Adaptation, Agriculture and food security (FAO)

LEAST DEVELOPED COUNTRIES EXPERT GROUP (LEG)
Regional training workshop on adaptation for the Asian LDCs
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Rome, Italy

Content

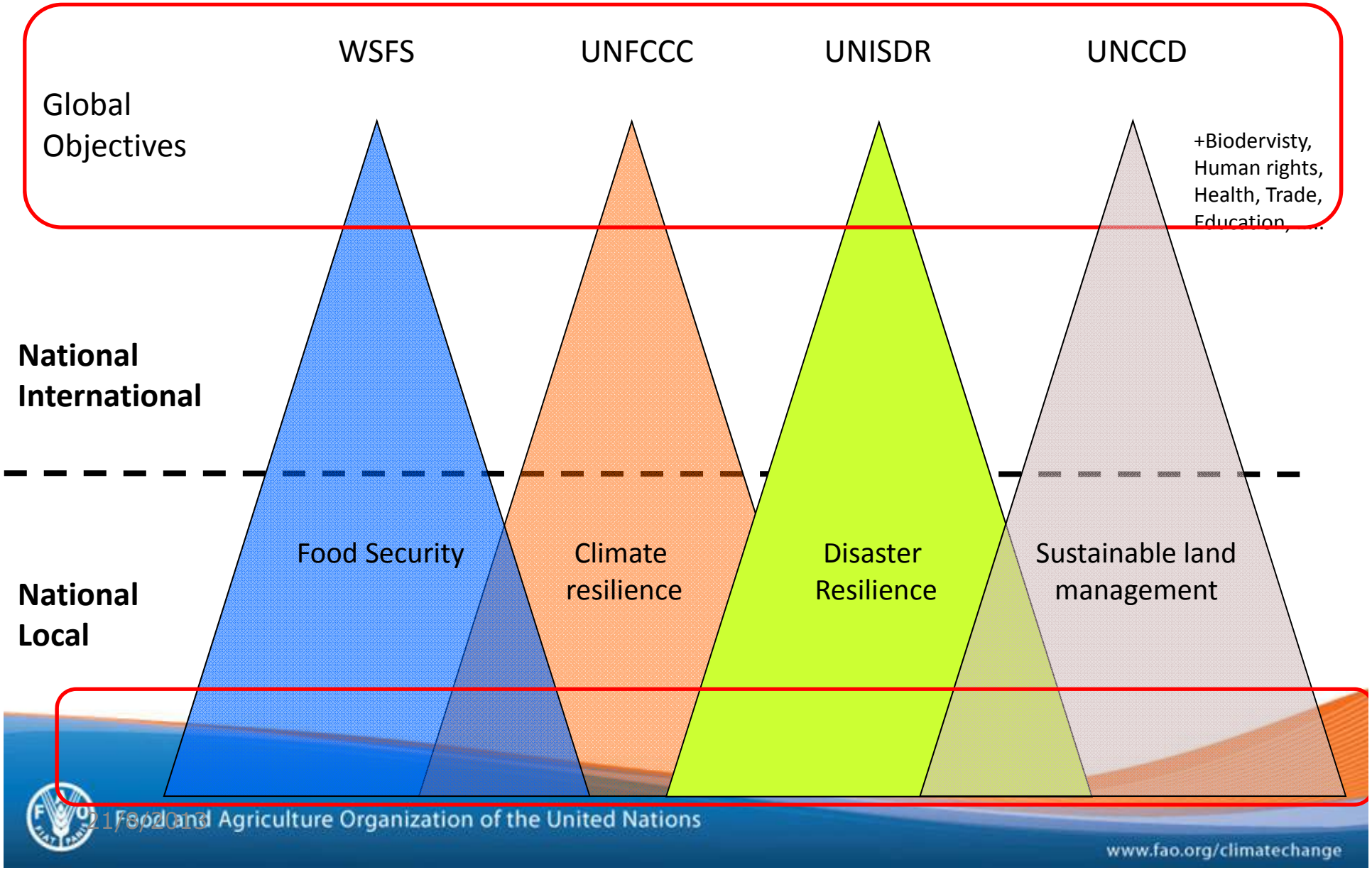
- Climate Change Adaptation, DRR, Agriculture and Food and nutrition security,
  - CSA, FAO adapt and DRR framework
- Some examples from Agriculture
  - Adaptation options in Ag
  - Adaptation options in FI and Aq

