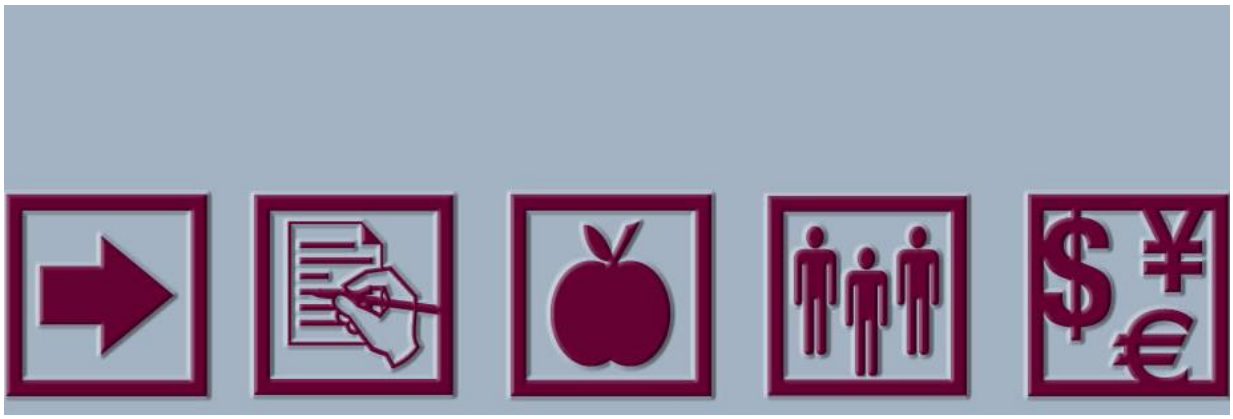

Resource Documents Guide

Upgrading Value Chains towards Climate Change Adaptation and Mitigation

ValueLinks

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

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March 2023

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1 Introduction

Value chain (VC) promotion is a key concept of development cooperation which is widely applied in the agriculture sector and facing growing needs of climate change adaptation and mitigation:

- On the one hand, agriculture and food value chains often cause negative impact on the environment and climate, contributing to increased greenhouse gas emissions, pollution and water scarcity as well as deforestation and reduced biodiversity. In times of growing concerns about climate change, adapted value chain promotion strategies are needed that contribute to mitigating negative effects on the environment.
- On the other hand, the impact of climate change (CC) on agriculture and food value chains is becoming increasingly noticeable. Unpredictable weather patterns, extreme temperatures, natural disasters, and the spread of pests and diseases are causing significant losses in crops and income, resulting in higher levels of hunger. To combat these effects, it is essential to integrate climate change adaptation strategies into the promotion of agricultural value chains.

Table 1: Agricultural value chains and climate change

Agricultural value chains may…		
…cause negative impact on the environment and cause CC (1)	**… be affected by climate change and environmental degradation (2)**	**… contribute positively to climate and environment (3)**
• Carbon/GHG emissions • Wasteful energy and water consumption • Pollution (water/air/soil) • Reduced biodiversity • Deforestation • Increased soil erosion	• Increasing temperature • Changing/less predictable rainfall • Natural disasters (drought, floods) • Increasing pests and diseases • Increased/reduced CO2 fertilization • Climate migration	• Carbon offsetting • Renewable energy • Pollination • Agroforestry
VC strategies: CC mitigation (e.g. circular economy measures) and reduction of negative environmental impact)	**VC strategies: CC adaptation (e.g. Climate-Smart Agriculture, climate information services, climate standards, Eco-system-based Adaptation)**	

In order to help value chain promotion projects to align interventions better to climate change adaptation and mitigation, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) mbH developed specific training content in 2022 to be included in its ValueLinks methodology in the framework of the Sector Network Natural Resources and Rural Development Asia/Pacific (*SNRD Asia/Pacific) Task Force on Climate-Smart Agricultural Value Chains*.

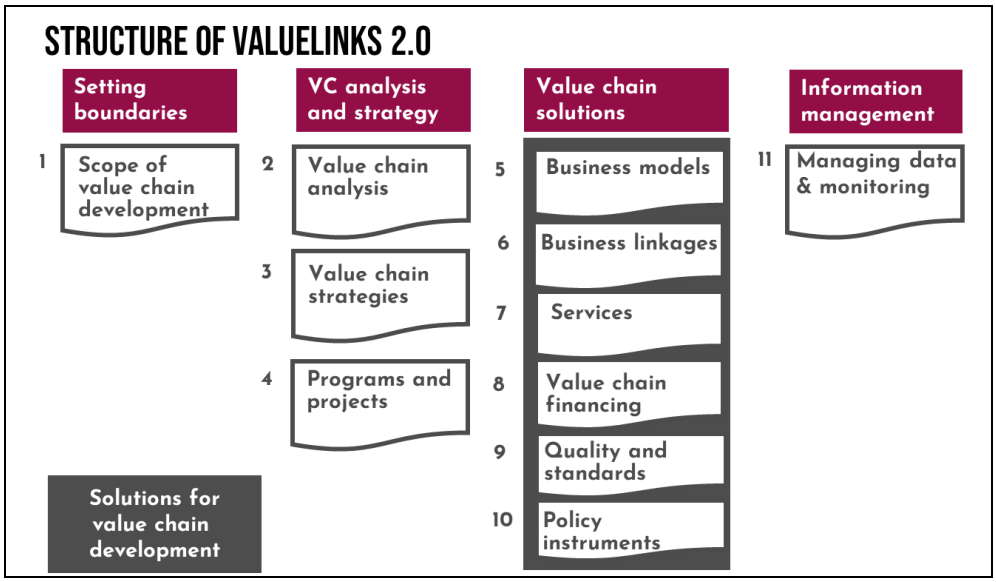
The present resource documents guide on climate change adaptation and mitigation in agricultural value chains provides an overview for selected reading and links to find further detailed information.

