



MOUNTAIN PARTNERS

APPLYING ECOSYSTEM-BASED DISASTER RISK
REDUCTION (ECO-DRR) FOR SUSTAINABLE AND
RESILIENT DEVELOPMENT PLANNING
IN THE KOH-E BABA MOUNTAINS, AFGHANISTAN



CONSERVATION
ORGANISATION FOR
AFGHANISTAN'S
MOUNTAIN AREAS



سازمان تحفظ ساحات
کوهستانی افغانستان

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United Nations Environment Programme
P.O. Box 30552 Nairobi, KENYA
Tel: +254 (0)20 762 1234
Fax: +254 (0)20 762 3927
E-mail: unepub@unep.org
Web: <http://www.unep.org>

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Prepared by the Eco-DRR Project Team for Afghanistan: Niloufar Bayani, Andrew
Scanlon, Marisol Estrella, Alec Knuerr, Najeeb Azad, Mohammad Sakhi Hassany,
Kelly Franklin

Special thanks to: Assadullah Amiri, Abdul Aziz Mohibbi, Jon Coe, Yves Barthélemy,
Sophie Brown, Cristina Poiata

Design and layout: Philippa Terblanche www.philanthropycreative.co.uk

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EXECUTIVE SUMMARY

Orgosh village tree nursery
after establishment.

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In 2013-2016, the United Nations Environment Programme (UNEP) and the European Commission (EC) supported a pilot demonstration project on Ecosystem-based Disaster Risk Reduction (Eco-DRR) in the Koh-e Baba Mountains of the Province of Bamyan, Afghanistan. Implemented in partnership with the National Government, the Conservation Organization for Afghan Mountain Areas (COAM), and the Community Development Councils, the Eco-DRR project aimed to reduce harsh winter, flood, and avalanche risks and support community livelihoods through applying a landscape approach to development planning in the mountain environment of Afghanistan.

It also promoted linkages to climate change adaptation under the umbrella of strengthening community resilience. The Eco-DRR project closely complemented resilience-building projects, which were carried out by UNEP with support from the Global Environment Facility (GEF), the Department of International Development (DFID) of the United Kingdom and the Government of Estonia.

The project had four main components:

- 1. Mainstream Eco-DRR in local development planning**
- 2. Undertake practical field interventions, including community tree nurseries and stabilizing streambanks and degraded slopes through re-planting activities**
- 3. Develop local and national skills and capacity for implementing Eco-DRR and Green and Resilient Development Planning**
- 4. Support advocacy on Eco-DRR for enhancing national disaster and climate resilience**

The project has provided a practical field-based model for Eco-DRR in the Koh-e-Baba Mountains of Afghanistan. Significant investment was made

to raise awareness and build capacity in relevant Government agencies, and local and provincial partners. Multiple, national workshops and seminars, as well as frequent communication with policy-makers, provincial and local authorities were an essential component of the project, with the aim to engage and motivate Government stakeholders to effectively advocate for Eco-DRR mainstreaming in the country. The capacity built within the Government is evidenced by the increased engagement of the Government of Afghanistan in global DRR events and reporting against DRR targets, for instance through the Hyogo Framework for Action (HFA) Monitoring Tool.¹

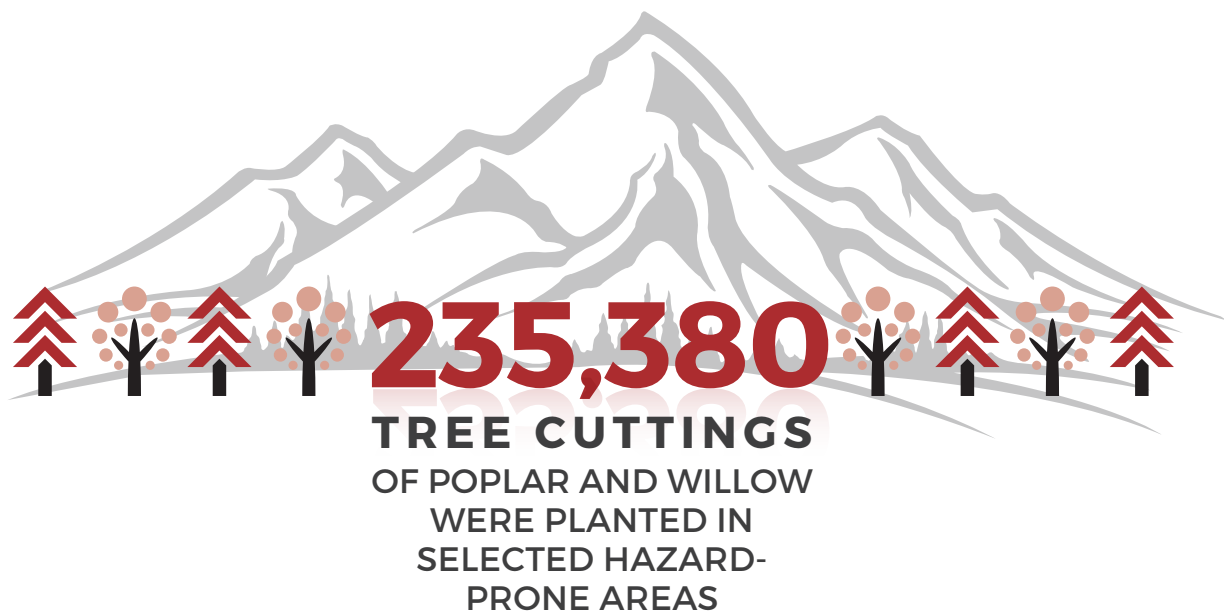
The project clearly demonstrated that Eco-DRR can be successfully applied using a landscape approach, to ensure that future development is ecologically sound and resilient to disasters. At the same time, it enhanced local and national capacities to integrate Eco-DRR in national and local development planning and increased support for Eco-DRR among policy-makers, as well as humanitarian, development and disaster management actors.



Click above (or visit <http://bit.ly/2eTPNTO>) to view a short video on the Eco-DRR project in Afghanistan

HIGHLIGHTS OF INTERVENTIONS

- A local database on ecosystems and hazards of Koh-e Baba has been established, including remote sensing results, GIS maps and community-based knowledge
- A Green and Resilient Development plan template has been developed and tested
- Six community tree nurseries were established, and have produced a total of 235,000 saplings of indigenous and resilient species over three years
- Nursery management training delivered to 270 local community members
- Training of trainer programme for nursery management involved 210 participants from communities, government and universities
- 235,380 tree cuttings of poplar and willow were planted in selected hazard-prone areas across the seven villages to reforest and rehabilitate degraded slopes
- Three multi-purpose, community resilience centers have been established and Standard Operating Procedures are in place
- Local disaster preparedness and first aid teams were established in each village and over 100 people trained on disaster preparedness and early warning
- 24 local community-level, one provincial-level, and three national level trainings and seminars were delivered to raise awareness and build capacity on Eco-DRR
- Partnerships established with Kabul University and Bamyan University to mainstream Eco-DRR in academic curricula
- Through supporting policy advocacy, the Government of Afghanistan increased engagement in the post-2015 national and global policy consultations on DRR
- By influencing UNEP's partnerships, Eco-DRR was promoted in climate change adaptation and humanitarian activities in the country
- South-South Eco-DRR learning exchanges organized involving Afghanistan, Tajikistan and Kyrgyzstan to facilitate regional learning and collaboration



ⁱ The Hyogo Framework for Action (HFA) was the global framework on Disaster Risk Reduction (DRR) for the period 2005-2015, which identified priorities for action. Nationally prepared progress reports were used to assess each country's level of advancement towards implementing the HFA's five priorities for action. In 2015 the HFA was succeeded by the Sendai Framework for Disaster Risk Reduction (2015-2030), which sets the scene for global DRR activities in the next 15 years. For more information see www.preventionweb.net/drr-framework/hyogo/

INTRODUCTION TO THE ECO-DRR PROJECT IN AFGHANISTAN

Aerial view of one of the narrow valleys in the Koh-e Baba, where farming is made possible by seasonal snow melt flowing from high mountain peaks.

2015 © UNEP/Alec Knuerr



The European Commission and UNEP collaborated on a four-year project (2012-2016) to promote, innovate and scale-up Ecosystem-based Disaster Risk Reduction (Eco-DRR) in vulnerable countries and to raise greater recognition of Eco-DRR globally. While the project was global in scope, it implemented Eco-DRR pilot demonstrations in four countries: Sudan, Afghanistan, Haiti and the Democratic Republic of the Congo (DRC).

These four countries were selected because they presented four distinct ecosystem zones located in highly vulnerable settings, in which to apply various Eco-DRR approaches. In addition, UNEP has established field presence in all four countries, providing opportunity to leverage resources and build on UNEP's work in the countries.

In each of the four countries, the project delivered a common set of interventions, which were then tailored according to local contexts and national priorities.

THESE INTERVENTIONS INCLUDED:

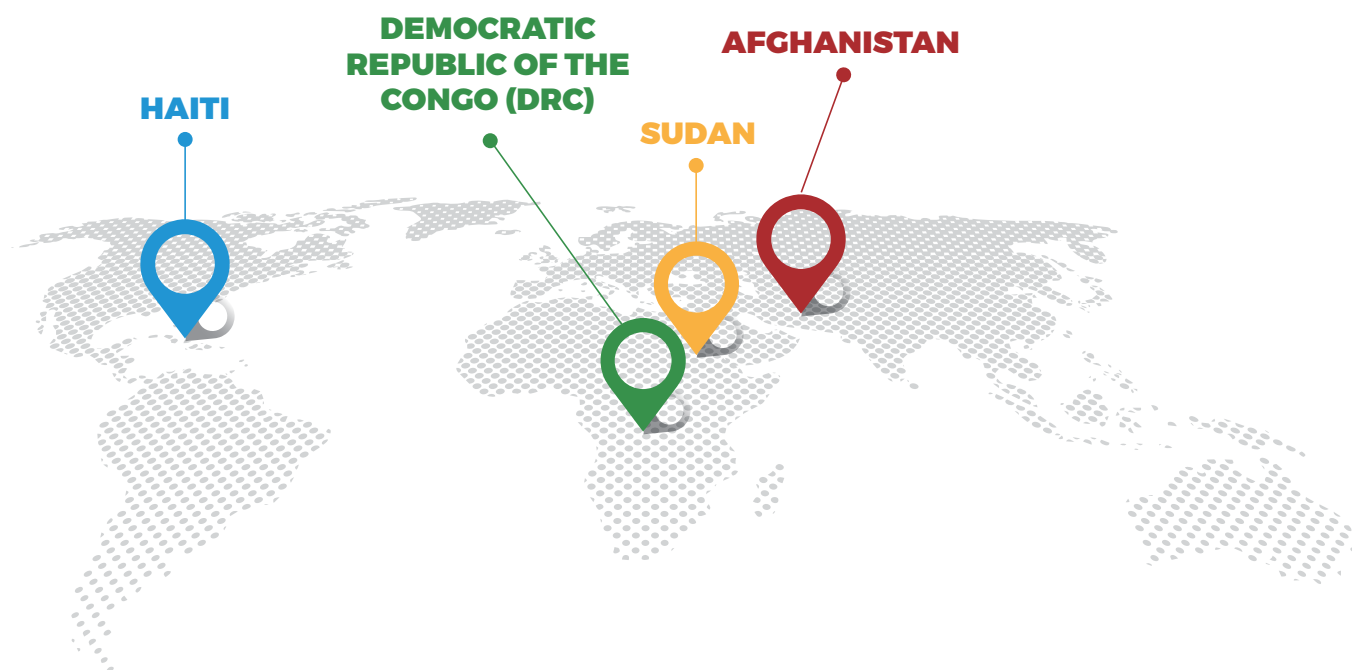
- **National and community baseline assessments for mapping Eco-DRR opportunities and challenges;**
- **Field-based activities to apply and demonstrate the Eco-DRR approach and provide direct benefits to local communities who are vulnerable to disaster and climate risks;**
- **Local and national capacity building and training workshops to support Eco-DRR implementation and promote replication of similar initiatives around the country;**
- **Strengthening partnerships and new collaborations on Eco-DRR; and**
- **Policy advocacy to inform national policy and planning processes and promote risk-informed, sustainable development.**

This case study documents the experience, results and lessons of the Eco-DRR demonstration project in Afghanistan, which was implemented in three valleys of the Koh-e Baba Mountain area (**MAP 1**). The Eco-DRR demonstration project built upon other UNEP projects in the Koh-e Baba Mountains, which promoted sustainable landscape management, natural resources management, and ecosystem restoration. At the same time, it introduced a number of innovations to the sustainable landscape management approach, including mainstreaming of DRR and climate change adaptation (CCA) in development planning. The project also complemented UNEP projects in neighbouring valleys in the Koh-e Baba Mountain area, for instance contributing towards the establishment of the Shah Foladi Alpine Mountain area as Afghanistan's third protected area and giving national recognition to this zone of special conservation importance. The Eco-DRR project was able to contribute to

UNEP's flagship initiative for ecology, landscape and development in the Koh-e Baba region, a larger landscape of some 700 km².

The Eco-DRR project aimed to reduce harsh winter, flood and avalanche risks by promoting improved ecosystem management through a landscape approach. This approach entails bottom-up development planning, which takes into account environmental sustainability and disaster risk reduction, starting from villages and moving up to the entire landscape of the Koh-e Baba Mountains. This was achieved as a collaboration between the Government of Afghanistan, UNEP, and local actors, in particular the Conservation Organization for Afghan Mountain Areas (COAM), and local communities.

These four countries were selected because they presented four distinct ecosystem zones located in highly vulnerable settings, in which to apply various Eco-DRR approaches. In addition, UNEP has established field presence in all four countries, providing opportunity to leverage resources and build on UNEP's work in the countries.



The project targeted seven villages (**MAP 2**) in the upper watersheds of valleys, where floods often originate from, in order to reduce disaster risk across the entire valley. Over 30 representatives from the Government, communities and international development and humanitarian actors engaged in the process as part of a strategic and technical experts team. Through the field demonstration activities in Bamyan, UNEP invested in institutional capacity-building at the national, provincial and local level to implement and mainstream Eco-DRR in local development planning processes in Afghanistan.

The area was selected because it represents the high level of disaster vulnerability experienced by populations in Afghanistan's high mountain environments, for reasons such as poverty, the isolation of villages during harsh winters and the multitude of hazards that affect the area. At the same time, the relatively stable security situation in Bamyan, and the long-standing collaboration

between UNEP, COAM and the target villages facilitated the implementation and monitoring of field activities.

The project was also timely because it provided a tangible experience of Eco-DRR in Afghanistan, which helped inform national policy dialogue leading up to the adoption of the new global framework on DRR, known as the Sendai Framework for Disaster Risk Reduction (2015-2030). The Eco-DRR approach is now being considered for replication in other provinces in the country as well as in neighbouring countries in Central Asia. A number of UN agencies have extended engagement with UNEP in order to better understand and incorporate Eco-DRR as a resilience measure in their own programmes. In particular the World Food Programme (WFP), the United Nations Development Programme (UNDP) and Food and Agriculture Organization of the United Nations (FAO) have developed specific projects in line with the UNEP approach.

BOX 1. WHAT IS ECOSYSTEM-BASED DISASTER RISK REDUCTION?

Healthy, well-managed ecosystems have long been recognized to deliver multiple services, including for disaster risk reduction (DRR) (Renaud et al. 2013). However, it is only over the last decade that the role of ecosystems in DRR has received increased global attention. Sustainable ecosystem management for DRR is now recognized as a priority measure in the Sendai Framework for Disaster Risk Reduction (2015-2030).

Ecosystem-based approaches to disaster risk reduction (Eco-DRR) have been defined as “the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development” (Estrella and Saalismaa 2013: 30). With climate change expected to magnify existing disaster risks, Eco-DRR also incorporates climate risk management and climate change adaptation as a core principle (Ibid) and shares common features with Ecosystem-based Adaptation (EbA) (UNEP 2015).

Disaster risk is often understood as a composite of three main elements: hazards (e.g. flood, storm, landslide), exposure (i.e. people or assets located in hazardous locations) and vulnerability (i.e. the range of factors – social, physical, economic, environmental, cultural and political/institutional, etc. – that shape how hazards affect or impact on people and communities) (UNISDR 2009). Therefore, a reduction in any one of these elements will contribute overall towards DRR.

If managed wisely, ecosystems, such as wetlands, forests, mangroves, reefs, seagrasses and dunes, perform important functions that can influence all three elements of the disaster risk equation – **by preventing, mitigating or regulating hazards** (e.g. forests can reduce incidence of landslides and avalanches, wetlands help regulate flooding and droughts), **by acting as natural buffers and thus reducing people's exposure to hazards** (e.g. mangroves, coral reefs and seagrasses protect coastal areas from storm surge impacts), and **by reducing vulnerability to hazard impacts** through supporting livelihoods and basic needs (food, water, shelter, fuel) before, during and after disasters (PEDRR 2013). In this regard, healthy, well-functioning ecosystems strengthen local resilience against disasters and climate change.

Eco-DRR builds on existing sustainable ecosystem management principles and approaches and includes a range of potential measures, such as: environmental impact assessment tools, integrated water resources management or river basin management, integrated coastal zone management, ridge-to-reef and other landscape-scale approaches, sustainable dryland management, protected area management, integrated forest management, among others (see PEDRR 2010). Eco-DRR should be implemented as part of broader disaster and climate risk management strategies, together with other measures such as engineered infrastructure when appropriate, risk-informed land-use planning, early warning and contingency planning.

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BOX 2. OVERVIEW OF THE ECO-DRR PROJECT IN AFGHANISTAN

PROJECT AIMS:

- To demonstrate the effectiveness of Eco-DRR in reducing the risks of floods, harsh winters and avalanches, and providing multiple benefits for local livelihoods;
- To develop local and national capacities for implementing Eco-DRR through a landscape approach;
- To inform national and provincial policies and planning by mainstreaming Eco-DRR.

ECOSYSTEMS IN FOCUS: Mountains, rangelands

MAIN HAZARDS TARGETED: Harsh winter, flood, avalanche

TARGET BENEFICIARIES: 7 villages (Orgash, Jawzari, Chapquolak, Petab, Geru, Yatimak and Ghabr-e Zaghak) with a total population of approximately 630 people, located in 3 valleys (Dukoni, Khushkak and Chapdara (also known as Foladi)) in the Koh-e Baba Mountains of Bamyan Province

IMPLEMENTING PARTNER: The Conservation Organization for Afghan Mountain Areas (COAM)

OTHER KEY PARTNERS: Afghanistan National Disaster Management Authority (ANDMA), National Environmental Protection Agency (NEPA), Ministry of Agriculture, Irrigation and Livestock (MAIL), Ministry of Rural Rehabilitation and Development (MRRD), Provincial Government of Bamyan, Community Development Councils (CDCs) under the framework of the National Solidarity Programme, Save the Children, Kabul University, Bamyan University, United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), United Nations Development Programme (UNDP).

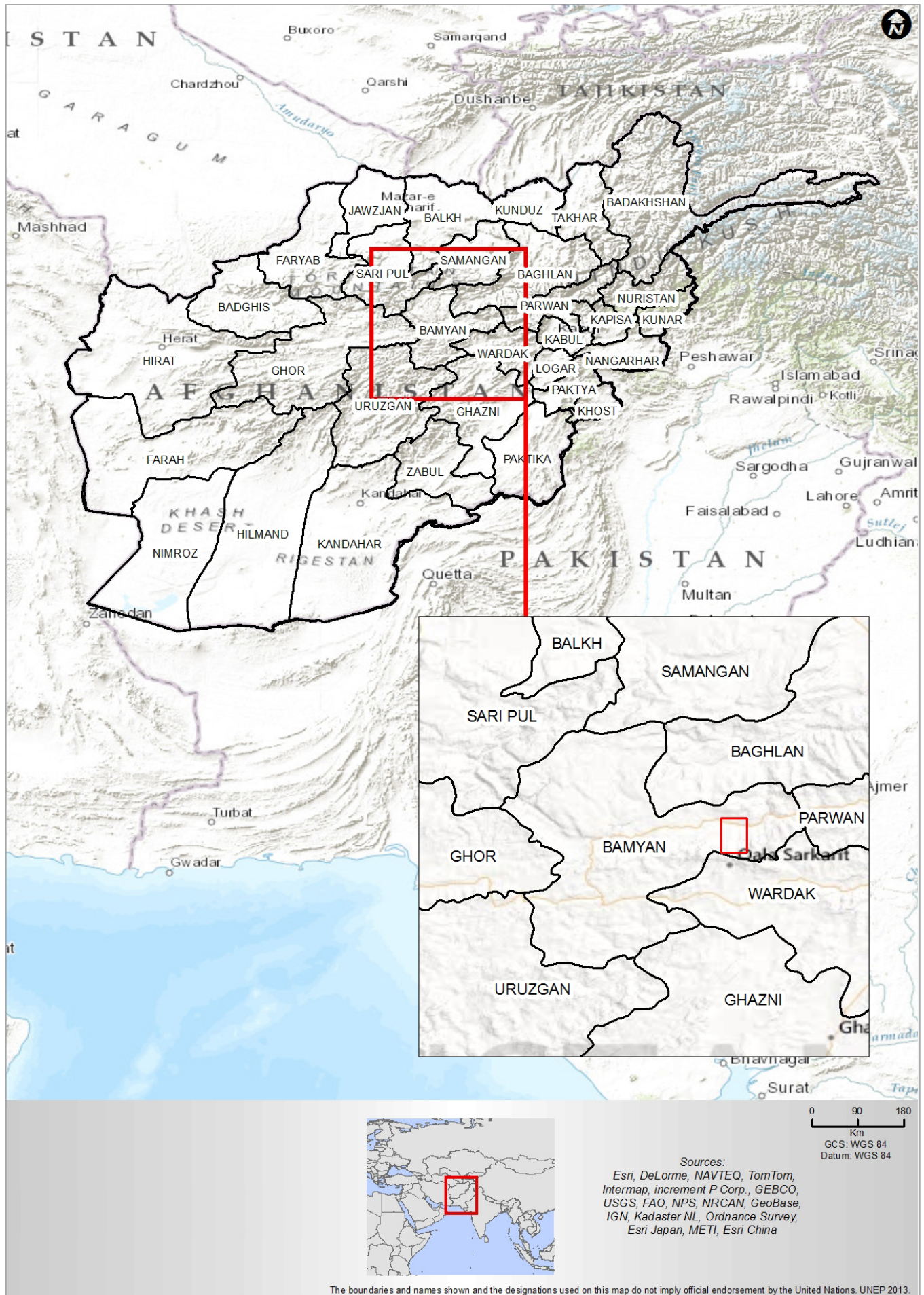
DURATION: May 2013 – May 2016

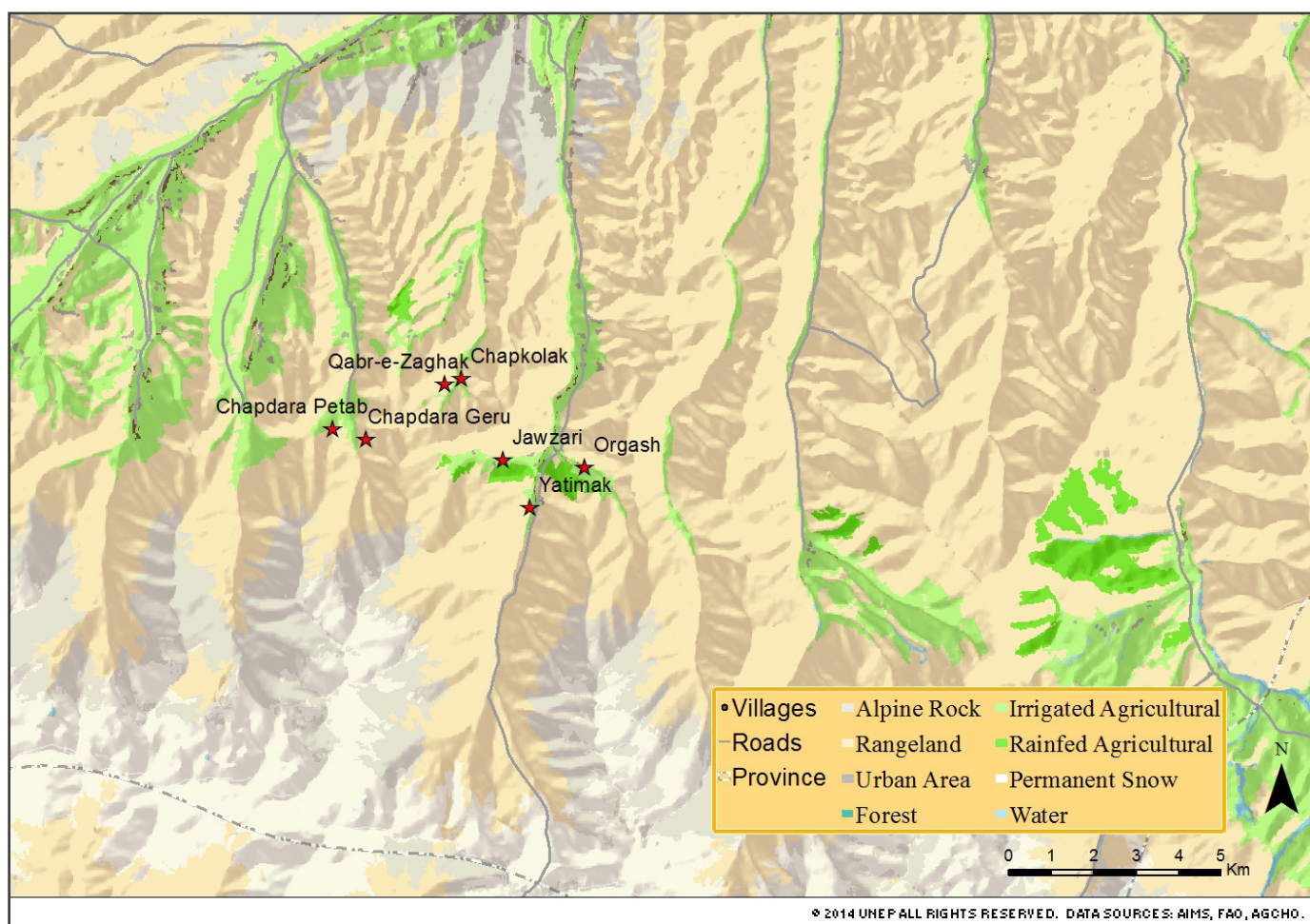
BUDGET:ⁱⁱ USD 250,000

OTHER ONGOING PROJECTS/ACTIVITIES LEVERAGED: The Eco-DRR project provided initial seed funding which informed UNEP's country-level Eco-DRR programming for Afghanistan, resulting in new funding from: the Department of International Development (DFID) of the United Kingdom amounting to USD 1,685,661 (£ 1,285,420); the Government of Estonia amounting to USD 1,787,120 (Euro 1,600,000); the Global Environment Facility (GEF) funding of approximately USD 450,000; in-kind support for technical mapping services provided by GeoVille through funding from the European Space Agency (G-Eco-Mon program) amounting to approximately USD 50,000.

