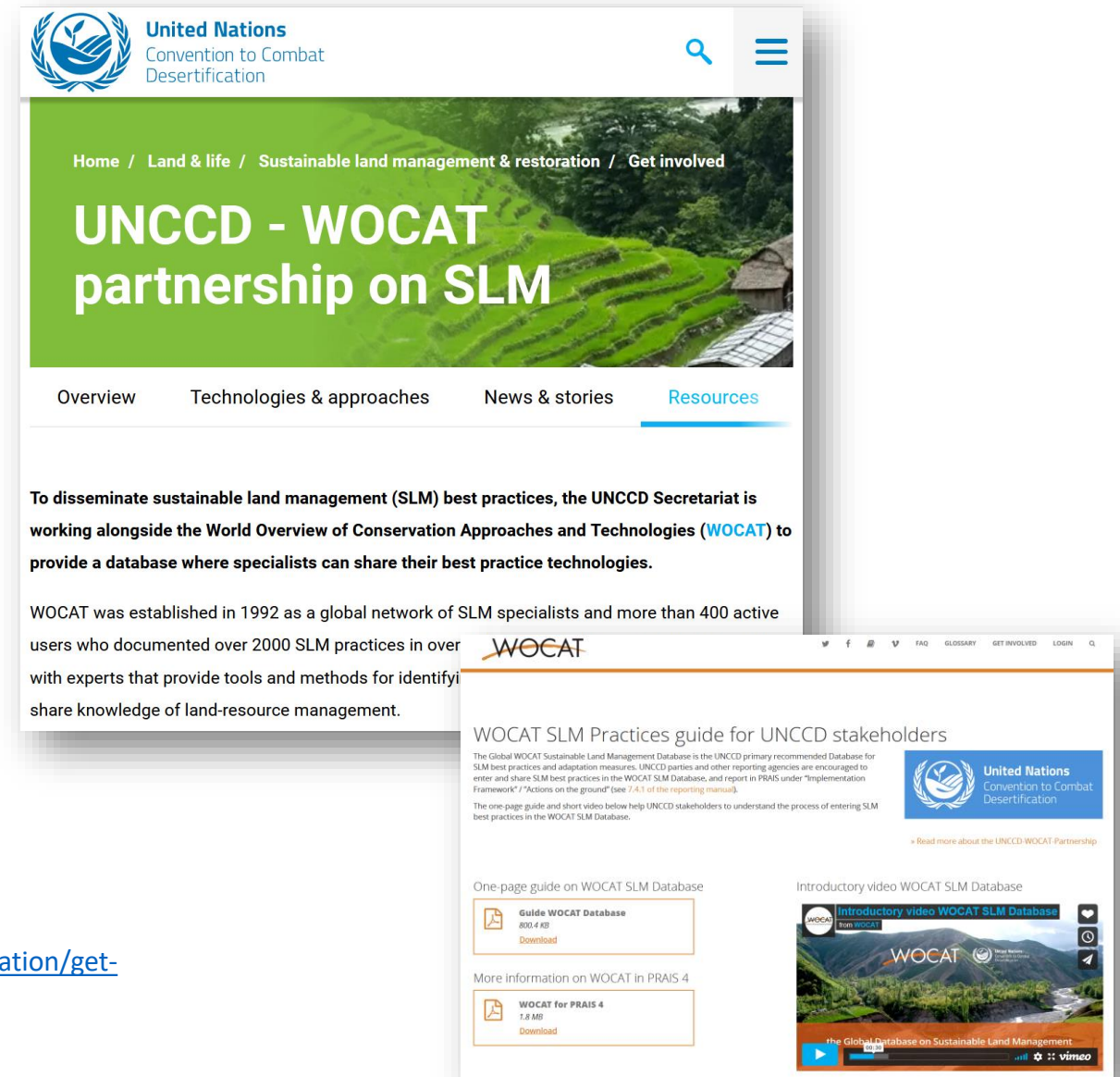
WOCAT and UNCCD

In 2014, WOCAT was **officially recognized by the UNCCD** as the **primary recommended Global SLM Database** for reporting on best SLM practices