2 ValueLinks and general documents

GIZ (2018), ValueLinks 2.0 Manual

The ValueLinks 2.0 Manual (volumes I and II) provides a comprehensive overview on ValueLinks, the methodology developed by GIZ for value chain promotion applied in many VC projects. It is the key resource document for GIZ value chain promotion projects and includes detailed chapters on environmental analysis of value chains and a toolbox of solutions for value chain upgrading.
https://www.valuelinks.org/material/manual/

Table 2: The structure of ValueLinks 2.0



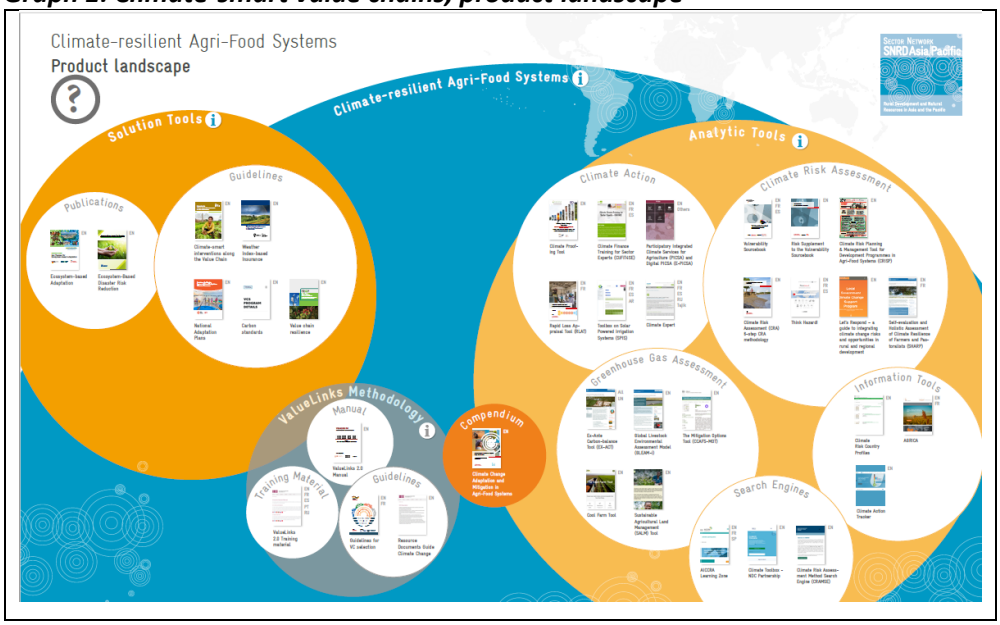
International ValueLinks Association e.V. (2023), ValueLinks 2.0 Training Material

The complete set of ValueLinks 2.0 training material is available in form of PDF files on the ValueLinks website. It presents essential elements of VC analysis and promotion according to the 11 modules of ValueLinks
https://www.valuelinks.org/material/materials/

GIZ (2023), Climate Change Adaptation and Mitigation in Agri-Food Systems

The compendium offers extensive insights on analytical tools crucial for climate change adaptation and mitigation in value chain projects. It serves as a key resource for understanding the intersection of climate change and value chains and provides quick access to relevant tools via a summarized product landscape.
https://www.adaptationcommunity.net/wp-content/uploads/2023/03/Adaptation-Mitigation-Agri-Food-Systems-Compendium-Analytic-Tools.pdf