ⁱⁱ This does not include UNEP staff and field office costs.

MAP 1. Location of Koh-e Baba Mountains in Bamyan Province, in the Central Highlands of Afghanistan.



MAP 2. The seven target villages of the Eco-DRR project in Koh-e Baba

LOCAL CONTEXT

Afghanistan's Koh-e Baba region is situated in the western Hindu Kush, lying on the border of Bamyan and Wardak Provinces. The broader area is referred to as the Central Highlands or Hazarajat region of Afghanistan.ⁱⁱⁱ There are 22 villages located above 3,000 meters, in the Koh-e Baba Mountain range, which have a combined population of about 14,700 people. Average household size is seven. Field interventions were implemented in Dukoni, Khushkak and

Chapdara (also known as Foladi) valleys in seven villages: Petab, Geru, Orgash, Jawzari, Chapquolak, Yatimak and Ghabr-e Zaghak.^{iv} The villages are small, ranging in population from 48 to 300 people (**TABLE 1**). The total population of the seven villages is approximately 1317 people.ⁱⁱ

ⁱⁱⁱ Refers to the predominance of the Shia' Hazara ethnic group in this region

^{iv} The two villages of Petab and Geru are small, located on opposite sides of the Chapdara valley; therefore, certain activities were shared by the two villages.

TABLE 1. Population of Eco-DRR project villages

VILLAGE NAME	POPULATION
Jawzari	385
Orgosh	320
Yatimak	350
Chapquolak	70
Ghabr-e Zaghak	52
Petab	75
Geru	65
Total	1317

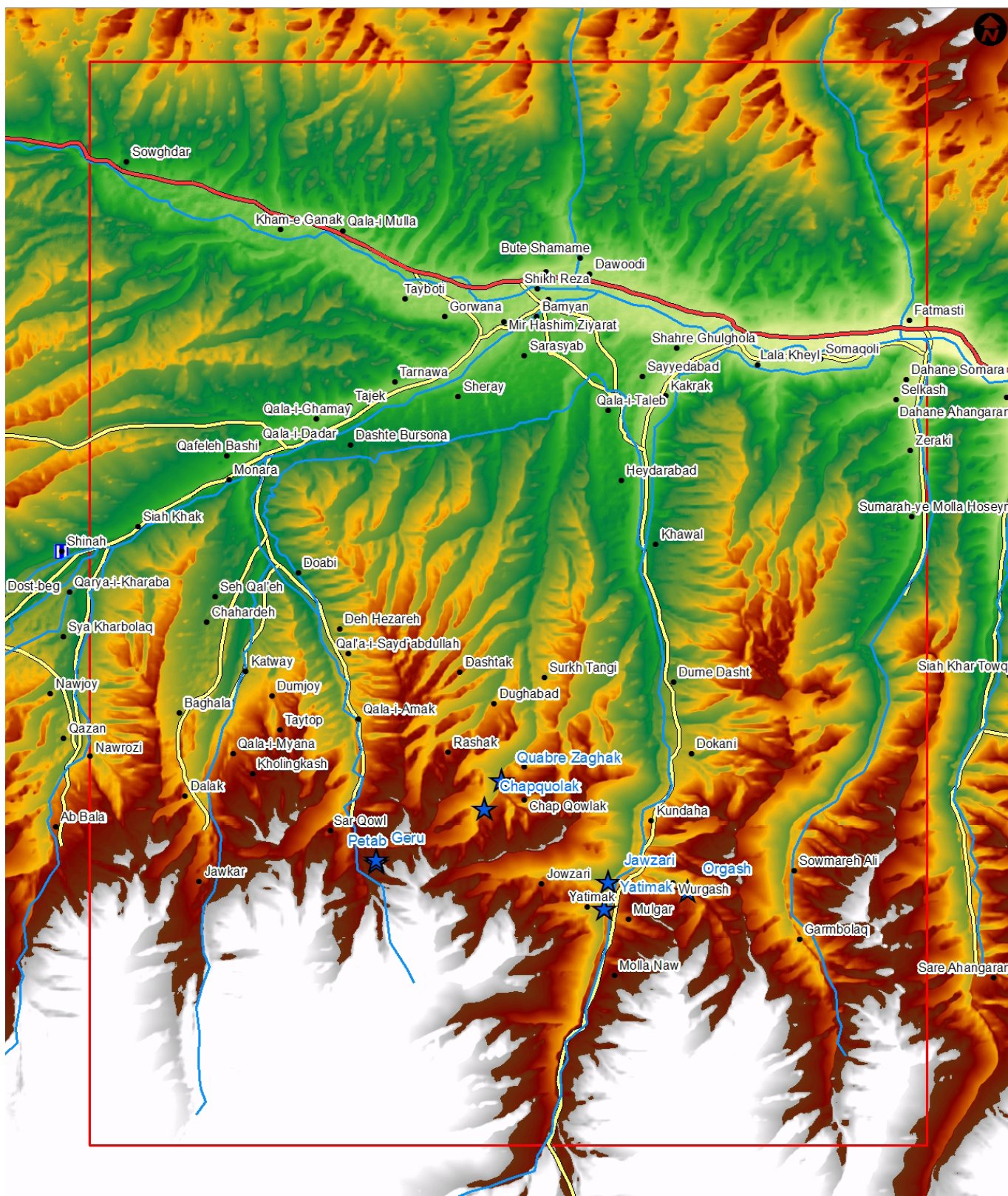
The Koh-e-Baba is the western most mountain range in Afghanistan that holds glaciers, permanent snow and ice cover. Glaciated mountains, steep slopes and narrow valleys dominate the breath-taking landscape. Elevation is high and ranges from 2,800 to

over 5,000 m above sea level (**MAP 3**). Over 20 peaks rise to over 4,500 m and are crowned in the west by Mount Shah Foladi at 5,050 m. Approximately 18 small alpine glaciers remain on the northern slopes, each averaging slightly around 500 m².



The capital city of Bamyan is a UNESCO World Heritage Cultural Site and a tourist attraction renowned for its ancient cities and (now empty) Buddha niches. The two 6th-century statues of Buddha were destroyed by the Taliban in 2001.

MAP 3. Elevation map of the Koh-e Baba area



ELEVATION MAP

- ★ UNEP DRR Intervention villages
- River
- Main Road
- Secondary road

4700 m
2400 m

0 1 2
Km

GCS: WGS 84
Datum: WGS 84

Sources:
UN Cartographic Section
National Dataset

The boundaries and names shown and the designations used on this map do not imply official endorsement by the United Nations. UNEP 2013.

Snowmelt is the main source of water to communities living in the valleys. The alpine pastures capture and store water and release it over the dry months when it feeds the creeks, canals, and rivers of the region. The area is also an important source of water for the country. Seasonal melting of snow and ice-fields feeds into Kunduz as well as Afghanistan's other major river systems, including Balkh, Harirud, Helmand, and Kabul rivers.²

Much of the land consists of high elevation pastures and alpine areas with nutrient-poor soils. The remaining area supports irrigated lands and villages. While the valleys are green during warmer months, the steep slopes of the mountains are relatively bare of vegetation and are covered by snow for long periods of the year. Irrigated land is limited to the bottom of valleys. In Bamyan Province, pastures account for 1.3 million hectares (92.4%), while irrigated land makes up only about 33,790 ha (2%).³ In the narrow valleys of Koh-e Baba Mountains, irrigated land is even more limited than the provincial average. In some villages (e.g. Petab, Qabre Zaghak, Orgash), there is virtually no flat ground, and irrigated lands lie on the slopes above and below the village.

Farming (predominantly for subsistence) and livestock are the major sources of revenue of households. Villages are strategically located along water channels and rivers to benefit from the available water and irrigable land. The small amount of land available for irrigation is well utilized for wheat, barley, and potato production along with smaller areas for fruit trees, legumes, and vegetables such as turnip, onion and carrot. Canals constructed to channel water from streams irrigate the fields. Farmland soil productivity is enhanced through crop rotation and the use of fertilizer.⁴ In some cases, where land is not too rocky and enough wheat seed is available, rain-fed agriculture is practiced on slopes.

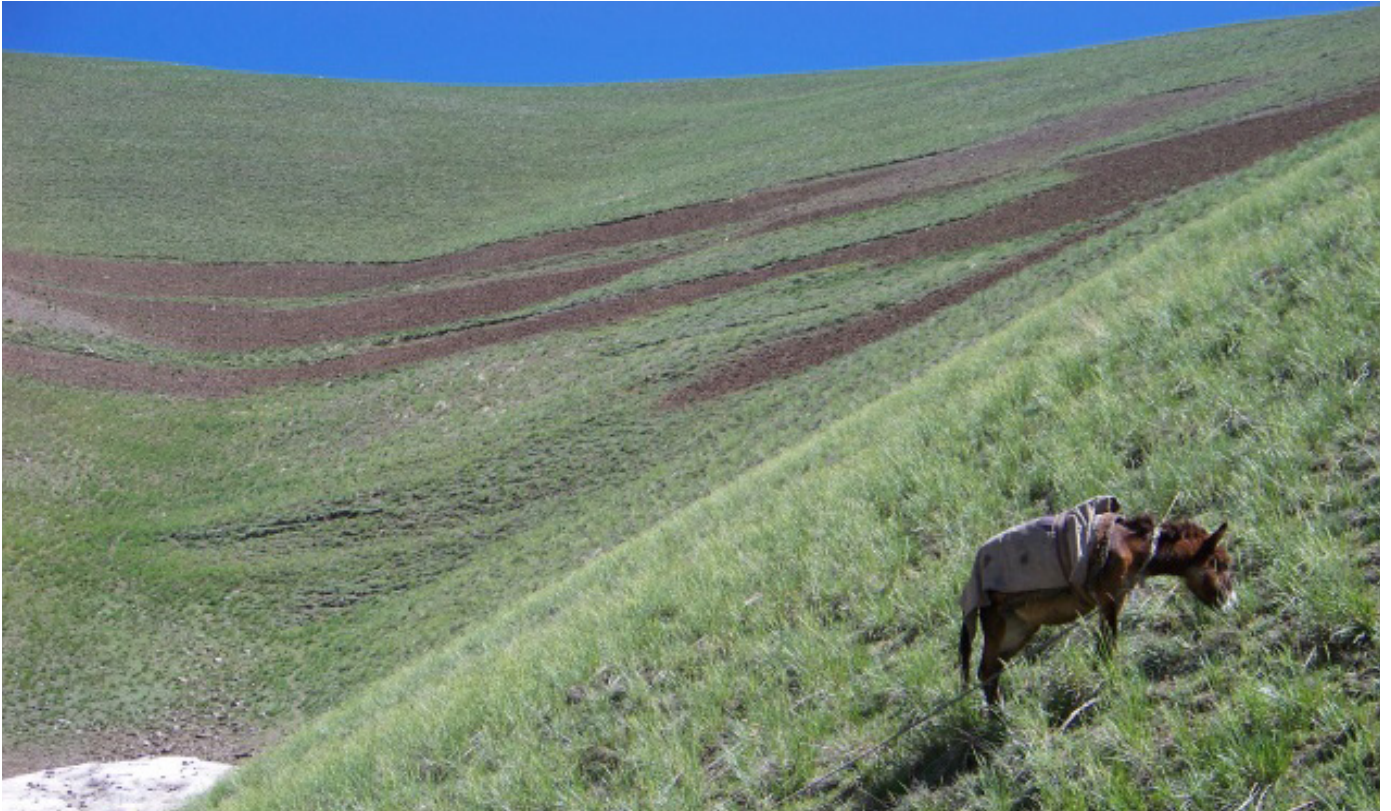
Given the long winters and limits of farming on marginal lands at high altitudes, the communities in the Koh-e Baba area depend heavily on rangelands for livestock grazing (sheep, goats, donkeys and cows) on high elevations. During the summer, hired shepherds, family members, or sometimes entire households take livestock to summer pastures (*ailoqs*) in higher elevations to capitalize on the grazing land available.⁵ In cases where the whole family moves, each family has a particular camp in the summer pasture that they return to each year.⁶

Pastures also provide important plant species for fuel, food, medicine and the means for animal production, such as fodder for livestock in the winter. Every household in rural villages depends predominantly on shrubs collected from pastures and supplemented by dung for heating and cooking. Wood and coal are also used for fuel but are less easily available.⁷

In 2015 the Government of Afghanistan designated an area covering 700 km² of the Koh-e Baba Mountains as the Shah Foladi Protected Area, named after the highest peak of the mountain range. Article 40 of the Environment Law of Afghanistan establishes six categories of protected areas for Afghanistan based on the categories defined by the International Union for the Conservation of Nature (IUCN). By defining the Shah Foladi areas as an IUCN Protected Area Category V, the Government of Afghanistan has recognized that

“THE INTERACTION OF PEOPLE AND NATURE OVER TIME HAS PRODUCED AN AREA OF DISTINCT CHARACTER WITH SIGNIFICANT ECOLOGICAL, BIOLOGICAL, CULTURAL AND SCENIC VALUE AND WHERE SAFEGUARDING THE INTEGRITY OF THIS INTERACTION IS VITAL TO PROTECTING AND SUSTAINING THE AREA AND ITS ASSOCIATED NATURE CONSERVATION AND OTHER VALUES.”⁸

Shah Foladi is the country's third protected area, giving national recognition to the impressive diversity of fauna and flora of this mountain range, which includes numerous endemic plant species, and wildlife such as wolf, fox, wildcat, rabbit and deer. The area is home to a large number of breeding and migratory birds.⁹ In addition, there is a great genetic diversity of wild relatives of wheat and other flora which support genes of resilience and resistance to disease, an ecosystem service that is of special importance in a predominantly agricultural area. Historically, leopards, bears and boars have also inhabited the region.¹⁰



Rangeland in the Koh-e Baba Mountains of Bamyan



In the Koh-e Baba mountains of Bamyan, residents use animal dung for heating to supplement shrubs

2

MAIN HAZARDS, DEVELOPMENT TRENDS AND CHALLENGES IN THE KOH-E BABA MOUNTAINS

Harsh winters, heavy snowfall and avalanches are some of the major challenges faced by communities in the Koh-e Baba Mountains.

2014 © UNEP/Najeeb Azad



Socio-economic and natural baseline assessments, including community-based land-use and risk mapping, remote sensing and multi-stakeholder consultations provided the primary basis for obtaining information on the major development trends and challenges related to land-use, ecosystem degradation and disaster risk in the Koh-e Baba Mountains. Moreover, the project drew upon findings of previous projects by UNEP, COAM and other partners in the same area, as well as UNEP's assessments and technical reports such as "Women and natural resources in Afghanistan" (2009).¹¹

2.1. MOUNTAIN HAZARDS AND EXPOSURE

Communities in the Koh-e Baba Mountains are exposed to a number of hazards, including extreme temperatures, heavy snowfall, flooding, avalanches, droughts and landslides. Some of the harshest climate and highest snowfall in Afghanistan are found in the Central Highlands, which encompasses the Koh-e Baba Mountains. The winter months, which last almost half the year bring heavy snowfall, avalanches and extreme winter conditions.¹² Winter temperatures remain below -15° C for weeks at a time.¹³ Extreme temperatures are the third most important cause of mortality linked to hazards in Afghanistan.¹⁴

Most valleys in Koh-e Baba have one road that connects the villages to Bamyan Center, the capital of the Province. Trails that pass over mountain ridges to connect valleys are the only outlets, but they can only be used on foot or on donkeys. Therefore, when snowfall and avalanches block the main roads during winter, the villages of Koh-e Baba are isolated for weeks, therefore increasing people's vulnerability to mountain hazards. From many villages, it takes at least three hours on foot to reach the closest medical centre in Bamyan Center.¹⁵

Flash floods happen frequently in the valleys of Koh-e Baba and result from rapid snowmelt in springtime. For instance, the last big flood in Jawzari village in 1998 damaged many houses and killed livestock. Flooding removes the little topsoil available on agricultural land and deposits rocks in the fields, which affects agricultural production. Drought also impacts pasture productivity and agricultural yields in the Koh-e Baba, as evidenced by the impacts of recent droughts during 1998-2002 and 2006-2007.¹⁵

In community consultations, women were repeatedly mentioned as the most exposed

group to natural hazards due to their specific roles in natural resource use. For instance, women are responsible for collecting water and washing household items in the river, and are therefore more exposed to flash floods. Natural springs are often in avalanche prone areas (e.g. in Petab village), therefore putting women at a higher risk when they collect water. Heavy snowfall and avalanches block access to water springs in certain villages such as Jawzari, adding a burden for women who are the primary fetchers of water.

Climate change projections for Afghanistan suggest an increase in temperatures and unpredictable and heavy rainfall.¹⁶ The most adverse impacts will likely be the result of increased severity and frequency of droughts and floods. Climate change impacts may also reduce water availability due to melting of glaciers.¹⁷

Heavy precipitation can disrupt agricultural production. Previous events of heavy snowfalls late in the season, for instance in 2009 and 2013, have damaged wheat production in the villages of the Koh-e Baba.¹⁸ Villages in the upper catchment already suffer from a very short growing season (approximately four months per year); therefore, the impact of unpredictable snowfall on agricultural production is significant.¹⁹

✓ In 2009 when an avalanche blocked the road from Orgosh village to Bamyan Centre, a woman who had complications during labour lost her child because she could not be taken to the hospital.

2.2. ROOT CAUSES OF DISASTER VULNERABILITY

Communities are particularly vulnerable to disasters due to widespread poverty and a significant reliance on natural resources such as land and irrigation water for their livelihoods. Poverty is the most important determinant of vulnerability of the Afghan



UNEP and NEPA team providing technical guidance on terracing



More than 70% of Afghanistan's population depend on natural resources for their livelihood

population,²⁰⁻²¹ and is considered as “the real killer” in Afghanistan.^{vi} Afghanistan is one of the poorest countries in the world with a gross domestic product (GDP) of \$20.84 billion (2014 estimate).²² Living standards are among the lowest in the world and 36% of the population remains below the poverty line.²³ According to the World Risk Index (2012), Afghanistan has the lowest coping capacity to disasters as well as the lowest adaptive capacity worldwide.²⁴ Therefore, even small-scale hazards can have devastating effects on people’s lives.²⁵

Lack of livelihood alternatives and poor infrastructure add to the heavy burden of disasters.^{26,27} Most farmers are engaged in subsistence or near-subsistence agriculture. Many rural households are also involved in downstream agricultural activities, including processing, transporting and marketing.

Multiple communities in the Koh-e Baba reported that they do not feel capable of preventing hazards and their impacts on the community.²⁸ Within communities, vulnerability is highest among children, female-headed households, landless families, and the disabled. Female-headed and landless households are particularly vulnerable to disasters due to low income or lack of land tenure. The amount of productive land is limited and under pressure from rapid population growth and environmental degradation. Land tenure is a major development issue, and landless households are being pushed deeper in poverty.

vi A report published by the Office of the United Nations High Commissioner for Human Rights (OHCHR) reveals that poverty kills even more Afghans than those who died as a direct result of the armed conflict. Source: United Nations High Commissioner for Human Rights (OHCHR) (2010) Human Rights Dimension of Poverty in Afghanistan

2.3 UNSUSTAINABLE LAND USE INCREASES DISASTER VULNERABILITY

Environmental degradation has resulted in greater risk of harsh winters, floods, droughts and avalanches. Communities in the Koh-e-Baba rely directly on the land, soil, water, plants and animals for their livelihoods. However, a growing population, decades of conflict and a breakdown of natural resource governance have placed major pressures on natural resources in the area.

An underlying cause of flooding in Koh-e Baba is the degradation of local ecosystems.

Without woodlots or affordable alternatives for fuel, communities harvest slow-growing native shrubs on rangelands. Overgrazing and over-extraction of fuelwood have resulted in widespread rangeland degradation and the removal of vegetation, which would otherwise mitigate flooding by capturing surface runoff during heavy rains and rapid snowmelts. In addition, conversion of rangelands to rain-fed wheat production has caused desertification, soil erosion and decreased soil productivity.

Lack of risk-sensitive, land-use planning has exacerbated exposure and vulnerability to disasters. In the past 20 years, there has been an increase in the number of people and houses in the villages of Koh-e Baba Mountains. With little land available, new houses have been built in avalanche prone areas to accommodate the growing population.²⁹ However, in villages such as Jawzari, certain households must leave their houses to stay safe and spend winter months with relatives whose houses are away from avalanche-prone slopes in the village. Others who stay in these areas remain at high risk. In Geru village in 2007, an avalanche killed seven people from one family and injured another eight people in the village.³⁰

Increased population size and lack of risk-sensitive, land-use planning have also resulted in the expansion of agricultural land into flood-prone areas, therefore increasing economic exposure to floods. Without trees to stabilize soil, riverbanks and the earth banks of irrigation channels are prone to erosion, which causes overspill to adjacent land during heavy water flows and increases flood risk.

2.4. NATIONAL POLICY CONTEXT ON DISASTER RISK REDUCTION, CLIMATE CHANGE ADAPTATION AND DEVELOPMENT PLANNING

Development in Afghanistan is at great risk from disasters.^{vii} Over 130 disasters caused by natural hazards have affected the country in the past three decades, leaving 6.8 million people affected.³¹ The trend in disaster incidents shows that earthquakes have caused the highest loss of life, droughts affected the most number of people, and flooding caused the most economic damage.³² This paints a picture of disaster risk in Afghanistan as a complex, multi-hazard situation which affects different areas of the country.

POLICIES

Disaster management in Afghanistan has been historically concentrated on response and recovery, with less attention to risk reduction, prevention and resilience-building.³³ However, increasingly, national policies and plans are moving towards looking at resilience to the many risks faced by the Afghan population. These include disasters, climate change and conflict. For instance, the Government of Afghanistan has developed and adopted a Strategic National Adaptation Plan (2009-2015) for climate change and a National Adaptation Plan of Action (NAPA 2009), which include DRR-related strategies. The National Disaster Management Plan (NDMP) is also currently being re-written as a Disaster Resilience Pathways framework with a ten-year outlook.^{viii} Therefore, the Government is also promoting this approach to addressing these inter-linked challenges through integrated resilience programmes and plans at the national and sub-national levels.