In 2022, the University of Bern, Centre for Development and Environment on behalf of WOCAT received the **accreditation as member of the UNCCD CSO group**

<https://www.unccd.int/land-and-life/sustainable-land-management-and-restoration/get-involved/unccd-wocat-partnership-slm>

<https://www.wocat.net/library/media/60/>



WOCAT and UNCCD

2014: UNCCD selects WOCAT as the primary recommended database for SLM best practices and adaptation measures. Agreement between UNCCD and WOCAT signed. Data previously reported through the PRAIS were transferred to the WOCAT SLM Database.

2019: UNCCD Decision19/COP.14: acknowledging continuing efforts by WOCAT in promoting analysis, dissemination and accessibility of SLM practices.

2020: UNCCD-WOCAT Partnership extended to boost the uptake of SLM practices around the world through a strengthened global partnership.

2022:

Decision 9/COP.15 - Collaboration with the Global Environment Facility

Decision 11/COP.15 - Improving the **procedures for communication of information** as well as the quality and formats of reports to be submitted to the Conference of the Parties

Decision 19/COP.15 - Interfacing science and policy: The Science-Policy Interface, the **dissemination and accessibility of best practices**, and the UNCCD Knowledge Hub

Decision 20/COP.15 - Policy-oriented recommendations resulting from the cooperation with other intergovernmental scientific panels and bodies

Decision 24/COP.15 - Follow-up on policy frameworks and thematic issues: Gender



UNCCD Reporting process

UNCCD parties and other reporting agencies are encouraged to enter and share SLM best practices in the WOCAT SLM Database, and report in PRAIS under "Implementation Framework"/"Actions on the ground" (see 7.4.1 of the reporting manual)



Search docs

CONTENTS:

- Introduction
- 1. Strategic objective 1: To improve the condition of affected ecosystems, combat desertification/ land degradation, promote sustainable land management and contribute to land
- 7.1. About the implementation framework
- 7.2. Financial and non-financial resources
- 7.3. Policy and planning
- 7.4. Action on the ground
 - 7.4.1. Sustainable land management practices
 - 7.4.2. Restoration and rehabilitation
 - 7.4.3. Drought risk management and early warning systems
 - 7.4.4. Alternative livelihoods
 - 7.4.5. Establishing knowledge-sharing systems
- Annex I: User-specific license options for national data uploaded to the UNCCD Performance Review and Assessment of Implementation System (PRAIS)
- Annex II: Metadata

English العربية Español Français Русский 简体中文

Previous

Next

7. Implementation framework: financial and non-financial resources, policy and planning, and action on the ground

7.1. About the implementation framework

7.1.1. Introduction

7.4. Action on the ground

Parties are encouraged to answer questions related to the following five main topics.

7.4.1. Sustainable land management practices

Parties may provide a summary of one or more successful SLM practices based on the list developed using the World Overview of Conservation Approaches and Technologies (WOCAT) Global SLM Database and included in the PRAIS 4 platform¹.

The description of the practice may include information on the type of practice, main activities, main stakeholders involved, resources used, reasons for its success in avoiding or reducing land degradation in the long term, and main factors of success. When applicable, experiences from the LDN Target-Setting Programme should also be reported.