Two major challenges of our Time

1. Achieving Food Security
   - 870 million hungry
   - Food production must increase 60% by 2050
   - Adapting to Climate Change is crucial for Food Security

2. Addressing Climate Change
   - ”2 degree goal” requires major emission cuts
   - Agriculture and land use = 30% of emissions
   - Agriculture needs to be part of the solution
   - **CCA & DRR crucial for Sustainable Agriculture and Food Security**

International to local



Climate-Smart Agriculture

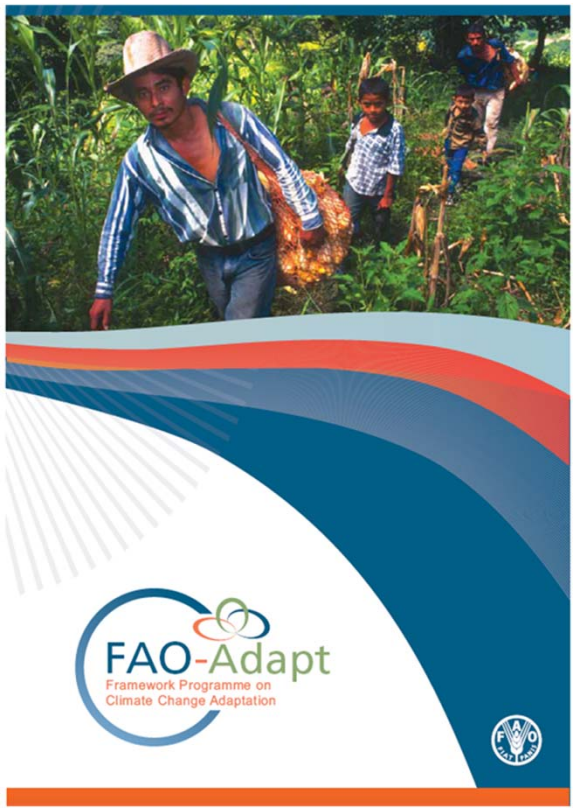
Agriculture that sustainably:

- increases productivity
- increases resilience (adaptation)
- reduces/removes GHGs