ROLES AND RESPONSIBILITIES

Chaired by the Second Vice President, the National Disaster Management Commission (NDMC) has been the highest institutional body on disaster management in Afghanistan and has the mandate to set national policy direction on DRR.³⁴ The Afghanistan National Disaster Management Authority (ANDMA) acts as the Secretariat to the NDMC and has been the principal coordinating body on DRR. In 2015 the Government of Afghanistan created a new Office of the Minister of State for Disaster and Humanitarian Affairs, which is responsible for leading and coordinating all disaster and humanitarian activities in Afghanistan, and has other broader responsibilities. The Minister will also chair and direct the Afghanistan National Disaster Management Authority (ANDMA). However, ANDMA and the concerned ministries still require considerable capacity building in order to effectively carry out their disaster management and risk reduction responsibilities.³⁵

Province-level Disaster Management Committees (PDMCs) and District-level Disaster Management Committees (DDMCs) are NDMC's counterparts at sub-national levels. At the local level, non-governmental organizations (NGOs) and the Community Development Councils (CDCs) play an important role in disaster management.

CDCs have been established in each village since 2003 as a component of the National Solidarity Programme (NSP) of the Government of Afghanistan. They serve as the lowest government administrative bodies and are designed to replace the native administration (*shura*). A unique feature of CDCs is the new avenue they provide for women's participation in decision-making, who have traditionally been excluded from *shuras*. Each CDC has developed a local development plan for the area under its administration - this area may cover one or multiple neighbouring villages. While active in disaster management, CDCs have not had a DRR mandate to date. However, there are efforts to integrate DRR into the mandate of CDCs in the new phase of NSP, starting in 2017.³⁶

^{vii} According to the Global Emergency Events Database (EM-DAT), disasters are defined as events that meet at least one of the following criteria: 1) Ten or more people reported killed; 2) Hundred or more people reported affected; 3) Declaration of a state of emergency; 4) Call for international assistance. Source: D. Guha-Sapir, R. Below, Ph. Hoyois - EM-DAT: The CRED/OFDA International Disaster Database -www.emdat.be - Université Catholique de Louvain - Brussels - Belgium.

^{viii} In 2010, the Government of Afghanistan developed a revised National Disaster Management Plan (NDMP), which includes a National Disaster Risk Reduction Plan (DRRP) and a Disaster Response and Recovery Plan. The DRRP was proposed with the goal to strengthen the implementation of existing DRR mechanisms on the ground; it decentralizes power on DRR issues from the Central Government to community-level decision-making bodies and augments the level of involvement and commitment of district and provincial administrations. Source: ANDMA (2010) Afghanistan National Disaster Management Plan

3

MAIN COMPONENTS OF THE ECO-DRR PROJECT IN AFGHANISTAN

Tree nursery

© UNEP



The Eco-DRR project implemented in the Koh-e Baba Mountains took into account the key development challenges, as described in **SECTION 2**. The project was cognizant of the interlinkages between poverty, ecosystem degradation, increasing population growth, increased floods, and the impacts of extreme winter conditions in the harsh high-mountain climate of the Koh-e Baba. At the same time, it considered Afghanistan's national policy environment and maximised opportunities for promoting Eco-DRR through landscape scale, local and national development planning processes.

FIGURE 1. Eco-DRR approach in the Koh-e Baba Mountains





THE ECO-DRR PROJECT HAD FOUR MAIN COMPONENTS

1

MAINSTREAM ECO-DRR IN LOCAL AND NATIONAL DEVELOPMENT PLANNING PROCESSES

2

UNDERTAKE FIELD INTERVENTIONS INCLUDING TREE NURSERY ESTABLISHMENT, TREE PLANTING AND COMMUNITY RESILIENCE CENTRES

3

DEVELOP LOCAL AND NATIONAL CAPACITIES FOR IMPLEMENTING ECO-DRR

4

SUPPORT PROVINCIAL - AND NATIONAL-LEVEL ADVOCACY ON ECO-DRR



The project promoted ecosystem management and disaster risk reduction within local development planning (**FIGURE 1**). The field interventions of the Eco-DRR project specifically addressed floods and severe winter, while avalanche risk was also addressed by promoting Eco-DRR in local development planning. While field interventions were focused on upper valley villages in three valleys, the project promoted a landscape approach, taking into account up-stream/down-stream linkages related to disaster risk and ecosystem management. The project developed and tested templates for sustainable and resilient development planning at the scales of villages and valleys, with the vision to inform development planning in the Koh-e Baba mountain range (**FIGURE 2**). The project was based on UNEP's experience of natural resource management in the larger Koh-e Baba area. By addressing hazards and drivers of risk in the upper valleys, the project also contributed to disaster risk reduction in lower parts of valley.

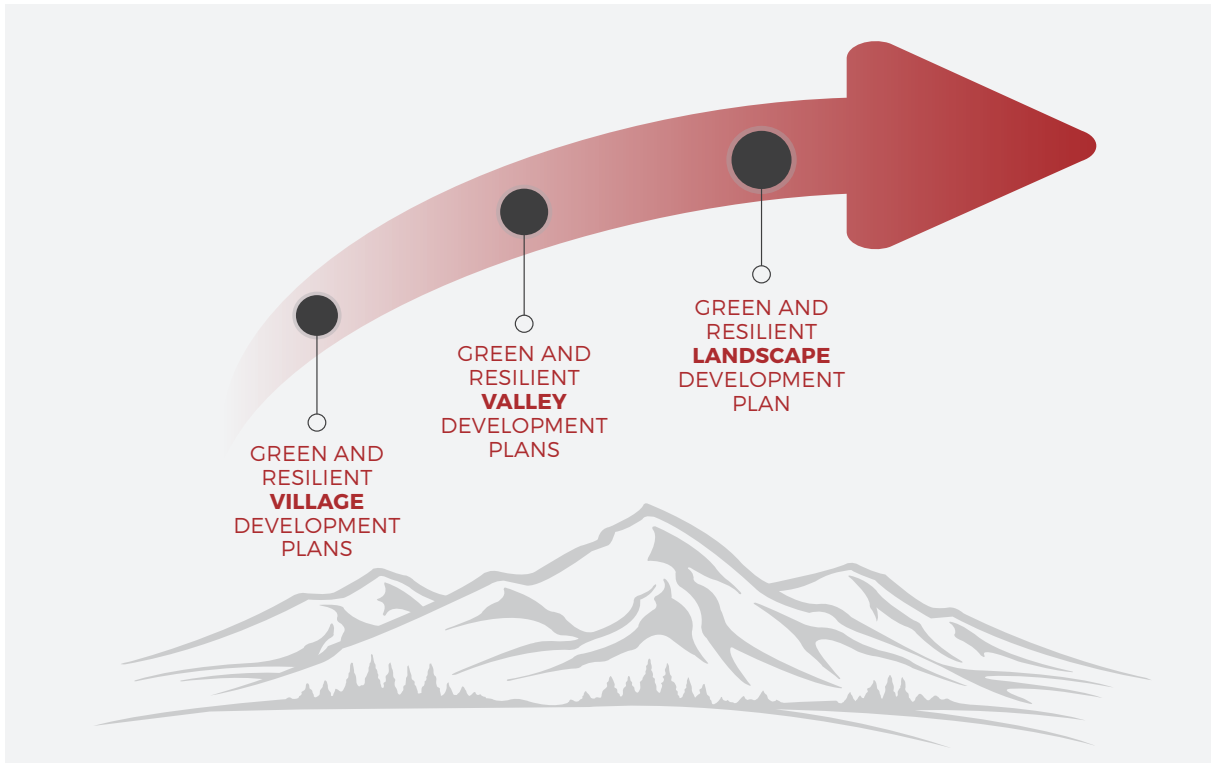
At the same time, it aimed to increase the awareness and capacity of national planners and actors of the importance of sustainable development planning which integrates disaster resilience and risk reduction. In particular, it aimed to increase knowledge of the linkages between improved environmental management and disaster risk reduction in rural Afghanistan, as well as to enhance a stronger and more efficient collaboration between environment, disaster management, humanitarian and development actors. The project therefore invested significantly in trainings, workshops and partnerships to build long-lasting Eco-DRR capacity in the country. The Eco-DRR project promoted linkages to climate change adaptation under the umbrella of strengthening community resilience.

Multiple projects on Eco-DRR are now being replicated by UNEP and partners in Bamyan and four other provinces, namely Badakhshan, Daikundi, Mazar-Wardak and Kabul, with funding from DFID, GEF and Estonia. The focus on ecosystem-based measures of the Eco-DRR project has also allowed greater collaboration with climate change adaptation projects of UNEP from other funding sources (e.g. Government of Estonia) and collaborations of UNEP with other agencies (e.g. UNESCO). These projects funded from other sources have many similar components

initiated by the Eco-DRR project, such as nursery establishment, community land-use planning, capacity building and awareness-raising on environmental management, early warning system demonstrations as well as policy advocacy and institutional cooperation.

UNEP's projects, such as Eco-DRR and the flagship initiative for ecology, landscape and development and rangeland re-seeding (discussed in **SECTION 1**) were successful in complementing each other, since synergies across disciplines from climate change adaptation, disaster management, social development and ecological education were all brought together under one umbrella programme. The Eco-DRR project has been particularly important, since it brought global attention and expertise to bear on the planning process in the Koh-e Baba. Regular training on Eco-DRR has given COAM and other local partners good guidance and awareness of the concepts of Eco-DRR and how to link with climate change actions. As a result, COAM has become a proficient local actor on Eco-DRR.

FIGURE 2. Diagram of the upward planning approach



3.1. MAINSTREAMING ECO-DRR IN LOCAL DEVELOPMENT PLANNING

Recognizing the importance of local-level planning for long-term sustainable development in the Koh-e Baba Mountains, the project aimed to mainstream Eco-DRR in local development plans. In this regard, the project designed a Green and Resilient Development Planning template to be used at the village level, and proposed a model to scale up local planning to integrate ecosystem and disaster to the landscape level. Community-based mapping, GIS modelling and remote sensing assessments were undertaken to better understand the current and historical changes in disaster risk, ecosystem health and land use. The project also promoted climate change adaptation through more resilient development planning.

ESTABLISHING A LOCAL DATABASE ON ECOSYSTEMS AND HAZARDS

An integral component of mainstreaming Eco-DRR in local development plans was the establishment of baselines and databases to inform land-use planning, which included community-based participatory mapping, ground surveys, remote-sensing and GIS modelling.

Through community consultations and focus group meetings, participatory mapping was carried out to collect information on land-use, ecosystems, hazards and disaster history. The information collected was then overlaid on satellite images of the area to clearly delineate exposed areas, as well as locations of community assets, water sources and other key points (**FIGURE 3**). In addition, flood-modelling results developed by UNEP Kabul Metrics and Physical Sciences staff were used to define flood zones around rivers.

Remote-sensing was also used to identify land-use patterns and key hazards, which was made possible through an in-kind grant from the G-Eco-Mon program (Geographic Ecosystem Monitoring and Assessment Service) and was executed by GeoVille, with funding from the European Space Agency.^{1X} The Pléiades satellite was tasked to take a very high resolution image of the area of Koh-e Baba in July 2014. The satellite image focused on a 100 km² area covering the seven pilot villages as well as the upper-watershed of the valleys up to the peaks, to cover the locations of target villages and areas upstream from where the floods originate. A digital surface model (DSM) and a land-use and land cover (LULC) map of the area of interest were developed at 1 m resolution.



Community consultation with the elders for baseline assessment of the Eco-DRR Project



Community consultation meetings in Koh-e Baba villages

The project staff from COAM and UNEP were trained to collect spatial information in the field in July to ground truth the land-use and land cover map. The following land-use and land cover classes were identified: rangeland, grassland, shrub, forest, bare soil, urban (i.e. villages), water, snow, agriculture and road (**FIGURE 4** left). Change in rangeland cover was detected by comparing the Pléiades image from 2014 with a KOMPSAT-2 satellite image from July 2007 (1 m resolution).

Soil erosion potential was analysed using the standard Universal Soil Loss Equation (USLE) methodology (10 m resolution; **FIGURE 4** middle) and based on DSM and LULC GIS layers. A basic avalanche exposure map was also developed by calculating the slope (1 m resolution; **FIGURE 4** right).

ix Read more about the G-Eco-Mon case study of Koh-e Baba at: <http://www.space4ecosystems.com/case-studies/>

GREEN AND RESILIENT DEVELOPMENT PLANS

A visioning assessment was conducted to better understand the community's development needs. CDC members, students and elders, as well as Chief Environmental Officers who are UNEP and COAM's focal points in villages, participated in the visioning assessment workshop in each village.

FIGURE 5 illustrates the proposed model for upward planning of development within

the Shah Foladi Protected Area. The village- and valley-level plans themselves feed into the larger landscape plans and vice-versa. The rationale for this 3-step approach is to enable communities to first identify risks and opportunities for development at the very local level within their village. By connecting the planning process to other villages and overlaying village plans along the same valley, the approach allows communities to consider hazards and opportunities across the entire valley, rather than focusing on localized issues. The approach also promotes development that is mindful of upstream-downstream linkages in the use of natural resources (land, water etc.) as well as hazards (e.g. floods originating from upper watershed that affect downstream communities). Development activities, such as agricultural expansion, housing and new roads, can be located away from avalanche- and flood-prone areas across the valley.

Finally, valley plans are brought together, overlaid and compared to develop a comprehensive land-use plan for the larger landscape. Ideally, the village and valley plans should exhibit key elements of the overall vision and strategy for the mountain area at the same time. These plans can be used to guide public infrastructure, landscape investments and practical project ideas.



Community-based mapping to inform green and resilient village development planning

FIGURE 3. Hotspots of flooding and avalanche in Petab and Geru Villages in Chapdara valley. Information is based on past events as described through community consultations (left) and transferred to GIS maps (right)

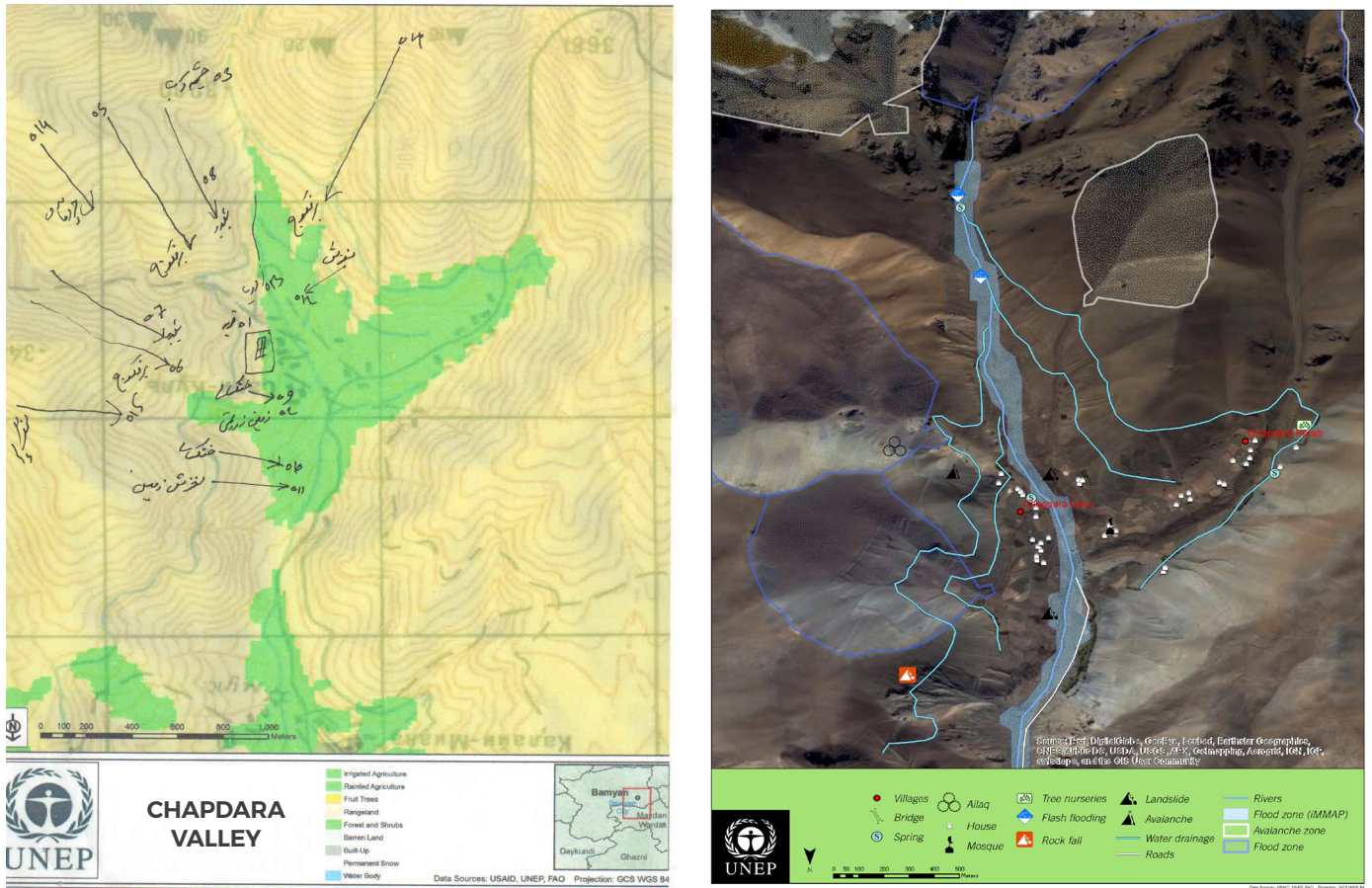


FIGURE 4. Left: Land-use and land cover map. Middle: Potential soil erosion. Right: Avalanche exposure.

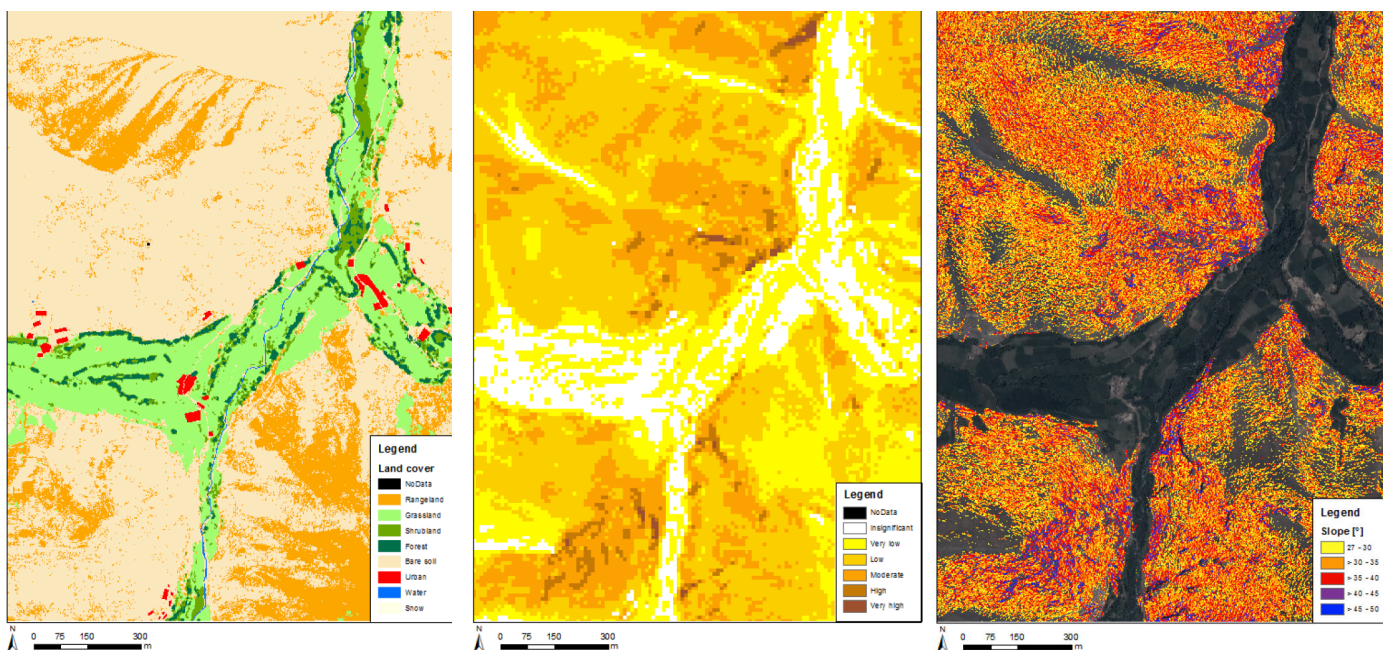


FIGURE 5. Proposed model of upward planning for sustainable and resilient development in the Koh-e Baba area of Bamyan



VILLAGE LEVEL PLANNING

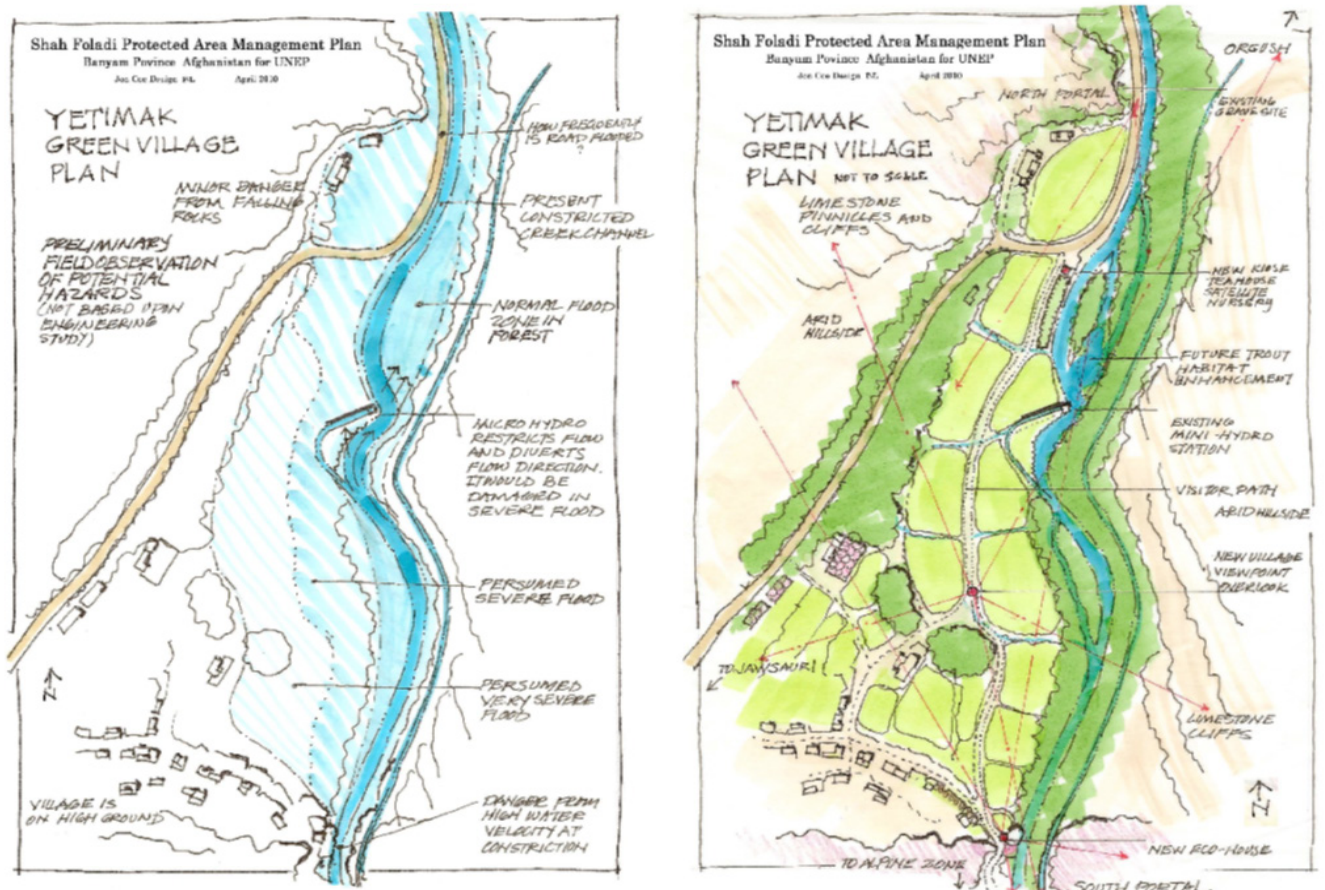
A standard Green and Resilient Village Development Plan was developed as a working template, to promote disaster resilient and sustainable development planning at the village level (see template in **ANNEX 1**). The template focuses on practical, participatory, and early action planning. It outlines the steps necessary to assess current and historical baselines, identify development priorities and opportunities for sustainable and disaster resilient development. The template was designed as a tool for UNEP and COAM to pilot test the approach but can also be applied by the CDCs, *shuras*, or other development actors.

In the proposed template, the planning process starts with a thorough examination of existing physical, social, cultural, religious, and socio-economic conditions, as well as identifying and locating key hazards and disaster prone areas through community consultations, field visits, and local expert knowledge. The approach also encourages the community to compare the existing

conditions with a historical period of time as determined by the community (e.g. 20 years or one generation before), and identify changes through time in land use, natural resource management practices, and disaster risk, as well as the driving factors of change. To ensure complete documentation of information, the planning report should include a photo reference map and GPS coordinates of all the key points discussed (e.g. avalanche prone slopes).