Graph 1: Climate-smart value chains, product landscape

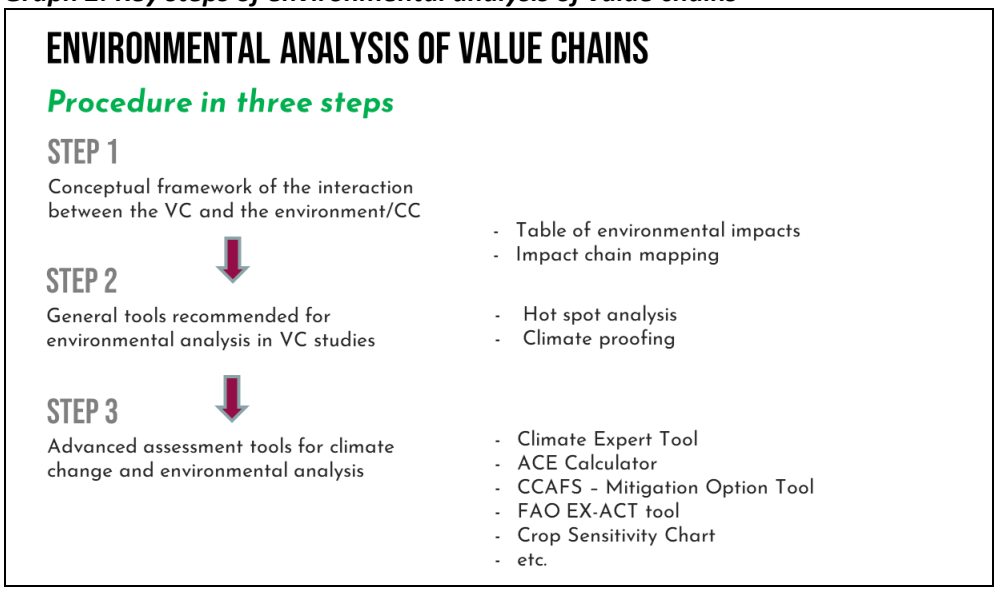


3 Climate change related value chain analysis

3.1. Overview

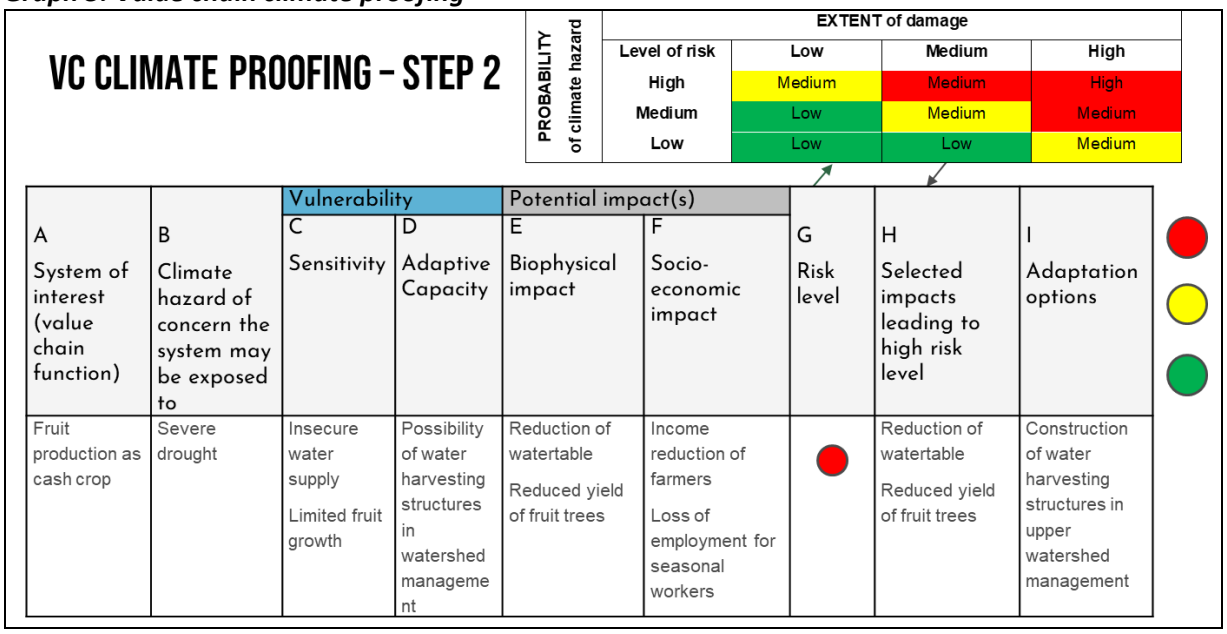
The climate change aspect is considered under the framework of a broader environmental analysis of VCs. The different tools used for an in-depth climate analysis may offer either qualitative or quantitative information, depending on the needs of each user. ValueLinks suggests a 3-step approach: first, establishing a conceptual connection between value chains and the environment/climate change; second, providing an overview of qualitative information tools; and third, offering advanced assessment tools for climate change that are tailored to user needs and time constraints, with a focus on quantitative information

Graph 2: Key steps of environmental analysis of value chains



The approach leverages existing tools, adapted to meet didactic and practical requirements. The climate proofing tool was modified to reflect the concepts of value chain mapping and climate change analysis used by ValueLinks (integrating climate change into development planning). This results in a matrix that considers both strategic considerations and concrete measures for implementation.

Graph 3: Value chain climate proofing



3.2. General documents

OECD (2011), Integrating Climate Change Adaptation into Development Co-operation

This document is a reference for identifying climate risks and adaptation options. The ValueLinks training materials adapted the step-by-step approach in the context of a value chain analysis through the climate proofing tool.
https://www.oecd.org/dac/environment-development/45856020.pdf

GIZ (2014), The Vulnerability Sourcebook. Concept and guidelines for standardised vulnerability assessments

The GIZ Vulnerability Sourcebook offers a concept and step-by-step guidelines for standardized assessments of vulnerability to climate change. Published in 2014, it has since been widely put to use for vulnerability assessments in the framework of climate change adaptation planning from the local to the national level. In its methodology, the Vulnerability Sourcebook follows the concept of climate change vulnerability as described in the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC). Yet, in the latest Fifth Assessment Report (AR5) of the IPCC Working Group II (WGII), this concept has been replaced by the concept of risk of climate change impacts. This risk concept has been adopted from the approach and practices of risk assessment in the disaster risk reduction community.