Additionally, a full description of the best practice can also be submitted through the WOCAT system to the dedicated knowledge base. Detailed information on how to submit to the WOCAT system can be found at this link:

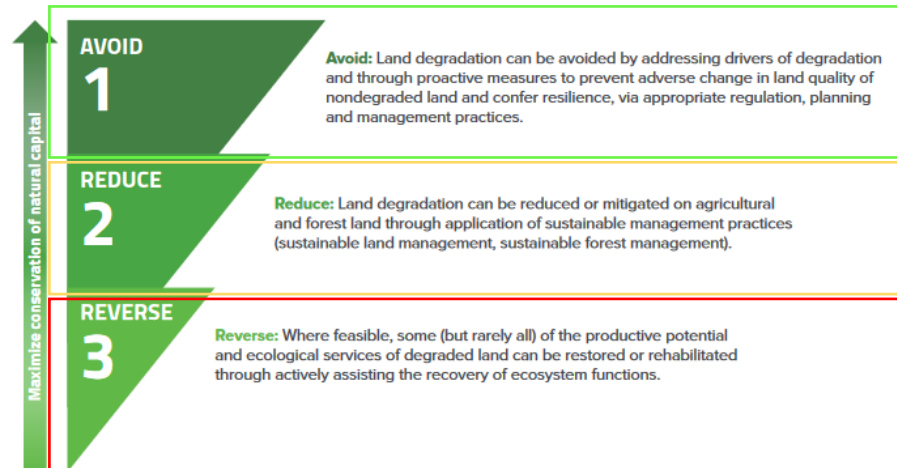
<http://knowledge.unccd.int/WOCAT-SLM>².

Parties are encouraged to provide one or more examples of support provided to another country to implement successful SLM practices. In the description, it is recommended to include information on the type of practice, main activities, main

Sustainable Land Management and LDN response hierarchy

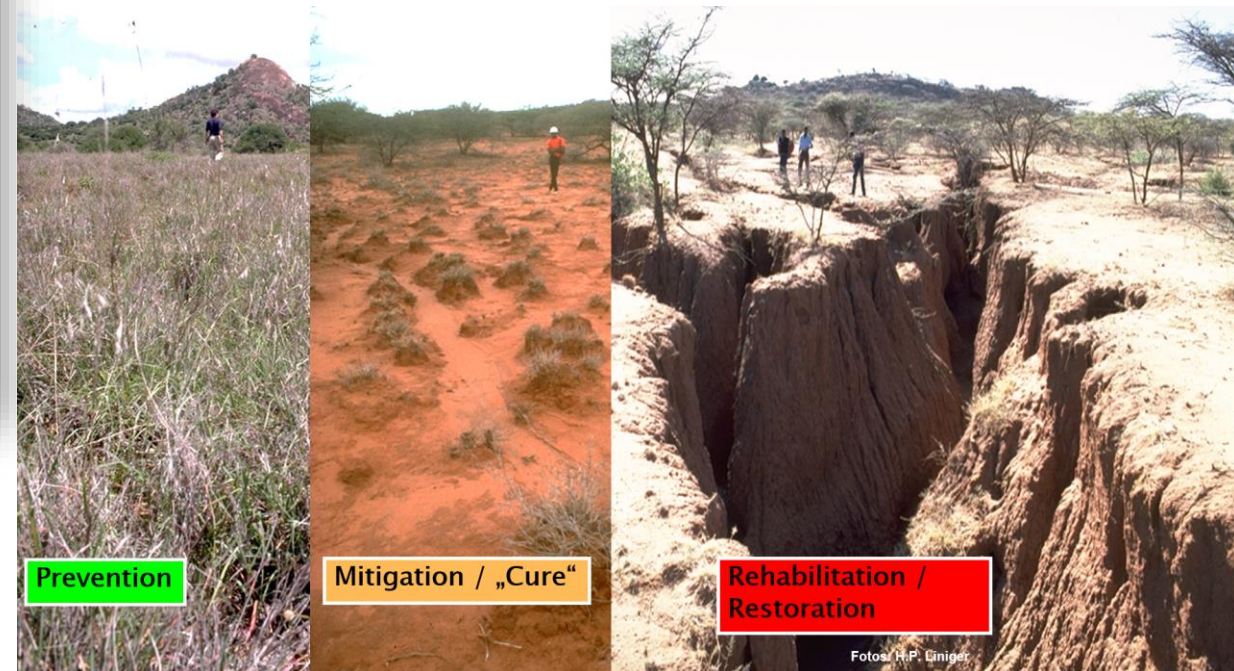
LDN is defined as: "A state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems."¹⁴ The LDN "response hierarchy" of Avoid > Reduce > Reverse land degradation is the overarching principle for LDN implementation, which guides decision-makers in planning interventions to achieve LDN (Figure 1).