Once the baseline and historical information is collected, communities are encouraged to discuss and identify local development priorities with respect to livelihoods, village development, disaster prevention and improving community resilience. A village development map, accompanied by a short report explaining the findings, development goals and strategies make up the final plan. These can be created after the consultation meetings by compiling all the information. The final step is to present the plan to the community, and CDC/*shura* to review and endorse it. The maps should then be displayed in a public building for public viewing and use.

FIGURE 6. Schematic summary of the Green and Resilient Village plan of Yatimak village.



To provide a practical example of implementing the planning process, the project developed initial green and resilient development plans of Yatimak village (**FIGURES 6**), based on community consultations, hazard mapping (see example in **FIGURE 3**), baseline data and technical expert knowledge. This plan was then used to identify locations of Eco-DRR interventions in Yatimak village within the scope of the Eco-DRR project (**FIGURE 7**).

Efforts were also made to provide a practical example of valley level planning, by combining green and resilient development plans of villages in the same valley. **FIGURE 8** shows a schematic view of the initial green and resilient plan for Khushkak valley (location of Qabr-e Zaghak and Chapquolak villages). Diagrams of Eco-DRR measures with explanations in both English and Dari have also been prepared as supplementary guidelines for implementation of sustainable and resilient development plans (see **BOX 3**).

The Eco-DRR project initially intended to pilot test the template in all seven target villages and scale-up to the entire area of the three valleys where these villages are located. However, it was realized that it would be more useful and viable in the long

run to embed the sustainable and resilient development planning process of the project into institutionalized, local development processes, to avoid duplication of efforts and ensure that a driving institutional force is behind the planning approach. By doing so, sustainable and resilient planning will not be connected to an individual project but can serve as part of a systematic process of development.

In this regard, the project aimed to influence the Government's National Solidarity Programme (NSP) as the best available framework of locally-driven development planning. However, the NSP is currently under revision, and a new NSP process is being worked out at the national level. Therefore, the project was unable to embed green and resilient development planning into the NSP. Nonetheless, UNEP has ensured that the needed requirements, including baselines such as hazard maps, socio-economic information and disaster risk assessments, as well as development priorities clearly identified by communities, in order to engage the NSP process when the next phase is initiated, which is expected to take place in 2017.

FIGURE 7. Location of Eco-DRR interventions in Yatimak village: tree nursery and tree planting along the river

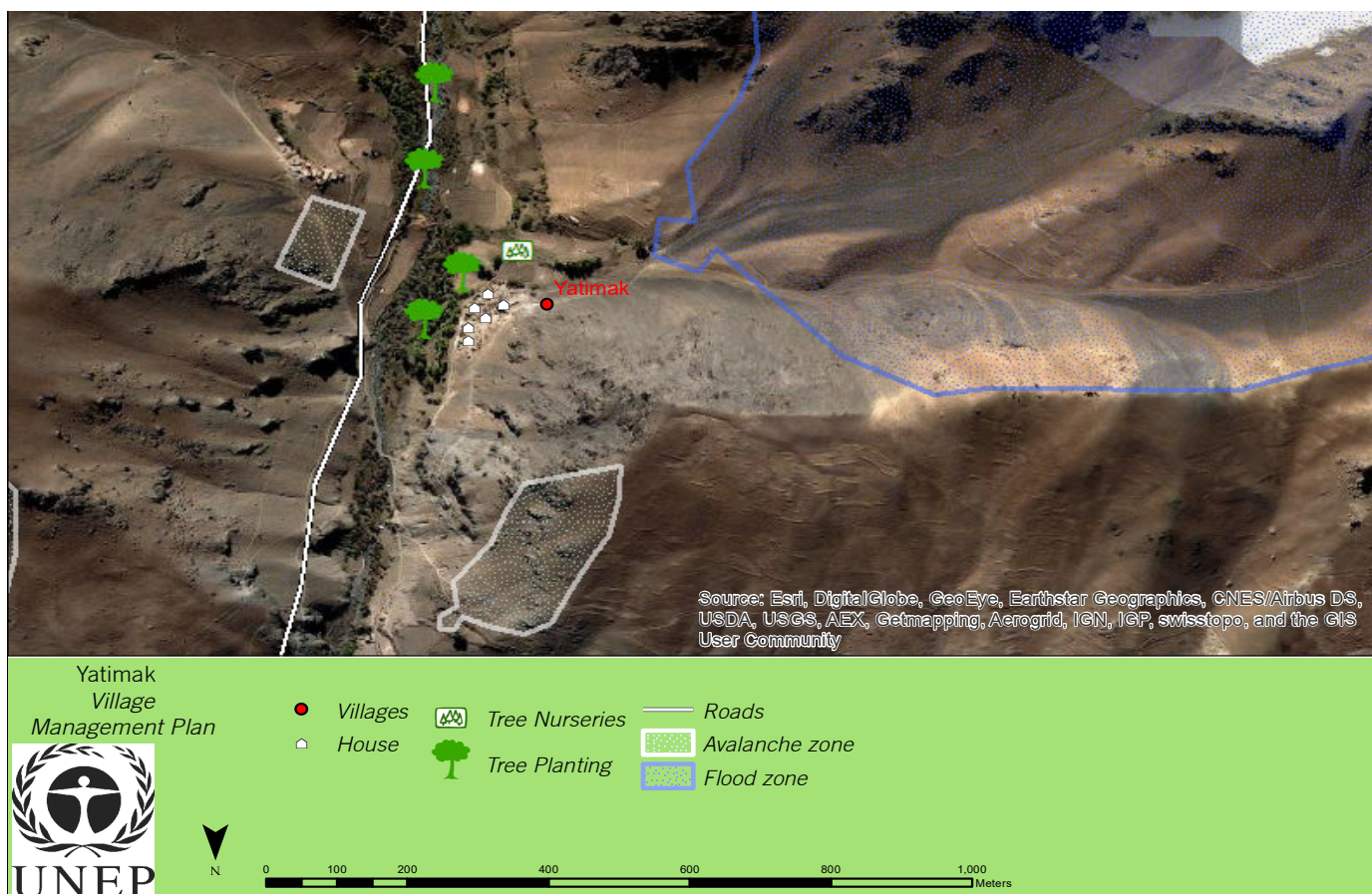
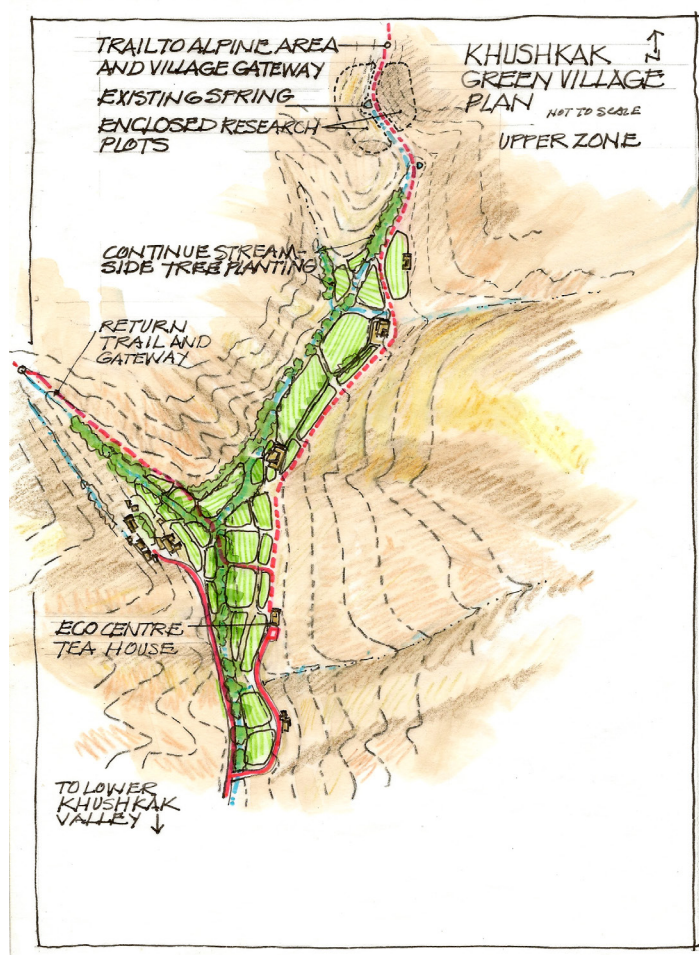
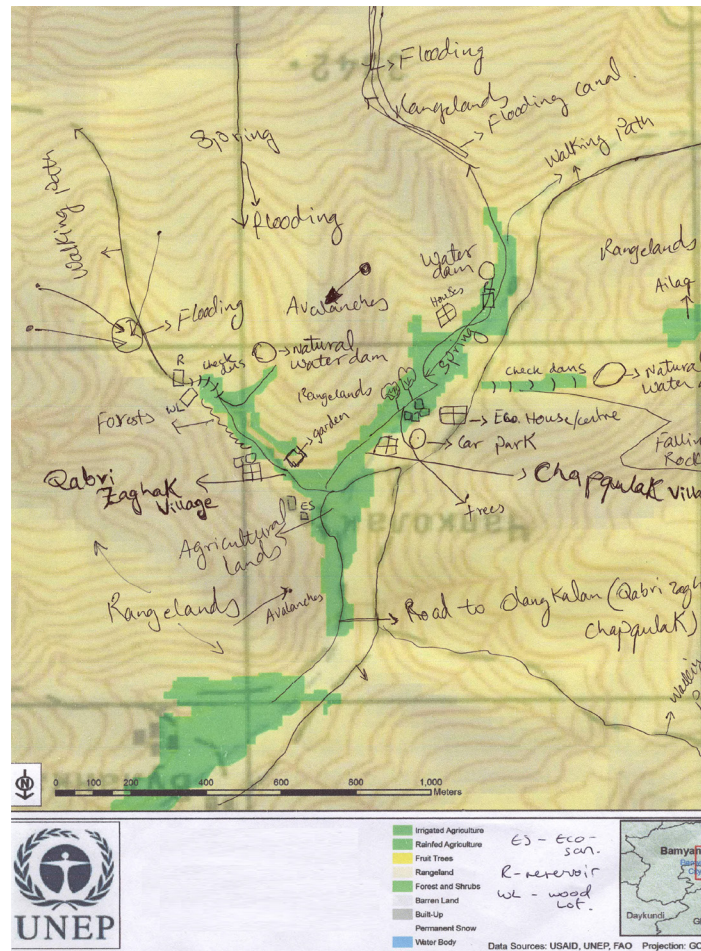
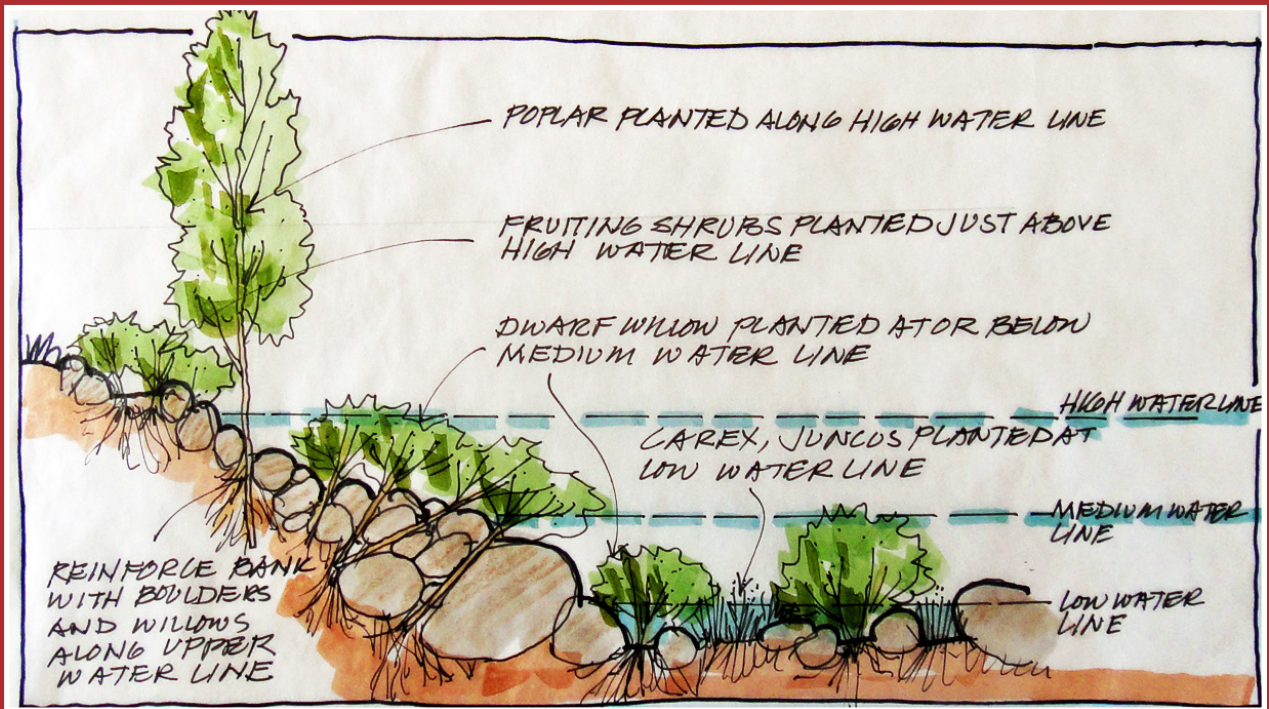


FIGURE 8. An initial schematic view of Khushkak valley's green and resilient development plan

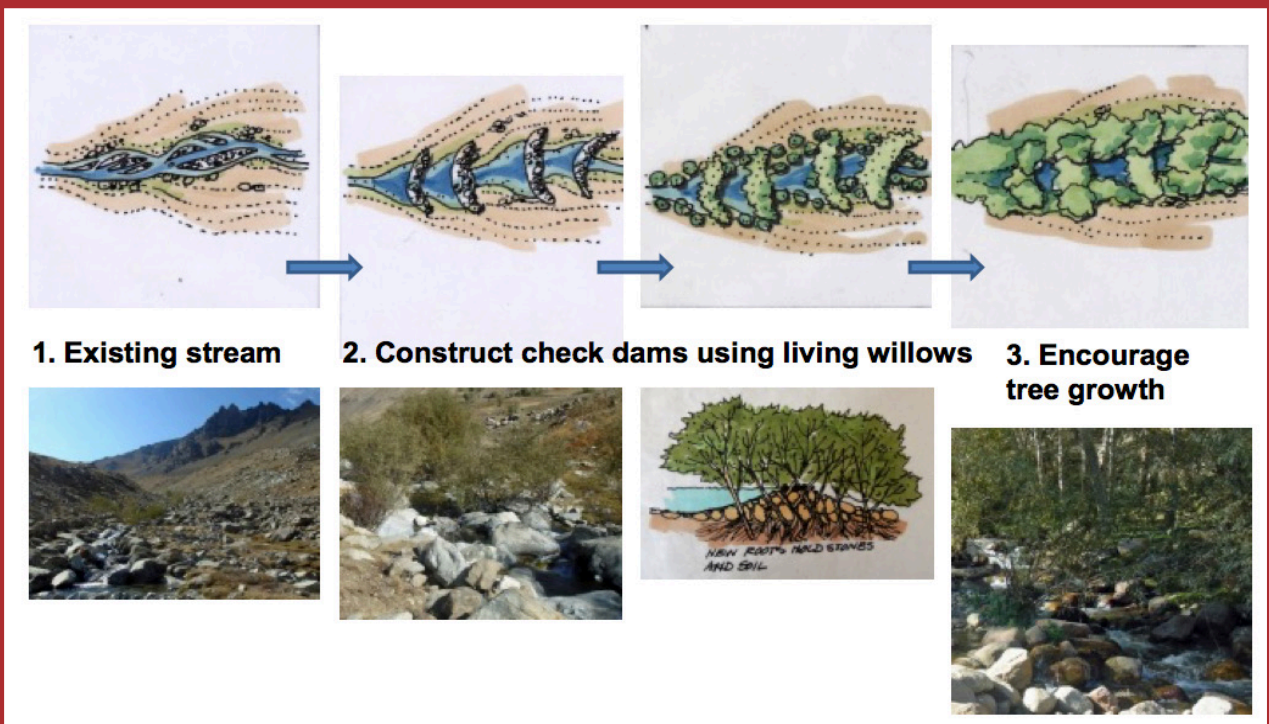


BOX 3. DIAGRAMS OF ECO-DRR GUIDELINES WERE DEVELOPED TO SUPPORT GREEN AND RESILIENT VILLAGE DEVELOPMENT PLANNING AND IMPLEMENTATION.

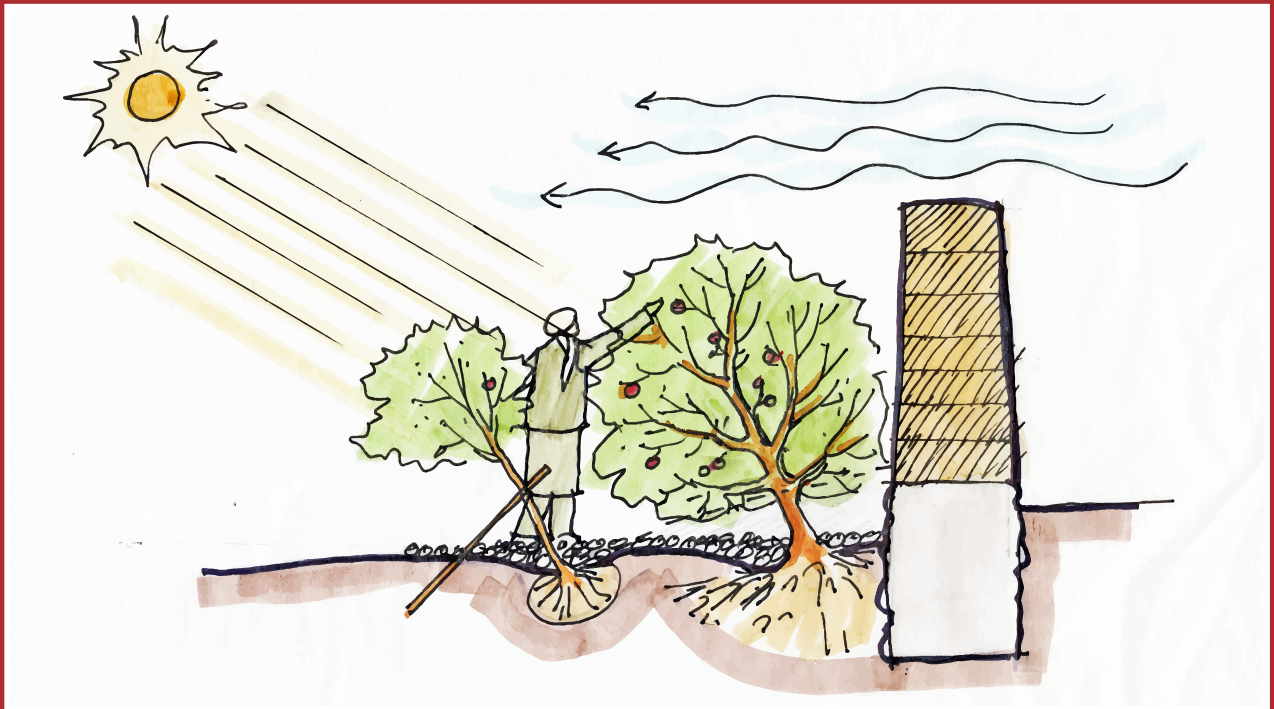
Tree planting along streambanks



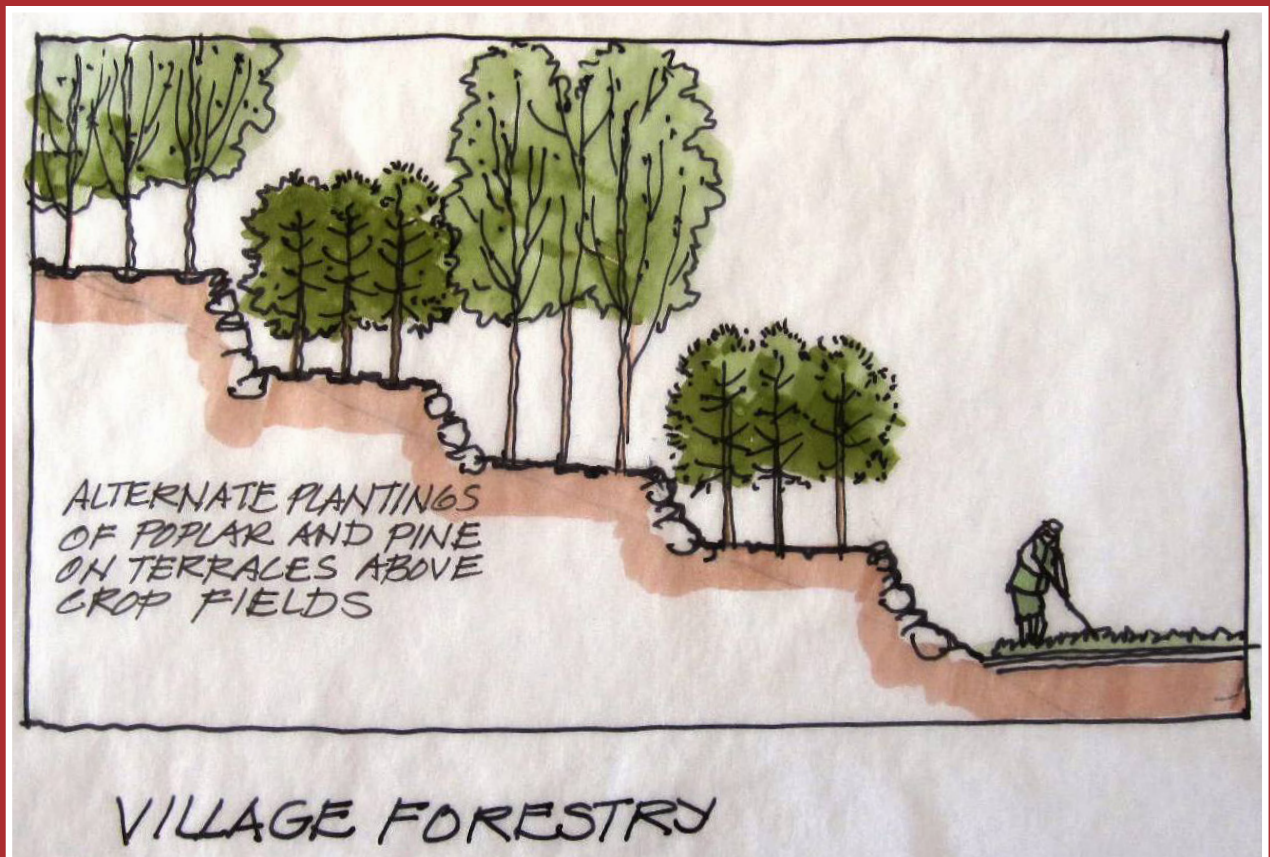
Flood reduction methods using check dams and tree planting along streams



Planting fruit trees in walled area to reduce the wind exposure of trees



Reforestation with terracing: Alternate planting of poplar and pine on terraces above crop fields



INTEGRATING ECO-DRR IN THE PROTECTED AREA MANAGEMENT PLAN

While the initial model of upward planning has not yet been implemented, the project was able to influence and inform the design of the Shah Foladi Protected Area Management Plan which was proposed by UNEP to the Government of Afghanistan in order to integrate Eco-DRR measures. Shah Foladi has been designated as an IUCN Category V protected area, which describes the primary management objective as being: "A protected area managed mainly for landscape conservation and recreation". Therefore, the core philosophy of the proposed management plan is also to:

"IMPLEMENT A MANAGEMENT PROGRAM WITH THE COMMUNITIES LIVING WITHIN THE PROTECTED AREA WHICH PROMOTES A SUSTAINABLE BALANCE AMONG THE CONSERVATION OF BIOLOGICAL DIVERSITY, COMPATIBLE ECONOMIC USE, AND CULTURAL VALUES, THROUGH PUBLIC AND PRIVATE PARTNERSHIPS, INTERDISCIPLINARY RESEARCH, EDUCATION AND COMMUNICATION."

The plan incorporates sustainable use of natural resources and disaster risk reduction measures as integral components of protected area management. It clearly acknowledges droughts, floods and other climate related hazards, as major threats and management issues in the protected area, in addition to increased natural resource use to unsustainable levels due to a high population growth.