This guideline provides a standardized approach to vulnerability assessments covering a broad range of sectors and topics (e.g. water sector, agriculture, fisheries, different ecosystems) as well as different spatial levels (community, subnational, national) and time horizons (e.g. current vulnerability or vulnerability in the medium to long term). It also offers step-by-step guidance for designing and implementing a vulnerability assessment which covers the entire life cycle of adaptation interventions, using consistent methods proven on the ground. This holistic focus on the full spectrum of adaptation measures, plans and strategies constitutes a new approach to vulnerability assessments.
https://www.adelphi.de/en/system/files/mediathek/bilder/vulnerability_sourcebook_guidelines_for_assessments_adelphi_giz_2014.pdf

GIZ and EURAC (2017), Risk Supplement to the Vulnerability Sourcebook. Guidance on how to apply the Vulnerability Sourcebook's approach with the new IPCC AR5 concept of climate risk

This Risk Supplement provides guidance on how to apply the Vulnerability Sourcebook's approach with the new IPCC AR5 concept of climate risk. It is not a stand-alone publication but should be read together with the Vulnerability Sourcebook.
https://transparency-partnership.net/system/files/document/GIZ%20EURAC_2017_Risk%20supplement%20to%20the%20vulnerability%20sourcebook.pdf

3.3. Specific tools and approaches

FAO (2022), Ex-Ante Carbon-balance Tool | EX-ACT – Guidelines

This document presents the methodology used to build the EX-Ante Carbon Balance Tool version 9 (EX-ACT). It describes in detail the main logic behind the tool, the tool structure, and the underlying equations and parameters used to calculate the carbon balance. EX-ACT is a land-use-based accounting system developed by the Food and Agriculture Organization of the United Nations (FAO) to evaluate the effects of the interventions in agriculture on greenhouse gas (GHG) emissions and carbon stock changes expressed as carbon balance. The carbon balance comprises changes in GHG emissions and carbon stock changes in the five quantifiable carbon pools: above-ground biomass, below-ground biomass, litter, deadwood and soil.
Ex-Ante Carbon balance Tool (fao.org)

FAO (2017), Ex-Ante Carbon-balance Tool (EX-ACT) – Quick Guidance

This Quick Guidance material provides the reader with an overview and explanation of the methodology, data requirements, application and final use of the Ex-Ante Carbon-balance Tool (EX-ACT). It complements the more comprehensive EX-ACT User Manual that is designed to equip users with an independent and proficient understanding in the use of the tool. The Quick Guidance is composed of two sections: Section A, Guide for decision makers (10 pp.), discusses the rationale behind the tool, its utilization and its results. Section B, Guide for tool users (8 pp.), introduces the more technical aspects of data collection, data entry and methodology.
https://www.fao.org/fileadmin/templates/ex_act/pdf/EX-ACT_quick_guidance.pdf

CGIAR/Wageningen University & Research (2021), Guidelines for calculating food supply GHG emissions with the ACE calculator

This guideline clarifies how to use the ACE calculator tool. The Agro-Chain greenhouse gas Emissions (ACE) calculator is a tool for estimating total greenhouse gas (GHG) emissions associated to a food product. It addresses the most common stages of 'linear' agro-food chains (chains for fresh and simple processed products, including canned, frozen, packaged and other minimal processed forms; the current version cannot cope with fractionation processes). The tool combines a calculation framework with datasets containing crops GHG intensities and Food Loss factors along the chain. Combined with user-definition parameters for the product-chain considered it generates an estimate for GHG emissions associated to a product when bought by a consumer. The default data that the calculator derives from the dataset may be overruled by the user if more specific data are available; this will make the calculations more case specific.
https://cgspace.cgiar.org/bitstream/handle/10568/106161/ACGE%20calculator%20guidelines.pdf?sequence=9&isAllowed=y

University of Aberdeen / CGIAR Research Program on Climate Change, Agriculture and Food Security (2015), CCAFS-Mitigation Option Tool (CCAFS-MOT) – a demo tool

This factsheet summarizes the CCAFS-Mitigation Option Tool (CCAFS-MOT), which is an Excel-based tool that brings together several empirical models to estimate greenhouse gas emissions (GHG) in rice, cropland and livestock systems and to provide information about the most effective mitigation options. This tool allows for management-relevant GHG assessments to be made with relatively little effort. Emissions estimates are in terms of total GHG emitted in kilograms of carbon dioxide equivalent per hectare (kg CO2eq ha-1) and in terms of GHG intensity, i.e. kg of carbon dioxide equivalent per unit of product (kg CO2eq kg-1). Users choose management practices. The aim of the tool is to accommodate a range of users from an introductory to advanced level, depending on objectives and issues like time, existing knowledge, or data available.
https://cgspace.cgiar.org/bitstream/handle/10568/67027/CCAFS-MOT%20rice%20example.pdf?sequence=3