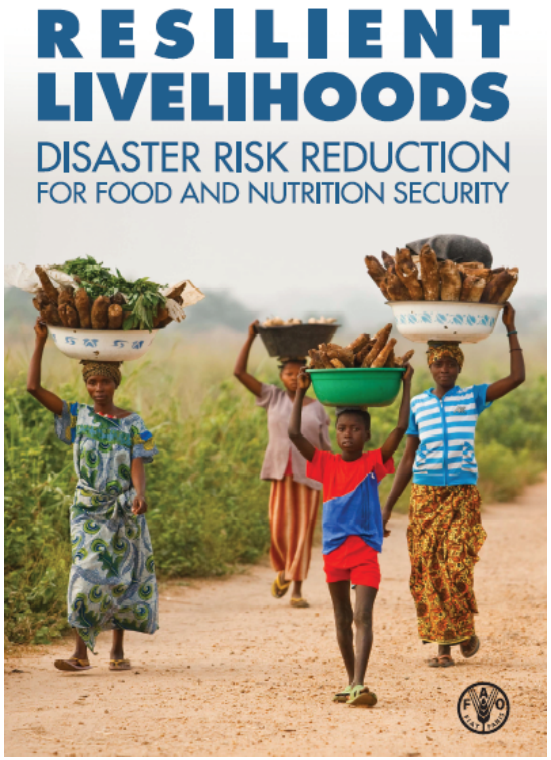
AND

- enhances achievement of national food security and development goals

FAO Frameworks for CCA & DRR

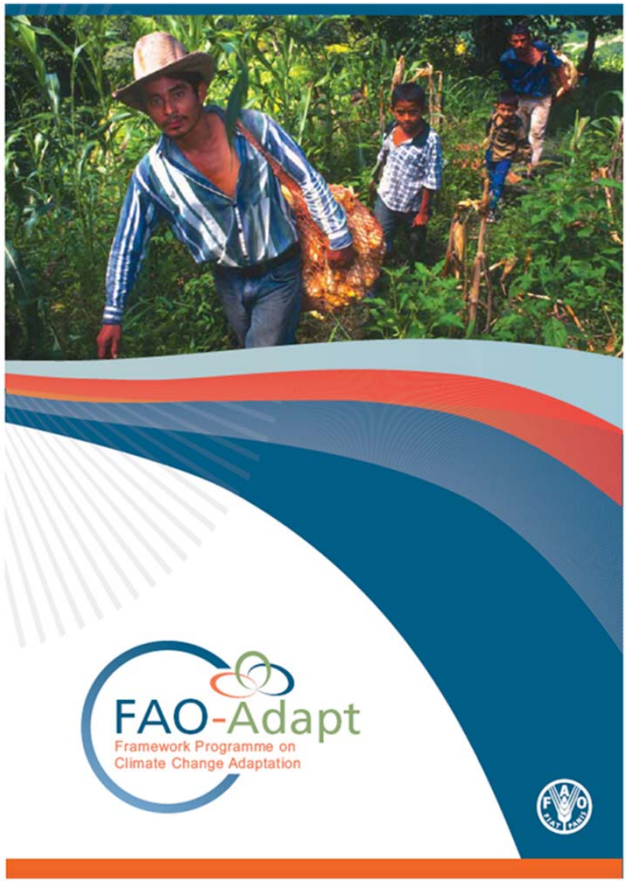


FAO-Adapt



DRR Framework Programme

Core Principles of FAO's Adaptation Work - aligned to NAPA and LDCF



- Focus on food security
- Mainstream CC into development
- Ensure country-driven processes
- Employ ecosystem-based approach
- Ensure trans-boundary collaboration
- Ensure participatory, gender-sensitive, location-specific adaptation
- Deliver through partnerships and as one UN
- Take long-term programmatic approach
- Promote synergies between adaptation, mitigation and productivity increase (climate-smart agriculture)

FAO-Adapt

•brings together FAO's entire body of **climate change adaptation work**

•catalyzes FAO's **adaptation activities** in support of its member countries

•offers the way forward for mainstreaming climate change adaptation into all FAO development activities

•aims to **enhance coordination**, capacity development and experience sharing on adaptation within FAO and among its member countries to encourage synergies and optimal resource use

•**facilitates** external & internal communication as well as resource mobilization

•**fosters partnerships** related to adaptation

•reinforces the mission **towards Climate-Smart practices**

Sourcebook and Partnership

- To address knowledge gaps and support countries in implementing climate-smart approaches
  - increase productivity & income
  - *build resilience (adaptation)*
  - reduce GHG emissions, where possible