Four management zones (**FIGURE 9**) were proposed to ensure that community use, resource development and on-ground management actions are compatible with the protection of identified protected area values. Zoning also constrains the use of land to specific conditions. Specific management objectives and permissible land-uses in each zone have therefore been identified. The proposed zoning will allow for conservation, restoration and scientific research in high-alpine areas. In the rangeland areas and the buffer zones bordering the main valleys of the greater Koh-e Baba ranges, the sustainable traditional resource use and agro-ecological systems shall be protected and restored. While in the special use zones such as gateway villages, the focus of management will be on sustaining the well-being of people and the land. An east-west overland trail and loop trails in individual valleys are also recommended (**FIGURE 10**). These will be important measures to reduce the isolation of villages during winter when snowfall and avalanches block the main access roads to Bamyan Centre.

To complement the protected area management plan, UNEP has developed practical guidelines (**FIGURES 11-12**) on appropriate Eco-DRR measures across the landscape, based on the priorities identified through community consultations, as well as expert knowledge. The plan is currently awaiting endorsement by the Government.

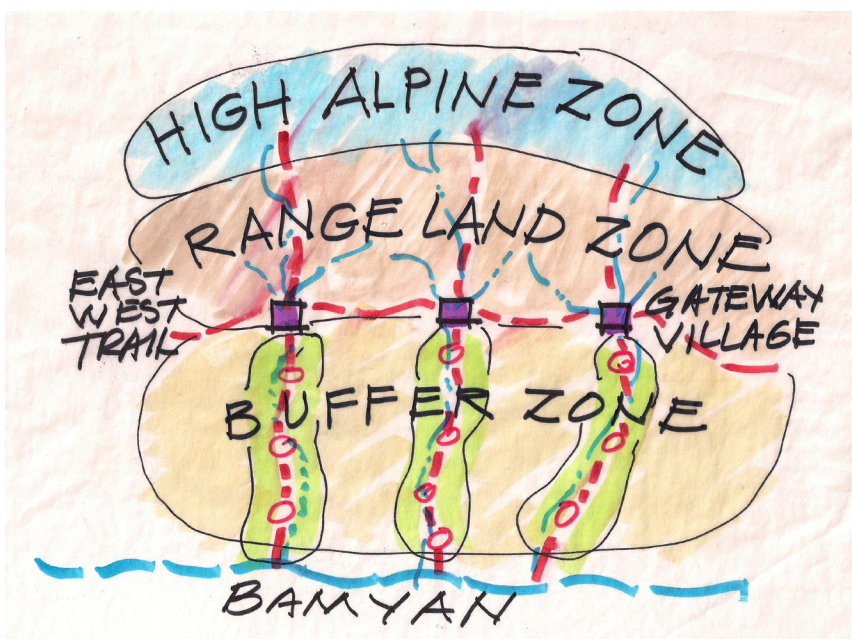


FIGURE 9. Three Management Zones for Koh-e-Baba Protected Area

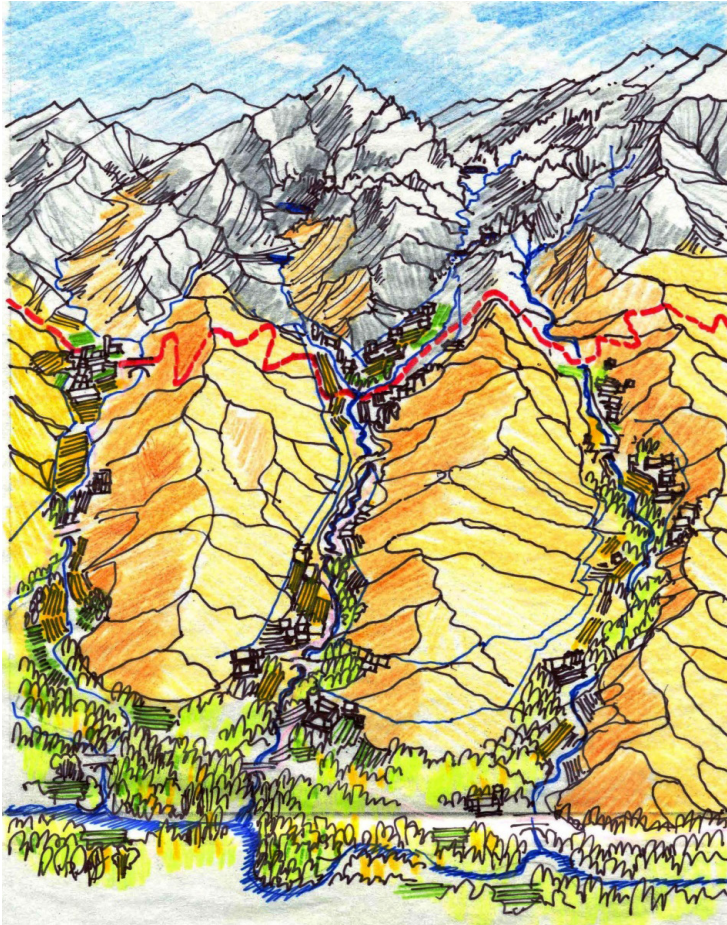


FIGURE 10. Pedestrian access trails are planned in the landscape plan of Koh-e Baba Mountains to connect valleys and reduce isolation during winter when the main roads are blocked from snowfall and avalanches. © Jon Coe Design

FIGURE 11. Guidelines for Eco-DRR measures were developed by UNEP at the landscape level

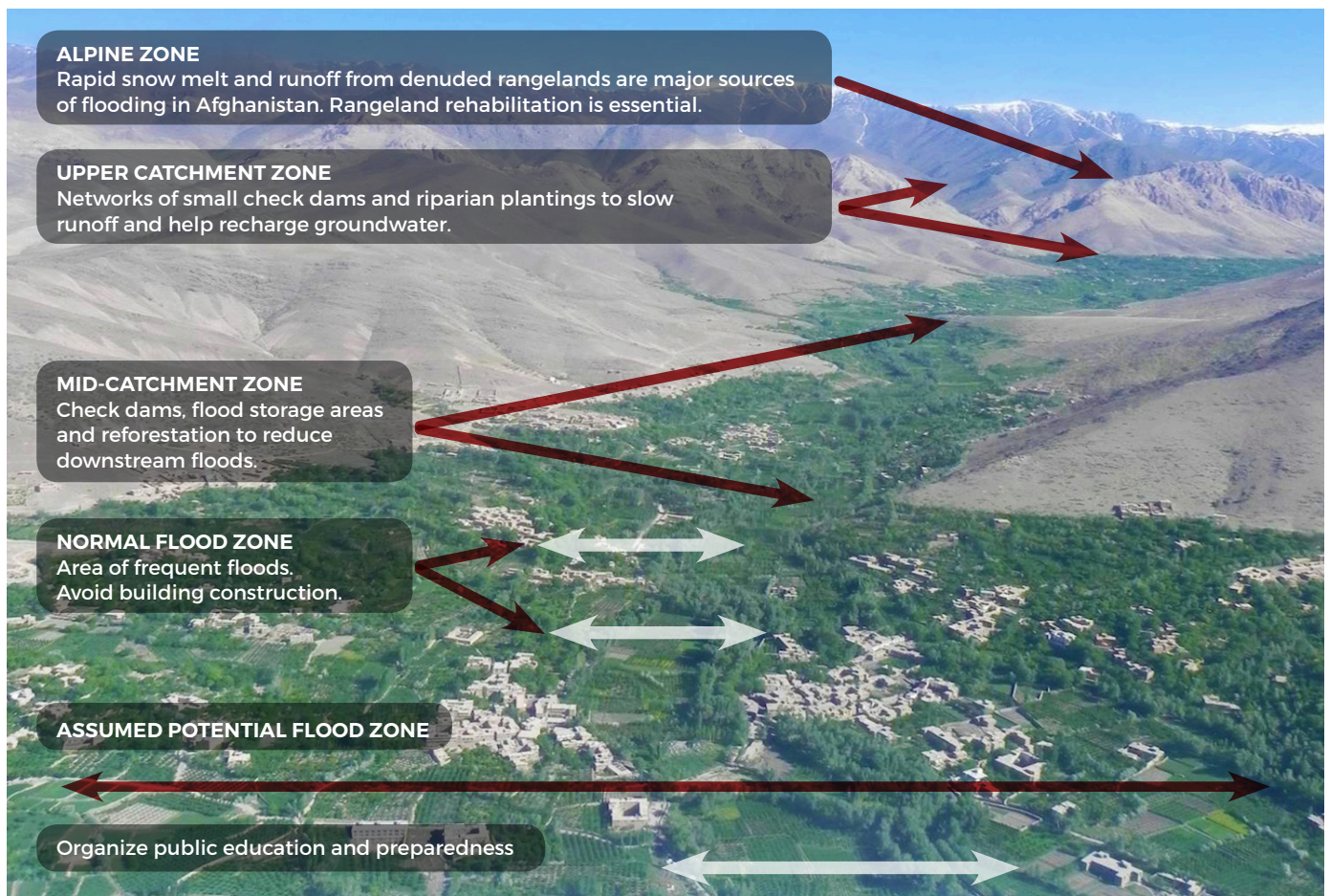
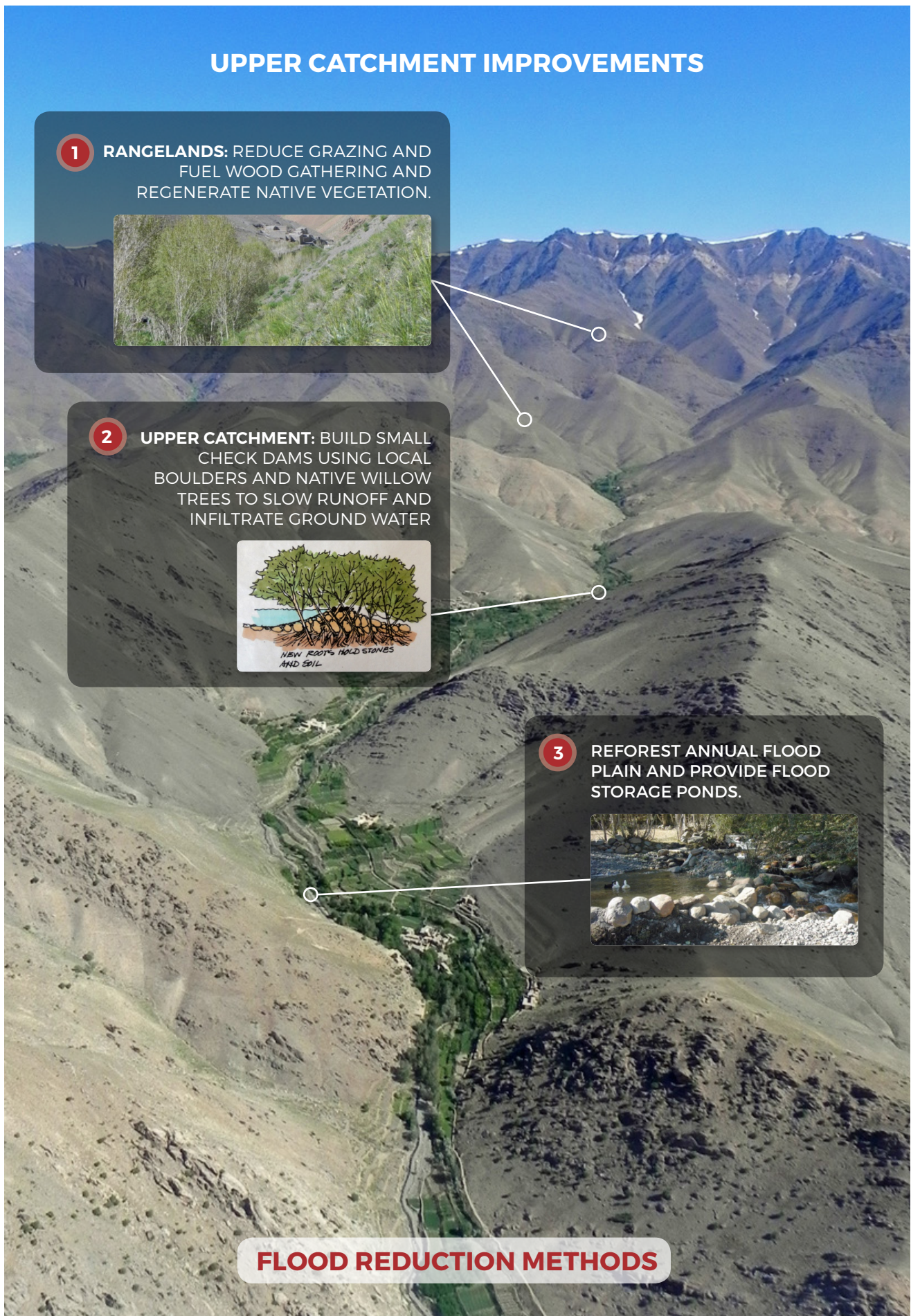


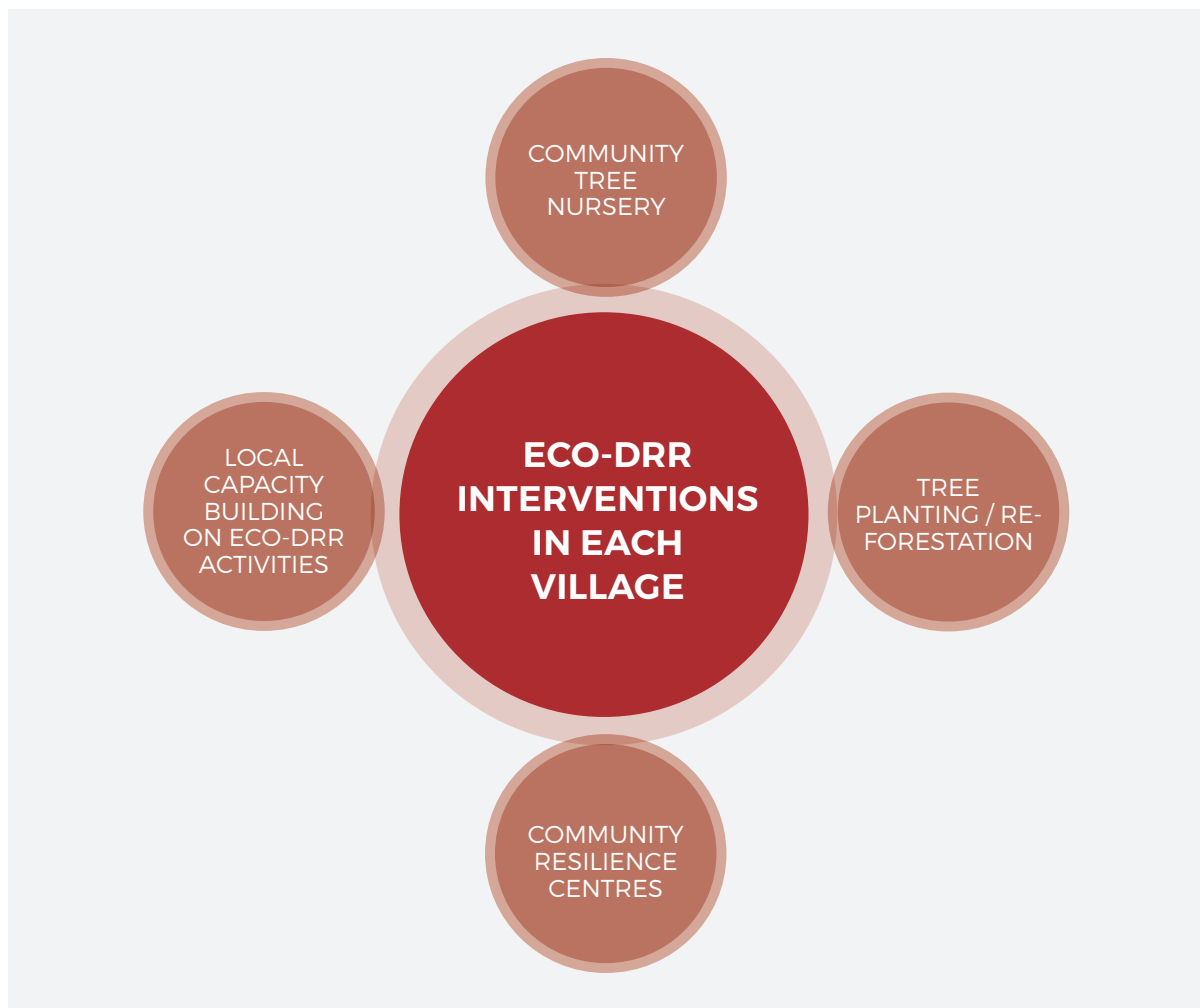
FIGURE 12. Guidelines for Eco-DRR flood reduction measures in the upper catchment



3.2. ECO-DRR FIELD INTERVENTIONS IN THE KOH-E BABA MOUNTAINS AND INITIAL RESULTS

The project implemented a number of field-based measures as pilot demonstrations of Eco-DRR in a high mountain environment. These field activities had several objectives. In the short term, these activities aimed to restore tree cover on slopes and riverbanks in order to reduce flood risk, while at the same time provide direct livelihood benefits to targeted households and stakeholders in the project. Establishment of community centres and disaster preparedness procedures aimed to reduce exposure of households by providing shelter from extreme winter conditions. The project also promoted replication and scale-up of Eco-DRR activities within Koh-e Baba, in order to sustain field interventions beyond the project's three-year lifespan.

It is important to highlight that the field demonstrations were undertaken at small-scale, covering only a very limited geographic area around villages. The intention was not to provide evidence of actual flood risk reduction, which would require field interventions at a much larger geographic scale and maintenance over a much longer time period that is beyond the scope and timeframe of this project. Rather, the field demonstrations applied well-known Eco-DRR measures that have been proven effective in other field research and in the scientific literature to demonstrate their potential in high mountain areas of Afghanistan.



COMMUNITY TREE NURSERIES

Tree nurseries were established to provide fruit and forest trees for planting as natural infrastructure to mitigate flooding, as well as fruit trees for additional income to households. Nursery establishment and management also enhanced the technical capacity and alternative livelihoods skills of communities. From a business sustainability perspective, nurseries were set up with the specific goal to produce quality trees for sale in the market at a profit within four years – the time it takes the trees to mature in high mountain areas – and expand the business after five years with the income gained from the sale of trees. The nursery has a seven year cycle and the nursery

owner will only start making income in year 3-5 depending on the weather and climate (FIGURE 13).

Six tree nurseries (around 1100 m² each) were established. Petab and Geru villages are very close to each other and therefore shared the same nursery. Over three years, each nursery produced 30,000 - 57,500 sapling of indigenous and cold-resilient tree species, namely apple, apricot, almond, walnut, pear, peach and poplar. In total 235,000 saplings were produced. The saplings produced in the nurseries are intended for planting in the villages; however, the location of nurseries within 20 km of Bamyan Bazaar also facilitates sale of surplus trees.

FIGURE 13. Seven-year business cycle for the community tree nurseries

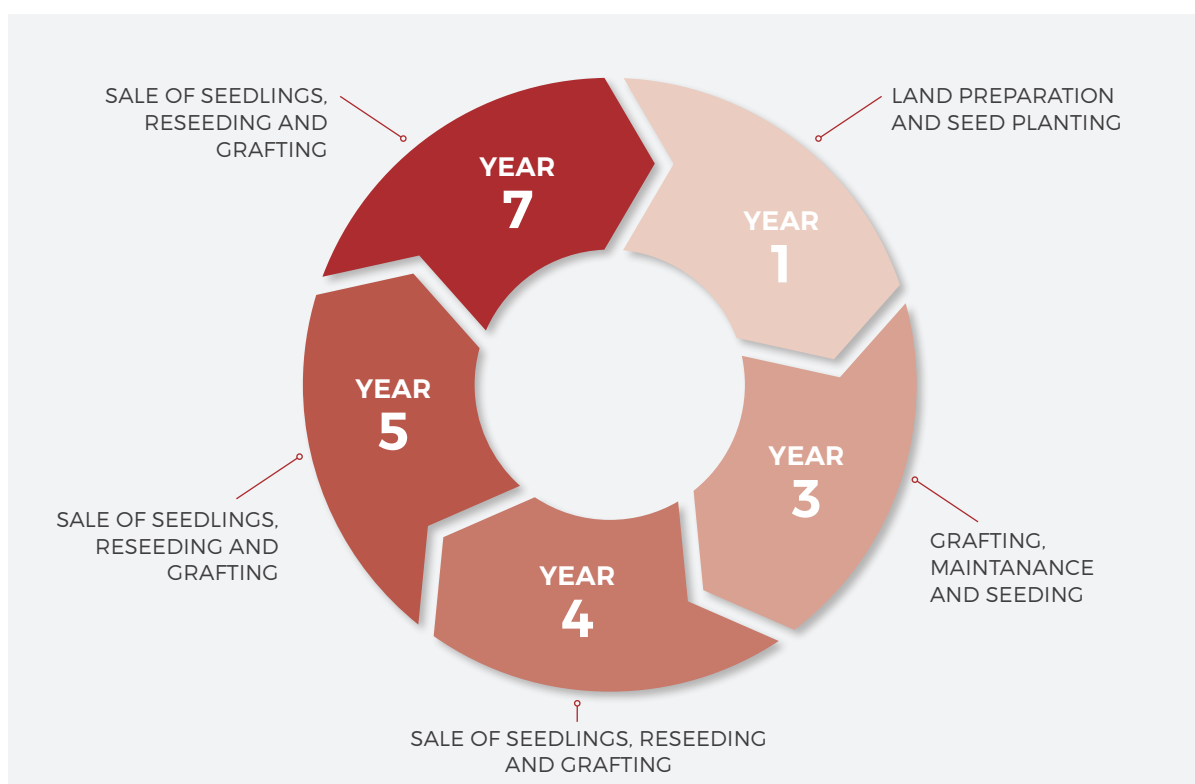


TABLE 2. Number of saplings produced per nursery

NURSERY LOCATION	NUMBER OF SAPLINGS PRODUCED OVER 3 YEARS
Orgash	57,500
Chapdara valley (Petab and Geru villages)	57,500
Chapquolak	30,000
Qabr-e Zaghak	30,000
Jawzari	30,000
Yatimak	30,000
Total	235,000



Orgosh village tree nursery during and after establishment

Water availability is sufficient in these areas with freshwater supply from rivers. However, the nurseries are located on higher ground than the rivers; therefore, a technical innovation, using a locally designed pump, was adopted to irrigate the nursery with hydraulic energy (see **BOX 4**).

As a first step, a previously established nursery in Orgosh was evaluated to learn from this experience and improve the plan for future nursery establishment through the Eco-DRR project. The nursery had been established by COAM through other projects. The evaluation template developed for this exercise was used as a standard template for establishing new nurseries, which outlines species selection, and methodology for irrigation, weeding, fertilization, design and layout and book keeping.

Because of the absence of public land, private land had to be selected in each village and the nurseries are therefore managed as private businesses with social benefits. A nursery business plan was developed to assist landowners in setting-up and planning of a sustainable and economically sound tree nursery business. The plan provides a distribution mechanism whereby forest trees are distributed to households in the community for planting in the village. Under the agreement, 30% of seedlings are reserved for purchase by the community at a quarter of the market price of trees.^x The remaining 70% of stock can be sold outside the community. The nurseries have made it cheaper and easier to buy sapling and fruits for households who would otherwise have to commute to the Bamyan Bazaar to buy these materials.