GIZ (Version 2018), Climate Expert - Approach and working materials to support businesses in developing climate change adaptation strategies

This info-sheet offers an overview of the Climate Expert Tool. The Climate Expert entails a practical 4-step approach and working materials that help companies analyze climate change risks and opportunities and generate strong adaptation strategies. It was developed by the GIZ Global Program on Private Sector Adaptation to Climate Chance (PSACC). The Climate Expert approach was developed for small and medium-sized enterprises (SMEs) that are or will be affected by climate change. It also addresses consultants, experts and multipliers who want to support the private sector in adapting to climate change.
https://www.climate-expert.org/fileadmin/user_upload/GIZ_PSACC_Info_Sheet_Climate_Expert_Approach.pdf
Climate Expert: Full Company Assessment (Excel) (climate-expert.org)

GIZ (Version 2018), Climate Expert Worksheets for CCA Strategy Development

The worksheets and underlying methodology presented in this Excel tool seek to support small and medium enterprises (SMEs) in assessing climate-related risks, identifying opportunities and developing adaptation strategies. They can be used by companies independently, by consultants supporting SMEs in developing a Climate Change Adaptation (CCA) strategy, or by trainers implementing awareness raising and or strategy development workshops with companies or consultants. The methodology and worksheets have been developed within a series of projects on CCA and SME competitiveness by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and its knowledge partner adelphi on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).
https://www.climate-expert.org/fileadmin/user_upload/Climate_Expert_Excel_Worksheet_Template_Dec_2018.pdf

EURAC Research (2023 under development) Climate Risk Planning & Managing Tool for Development Programmes in the Agriculture & Food Sector

This tool is currently under development. The Climate Risk Planning & Managing Tool for Development Programmes in the Agriculture & Food Sector (CRISP) project aims to develop a climate risk tool that considers the specific characteristics of agriculture and agricultural land use systems. The tool will be freely available, quick and simple to use, interactive and web-based for use by agricultural and rural development project planners and managers. The tool will be strongly based on the impact chain method developed by the Eurac Climate and Disaster Research Group and published in the Vulnerability Sourcebook and its Risk Supplement (Zebisch et al., 2014 and GIZ and EURAC, 2017). The tool will link to a range of external tools and databases that can be used for more in-depth analysis of specific actions. The envisaged tool will provide an entry point for agricultural and rural development projects for an initial, simple and quick exploration of climate implications.
https://www.eurac.edu/en/institutes-centers/institute-for-earth-observation/projects/crisp

U.S. Agency for International Development (2009), Adapting to Coastal Climate Change: A Guidebook for Development Planners

The guidebook provides a detailed treatment of climate concerns in coastal areas. The Guidebook proposes an approach for assessing vulnerability to climate change and climate variability, developing and implementing adaptation options, and integrating options into programs, development plans, and projects at the national and local levels. It is both a tool in itself and a link to other resources to help building resiliency against the impacts of climate change in coastal areas.
https://www.crc.uri.edu/download/CoastalAdaptationGuide.pdf

Wetlands International and The Nature Conservancy (2014), Mangroves for coastal defence. Guidelines for coastal managers & policy makers

The Nature Conservancy and Wetlands International together with the University of Cambridge set out to map the current state of knowledge about the role of mangroves in coastal defense and put the different findings and views in perspective. This practical guidebook summarizes the findings of the reviews and provides practical management recommendations to coastal zone managers and policymakers. It helps the reader to assess the risk context in a target area, to define hazard-specific mangrove management interventions and to incorporate these in risk reduction strategies, climate change adaptation protocols and broader coastal development planning. Case studies provide practical examples of mangrove management approaches and references to background information, practical tools for risk assessment and mangrove management are provided throughout the book.
https://www.nature.org/media/oceansandcoasts/mangroves-for-coastal-defence.pdf

Forest Trends and the Katoomba Group (2010), Payments for Ecosystem Services: Getting Started in Marine and Coastal Ecosystems- A Primer.

This primer is designed to provide a solid understanding of what Payments for Ecosystem Services (PES) are and how PES deals work in the marine environment. It is intended for an audience interested in exploring the potential of PES — either as prospective PES sellers themselves or as staff of organizations that work directly with coastal communities or coastal and marine resource owners who may be interested in PES.
www.forest-trends.org

World Resources Institute (2008), Ecosystem Services. A Guide for Decision Makers

The guide draws on early experience in measuring and managing multiple ecosystem services to outline how to assess the services development depends on and affects, how to use scenarios to explore the future, and how to choose policies that sustain ecosystems for development. It also uses a novel approach. It tells a fictional story about a city grappling with preventing floods and providing clean water while helping the country produce and sell biofuels. The story illustrates the difficult trade-offs that policymakers face in many parts of the world: how to provide cleaner energy and jobs whilst avoiding increasing food and land prices and endangering forests and clean water.
www.wri.org

TEEB (2010), The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB.