- FAO, IFAD, UNEP, WB, WFP, UNCCD and CGIAR/CCAFS

IFAD
Enabling poor rural people to overcome poverty

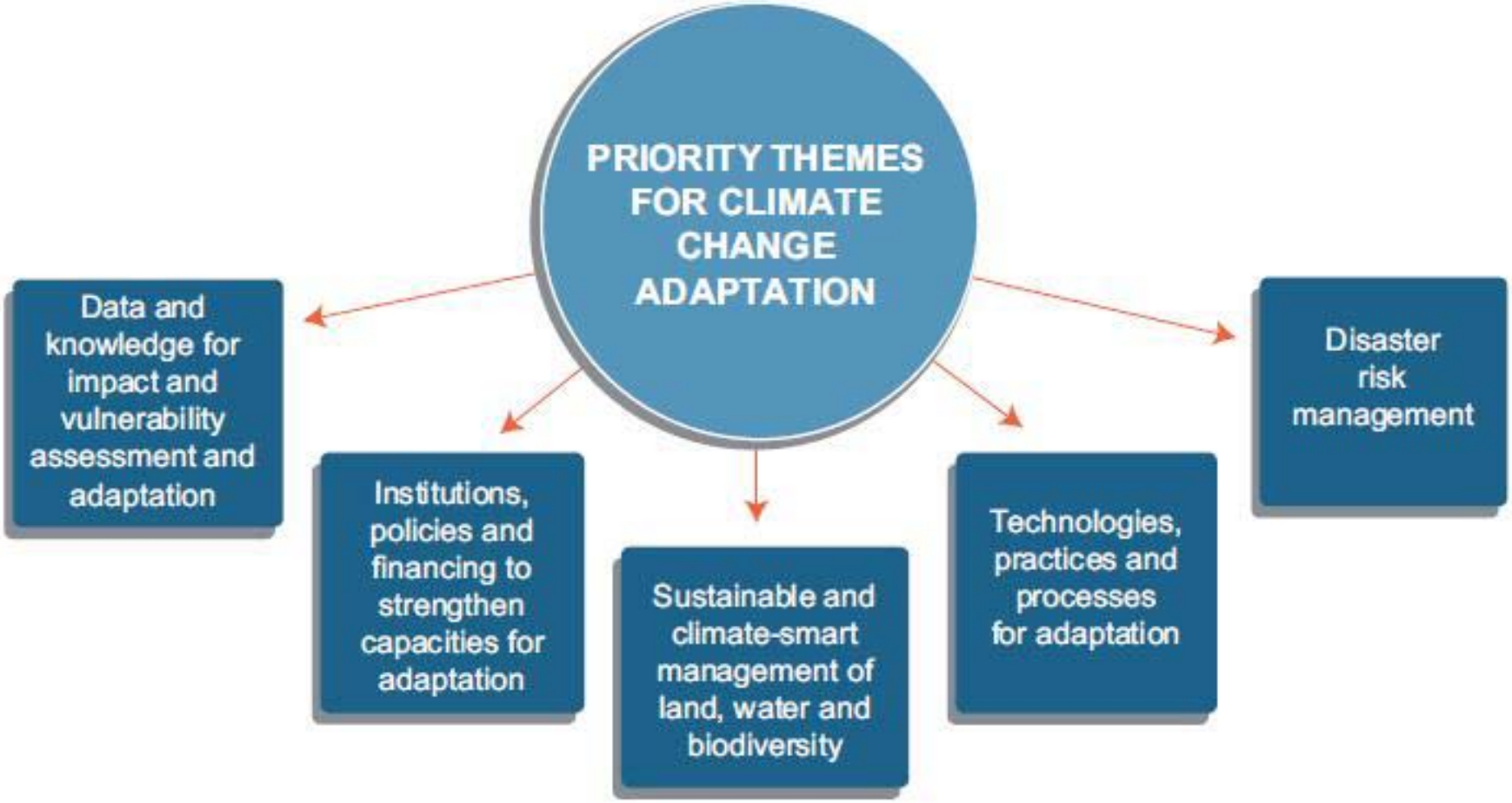
WFP
wfp.org

UNEP

THE GLOBAL MECHANISM
UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

CGIAR

FAO Medium-term Priorities for Adaptation



FAO data and information sources

- Impact data, maps, methodologies – **CLIMPAQ**

  - impacts of weather and climate on agriculture

- Technologies & practices for small producers – **TECA**

  - practical information on agricultural technologies and practices, to help small producers in the field

- Data and information on water - **AQUASTAT**

  - resources and use by country and by region Global Forest Resources Assessment – **FRA**

  - 90 variables: extent, condition, uses and values of forests, assessing all benefits from forest resources

- GHG database (crops, livestock, forestry, fisheries and land use changes) – FAOSTAT

  Promoting synergies between climate change adaptation, mitigation and development

Institutions, policies & financing

Ex. Climate change guidelines for national forest programmes and management plans