The business plan was agreed between nursery landowners and the CDCs under the supervision of the Provincial Directorate of Agriculture, Irrigation, and Livestock (DAIL), NEPA and UNEP. Based on this agreement, the land must be maintained as a tree nursery for a minimum of four years. COAM is responsible for providing technical support and financial assistance through the Eco-DRR project for two years to cover labour to prepare the land, purchase fencing and planting material and conduct trainings. After this period, COAM will remain available for technical back-stopping and trouble-shooting support for six years. COAM and DAIL are responsible for monitoring the management of the nursery and evaluating its success rate. Trainings on horticulture, nursery management and

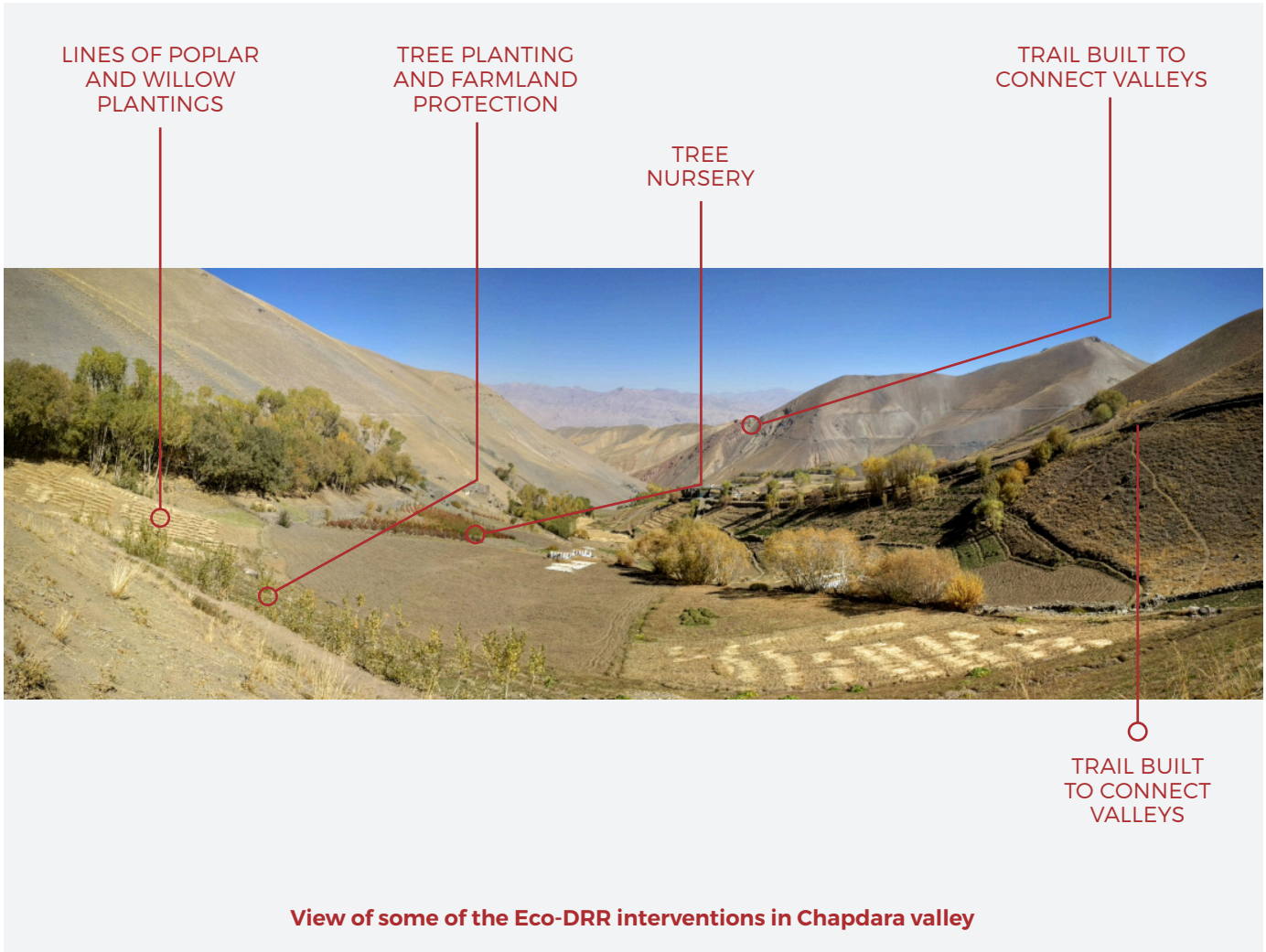
business management were provided to communities (see **SECTION 3.1**).

Despite the short growing season, the seedlings have shown a high survival rate. On average more than 85% of cuttings in nurseries have been growing well. Trees grown in these high altitude nurseries are adapted to the high mountain environment and are likely to have a high survival rate once planted. Best survival rates to date have been from apricot, apple, poplar and willow. Less successful have been expensive grafted apple varieties from other areas. As a result, the choice of trees to plant has been adjusted in subsequent years.

TREES IMPROVE OUR ENVIRONMENT AND OUR LIVES. I WANT EVERYONE TO HAVE ACCESS TO TREES FOR PLANTING

– SHA MOHAMMED,
NURSERY MANAGER IN
KHUSHKAK VALLEY

x These trees may only be sold outside the community if no one else in the community or neighbouring communities wishes to purchase them.

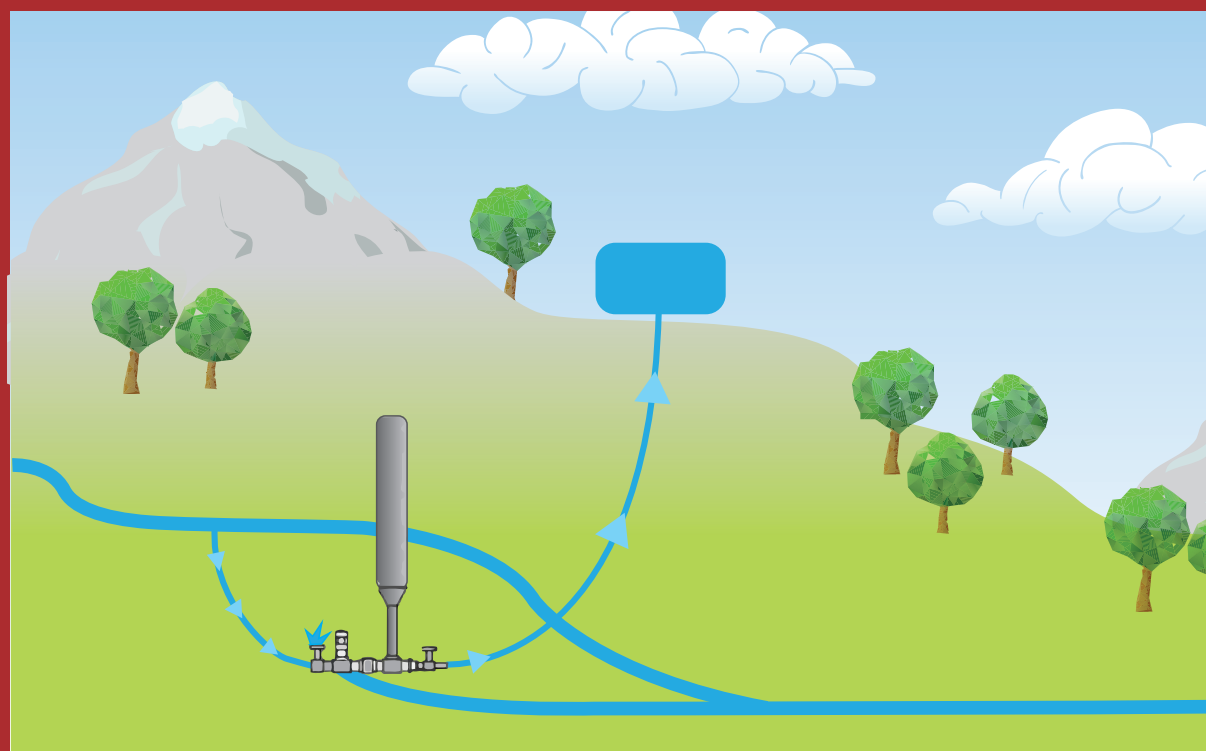


BOX 4. HYDRAULIC RAM PUMP

The hydraulic ram pump is a sustainable irrigation method which was used in the tree nurseries. A ram pump is a cyclic water pump powered solely by hydropower. It uses the kinetic energy of flowing water in a larger pipe, which when compressed in a heavy iron tank can be used to power water uphill. This makes the pump suitable for environments where water is readily available, but economic means and fuel are scarce. This model of ramp pump has been developed locally in Bamyan by UNEP, with NEPA and MRRD and local NGO support.



Ram pump setup



With the ramp pump, water can be transported to higher altitudes using hydraulic energy

BOX 5. INVOLVING WOMEN IN ECO-DRR ACTIVITIES

In the Koh-e Baba Mountains, like other rural areas of Afghanistan, women have an essential role in farming activities, such as planting, weeding, livestock keeping, in addition to collecting water and other household activities. Therefore, the Eco-DRR project was able to involve women in field activities such as weeding the nurseries, replanting and irrigating trees. Women also had a role in organizing community events. However, more demanding physical work, such as tree planting was done primarily by men, with the exception of a few women from female-headed households who participated in tree planting and terracing to gain additional income.

Despite these efforts, the gender ratio in the project has been roughly 70% men: 30% women due to cultural and religious norms regarding women's involvements in field activities. To address this issue, COAM invested in awareness-raising among community elders and elder male family members about the important role of women in natural resource management and DRR.

Other project activities aimed to increase engagement by women. Celebrations on global environmental days were used for awareness-raising, where women participated actively, for instance by sewing eco-friendly bags in community centres for World Peace Day, World Environment Day and Earth Day, which were widely used as a replacement for plastic bags.



“ MOST OF THE PEOPLE IN OUR VILLAGE ARE FARMERS; THEREFORE, TREES AND NURSERIES ARE VERY IMPORTANT TO US. I AM WORKING IN THE TREE NURSERY WITH MY FAMILY AND I AM PLEASED THAT THE ECO-DRR PROJECT INVOLVED BOTH WOMEN AND MEN IN ACTIVITIES.

NURGES, RESIDENT
OF A KOH-E BABA VILLAGE

COSTS AND BENEFITS OF NURSERY ESTABLISHMENT

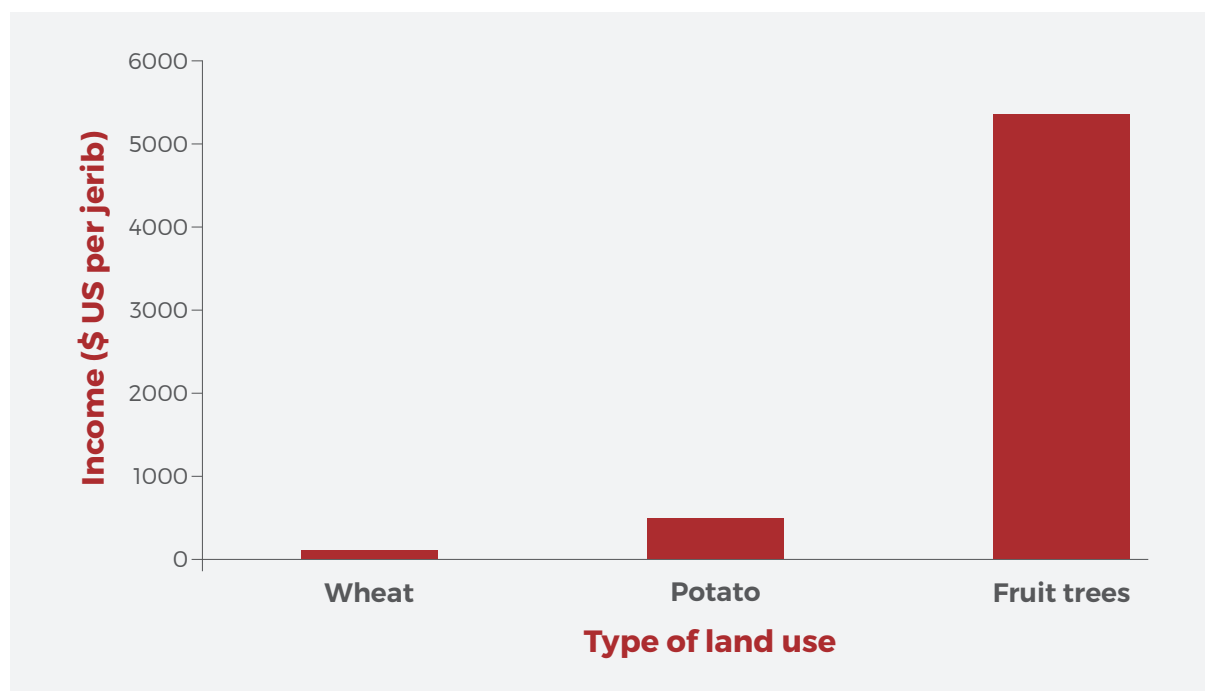
The cost of setting up a nursery in Koh-e Baba is approximately 2,500 USD. This includes labour, tools, seeds and other materials. Initially, the Eco-DRR project provided resources to cover labour to prepare the land, fencing and planting materials. Once established, the landowners cover the annual cost of maintenance and labour for the nursery.

Tree nurseries are demonstrations of a profitable sustainable business. Income from fruit trees per jerib (2,000 m²) is much higher than income from any other agricultural crops currently being grown in the area: wheat and potato bring less than US\$1,000 per jerib per year while fruit trees bring in as much as US\$ 6,000 per year, therefore giving farmers an incentive to invest in nurseries (**FIGURE 14**).

Price estimates for the fruit trees are based on 2015 local market information (US\$2 for a 3- year sapling). There is a low diversity of livelihood options in the area making it an attractive activity for households. In addition, nurseries provide potential for the community to benefit from employment. People are hired as day labour, and during busy times may be retained as specialist tree pruning, grafting and maintenance staff. About 20 persons per village per year are hired for about US\$ 7 per day. Fruit trees also diversify food and have a nutritious value in the diet of the local communities.^{XI}

^{XI} *So far it has not been profitable for communities to sell the fruits in the market because of the small number of trees and the absence of farmer cooperatives. The fruits are therefore consumed within the household and extra fruits are shared with neighbors. However, there is now potential to set up farmer cooperatives to sell fruits at Bamyan Bazaar.*

FIGURE 14. Revenue from 1 jerib (2,000 m²) of land under fruit tree production in nursery, compared with wheat and potato cultivation



REFORESTATION AND REHABILITATION OF SLOPES

Tree planting on slopes and river/stream banks was used to improve regulation of water runoff, reduce river/stream bank erosion and mitigate floods. Forest trees were planted on the slopes to reduce soil erosion and along rivers and *joys* (small water channels made of earth) to stabilize streambanks. The locations of plantings were selected by the communities following community-based mapping of floods and were monitored by COAM and UNEP through field visits.

Over two years, a total of 235,380 cuttings of poplar and willow trees were planted in selected flood prone areas across the seven villages. Each community has an agreement with COAM to make sure that livestock do not graze on planted saplings, and in some communities the replanted area has been fenced off. Various households have taken steps to plant more trees, such as apricot, at their own cost.

People in the communities have also expressed their appreciation for the aesthetic value of greener villages. In several villages, particularly Chapquoloak, Qabre Zaghak and Jawzari, the Community Development Council (CDC) has taken ownership of the efforts to reforest the slopes and green the village and is replicating the replanting work

through household contribution of labour. Each household is asked by the CDC to plant at least 10 trees every year.



Tree planting in Orgosh village: young saplings growing on terraces



Tree planting in Jawzari village: young saplings growing on terraces



Reforestation of eroded, flood prone slopes

COMMUNITY RESILIENCE CENTRES AND TEAMS

Three multi-purpose, community resilience centres have been established in Petab, Qabre Zaghak, and Jawzari. Building designs for 12 additional winter-resilient, community centres in other Koh-e Baba villages have been developed. Together, these centres will benefit 12 communities. Standard Operating Procedures (SOPs) have been developed for the management of the community resilience centres, and SOP trainings delivered to 30 persons in three villages.

The centres provide the communities with a safe shelter from hazards and to ensure sustainability and continuation of Eco-DRR activities. These community centres are located in a central location and benefit the entire village by providing:

- **Shelter to affected households in case of disasters;**
- **Storage space for first aid kits and food rations to increase disaster preparedness**
- **Space for environmental and disaster preparedness trainings, awareness raising posters and other educational material;**
- **Space for other community events.**

Since Bamyan is regaining its popularity as a local destination for hiking and back-country skiing (including national ski competitions), the community centres can also be used to provide space for hikers and skiers to stay. Next steps that are being considered in follow up projects are to provide trainings to village residents to attract more tourism and to link villages to ecotourism associations.

The challenge of creating community centres was that public land is virtually non-existent in the valleys where the villages are located. As a result, community centres had to be set up on private land, presenting the challenge of selecting land providers without favouring certain individuals over others in the community. Landowners are generally respected elders and current *shura* leaders.

VILLAGE DISASTER PREPAREDNESS TEAMS

Given the isolation of villages in the Central Highlands especially during winter, emergency services will take some time to respond to the immediate needs of a community after a disaster. The communities generally have to rely on each other for help in order to meet

immediate life-saving and life-sustaining needs. In order to support communities, the project established disaster preparedness and first aid teams in each of the seven villages, including a local early warning system.

Village disaster preparedness teams have about ten members, which included *shura* members, educated younger villagers and other able-bodied locals. The teams will not only have responsibility for taking immediate action in the event of a disaster in the community but will also take charge of coordinating disaster prevention and mitigation activities in the community, including awareness-raising.

Disaster preparedness teams include both men and women, each with different roles in the team. The men are responsible for much of the physical activities, for example clearing snow from the roads during snow avalanches and rocks from rock falls, rescuing people, and helping to implement the community's plan of action for disaster risk reduction. Both men and women are responsible for communicating early warning notices and maintaining all equipment in the community relating to disaster preparedness, such as first aid kits.

As per the NSP process, currently women make up approximately 30% of teams, though real involvement in team activities has been patchy. Each team has a Disaster Preparedness Team Leader and a First Aid Team Leader. Terms of Reference for these team leaders (between the team leaders and *shuras*) were developed and shared with the relevant focal points.

Disaster preparedness teams were also required to participate in disaster preparedness trainings delivered by the project. The team leader serves as the focal point for disasters in their respective villages and must designate a deputy in case of absence. Community disaster preparedness teams are active, and they are ensuring continuity in disaster preparedness activities.

First aid team leaders are trained to administer first aid and are responsible for immediate organization and quick response to injured community members, arranging for injured people to get to the hospital if necessary, retaining emergency contacts, regular maintenance of first aid equipment, as well as procurement of material from the Red Crescent Society and receiving top-up trainings every 12 months.



Koh-e Baba mountains have regained their popularity among hikers in Afghanistan



Female Afghan hikers using an Eco-DRR community resilience centre

BOX 6. LOGISTICS AND OPERATING PROCEDURES FOR COMMUNITY DISASTER PREPAREDNESS CENTRES INCLUDE:

- A list of emergency contacts, a risk calendar (highlighting high risk periods for different hazards) for the community, and a map of hazard prone areas must be clearly displayed in the community resilience centres.
- A phone must be available and registered with the emergency department in Bamyan and ANDMA to receive early warning from the Provincial early warning system.
- Due to the limited telephone lines and areas without a mobile phone signal, a map of the village with the nearest area for a mobile signal must also be displayed in the centre.
- The First Aid Team Leader is responsible for ensuring that first aid equipment is available and functional.
- Equipment is designated for use only in times of emergency by the disaster preparedness team.

3.3. STRENGTHENING LOCAL AND NATIONAL CAPACITIES FOR MAINSTREAMING ECO-DRR

The Eco-DRR project also invested significantly in strengthening local and national capacities for Eco-DRR implementation (TABLE 3). As this was Afghanistan's first experience in applying Eco-DRR, it was critical to progressively develop and strengthen capacities over time, which involved:

AWARENESS-RAISING;

TRAININGS AND WORKSHOPS;

HANDS-ON LEARNING ACTIVITIES IN THE
FIELD DEMONSTRATION SITES;

FIELD VISITS AND STUDY TOURS BOTH IN
THE COUNTRY AND THE REGION.



Eco-DRR training in local villages of the Koh-e Baba

“

I WORKED WITH THE ECO-DRR PROJECT TO ORGANIZE WORKSHOPS AND REVEGETATION ACTIVITIES. THROUGH THESE ACTIVITIES, WE HAVE IMPROVED THE KNOWLEDGE OF PEOPLE IN MY COMMUNITY, ON HOW TREES AND VEGETATION REDUCE THE RISK OF FLOODING.

HAJI ABDUL QADEER, KHUSHKAK COMMUNITY, VILLAGE CHIEF ENVIRONMENTAL OFFICER



TABLE 3. Local, provincial and national trainings and workshops delivered by the project

Types of trainings or workshops delivered	Implementing partner/s	Target audience	Number of trainings/ workshops and duration	Number of participants
WORKSHOPS RELATED TO ECO-DRR IMPLEMENTATION				
Training of trainers -Nursery management	UNEP, COAM, Bamyan University	Skilled farmers	3	210
Nursery management training	Trained nursery management trainers from local community, with support from COAM and Bamyan University	Local community members	9 (1 day each)	270
Community resilience centre management	UNEP, COAM, Aga Khan Development Network	Community Environmental Officers and heads of <i>Shuras</i>	3	30
Early warning and disaster preparedness	UNEP, ANDMA	Early Warning and Disaster Preparedness teams in each community, local government and local NGO staff, local senior community elders	7 (1 day each)	100
Training on community resilience centre management, nursery management and disaster preparedness	UNEP, COAM, NEPA, ANDMA and Bamyan University	Local community members, provincial Government organizations, Bamyan University	1 (3 days)	31
PROVINCIAL LEVEL TRAININGS ON ECO-DRR				
Eco-DRR implementation	UNEP	ANDMA Bamyan	1	7 persons
NATIONAL AWARENESS RAISING				
1st National training workshop on Eco-DRR in Kabul and Bamyan	UNEP	MRRD, MAIL, NEPA, ANDMA, Ministry of Mines and Petroleum, Kabul University and other academic institutions, Provincial Government agencies in Bamyan, CDCs, local community members in Bamyan	1 (2 days in Kabul + 2 days in Bamyan)	42 (Kabul) 55 (Bamyan)
2nd National training workshop on Eco-DRR in Bamyan	UNEP Afghanistan Country Programme, UNEP Regional Office for Asia and Pacific	NEPA, ANDMA, COAM, MRRD, Department of Women's Affairs (DoWA), Bamyan University, ActionAid, and Jawzari Community Development Councils, UNAMA, FAO, Mission d'Aide au Developpement des Economies Rurales d'Afghanistan (MADERA), Department of Education, Save the children, Bamyan Environment Conservationist Social Association.	2 days	68
National Conference on Eco-DRR	UNEP, Kabul University	Faculty members and students from various faculties of Kabul University, programme managers and practitioners from Government working at national and sub-national levels on environment/natural resource management, environmental protection/ regulation and disaster management, as well as NGOs and UN agencies.	1 (1 day)	7 persons

GENERAL				
Eco-DRR Planning tools and methods	OCHA	Project practitioners	1 day	50
Integrating environment markers in the Common Humanitarian Fund	OCHA	Government and humanitarian actors in country.	2 days	30
Linking disaster planning and climate action in Badakhshan Province	Concern NGO	DRR working group for Badakhshan Province, co-chaired by the UNAMA representative	1 day	30

TOOLS FOR AWARENESS-RAISING

XII Click here or visit <http://bit.ly/2eTPNTO> to view the video

An Eco-DRR communication strategy was developed by COAM to describe objectives and key messages of awareness-raising for different audiences: Communities in the Koh-e Baba, the Government, universities, and other local and national audiences. There are no newspapers in Afghanistan, internet access is low and only the privileged own a television. Therefore, radio sketches were selected as the best method to communicate to the local audience in Bamyan. Radio sketches were produced in collaboration with Radio Bamyan and NEPA and were broadcasted 2-3 times every month over a period of 3 months. Factsheets, brochures and posters (see example in **FIGURE 15**) in Dari and English were also produced and used in community centres and workshops.

A 3D model of the project area was used as a tool in community workshops for understanding disaster risk. In addition, a video of the Eco-DRR project in Dari was produced to communicate the Eco-DRR approach and activities. The video was shown in community workshops and the national conferences.^{XII}



A 3D model of the project area was used as a tool in community workshops for understanding disaster risk as well as ecosystem and socio-economic aspects of the area and deciding on development priorities and plans



Early warning and disaster preparedness training workshop in Petab Village conducted for the community in the local guesthouse where the disaster data was also recorded together with the Disaster Preparedness Team in the community.

FIGURE 15. Awareness-raising poster on Ecosystem-based DRR and climate change adaptation



NATURAL SOLUTIONS FOR RESILIENCE AND

INTRODUCTION

Afghanistan is especially prone to damage from disasters such as earthquakes, landslides, avalanches and flooding. Simple steps, aligned with natural processes, like restoring rangeland plant cover and riparian forestry while using local labour, training and sustainable technology, can reduce damage and speed recovery.

- Assist local communities in environmental planning to improve livelihoods while reducing disaster risks.
- Do not build in harm's way.
- Reduce flooding by restoring rangelands and slowing water runoff.
- Use natural local construction materials and natural buffers such as ecological restoration, against disaster hazards.
- Use ecologically sustainable techniques which also provide amenity, wildlife habitat and other benefits.
- Use local labour and increase traditional skills training.
- Establish early warning systems and improve preparedness for disasters.

RANGELAND ZONE PROTECTION



Generations of grazing and fuel wood cutting have greatly reduced plant cover resulting in rapid rain, melt water runoff, erosion and downstream flooding. An effective long-term way to reduce valley flooding is by restoring rangelands, which will also increase their long-term productivity.

UPPER-CATCHMENT ZONES GULLY PROTECTION



Gully erosion can be very rapid, damaging and difficult to control, so early remedial action is essential. Control measures start at the top of the gully and include rangeland restoration, filling with stones, dead branches and plants and construction of check dams.