Figure 1: The LDN Response Hierarchy



Source: Orr et al., 2017¹⁵

Purpose of the SLM technology



Fotos: H.P. Ciniger

Sustainable Land Management and LDN response hierarchy



Orange with chili and banana that surround by papaya (Mr. Sok Pheak)

Agroforestry: Intercropping of vegetables between orange trees (Cambodia)

Mixed cropping

DESCRIPTION	LOCATION
<p>Intercropping of chilies (or other short-term crops) between young orange trees is a type of agro-forestry system which increases income, makes ultimate use of land resources, saves time for maintenance and irrigation, and improves soil fertility by using crop residue with cow manure as fertilizer, thereby reducing the use of chemicals.</p> <p>Chili can be seen as a short-term crop that can be harvested soon after plantation. Farmers plant such short term crops to support their family's income (Pov, 2016). Oranges are a long-term crop that can be fully harvested after six years and then continue to be harvested for a long time. The more the orange trees are mature, the more they are able to produce. Furthermore, they do not require a great deal of maintenance and there is a good market demand for oranges (CEDAC, 2011). Growing chilies between young orange trees is known as an agro-forestry system that gives rise to a great number of benefits including an increase in the efficiency of land use, a saving of time otherwise spent on maintenance and irrigation, and also it improves the soil quality and prevents land degradation. Moreover it is an improvement in crop production that helps to generate more income for farmers (ECHO, 2007).</p> <p>The purpose of implementing this technology, whereby other short-term crops (such as chilies, eggplants, and herbs) are seasonally intercropped between young orange trees is to economize time spent on maintenance, watering, and applying fertilizer on chilies. And oranges benefit, too. Assorted crops absorb different nutrients from the soil which enables the soil to remain balanced and fertile and also they do not interfere with the growth of the long-term crop. Additionally the use of crop residue with cow manure is a mean of improving the soil's fertility and it helps to reduce the use of chemical fertilizer. Alternatively this technology can also include the plantation of papaya and banana trees around the land as additional crops, which provide shade and help to control soil moisture for the other crops.</p> <p>The farmer needs to plough the soil three times. After the first ploughing the soil has to be dried for four days, after the second ploughing for five days and after the final ploughing it should be dried seven days. If there is additional rainfall then extra days will be needed to get the soil dry. After that, holes need to be dug at a distance of 3.5 meters from each other in any direction. Each hole measures 30 X 40 centimeters and is 30 centimeters in depth. Before the orange trees are planted the soil should be mixed with compost, consisting of vegetables or crop residue and cow manure. Ten to five to thirty days after the chilies have sprouted they should be planted between the trees in a row with a gap of 1.2 meters and a distance of one meter from side to side. 2 month later the around 270 chilies plants are able to produce a yield of around 50 to 60 kg. Once they are four to five months old, 100 to 200 kg can be harvested every 15 days for a period of 6 months. The market price of chilies is between 2000 to 4000 riel per kilogram.</p> <p>One of the main advantages stated by the land user is to be able to balance the land shortage by using all of free space within the orange orchard. Another advantage is that weeds have less chance to grow. This saves labor time and generates better income. Due to crop rotation (different seasonal crops) he can maintain a good soil quality through a balanced absorption of the soil nutrients.</p>	

- Purpose related to land degradation**
- prevent land degradation
 - reduce land degradation
 - restore/rehabilitate severely degraded land
 - adapt to land degradation
 - not applicable