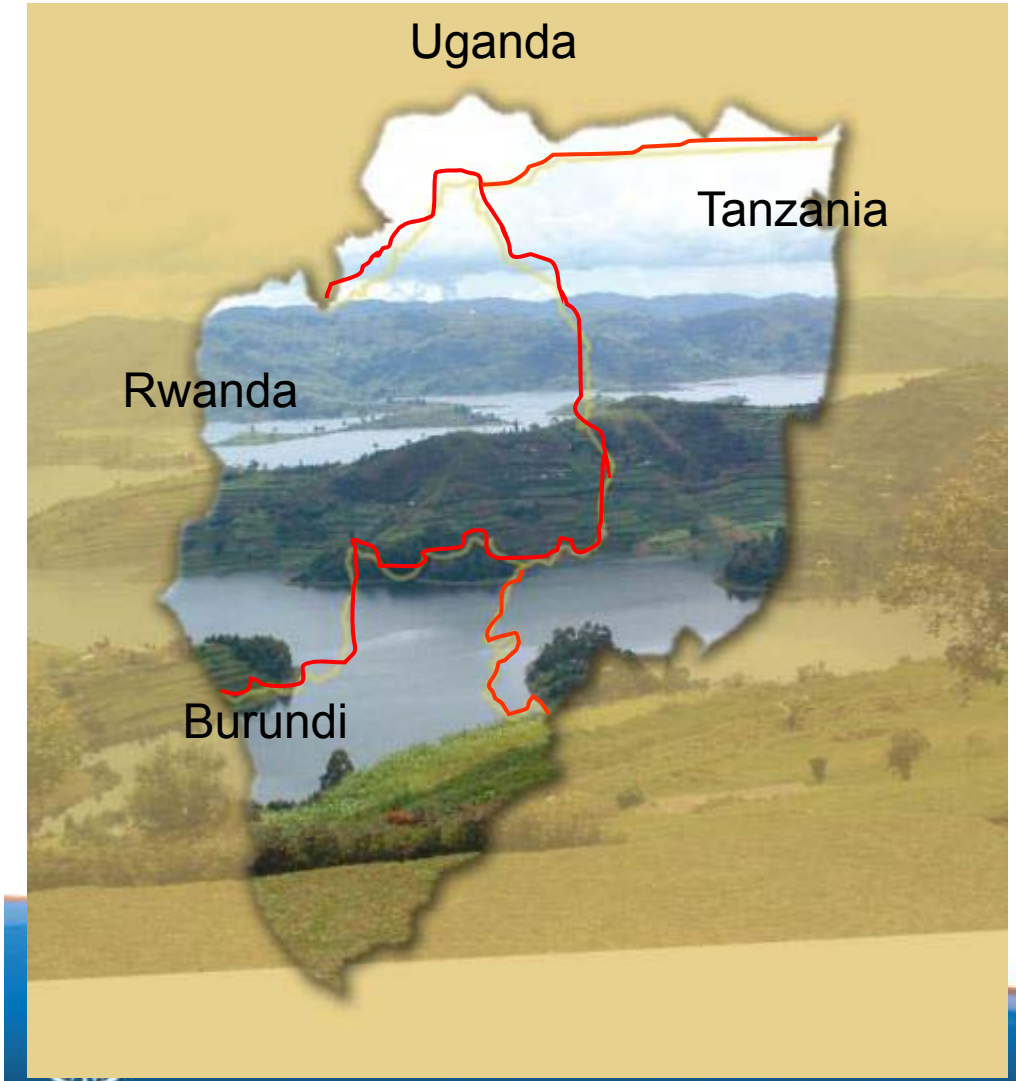
- Draw on existing knowledge of "best practice" in sustainable forest management to address new challenges and opportunities posed by climate change.

- Framework to put international agreements into practice and as the platform for addressing issues related to sustainable forest management, incl. climate change.

- http://www.fao.org/forestry/climatechange/64860/

Sustainable & climate-smart management of land, water and biodiversity

Ex. GEF/FAO Kagera Transboundary Agro-ecosystem Management Project



Goal: To adopt an integrated ecosystems approach for the management of land resources → to generate local, national and global benefits :

- restoration of degraded lands and improving productivity
- carbon sequestration and CCA
- agro-biodiversity conservation and sustainable use
- increased food security and improved rural livelihoods

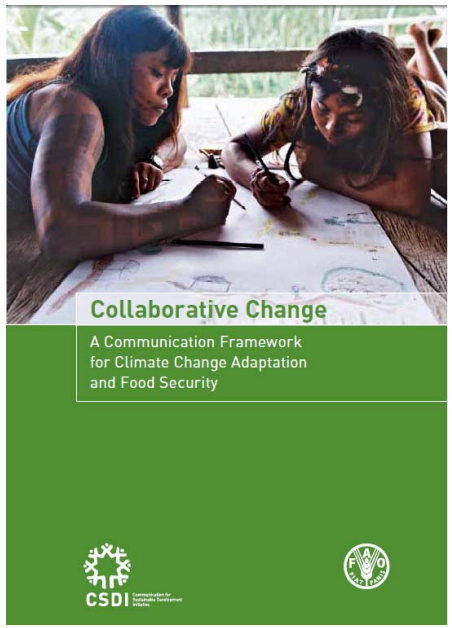
and thereby,

- contribute to the protection of international waters

http://www.fao.org/nr/kagera

Technologies, practices and processes for adaptation

Ex. CSDI: Communication for Sustainable Development Initiative, developing stakeholder-based communication strategies



promotes ComDev strategies and services in climate change adaptation and food security

- systematization of approaches and methodologies
- field project & technical assistance
- capacity development and knowledge sharing (fora, partnerships, networking)
- Pilots: Bolivia, Bangladesh, Bolivia, DR Congo

http://www.csdinitiative.org/

Disaster risk reduction

FAO DRR Framework Programme

1/ ENABLE THE ENVIRONMENT:

Institutional strengthening & good governance for DRR in agricultural sectors.

4/ BUILD RESILIENCE:

Prevention, mitigation and building resilience with technologies, approaches & practices across all agricultural sectors.