The Economics of Ecosystems and Biodiversity (TEEB) Synthesis Report was released at the 10th meeting of the Conference of Parties to the Convention on Biological Diversity (CBD) in Nagoya, Japan in October 2010. Mainstreaming the Economics of Nature provides a synthesis of the approach, conclusions and recommendations of TEEB. It makes the case for systematic appraisal of the economic contribution of biodiversity and ecosystem services to human wellbeing; and for routine steps to prevent that contribution being lost or diminished through neglect or mismanagement. It is an appeal to each of us, whether a citizen, policy maker, local administrator, investor, entrepreneur or academics, to reflect both on the value of nature, and on the nature of value itself.
www.teebweb.org

GIZ (2014), Integrating adaptation measures into forest management

This guide presents a step-by-step approach to the design of participatory adaptation strategies in the forest sector. The approach includes three distinct phases : a) a synthesis of available scientific information and traditional knowledge on the impacts of climate change on forests and the vulnerability of the socio-ecological system at regional/local level, b) the identification and prioritization of potential adaptation measures and strategies for the specific context, and c) the integration of these measures and strategies into new or existing management plans, national forest programmes, sector strategy papers, community development plans, etc.
http://star-www.giz.de/fetch/6u46X02300ug5D00QY/giz2015-0004en-integrating-adaptation-measures.pdf

GIZ (2022), Synergies between adaptation, biodiversity and mitigation – How Ecosystem-based Adaptation can build bridges between Nationally Determined Contributions and the new Global Biodiversity Framework

This publication describes how building synergies between climate and biodiversity policies can increase the possibility of international support for implementing and upscaling ecosystem-based approaches and policies. After some general considerations on the role of Ecosystem-based Adaptation (EbA) in building bridges that bring multiple benefits for adaptation, mitigation, biodiversity, society and human well-being, the authors of the study apply this perspective to three cases (Pakistan, Jordan and Costa Rica), exploring synergies of ecosystem-based approaches in the water, agriculture and urban sectors. The paper also addresses maladaptation risks and the need

to move away from silo mentalities and towards more system thinking, always including a social justice perspective. The discussion paper closes with some recommendations by the authors' on how to move forward.
https://www.adaptationcommunity.net/wp-content/uploads/2022/10/GIZ_EbA_Synergies.pdf

GIZ (2022), Assessing the Adaptation Relevance of Businesses: A Selection of Tools

This publication aims to support "Adaptation SMEs" in communicating and marketing their adaptation and resilience impact to investors and finance providers. As a part of the growing urgency to adapt to the impacts of climate change, the role of the private sector is now more visible than ever. A growing number of companies, including small and medium enterprises (SMEs), in developed and developing countries offer products and services that support their customers to adapt to climate change. The attention of investors is also increasing and consequently, investment funds progressively started to include SMEs and their goods, services, and technologies in their portfolios. Unfortunately, adaptation businesses often fail to be identified by investors as a result of limited communication of the adaptation relevance by the solution providers.
https://www.adaptationcommunity.net/wp-content/uploads/2022/12/GIZ_PAF-Adaptation-Relevance-Tools-2.pdf

4 Climate change related value chain solutions

4.1 Overview

Value chain solutions with a focus on climate change adaptation and mitigation are structured according to the six different solution modules suggested by ValueLinks 2.0.

Table 3: Overview on VC solutions with a focus on climate change adaptation and mitigation

Climate-smart business models (VL 5)	**Climate-smart business linkages (VL 6)**	**Climate-smart services (VL 7)**
➢ Climate-smart agriculture ➢ Climate-smart processing and trading	➢ Climate-smart input supply ➢ Deforestation-free supply chains ➢ Regional marketing	➢ Climate information services ➢ CC-adapted extension services ➢ Digital and innovative technology-driven services
Climate-smart financial services (VL 8)	**Climate-smart certifications (VL 9)**	**Climate-smart policies and infrastructure (VL 10)**
➢ Sustainable finance ➢ Payments for ecosystem services ➢ Weather index-based insurance ➢ Carbon credit trade	➢ Sustainability and organic certification ➢ Climate standards, CO2 footprint	➢ Climate management laws, e.g. EU supply chain law ➢ NAPs and NDCs ➢ Ecosystem-based Adaptation (EbA) & disaster risk reduction

Relevant general resource documents recommended for reading are:

FAO/UNDO (2020), Toolkit for value chain analysis and market development integrating climate resilience and gender responsiveness

The toolkit with the focus on integrating agriculture in National Adaptation Plans has the objective to help countries in selecting and analyzing value chains for opportunities to improve climate change resilience and reduce gender inequalities; and subsequently help in identifying and prioritizing investments to promote market development in line with these opportunities. The

comprehensive toolkit is based on value promotion principles similar to ValueLinks, includes good examples of climate change-related selection criteria and a sample National Adaptation Plan of Zambia.
https://www.fao.org/policy-support/tools-and-publications/resources-details/fr/c/1333257/

IFAD (2015), How to do climate change risk assessments in value chain projects

The concise publication particularly provides a comprehensive, very good and detailed overview on climate risk issues and effective climate risk management opportunities along the value chain. The publication discusses lessons learned, how different value chain interventions can contribute to improved climate risk management and refers to different case studies from Djibouti, Lesotho, Morocco, Nicaragua, Nigeria and Rwanda.
https://www.ifad.org/documents/38714170/40195554/Climate+change+risk+assessments+in+Value+Chain+Projects/e0fd0f38-42fe-4418-beda-56aff9c8bebf