HILLSIDE ZONE TERRACING

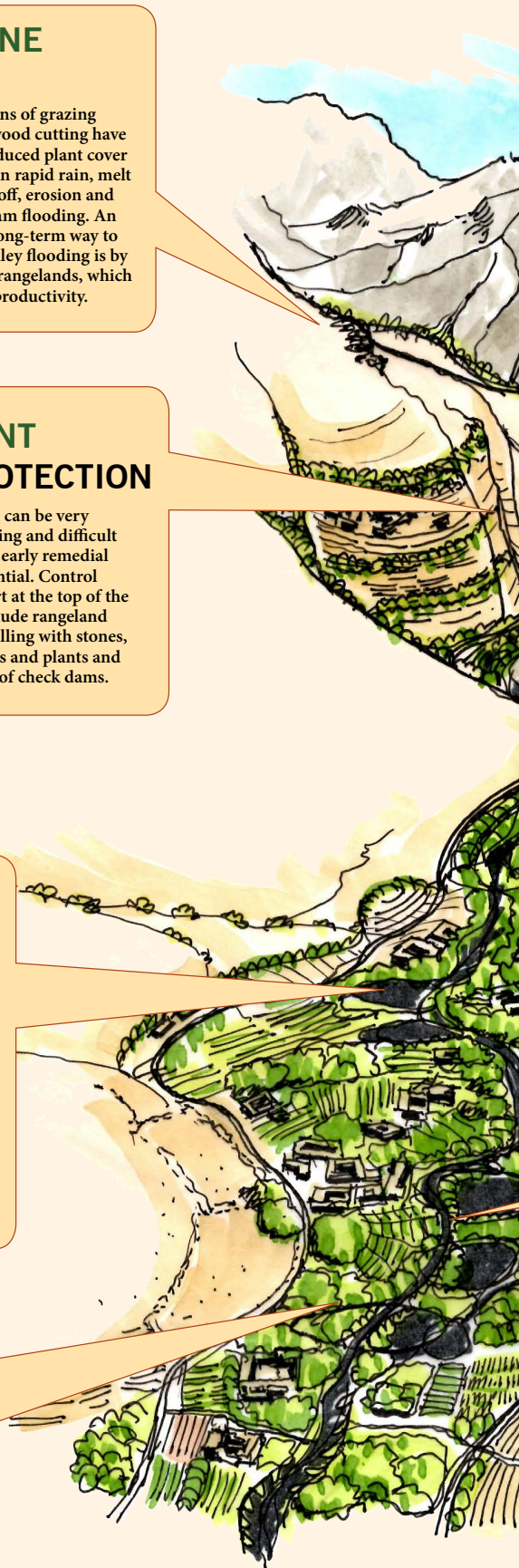
No slopes steeper than 45 degrees should be disturbed. On gentler slopes, terracing, ranging from single stone lines on contours, to bund and swale earth forming, to stone terrace walls capture runoff, reduce erosion and provide productive crops and forestry. Walls should be no higher than one metre to minimize earthquake and landslide hazards.



LOWER CATCHMENT ZONE COMMUNITY FORESTRY



Afghanistan was once more forested than it is today, with riparian woodlands following seasonal water courses. These healthy ecosystems can be recreated, both up stream and in lower catchment areas, reducing hazards such as rock falls and avalanches, providing wildlife habitat and amenities and improving micro-climate by shading and evaporative cooling. Trees also fix carbon and improve sustainable livelihoods. Community scale forestry plots can be developed on hillsides (with or without terracing) and some forest species are adapted to seasonally flooding and can be used for riparian woodlots.





REDUCED DISASTER RISK IN AFGHANISTAN



ALPINE ZONE CONSERVATION

Afghan mountains are being raised rapidly by geological forces and are very unstable and susceptible to rockslides, avalanches and earthquakes. All development other than trails and simple camp sites should be restricted in this beautiful zone and iconic wildlife and plant species must be protected.



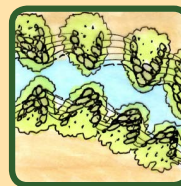
UPPER-CATCHMENT ZONE STREAM BANK PROTECTION



Watershed management begins at the top. Smaller streams are easier to control using simple natural materials such as stones, boulders and plants to build check dams, groynes and bank protection. This slows water flow, reducing erosion, increasing soil deposition and water infiltration. The use of many small interventions in upper catchment streams reduces the need for larger flood management projects in lower catchments.

MID-CATCHMENT ZONE RIVERBANK PROTECTION

The first principle of flood damage reduction is to prevent construction in exposed areas like flood plains. Restriction of river flow into straight narrow channels increases water velocity and downstream destructive power, so channelization should be avoided wherever possible. Riversides can be protected from erosion with planted groynes which also provide wildlife habitat, fuel wood and wild fruit.



RIVER TERRACE ZONES ORCHARDS



Terraced orchards above flood plains are easily irrigated and usually have access to transportation. Fruit crops have a prosperous commercial history in Afghanistan and provide nutritious products for sale and storage for winter use. These alternative livelihoods reduce the need for rangeland over grazing and thus reduce risk of flooding and erosion.



DEVELOPING LOCAL CAPACITIES FOR IMPLEMENTING ECO-DRR

At the local level, the project mainly focused on re-enforcing the capacities of community members, involving CDCs, Community Environmental Officers, women and vulnerable households as primary beneficiaries (see **TABLE 3**). Trainings enhanced capacity to implement Eco-DRR field activities. For example, a training of trainers was organized on nursery management, with participation of 210 people from the local communities, universities and the Government. Later, nursery management trainings were delivered by the trainers to 270 local residents of Koh-e Baba. By training literate and skilled farmers as trainers and contracting them to deliver nursery management trainings, the project built long-lasting community capacity to maintain and replicate nursery establishment. An instruction package in Dari was developed and provided to local trainers.

The project also trained over 100 people, including disaster preparedness teams, in early warning and disaster preparedness, as well as management of community resilience centres (see **SECTION 3.2**). Three training packages were developed and are available for future use: **1)** management of community resilience centres, **2)** nursery management, and **3)** early warning and disaster preparedness which integrated traditional practices used by the communities and guidelines from the Ministry of Rural Rehabilitation and Development (MRRD).

Due to the harsh winters in Bamyan, practical trainings were delivered during spring and summer months over the period of the project (3 years), with the exception of nursery book-keeping trainings which could be delivered in autumn. Practical trainings such as nursery management have been successful at building local capacity for Eco-DRR measures in Koh-e Baba communities, which is an important factor in the future sustainability of outcomes. As a result, communities now have a higher awareness of Eco-DRR. The project also introduced a number of innovations. For instance, communities experimented with drought-resistant trees such as apricot, which were previously considered unsuitable to arid valleys such as Khushkak.

BOX 6. MEET THE TRAINER: SHA MOHAMMAD, NURSERY MANAGEMENT TRAINER AND LOCAL SUSTAINABILITY CHAMPION



Sha Mohammed was chosen from a long list of candidates to support nursery management trainings. He is an innovative person with many sustainability ideas. He uses passive solar housing - a complex setup of solar panels - and has set up over 30 beehives on his land. He also is the owner of the most diverse nursery in Bamyan with over 35 different tree species ranging from peaches, mulberries to delicious blackberries.



Nursery management training of trainers

PROVINCIAL AND NATIONAL EVENTS

At the national level, trainings and workshops brought together National Government actors, Provincial Government and line ministries in Bamyan, as well as local CDCs, in order to raise awareness and promote cross-sectoral collaboration on Eco-DRR (see section 4). The field demonstrations and practical trainings served as a basis for strengthening Provincial and National Governments' understanding of Eco-DRR practice in order to sustain future implementation and replication of Eco-DRR measures. Involving Provincial Government agencies such as NEPA, ANDMA, the Bamyan Governor's Office and MRRD in delivering Eco-DRR trainings to communities was another important step in building capacity within the Government to scale up trainings.

By engaging universities in national workshops, the project was able to reach a broader audience of academics and spark interest in mainstreaming Eco-DRR in university curricula (see below). UNEP also presented at various other conferences and meetings with national and international development actors in Afghanistan.



Site visit with local experts from DAIL, NEPA and ANDMA to field intervention sites



Site visit with local experts from DAIL, NEPA and ANDMA to field intervention sites

MAINSTREAMING ECO-DRR IN UNIVERSITY PROGRAMMES

The Eco-DRR project involved universities in Afghanistan in national and provincial Eco-DRR conferences and trainings, in an effort to mainstream Eco-DRR concepts and practical knowledge in university programmes. A national-level Eco-DRR conference was held at Kabul University in March 2014, in collaboration with the Faculty of Agriculture. This conference and multiple seminars sparked interest in academia to integrate Eco-DRR in university programmes.

As a result, UNEP supported Kabul University and Bamyan University in mainstreaming Eco-DRR and climate change adaptation and enhancing their curricula by providing practical learning opportunities for students. Kabul University is the oldest tertiary

institution in Afghanistan established in 1931 and plays an instrumental role in providing curriculum support, trainings, and technical advice to universities in the provinces. In 2013, Kabul University established the Department of Disaster Management under the Faculty of Environmental Science. This department is the first and only disaster-related programme in public tertiary education in Afghanistan.^{xviii} The department is in need of developing a comprehensive curriculum framework for submitting to the Ministry of Higher Education (MoHE) for approval. Producing a new generation of graduates with knowledge and skills to work in various sectors of environment and disaster management within the country will provide the critical mass to enable mainstreaming of Eco-DRR.

UNEP is providing technical assistance in the process of curriculum development, while building capacity of the lecturers to integrate innovative and practical components into their teaching. This includes assisting in the development of the curriculum framework, a 5-year strategic plan for the faculty, and developing curriculum packages for specialized courses. The Masters' level course and modules on Disasters, Environment and Risk Reduction developed by the Partnership for Environment and Disaster Risk Reduction (PEDRR) have been adapted and integrated into the DRR-related courses of Kabul University.^{xiv} Additionally, UNEP is supporting Kabul University to build partnerships for case-based teaching^{xv} and learning approaches that use real data, problems, and systems derived from Afghanistan's experience. The faculty's long-term plans are to establish a research centre and training hub for short professional courses for Government employees and practitioners as well as a Master's degree programme for which UNEP is also providing continuous support.

Bamyan University also expressed interest in incorporating Eco-DRR in the curriculum of its Agriculture Faculty, specifically within the Department of Forestry and Natural Resource Management. In 2015, an environmental stewardship course, supported by UNEP, was pilot tested in Bamyan University for students from the Department of Forestry and Natural Resource Management, Department of Tourism, and Department of Economy. This course was developed in partnership with Sustainable Smiles, a non-profit organization, and the University of Montana. The course was established in response to the teachers' and students' request for having practical learning opportunities integrated into the curriculum. In this programme, students are required to work together in teams, hold different leadership responsibilities, and coordinate with outside experts and community members to solve environmental issues. They research, plan, and implement an environmental project of their choice based on time, budget, and resources available while developing leadership, stewardship, and post-graduate employment skills. The environmental stewardship course enables students to address an environmental issue in their local community, which relate to natural resource management. Many of the group projects that focus on more rural areas (e.g. Koh-e Baba villages), have a strong

ecosystem-based DRR or CCA component. This programme was appreciated by students, faculty, and the local communities, and there are efforts to obtain approval from the Ministry of Higher Education in order to roll out the course in other universities across the country.

xiii There is also a private university, Sharq University, that has a Bachelors Programme in Disaster Management. Many of the teachers at Kabul University are also teaching in this private university.

xiv Formally established in 2008, the Partnership for Environment and Disaster Risk Reduction (PEDRR) is a global alliance of UN agencies, NGOs and specialist institutes. UNEP was a co-founder of PEDRR and remains a core member.

xv "Case-based teaching" is an active learning strategy in which students read and discuss complex, real-life scenarios that call on their analytical thinking skills and decision-making.

SUPPORTING NATIONAL ADVOCACY ON ECO-DRR

The project aimed to implement Eco-DRR in Afghanistan, in order to provide a local example in the country and an entry point to promote Eco-DRR in national plans and policies. Recognizing that disaster risk reduction is nascent and lagging behind disaster management efforts in Afghanistan, the project positioned its policy advocacy approach on two pillars.

The first approach was to promote the overall concept of disaster risk reduction in the country and introduce Eco-DRR as an integral component of DRR. The work of UNEP with the humanitarian cluster system are examples of this strategy.

Secondly, the project identified entry points for integrating Eco-DRR into ongoing activities such as climate change adaptation. By highlighting commonalities between Eco-DRR and ecosystem-based adaptation and operating under the umbrella of "resilience building", the project has been able to influence climate change adaptation efforts by the Government – for instance the Strategic National Adaptation Plan (SNAP) - as well as the work of international organizations, such as the Afghanistan Resilience Consortium (ARC). The new ARC project on resilience building (discussed below), with funding from DFID, is an example of the effective integration of Eco-DRR and CCA in project design at the national level in Afghanistan.

Through its field interventions and multiple local, provincial and national-level trainings and workshops, the project sparked national

dialogue on the effectiveness of Eco-DRR to achieve sustainable and disaster-resilient development. Increased national awareness has in turn translated into active engagement of National Government in consultations leading up to the post-2015 global framework for DRR, known as the Sendai Framework (2015-2030). Moreover, the experience of the Eco-DRR project in the Koh-e Baba Mountains spurred regional exchanges and study tours between countries in the region.

ENGAGING IN THE POST-2015 NATIONAL AND GLOBAL POLICY AGENDA ON DRR

At the start of project implementation, in an effort to raise national awareness of Eco-DRR, UNEP held the country's first National Workshop on Eco-DRR in May 2013. Organized in collaboration with NEPA and ANDMA, the four-day training introduced Eco-DRR concepts and promoted cross-sectoral integration and mainstreaming of Eco-DRR in national development planning processes.

The second half of the training was held in Bamyan for a field visit and involved the Provincial Government and line ministries in Bamyan, as well as CDC representatives and local community members.

Following the first national training, a provincial environment and disaster committee was formed, which comprised the Bamyan Governor's Office, MAIL, MRRD, ANDMA and NEPA. This committee has been meeting several times to discuss next steps. As a result of strong interest in the Government of Bamyan, a second national training was held in September 2015 in Bamyan Centre, in collaboration with the provincial department of ANDMA in Bamyan. The one-day training further discussed Eco-DRR concepts, promoted mainstreaming of Eco-DRR in provincial policies, and elaborated on the role of women in Eco-DRR and synergies with climate change adaptation.



Field visit in Bamyan during national training on Eco-DRR (May 2016)



Second conference on building resilience through Eco-DRR in Afghanistan, held in Bamyan province in September 2015.

The project's success in raising awareness on Eco-DRR in the country was evidenced when ANDMA resumed formal progress reporting towards the goals of the Hyogo Framework for Action (HFA) (2005-2015), which at that time was the global framework on DRR. In 2013, for the first time since the adoption of the HFA, and again in 2015, the Government of Afghanistan submitted a National Progress Report to the HFA, and specifically reported on its progress towards reducing the underlying risk factors (HFA Priority of Action 4), such as advancements in environmental policy and legislation.

The Government of Afghanistan also engaged in preparatory discussions on the post-2015 global framework on DRR, now the Sendai Framework for Disaster Risk Reduction (2015-2030). A delegation led by ANDMA attended the 6th Asian Ministerial Conference on DRR, which was held in Bangkok in June 2014. This heightened engagement signalled a shift in the Government's vision, moving from disaster response towards risk reduction. As a result of the project, there has also been higher levels of awareness about Eco-DRR in ANDMA and interest by Dr. Abdullah, the Chief Executive of the National Government.

PROMOTING ECO-DRR IN NATIONAL CLIMATE CHANGE ADAPTATION AND HUMANITARIAN ACTIVITIES

The project also considered it a priority to strengthen cross-sectoral collaboration between environment, disaster management, climate change, development, and humanitarian actors in order to mainstream

Eco-DRR in national policies, plans and programmes. The Eco-DRR project informed and influenced UNEP's collaborations with humanitarian and climate change actors to promote Eco-DRR within these sectors. As a result, UNEP contributed to various conferences and stakeholder meetings, and facilitated several site visits to field activities in Bamyan.

INTEGRATING CLIMATE CHANGE ADAPTATION AND DRR

Leveraging on UNEP's involvement in the Afghanistan Resilience Consortium (ARC),^{xvii} the project promoted Eco-DRR in broader resilience-building projects and mobilized funds, which will be implemented by the Consortium. In 2015, with support from DFID, the ARC commenced its first project titled "Strengthening the Resilience of Afghanistan's Vulnerable Communities against Natural Disasters (SRACAD)." The four-year SRACAD project (2015-2019) combines national and sub-national institutional strengthening and policy planning with the provision of direct disaster risk reduction and humanitarian assistance to more than 400,000 people across 25 disaster-prone districts in eight of Afghanistan's most vulnerable provinces.

UNEP has also provided ARC with technical assistance to access International Climate Fund resources from the United Kingdom, which increases Afghan aid and ANDMA's involvement with the country's growing climate portfolio and the integration of climate change into DRR planning and response.^{xviii}

Eco-DRR is now reflected more broadly in the ARC's work through a focus on: **a)** Community-based Natural Resource Management (CBNRM) that emphasizes community-based actions, instead of large-scale engineering, over a large landscape to capitalize on ecosystem services in order to reduce disaster risk; **b)** holistically integrating climate change adaptation and DRR via ecosystem-based approaches; and **c)** harvesting lessons and experiences from the field on CBNRM activities to raise awareness about CBNRM and ecosystem-based adaptation at the provincial and national levels.

Also related to influencing climate change efforts, UNEP supported the development and implementation of Afghanistan's Intended Nationally Determined Contribution (INDC) under the UNFCCC for the Paris Climate Conference (CoP 21) in December 2015. UNEP and NEPA organized a series of pre- and post-conference workshops to build political consensus and motivation to address the country's urgent and immediate climate change adaptation and mitigation needs. These workshops helped solidify the INDC's role as a unifying tool that brings together a diverse cross section of Government institutions, NGOs, academia, and international development organizations.

INFLUENCING HUMANITARIAN ACTIVITIES

Within the DRR Working Group of the Food Security and Agriculture Cluster (FSAC) of the humanitarian sector,^{xviii} UNEP has been promoting the integration of Eco-DRR and CCA in disaster risk reduction and resilience planning through the provision of technical guidance to ANDMA, Afghanaid, and other members. For instance, a seven-module training curriculum was developed on the science of climate change and ecosystem-based adaptation approaches. This training was delivered to Government staff of ANDMA, NEPA, MRRD, MAIL and the Ministry of Energy and Water (MEW) in May 2016.

The DRR working group of FSAC is also facilitating the development of a national early warning system (EWS), together with guidelines and operational manuals for effective functioning of the system.³⁷ UNEP is supporting the ARC and ANDMA on the establishment of standard operating procedures (SOPs) and guidelines on EWSs. In particular, UNEP is adding value on the

integration of climate change considerations into conventional DRR EWS, such as meteorological analysis, geospatial mapping, and the development of climate change projections for temperature and precipitation.

Finally, in collaboration with The World Bank and the United Nations Office for Project Services (UNOPS), UNEP is undertaking a strategic institutional review of ANDMA to improve its ability to achieve its mandate at the national, provincial, and district levels. This includes strengthening ANDMA's capacity to coordinate the national DRR working group, together with Afghanaid, in order to bring together the many diverse actors working on resilience, DRR, rural livelihoods and climate change.

xvi In 2014 ActionAid, Afghanaid, Concern Worldwide, Save the Children, and UNEP created the ARC with the goal of reducing Afghanistan's vulnerabilities to disasters and climate change in a coherent and coordinated manner.

xvii Afghanaid and ANDMA are the co-chairs of the ARC's DRR working group.

xviii The Food Security and Agriculture Cluster (FSAC) in Afghanistan was established in 2008, is co-led by WFP and FAO with Caritas Germany as NGO in a co-chair role.



Study team on field site visits in Naryn Oblast, southern Kyrgyzstan, looking at public infrastructure and watershed management links to climate change

FACILITATING LEARNING EXCHANGES BETWEEN COUNTRIES IN THE REGION

The project also supported south-south learning exchanges to promote Eco-DRR and CCA in the region. In November 2014, UNEP, with additional funding from the Swiss Agency for Development and Cooperation (SDC), organized a regional study tour on Eco-DRR in Kyrgyzstan. Twenty-two representatives from Afghanistan, Tajikistan and Kyrgyzstan participated in the event, which provided the first opportunity to exchange knowledge and lessons on Eco-DRR approaches in the region, including field visits to watershed management programmes in Kyrgyzstan.

The regional study tour has stimulated a follow-up Eco-DRR study tour in Tajikistan, which was organized through other sources of funding and was attended by participants from the three above-mentioned countries. As a result of learning exchanges, an active regional network of Eco-DRR experts has been created among the three countries.



Eco-DRR awareness raising
for children
2015 © UNEP

4

HOW DID THE PROJECT CONTRIBUTE TO DISASTER RISK REDUCTION?

A local village elder from Khushkak Valley sharing stories with the UNEP team about his decades of experience in farming.

© UNEP/Alec Knuerr



As discussed in **SECTION 1**, disaster risk is understood as a composite of three main elements that must be present: hazard, exposure (i.e. people or assets located in hazardous locations) and vulnerability (i.e. the range of factors – social, physical, economic, environmental, cultural, political/institutional, etc. – that shape how hazards affect or impact on people and communities) (see **BOX 1**). The Eco-DRR project in Afghanistan aimed to influence all three components of the disaster risk equation.

It is important to bear in mind that the project's field interventions were implemented at a very limited geographic area within the Koh-e Baba Mountains. Therefore, the intention was not to provide evidence of actual risk reduction, which would require interventions at a much larger geographic scale and over a much longer time period, which are beyond the scope of the project. The project, however, applied well-known Eco-DRR measures in order to demonstrate their potential in high mountain areas of Afghanistan. Further details about project interventions and results are found in **SECTION 3**.

4.1. MITIGATING HAZARDS

The project promoted ecosystem-based measures to mitigate floods by addressing ecosystem degradation as a driver of disaster risk in the Koh-e Baba Mountains. Tree planting on degraded mountain slopes and stream banks aimed at reducing soil erosion, stabilizing stream and river banks, which were contributing to the high risk of flash floods in springtime when there is rapid snowmelt. Planted trees on streams and irrigation canals were used as an alternative to hard engineering measures for reducing erosion, therefore helping to regulate runoff and overflow of water to adjacent land. Selection of trees was based on suitability to climate in the high mountains and local community preferences. By targeting villages in the upper watershed for tree planting, the project aimed to also reduce flood risk downstream in the valleys, therefore benefitting a larger population in the Koh-e Baba Mountains.

4.2. REDUCING EXPOSURE

Given the absence of disaster risk reduction measures in Afghanistan's decentralized development planning processes, the project promoted risk sensitive and ecosystem-based measures within the Green and Resilient Development Planning approach in the seven villages. The village development planning template aims to guide future development away from areas which are exposed to floods and avalanches.

It promotes identification of hazard hotspots, as well as changes in ecosystem health – such as rangelands – based on community knowledge, remote-sensing, and GIS mapping. By connecting village plans with the development vision of the Koh-e Baba landscape through a bottom-up approach (as discussed in **SECTION 3**), the project provides a model for extending development planning to an ecologically meaningful scale where the role of ecosystems in DRR can be maximized, while reducing disaster risk for a larger population.

4.3. REDUCING LOCAL VULNERABILITIES

The project also served to reduce local vulnerabilities to disasters and climate change by implementing measures that:

- **Improved disaster preparedness and created shelters from harsh winters and other extreme weather events;**
- **Established local disaster preparedness and first aid teams;**
- **Developed capacities to diversify local livelihoods and augment household incomes;**
- **Developed Eco-DRR capacities at the provincial and national levels;**
- **Informed humanitarian activities, and integrated DRR and CCA planning processes for greater efficiency and effectiveness;**
- **Strengthened partnerships and collaborative initiatives on Eco-DRR.**

The establishment of disaster preparedness and environmental community centres has improved communities' resilience to disasters, by putting in place Standard Operating Procedures for storing food rations, providing shelter for affected households during harsh winters and other extreme weather events, as well as creating a space for Eco-DRR awareness-raising. Community Disaster Preparedness Teams and First Aid Teams will also improve early warning and first-aid response to disasters in these remote communities.

By diversifying livelihood sources and increasing household incomes through the establishment

of community-managed tree nurseries and tree planting activities, the project enables communities to better cope with and manage disasters. For instance, the nursery management trainings provided necessary skills to households to gain up to six times more income from their land by planting fruit trees in place of wheat or potatoes. The use of locally-designed technology to irrigate nurseries has made nursery establishment affordable for local households.

Given the limited attention to disaster risk reduction in Afghanistan, the project informed and influenced UNEP's partnerships and promoted integration of Eco-DRR within existing humanitarian and climate change adaptation activities. There is now much stronger collaboration between humanitarian, climate change and DRR actors to integrate disaster and climate risks into activities, which contributes to pooling of both human and financial resources and improved

development assistance programming. Numerous examples of this collaboration are now taking place such as within donor groups with the formation of the Disasters and Resilience Working Group, co-chaired by Canada and the UK, and the UN DRR working group co-chaired by UNEP, WFP, and the United Nations Assistance Mission in Afghanistan (UNAMA).