- Degradation addressed**
- chemical soil deterioration** - Cn: fertility decline and reduced organic matter content (not caused by erosion)
 - biological degradation** - Bc: reduction of vegetation cover, Bt: loss of soil life
 - water degradation** - Ha: aridification

- Type of introduction**
- through land users' innovation
 - as part of a traditional system (> 50 years)
 - during experiments/ research
 - through projects/ external interventions



Women belonging to a village institution prepare indigenous grass seed balls (FES)

Community Based Soil Rehabilitation for Grassland on Common Lands After Eradication of the Invasive Lantana Camara (India)

DESCRIPTION	LOCATION
<p>Community-based soil rehabilitation by eradicating the invasive plant Lantana Camara using the 'cut rootstock' method (refer to WOCAT technology 6660) is an effective, cost-efficient, and sustainable approach to restoring grasslands on common lands in the Mandla District of Madhya Pradesh. The three-tier institutional structure used in this eradication process involved the formation of informal women groups at the hamlet level (village organisational structure), the Village Environment Committee (VEC) at the village level, and an Executive Committee at the cluster level (higher organisational structure) so to ensure community involvement and ownership.</p> <p>Community-based soil rehabilitation after the eradication of the invasive plant species, Lantana Camara, is an effective technique for restoring grasslands on common lands that had earlier been invaded by this species. The invasion of Lantana Camara can have significant negative impacts on the ecosystem, reducing the diversity of plant life and disrupting the local communities' use of common lands for grazing, for agriculture, and for collecting non-timber forest products.</p> <p>To address these issues, a three-tier institutional structure is being used by the project-implementing organization Foundation for Ecological Security (FES). This structure includes the formation of informal women groups at the hamlet level, the Village Environment Committee (VEC) at the village level, and an executive committee at the cluster level. The VEC prepares proposals on common issues and plans with budgets that are presented to the executive committee, which is made up of a mix of individuals, with 50% of the seats reserved for women.</p> <p>The first step in the process is for the village executive committee to take the Gram Sabha (Village Governing Body) into confidence and prepare bylaws for the restoration and conservation of the Lantana-eradicated site. These bylaws are regularly discussed in the village institution meeting to refresh the memory of the community and different stakeholders on how to properly conserve the site. Local resource persons facilitate the implementation of work.</p> <p>One of the major works undertaken by these communities in the Mandla District is the soil rehabilitation from Lantana Camara for grassland restoration on common lands. This involves cutting the root of the plant three inches below the ground and lifting the bush upside down to prevent it from gaining ground. This method is done between July and September before fruting to avoid seed fall, which can cause recurrence for up to three years, also this is the time when the soil has enough moisture thus softness to uproot the Lantana plants.</p> <p>The Cut Rootstock (CRS) method to control the spread of Lantana Camara is cost-effective and sustainable as it does not require the use of chemical herbicides or heavy machinery. In addition to using the CRS method, perching trees are located, and saplings are removed from under their canopies and along the nearby surface runoff zone. Regular monitoring and follow-up actions may be necessary to ensure the long-term success of this method in controlling the spread of Lantana Camara.</p> <p>To prevent a recurrence, measures such as mopping for three years continuously, planting and seed sowing in areas where rootstocks seem to be less, and grass seed sowing are executed. The community institution ensures the collection of indigenous grass species, which are made into seed balls and sown before the advent of monsoon. These grass</p>	

- Purpose related to land degradation**
- prevent land degradation
 - reduce land degradation
 - restore/rehabilitate severely degraded land
 - adapt to land degradation
 - not applicable

- Degradation addressed**
- biological degradation** - Bc: reduction of vegetation cover, Bq: quantity/ biomass decline, Bf: detrimental effects of fires, Bt: quality and species composition/ diversity decline, Bl: loss of soil life

Spread of the Technology: applied at specific points/ concentrated on a small area