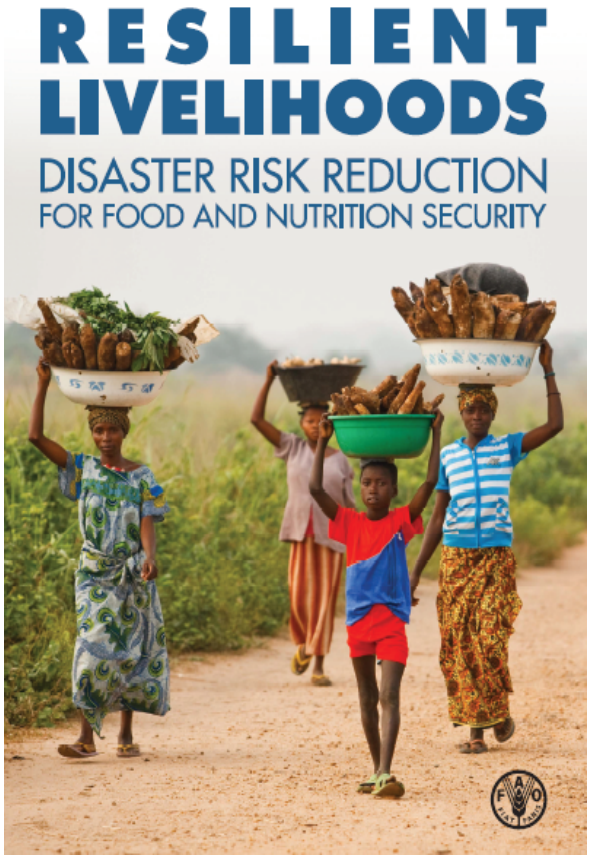
Four Integrated Thematic Pillars

2/ WATCH TO SAFEGUARD:

Information and early warning systems on food & nutrition security and trans-boundary threats.

3/ PREPARE TO RESPOND:

Preparedness for effective response & recovery in agriculture, livestock, fisheries & forestry.

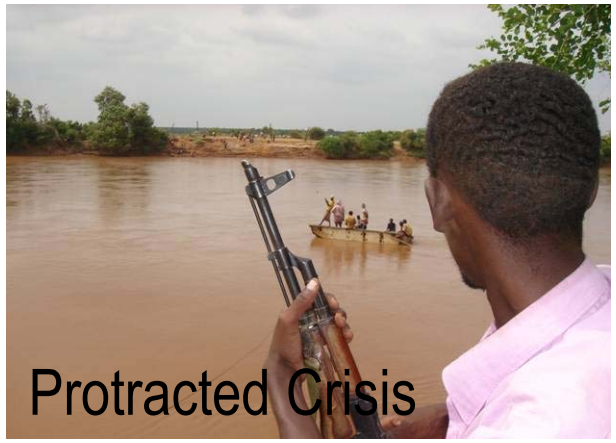


CROSS-CUTTING PRIORITIES

Knowledge, innovation & education to build a culture of resilience

Multiple Threats to Agricultural Livelihoods

DRR/M in Agriculture includes more than climate induced hazards



Climate change => will impact on all above

Build Resilience

Prevention and building resilience with technologies, approaches and practices in all agricultural sectors

Agriculture

- Conservation agriculture
- Crop diversification
- Appropriate crop selection (drought/saline/flood tolerant)
- Adjust cropping calendars
- Local seed multiplication systems

Livestock

- Fodder conservation
- Proofing of storage facilities and livestock shelters.
- Resilient animal breeding
- Pest management to cope with threats

Fisheries

- Adoption of ecosystem-based approach
- Implementation of the Code of conduct for responsible fisheries
- Sustainable livelihoods approaches/diversification
- Support to the development of financial mechanisms, such as insurance

Water

- Rainwater harvesting, conservation & storage
- Water reserves to buffer droughts

Land

- Restoration of degraded lands
- Land use/access, tenure & territorial planning
- Land and soil management

Forests

- Forest pests prevention
- Agro-forestry
- Integrated Fire Management
- Afforestation /reforestation
- Catchment area Mgt

Community–based Disaster Risk Reduction

Demand responsive intervention design : Juye (China)