GIZ (2011), Integrating climate change into development planning

The training manual starts from the interpretation of climate data and helps to understand/ conduct vulnerability assessments. The manual suggests appropriate tools for the selection of adaptation measures.
https://www.oecd.org/dac/environment-development/45856020.pdf

4.2 Business models

FAO (2018), Climate-Smart Agriculture Case Studies 2018. Successful approaches from different regions

The FAO publication presents detailed climate-smart agriculture case studies such as climate-smart landscape-level planning in Burundi, the "re-greening" of the Sahel for farmers in Burkina Faso and Niger, the role of livestock in building resilience to climate change in Zambia, sloping agricultural land technology in coconut farming communities in the Philippines, floating gardens in Bangladesh, indigenous pig breeds for climate-smart landscapes in the western Balkans, sustainable forest management to mitigate climate change impacts in Kyrgyzstan, climates-smart agroforestry systems for the dry corridor of Central America, climate-smart mussel farming in Chile and a water scarcity initiative in the NENA region.
https://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1177071/

Partnership for Resilience and Environmental Preparedness (PREP), Value Chain Climate Resilience. A guide to managing climate impacts in companies and communities

The guide intends to help large-scale firms to mainstream climate risk management within their organization and presents several case studies of business models of lead firms for improving climate resilience in their value chains. Examples of initiatives related to developing countries include companies such as The Body Shop (climate insurance schemes for fair trade suppliers), Earth Networks (information and tools for weather-related decision making), Green Mountain Coffee Roasters (assess climate change impacts and prepare adaptation strategies), Levi Strauss & Co (supporting the Better Cotton Initiative), Starbucks (promote Coffee and Farmer Equity (C.A.F.E.) practices), Swiss Re (holistic risk management framework for poor farmers)
https://s3.amazonaws.com/oxfam-us/static/oa4/valuechainclimateresilience.pdf

Adelphi (2019), The roles of the private sector in climate change adaptation – an introduction

The short article focuses on private sector business models and adaptation measures to address resilience in a holistic manner. The publication includes an overview on different types of adaptation measures.
https://www.adelphi.de/en/publication/roles-private-sector-climate-change-adaptation-introduction

GIZ (2014), Post-harvest losses of rice in Nigeria and their ecological footprint

The study contains a life cycle assessment showing the large environmental footprint of food losses along the value chain.
https://www.fao.org/food-loss-reduction/news/detail/en/c/278140/

4.3 Business linkages

European Parliament (2022), Deforestation Regulation P9_TA(2022)0311

The European Parliament adopted a so-called "Deforestation Regulation" in September 2022 to ensure that a set of key goods placed on the EU market will no longer contribute to deforestation and forest degradation in the EU and elsewhere in the world. The regulation applies to palm oil, cattle, soy, coffee, cocoa, timber and rubber as well as derived products. Under the new rules, all relevant companies have to conduct strict due diligence if they place such products on the EU market.
https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7444

4.4 Services

Millennium Ecosystem Assessment (2005), Ecosystems and Human Well-being

The publication is a key reference document in the area of ecosystem services. Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food, water, timber, and fiber; regulating services that affect climate, floods, disease, wastes and water quality; cultural services that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling.
https://www.millenniumassessment.org/documents/document.356.aspx.pdf

4.5 Financial and insurance services

Adelphi (2019), BOTTOM-UP INNOVATION FOR ADAPTATION FINANCING - New Approaches for Financing Adaptation Challenges Developed through the Practitioner Labs Climate Finance

The recent publication presents six innovative bottom-up adaptation financing approaches from the *SEED Practitioner Labs Climate Finance* 2018 in India, Thailand and Uganda, and shares overarching learnings about challenges and solutions. The Labs facilitated the development of the following prototype solutions with a focus on small- and medium-sized enterprises (SMEs): *Mobile-Enabled Microinsurance* (Uganda), *Irrigation System Microleasing for High-Value Crops* (Uganda), *Green MSME Finance Tool* (India), *Last of Ours – Blockchain-based Conservation Fund* (Thailand), *Global Mangrove Trust – A Blockchain-based Conservation Finance Incentive* (Thailand), *Smart-Irrigation-as-a-Service Vehicle* (Thailand).
https://www.adaptationcommunity.net/publications-filter/?_sft_topics=private-sector-adaptation

WFP/IFAD (2011), Weather Index-based Insurance in Agricultural Development – A Technical Guide

The publication is a technical guide presenting concepts and characteristics of weather index-based insurances with a road map of assessing the potential and setting up insurance schemes
https://www.ifad.org/documents/38714170/40239486/Weather+Index-based+Insurance+in+agricultural+development+a+technical+guide.pdf/1bc46353-bfbd-4ae9-8446-28da834e0124?t=1522060392000

Cavanagh et al. (2020), Agency, inequality, and additionality: contested assemblages of agricultural carbon finance in western Kenya