In a permanently protected area?: No

Date of implementation: 2016

- Type of introduction**
- through land users' innovation
 - as part of a traditional system (> 50 years)
 - during experiments/ research
 - through projects/ external interventions

Geospatial Platforms to support LDN monitoring, decision-making and reporting (SDG 15.3)

Conclusions:

- Documentation of SLM good practices can be included in mapping LD/SLM (coordinates exist).
- Use of SLM good practices in the context of mapping to link hot spots/green spots with SLM good practices.
- Geo-portals are used for planning, to define locations (priorities) for implementing SLM in a participatory way it is also important to see the solutions/good practices that already exist and could be replicated.

Earth Engine Apps

1/3

WOCAT SLM best practices
 Key Biodiversity Areas
 Protected Areas
 Topography
 Land Cover (National UNCCD 7 classes) 2016
 Land Use Land Cover (National) 2016
 Land Productivity Dynamics (2001-2022)
 Soil Class
 Soil Organic Carbon
 Precipitation Trend 2011-2021
 Mountains
 Net Primary Productivity 2022
 Fire Index (Recurrence 2001-2021)

SDG 15.3.1

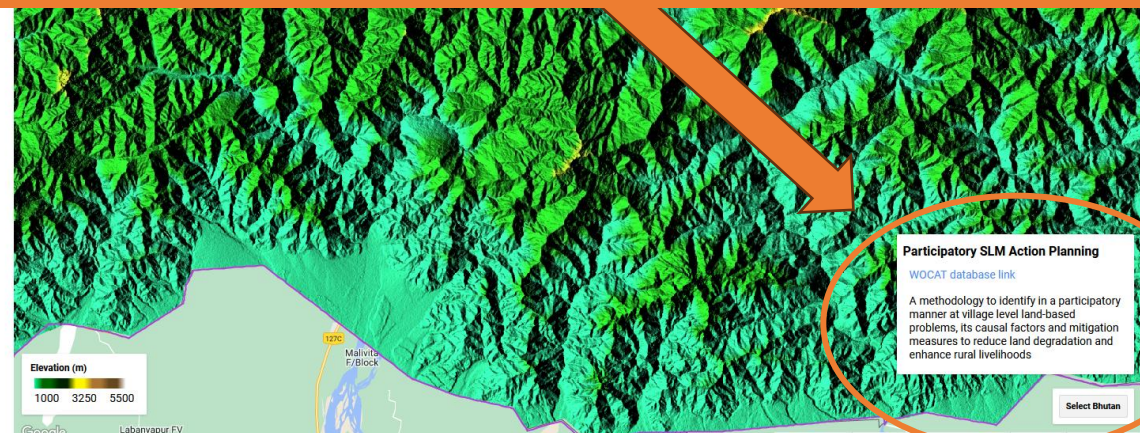
Multi-Criteria Analysis

Land Cover transition analysis

Soil properties

Soil properties reference

Front layer opacity: 1



Participatory SLM Action Planning (Bhutan)

DESCRIPTION
A methodology to identify in a participatory manner at village level land-based problems, its causal factors and mitigation measures to reduce land degradation and enhance rural livelihoods.

LOCATION
Bhutan: Thimphu, Trashigang and Dhangra Dzongkhag, Drukpa Yungdrung Monastery

Year of implementation 2012

Type of Approach
Participatory

Target population
Rural population

Target programme
Sustainable Land Management

APPROPRIATE AND ENABLING ENVIRONMENT
The approach is suitable for use in other countries (Bhutan, Nepal, India, Myanmar, Cambodia, Laos, Vietnam, Thailand, etc.)

Additional information
The approach is suitable for use in other countries (Bhutan, Nepal, India, Myanmar, Cambodia, Laos, Vietnam, Thailand, etc.)

<https://wocatapps.users.earthengine.app/>

Thank you!



Photo: RUA Cambodia