- Farmers cooperatives capacitated as partners in DRR/CCA
- Early warning system and information dissemination mechanism
- Drainage and irrigation infrastructures improved
- Dissemination of newly released hazard tolerant wheat and cotton varieties
- Formulated fertilization for soil improvement
- Gender mainstreaming
- Disaster risk management plans (villages & county) developed and included into overall development planning

http://www.fao.org/climatechange/china/juye/en/

Lessons

- **Food security perspective: DRR & CCA go together;**
- **Agriculture provides opportunities to link sustainable production, adaptation and mitigation targets (climate-smart agriculture)**
- **DRR is a suitable entry point to initiate CCA processes at local levels**
- **Cross-sectoral perspective is essential; a catalyst**
- **Address DRR/CCA within bro development context;**

lessons

- Context is important "one size does not fit all"
- Implementation of EBA and sustainable NR management essential to reduce underlying risk (no-regret), xompetition for resourceses will increase
- Research, action research, R&D linkages and extension services (for poor)
- Urgent need for more reliable seasonal weather forecasting coupled with season-specific advice on crop selection and water management
- Community-based DRR and CCA are suitable to promote mainstreaming of adaptation in AG sectors Trade-offs
- Avoid "Maladaptation" , unintended consequences results in adaptation 'winners' and losers' in other areas or sectors. Need to consider impacts on communities further away in both space (other countries) and time (future)

Some examples from the fisheries and aquaculture sector

Fisheries and Aquqculture sector relevance

- Fisheries and aquaculture are of vital importance, globally 50% of animal protein and essential nutrition to 400 million people in the poorest countries and nutrition for 4 billion people worldwide. One of the most widely traded and exported food products, especially for developing countries
- Fisheries and aquaculture supply both directly and indirectly livelihoods to over 500 million people
- Significant impacts for the sector from CC

Adaptation in Large Marine Ecosystems

- Large Marine Ecosystems (LME)
  - Ecosystem based approaches
  - Large areas of ocean space next to continents where primary productivity is greater than in open oceans
  - About 80% of worlds fisheries catch comes from LMEs
- Variety of habitats and socioeconomic contexts in each LME

1 Bay of Bengal

- Pond excavation
- Locally available species
- Individual loan support
- Small-scale homestead pens
- Trap pond management

Tilapia in Bangladesh

Bay of Bengal

Fish pond after flooding in Bangladesh. Fish were lost and the pond was filled with trees and other debris.

Fencing a pond for flood management in Bangladesh

2. Gulf of Thailand

- Large scale collaborative initiatives
  - Climate Change and Adaptation Initiative (CCAI)
    - Coordinated by the Mekong River Commission
    - Pilot demonstration sites in each country
      - Adaptive management, local knowledge and scaling up from local level
    - Awareness raising and outreach
      - CCAI support for adaption plan development – mentoring, learning exchanges and training manuals
      - Posters, cartoons in local languages
  - 'Sister Rivers'
    - Mekong-Mississippi
    - Share flood plain management and development lessons learned, planning efforts and technical capacities

3. Small Island developing States (SIDS)

- Rural Community Climate Change Adaptation
  - Pilot communities
  - Participatory vulnerability assessments and adaptation planning

Navukailagi Village, Fiji. Short and long term coastal erosion and inundation addressed via groyne and mangrove planting. *SOURCE: USP PACE-SD*