The article presents a case study of a high-profile agricultural carbon finance initiative in Kenya, the Kenya Agricultural Carbon Project launched in 2009, and concludes that carbon payments received by smallholder farmers are very low and not helpful for reducing poverty.
https://journals.scholarsportal.info/browse/03066150/v48i0006

Cordaid Rwanda (2022), Climate Resilient and Agri-finance

The conference proceedings and background reader of a 2022 conference in Kigali, organized in cooperation with Rabobank, provides a very good overview on climate funding opportunities, adaptation funds, climate-smart lending platforms, carbon credit trading platforms and examples of Nationally Determined Contributions.
https://www.rfilc.org/library/climate-resilient-and-agrifinance-conference-proceeds-and/

4.6 Standards

Verra (2022), Verified Carbon Standard Program Details

The Verified Carbon Standard (VCS) Program is the world's most widely used greenhouse gas (GHG) crediting program: Once projects have been certified against the VCS Program's rigorous set of rules and requirements, project developers can be issued tradable GHG credits called Verified Carbon Units (VCUs). Individual projects and jurisdictional programs can be registered under the VCS program and are issued unique carbon credits. The website defines the rules and requirements and provides an overview on related standards.
https://verra.org/programs/verified-carbon-standard/vcs-program-details/

The Gold Standard Foundation (2022), Standard Documents

Gold Standard for the Global Goals is a next-generation standard, designed to accelerate progress toward climate security and sustainable development. The standard enables initiatives to quantify, certify and maximize their impacts toward climate security and the Sustainable Development Goals, while enhanced safeguards, holistic project design, management of trade-offs and local stakeholder engagement ensure Gold Standard continues to deliver the highest levels of environmental and social integrity.
https://www.goldstandard.org/project-developers/standard-documents

4.7 Policy

NAP Global Network/GIZ (2019), Engaging the Private Sector in National Adaptation Planning Processes

The publication offers guidance to governments and their partners on how to engage the private sector in National Adaptation Plan processes. It provides examples of instances where the private sector has successfully engaged with the NAP process, as well as with climate change adaptation more broadly.
https://napglobalnetwork.org/wp-content/uploads/2019/04/napgn-en-2019-engaging-the-private-sector-in-national-adaptation-planning-processes.pdf

UNFCCC (2020), Pocket Guide to NDCs under the UNFCCC

The pocket guide is the key reference framework document for Nationally Determined Contributions (NDC). It explains the nature, history and key features of NDCs starting from the Paris Agreement.
https://unepccc.org/wp-content/uploads/2020/06/2020-pocket-guide-to-ndcs.pdf

GIZ (2022), Solutions in Focus - Key Themes for Ecosystem-based Adaptation

Ecosystem-based Adaptation (EbA) means using biodiversity and services provided by ecosystems to help people adapt to the effects of climate change. It builds on healthy ecosystems, and thus

requires managing the ecosystems for their long-term benefits. The GIZ publication showcases a selection of EbA solutions applied in different settings and focuses on aspects and themes important for the longevity of EbAs. Examples of EbA solutions discussed include Ecosystem-based Adaptation in river basin planning in Thailand, water stewardship initiatives in Thailand, integrated land use and water management in Mexica, restoring Morocco's biodiversity through agroforestry, building resilient communities in dryland areas of Ethiopia, forest landscape restoration and improved natural resource management in Cameroon etc. including actions that link smallholders with profitable value chains, markets, and financial services to improve income.
https://www.adaptationcommunity.net/publications/solutions-in-focus-key-themes-for-ecosystem-based-adaptation/

UNDRR (2020), Ecosystem-Based Disaster Risk Reduction: Implementing Nature-Based solutions for Resilience

The publication provides a good overview on different ecosystem-based approaches and shows how to integrate Nature-based solutions into policies, plans and programs.
https://www.undrr.org/publication/ecosystem-based-disaster-risk-reduction-implementing-nature-based-solutions-0

The United Nations Framework Convention on Climate Change

The main website for any documents related to the UNFCCC process (e.g. the Kyoto Protocol, Bali Road Map, Cancun Agreements/NAPs, Durban Outcomes, Doha Climate Gateway, Warsaw Outcomes, Paris Agreement/NDCs). This is also the place to look for national reports/communications.
http://unfcc.int/2860.php

Climate Change Adaptation (CCA)

The website of the UNFCCC is the main source of official information related to climate change adaptation, followed by the platform "adaptation community", which provides information, online sessions and trainings on applying approaches, methods and tools that facilitate the planning and implementation of adaptation action, including climate services, climate risk management, national adaptation plan (NAP) process, ecosystem-based adaptation (EbA), climate change and migration, private sector adaptation and Monitoring and Evaluation (M&E).
http://unfccc.int/adaptation/items/4159.php or https://www.adaptationcommunity.net/

Nationally Determined Contributions (NDCs)

The NDC Partnership's Knowledge Portal helps countries to accelerate climate action by providing quick and easy access to data, tools, guidance, good practice, and funding opportunities. Whether interested in reducing emissions or adapting to the impacts of climate change, the Knowledge Portal draws together the most relevant resources from partners and other leading institutions.
https://ndcpartnership.org/