In addition, Eco-DRR has been mainstreamed in the activities of the Afghanistan Resilience Consortium and as a result is being replicated in four other provinces, to reduce vulnerabilities to multiple disasters and climate change. Regional south-south exchange activities have also been successful in creating a regional network of experts on Eco-DRR and CCA in Afghanistan, Tajikistan and Kyrgyzstan, and sparked additional capacity-building activities and trainings in these countries, which will further strengthen implementation and replication of Eco-DRR in the region.

THE ECO-DRR PROJECT IN KOH-E BABA MOUNTAINS



CONTRIBUTED TO:

**MITIGATING
HAZARDS**

**REDUCING
EXPOSURE**

**REDUCING LOCAL
VULNERABILITIES
TO DISASTERS.**

5

LESSONS LEARNED

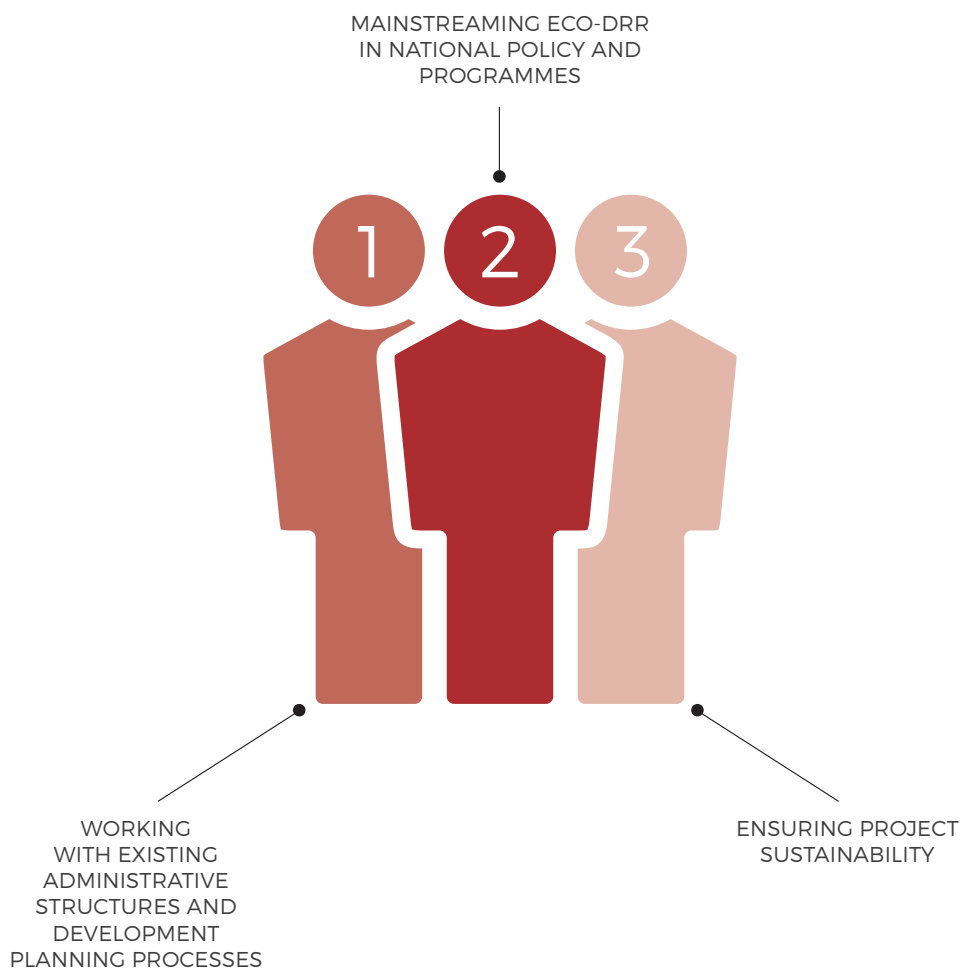
The snow covered Shah Foladi, declared as Afghanistan's third national protected area in 2015

2014 © UNEP/Alec Knuerr



This final section reflects on the main lessons learned from our project, in order to inform design, implementation, replicability and sustainability of similar Eco- DRR approaches and initiatives in Afghanistan but also globally. The project clearly demonstrated that Eco-DRR can be applied through a landscape approach to ensure sustainable and resilient development. Several factors, however, need to be considered to support project implementation, maximize results and outcomes and ensure sustainability.

LESSONS LEARNED







WORKING WITH EXISTING ADMINISTRATIVE STRUCTURES AND DEVELOPMENT PLANNING PROCESSES

One of the challenges faced by the project was how best to support the integration of Eco-DRR elements in local development planning in Afghanistan. The project considered three possibilities. The first was a proposed model of upward planning, starting from villages and moving up to valleys and the larger landscape. However, while each target village has its own native administration (i.e. *shura*), depending on their size, a number of small villages may fall within the jurisdiction of the same local administration (i.e. CDC). Therefore, development planning with the village *shuras* would have been redundant and risked creating an ineffective planning process in parallel with the nationally-instituted development planning process.

The second option was to influence the existing development planning process under the NSP framework, which involves CDCs. This would involve developing a common development plan for multiple villages, some of which were not targeted directly by the project but fell within the area covered by the same CDC. However to date, these local administration bodies have not been mandated to address disaster risk reduction. The next phase of the NSP, re-named as the Citizen Charter, is expected to give CDCs a local DRR mandate. The process of revision has been slow, and the next phase of the NSP programme is still being worked out. As a future step and within the scope of other projects, UNEP is planning to engage in this revision process and promote Eco-DRR and bottom-up green and resilient development planning through the Citizen Charter programme.

Finally, the project took advantage of the location of the seven target villages, which were within the boundaries of the Shah Foladi Protected Area, and influenced the design of the protected area management plan to scale-up the Eco-DRR approach within a larger landscape. The management plan of the protected area now includes Eco-DRR in its rationale and measures, such as zoning. This plan has also been awaiting endorsement by the Government of Afghanistan.

The Eco-DRR project team concluded that the best option is to support and further strengthen nationally-instituted development planning processes at various levels as a means of achieving greater ownership and sustainability, rather than

creating a separate, project-driven planning process in parallel. Although the project initially promoted the first option (discussed above), UNEP decided to ensure that the Green and Resilient Development Planning process is fully embedded into the nationally-instituted development planning process, which will re-start once the new phase of the NSP begins and the Shah Foladi Protected Area Management Plan is endorsed in 2017.

In anticipation, the Eco-DRR project has put all the necessary material in place, including planning templates, baseline socio-economic and disaster risk information and locally identified development priorities. These would allow National and Provincial Governments and villages to effectively engage both the NSP Phase 2 and the Shah Foladi Plan implementation process, when they are initiated.



MAINSTREAMING ECO-DRR IN NATIONAL POLICY AND PROGRAMMES

The project has influenced national policy and programmes by promoting Eco-DRR as an integral component of DRR in humanitarian and disaster management activities, as well as by integrating Eco-DRR in climate change adaptation activities, such as the work of the ARC consortium. Nevertheless, policy advocacy was not without its challenges. High turnover of staff in government positions has been a limiting factor in efforts to build capacity and support policy advocacy on Eco-DRR. Long periods of lull in planning and policy implementation before and after national elections, absence of a Governor in Bamyan for an extended period of time and

therefore a vacuum in leadership and temporary replacements presented challenges to informing policy. For instance, UNEP's efforts to promote Eco-DRR in the 5-year Provincial Plan of Bamyan were undermined by a change in Provincial Governor and multiple temporary assignments to this position, which resulted in long delays in the development of the Provincial Plan. Nevertheless, the capacity built within technical government staff, for instance through national trainings and conferences, will be an important factor in supporting policy on Eco-DRR in follow up activities of UNEP and partners.



ENSURING PROJECT SUSTAINABILITY

A major concern of any project, including the Eco-DRR project in Afghanistan, is the project's sustainability beyond its limited lifespan. In this case, the Eco-DRR project was a 3-year intervention, which has yielded a number of successful results. Certainly a number of challenges will constrain further uptake, replication and scaling-up of the approach in the country. These include for instance limited capacity of National and Local Governments, lack of access to public land for community Eco-DRR activities, and the need to demonstrate clear economic benefits of Eco-DRR activities to provide local incentives for replication. While there is no way to guarantee that the project activities and results will be sustained, we can reflect on a number of factors that support long-term outcomes:

First, at the local level, the high community uptake of field interventions indicates a clear local interest in continuing and replicating the initiatives. For instance, at the beginning COAM was faced with resistance from local communities to give up their land for establishing tree nurseries. However, by the end of the project, the project had not only established five nurseries, but has also received numerous requests to replicate tree nursery establishment on other land parcels, and even in other villages of the Koh-e Baba.

Second, by providing a local pilot demonstration of Eco-DRR, the project has been able to mainstream

Eco-DRR in the programming and project design approach of UNEP Afghanistan's Country Programme. Ecosystem-based DRR and CCA has become a cross-cutting approach in all of UNEP's activities in Afghanistan, as well as in UNEP's partnerships with climate change, DRR and humanitarian actors. By promoting Eco-DRR integration in CCA and humanitarian activities, the project has supported streamlining of efforts for DRR and CCA.

Third, the Green and Resilient Development Planning template provides a clear roadmap for integrating Eco-DRR in local development planning processes. It is also a timely input into the revisions of the NSP and the strengthening of the role of CDCs in DRR.

Fourth, by mainstreaming Eco-DRR in university curricula, the project has been able to ensure continuous awareness-raising and capacity-building on Eco-DRR among Afghanistan's young generation who will be leading the country's development.

Finally, there is now greater national awareness and commitment from the National and Provincial Governments in Bamyan to promote Eco-DRR, based on local, national and regional exchanges. UNEP and ARC's follow-up projects will also support the Government in further promoting Eco-DRR at the national level. The capacity built within National and Provincial Governments in Bamyan will be key for replication and scale up of Eco-DRR in Afghanistan.

6

ANNEXES, ACRONYMS, ABBREVIATIONS AND REFERENCES

During summer,
Bamyan's rangelands come
alive with bright colors
and smells from native plants.
Bamyan, Afghanistan.

© Alec Knuerr, UNEP



ANNEX 1. GREEN AND RESILIENT VILLAGE DEVELOPMENT PLANNING TEMPLATE

INTRODUCTION

THE GREEN AND RESILIENT VILLAGE PLANNING TEMPLATE HAS BEEN DEVELOPED TO ASSIST THE COMMUNITY TO PRIORITISE ENVIRONMENTAL DEVELOPMENT PROJECTS THAT FOCUS ON BOTH SUSTAINABILITY AND RESILIENCE TO DISASTERS AND CLIMATE CHANGE. THE TEMPLATE FOCUSES ON PRACTICAL, PARTICIPATORY, AND EARLY ACTION PLANNING.

It is important for the following maps, exercises and reports to be developed with the participation of the Village *Shura* or Community Development Councils (CDCs), other community leaders and representatives (e.g. teachers, health workers, farmers, grassroots organizations, etc), youth, elders, with efforts to ensure gender balance. Composition will vary from village to village. It is therefore, imperative that the consultation is arranged beforehand in order for the consultation group to be informed and gathered, preferably in a public building such as a school or a community centre.

The following template should be described to the community as an exercise to facilitate the identification of development priorities, taking into account environmental features, natural resources and ecosystem services, disaster zones, location of settlements and assets, changing climate patterns, key development trends and changes, among others. Information is then communicated visually through mapping exercises.



PLANNING STEPS AND WORK PRODUCTS

1. BASIC VILLAGE INFORMATION

1	Village Site location: <ul style="list-style-type: none">· Name of village· Village meeting place / and GPS coordinate· Name of Valley / District / Province
2	Date/s of community consultation / interview
3	Name of person/s facilitating consultation / interview
4	Number of people attending community consultations / interview
5	Define and identify “vulnerable” groups / households within the community to help prioritization and planning to target locally identified vulnerable people

2. EXISTING CONDITIONS MAP

A printed GIS base map of the village should be used as the foundation for this map to be developed. The **EXISTING CONDITIONS MAP** should be created using the below guidelines:

IDENTIFY AND LOCATE THE FOLLOWING MAIN FEATURES OF THE COMMUNITY:	
Physical features and main land use areas: NOTES:	<ul style="list-style-type: none"> - Streams, Springs and Wetlands - Rock outcrops (major), natural features, Outstanding views and vistas - Agricultural land, rain-fed agriculture land and Rangeland and pasture for livestock - Human settlements - Woodland, forest or plantations
Important sites socially, culturally or religious: NOTES:	<ul style="list-style-type: none"> - Monuments e.g. shrines and mosques - Village meeting areas and <i>shura</i> offices
Key community infrastructure and socio-economic assets: NOTES:	<ul style="list-style-type: none"> - Locations of <i>ailoqs</i> (summer pasture shelters) - Roads, schools, public facilities (including medical clinics, veterinary clinics etc.) - Compounds and other buildings - Crop fields, terraced walls, tree plantings (both forestry and fruit orchards) - Water reservoirs and holding ponds etc.

3. NATURAL HAZARD AND DISASTER-RISK MAP

A printed GIS base map of the village should be used as the foundation for this map to be developed. The **NATURAL HAZARD AND DISASTER RISK MAP** should be created using the below guidelines:

IDENTIFY AND LOCATE KEY HAZARDS AND DISASTER PRONE AREAS (VISIT AFTERWARD AND TAKE GPS POINTS)	
What and where are the main hazards or threats that impact the community? (Flooding, avalanche, landslide and rock falls etc.) NOTES:	<ul style="list-style-type: none"> - Mark the locations of hazards or threats - What damage and impact did the hazard or threat have on the community?
Dates of major disasters and how often do they occur? NOTES:	<ul style="list-style-type: none"> - Mark the date of the last major incident for each disaster/hazard? - How often does each disaster/hazard take place?
What are the hazard impacts? Social, economic, environmental, etc. NOTES:	<ul style="list-style-type: none"> - Mark the types of impact that each disaster/hazard has on the community.

4. EXERCISE: HISTORIC CONDITIONS AND COMPARISON

The participants should be asked to think back to a significant period of time (around 20 years/ one generation previous to the present time) to which they can accurately remember the village conditions at the time and questions should be asked in order to compare both time periods.

By including the community in this comparison, the key changes in the community can be identified as well as the drivers of change, consequences of the change and the priorities they now have for moving forward.

THE FOLLOWING QUESTIONS SHOULD BE ASKED OF THE **EXISTING CONDITIONS MAP**:

- 1 What are the main changes observed with respect to the physical features and main land use areas in the community?
- 2 What are the main changes observed with respect to the important social, cultural or religious sites in the community?
- 3 What are the main changes observed with respect to the key community infrastructure and socio-economic assets in the community?
- 4 What are the differences in the human effort needed for collection of fuel wood and water in past and present?
- 5 What are the main driving factors of the changes identified in questions 1-4 above? Are these internally or externally driven changes?

THE FOLLOWING QUESTIONS SHOULD BE ASKED OF THE **NATURAL HAZARD AND DISASTER-RISK MAP**:

- 1 What are the main changes observed with respect to the hazards and natural disasters impacting the community?
- 2 What are the main driving factors of the changes identified in question 1 above? Are these internally or externally driven changes?

5. PHOTO REFERENCE MAP

This section should be integrated into the previous **EXISTING CONDITIONS MAP** and **NATURAL HAZARD AND DISASTER RISK MAP**. The photographs should be used to support what is being recorded in these maps.

PHOTOS SHOULD BE TAKEN OF:

- Hazard and disaster prone areas
- Areas most impacted by floods
- Known avalanche areas
- Proposed sites for environmental interventions
- Special scenic viewing locations
- Existing environmental projects implemented by other agencies and organisations

The photo should be referenced with a number and should include an arrow which shows the direction where the reference photo was taken. The photographs should also have descriptive captions describing the picture.



Example:
Photo 23 looking in
direction of the arrow.

6. REPORT: RAPID ASSESSMENT

(CAN BE CREATED SIMULTANEOUSLY WITH THE EXISTING CONDITIONS MAP)

A short report should be created that includes information from the questions below. These questions should be addressed to the community. However, some questions will also require additional information from the facilitator.

1 ASSESSMENT OF MAIN LIVELIHOODS AND SOURCES OF INCOME

- a. Predominant agricultural crops
- b. Economic activities conducted by women
- c. Economic activities conducted by men
- d. What are the impacts of livelihoods/livelihood practices on environment or natural resources positive and negative?
- e. What are the significant changes with respect to the main types of livelihoods from past (e.g. 20 years) to present? What are the reasons for these changes? How is this impacting the environment/natural resource use?
- f. Are there any links between livelihoods/livelihood practices/land-use and hazard occurrence/hazard and disaster impacts?

2 ASSESSMENT OF DISASTER PREPAREDNESS AND RESILIENCE

- a. What actions do people take to anticipate and to prepare for disasters e.g. flooding, avalanche and drought etc.?
- b. What actions are taken to prevent disasters from occurring, to reduce impacts?
- c. What types of early warning systems are in place at community level, how are people warned about potential disasters/hazard events?
- d. Are there differences between men and women in the way they receive early warning /notification and prepare and cope with disasters?

3 ASSESSING "SOCIAL CAPITAL" / COMMUNITY-BASED INSTITUTIONS AND ACTIVITIES

- a. Are there any local/community-based organizations/institutional structures? What is their composition and their main function/roles/responsibilities?
- b. Are there existing environmental, DRR, climate change, women's programmes/initiatives etc.? Who is involved? What is their status?
- c. To what extent are vulnerable groups/sectors targeted and involved in the activities mentioned in last question?

4 ASSESSING/IDENTIFYING COMMUNITY CONCERNS AND PRIORITIES

This exercise should be guided by the facilitator based on the assessment of the above questions and responses. A large village wish-list is not the desired outcome of this exercise but solutions and projects outside of COAM/NEPA current scope of work can still be recorded and suggested to appropriate partner organisations.

- a. Based on the above assessments, discuss and identify local development priorities (with respect to livelihoods, village development, disaster risk reduction, and improving resilience to disasters)

7. VILLAGE GREEN AND RESILIENT DEVELOPMENT MAP

A printed GIS base map of the village should be used as the foundation for this map to be developed.

The **VILLAGE GREEN AND RESILIENT DEVELOPMENT MAP** should be created based upon all the maps developed and information gathered from interviewing the community, such as:

- Current trends that have been noticed e.g. population growth, new cash crops being planted (Where? More water and land needed?), more livestock investment etc.
- Key drivers of development and disasters that have been identified and may continue to impact village development. For example if population growth is a major driver of change, then it is likely that there will be further population growth in the area and therefore it is important to plan land-use appropriately in a sustainable way as well as in a disaster resilient manner. E.g. locating people and infrastructure away from hazard prone areas.

The Map should now be created using the below guidelines:

- 1 Identify and locate key critical natural resources needed to sustain and support development needs of community .e.g. water, land, fuel wood, etc.
- 2 List/design a map or plan showing recommended projects and actions to meet the above development priorities that have been cross referenced and integrated with priorities identified by the community.

8. SUMMARY TABLE

Fill out the summary table to present the green and resilient village development plan in a snapshot.

Challenges identified by the community	Priorities determined by community	Strategies to address the challenges identified as priorities in a sustainable and resilient way	Plans and projects to convert strategies into actions: 1. Activities 2. Timeframe 3. Description 4. Costs and source of funding 5. Other resource requirements and how they would be met
e.g. Bad conditions of the road that connects the village to Bamyán Center	e.g. building a new road	e.g. 1. Training on hazard-safe road construction using green technology/ eco-tech methods 2. Road should be built away from identified avalanche-prone slopes. Possible safe locations are marked on the map	e.g. 1. district level funding on infrastructure with XX\$ funding over XX years

9. REPORT: VILLAGE MANAGEMENT PLAN

This section should be developed using all of the information from the maps and reports developed thus far. This report can be joined with the **VILLAGE DEVELOPMENT MAP** to create an overall **VILLAGE DEVELOPMENT PLAN**.

- 1 The short report should include the following baseline information:
- 2 Introduction – set the scene with a brief record of events and village facts
- 3 Village map and location in Koh-e Baba
- 4 Key people (CDC, CEO, Ministry and NGO's working in area and their activities)
- 5 Results of baseline assessment: Key livelihood and development trends, status and trends of natural resources, status and trends of main hazards, social/community capital and development opportunities (positive tone)
- 6 Problems, issues and challenges
- 7 Actions to be taken (solutions) (what, where, who, when and how much \$)
- 8 Project management forms, accounts, etc. (kept for internal records)
- 9 Representative village photograph

10. FINAL STEPS

- 1 All maps created with the community, the **EXISTING CONDITIONS MAP**, the **NATURAL HAZARD AND DISASTER-RISK MAP** should be digitalised and produced in both English and Dari and presented to the community for review. The maps should then be ideally displayed in a public building, community centre or village notice-board for public viewing and use.

Additional items could be attached to the maps, such as:

- Photos with notes
- Reference photos of similar work elsewhere
- Sketches of eco-tech methods for planned interventions

- 2 The final **VILLAGE MANAGEMENT PLAN** should also be digitalised and presented to the *Shura* (or CDC) for discussion. The *Shura* (CDC) must approve and sign the final **VILLAGE MANAGEMENT PLAN** before beginning projects.

Again additional items could be attached to the map, such as:

- Photos with notes
- Reference photos of similar work elsewhere
- Sketches of eco-tech methods for planned interventions

ANNEX 2. ACRONYMS AND ABBREVIATIONS

3D	Three dimensional	M	Meters
ANDMA	Afghanistan National Disaster Management Authority	MADERA	Mission d'Aide au Développement des Economies Rurales d'Afghanistan
ARC	Afghanistan Resilience Consortium	MAIL	Ministry of Agriculture, Irrigation and Livestock
CBNRM	Community-based Natural Resource Management	MEW	Ministry of Energy and Water
CCA	Climate Change Adaptation	MoHE	Ministry of Higher Education
CDC	Community Development Council	MRRD	Ministry of Rural Rehabilitation and Development
COAM	Conservation Organization for Afghanistan Mountain Areas	NAPA	National Adaption Programme of Action
CoP	Conference of the Parties	NDMC	National Disaster Management Commission
DAIL	Directorate of Agriculture, Irrigation, and Livestock	NDMP	National Disaster Management Plan
DDMC's	District- Level Disaster Management Committees	NEPA	National Environmental Protection Agency
DIFD	Department for International Development of the United Kingdom	NGO	Non-Governmental Organization
DoWA	Department of Women's Affaires	NSP	National Solidarity Programme
DRC	Democratic Republic of the Congo	OCHA	United Nations Office for the Coordination of Humanitarian Affairs
DRR	Disaster Risk Reduction	OHCHR	Office of the United Nations High Commissioner for Human Rights
DRRP	National Disaster Risk Reduction Plan	PDMC	Provincial Level Disaster Management Committees
DSM	Digital Service Model	PEDRR	Partnership for Environment and Disaster Risk Reduction
EbA	Ecosystem-based Adaptation	SDC	Swiss Agency for Development and Cooperation
EC	European Commission	SFDRR	Sendai Framework for Disaster Risk Reduction
Eco-DRR	Ecosystem-based Disaster Risk Reduction	SNAP	Strategic National Adaptation Plan
EM-DAT	Emergency Events Database	SOP	Standard Operating Procedures
ESA	European Space Agency	SRACAD	Strengthening the Resilience of Afghanistan's Vulnerable Communities against Natural Disasters
EWS	Early Warning System	UK	United Kingdom
FAO	Food and Agriculture Organization of the United Nations	UN	United Nations
FSAC	Food Security and Agriculture Cluster	UNAMA	United Nations Assistance Mission in Afghanistan
GEF	Global Environment Facility	UNDP	United Nations Development Programme
GDP	Gross Domestic Product	UNEP	United Nations Environment Programme
G-ECO-MON	Geographic Ecosystem Monitoring and Assessment Service	UNESCO	United Nations Educational, Scientific and Cultural Organisation
GIS	Geographic Information System	UNFCCC	United Nations Framework Convention on Climate Change
GPS	Global Positioning System	UNISDR	United Nations International Strategy for Disaster Reduction
ha	Hectares	UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
HFA	Hyogo Framework for Action	UNOPS	United Nations Office for Project Services
INDC	Intended Nationally Determined Contribution	US	United States
IPCC	Intergovernmental Panel on Climate Change	USD	United States Dollar
IUCN	International Union for the Conservation of Nature	USLE	Universal Soil Loss Equation
Kg	Kilograms	WFP	World Food Programme
Km²	Square Kilometers		
Km	Kilometers		
KOMP SAT	South Korean Multi-purpose Satellite		
LULC	Land Use and Land Cover		
M²	Square Meters		

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Wheat farming is an important source of livelihoods in Bamyan
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