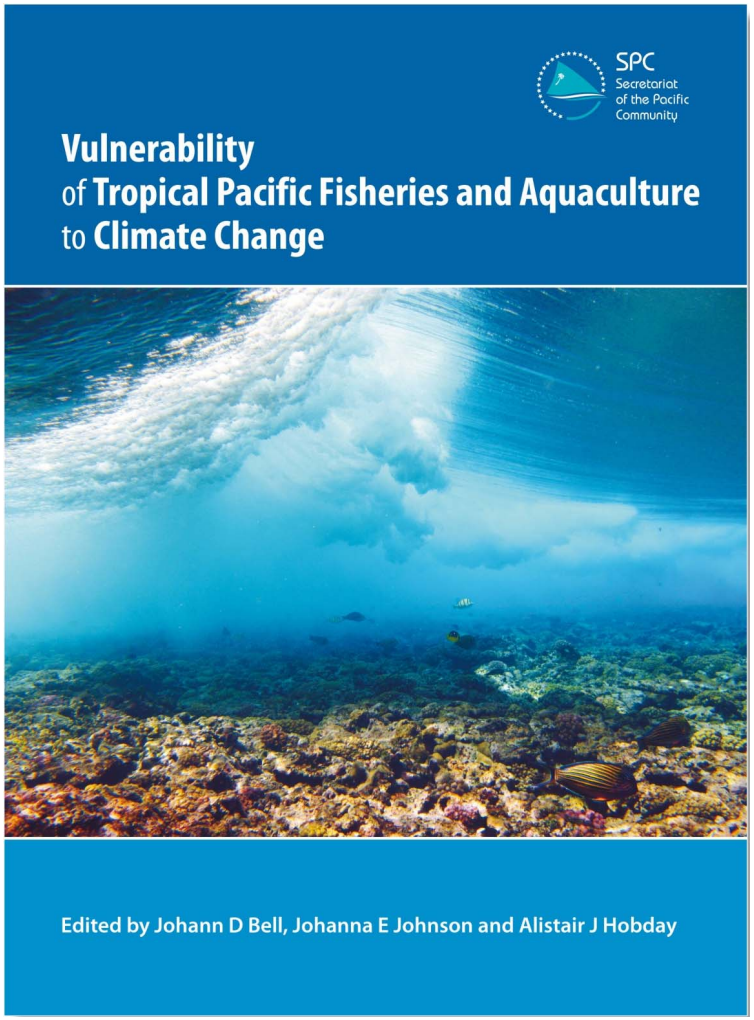
SIDS

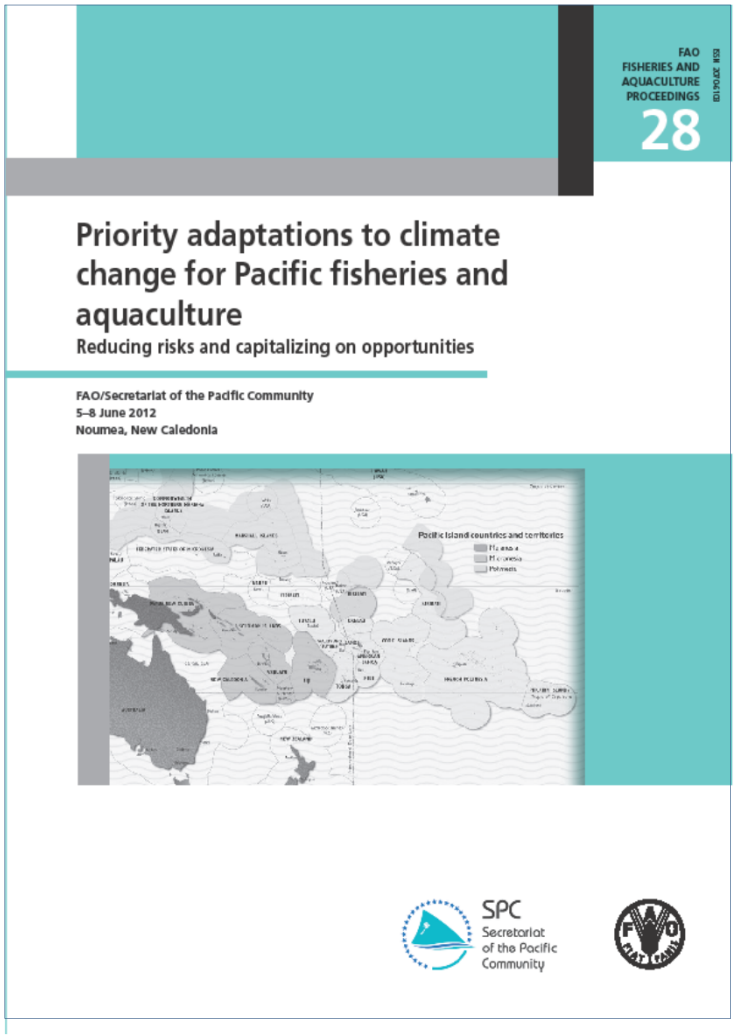
- Collaborative multi-country initiatives:
  - Pacific tuna Vessel Day Scheme
    - Migratory species management
  - Pacific Adaptation to Climate Change (PACC)
    - Coastal rehabilitation and infrastructure relocation *(Vanuatu)*
    - Coastal food security *(Palau)*
    - Government "Mainstreaming Team" *(Samoa)*
    - Participatory community vulnerability assessments *(Solomon Islands)*

SIDS

- Ecosystem based adaptation in the Seychelles
  - To address coastal flooding and water shortages
    - Active mangrove management and restoration
    - Sand dune rehabilitation using native species
    - Wetland restoration and invasive species removal and agricultural land reclamation
    - Construction and rehabilitation of fringing coral reefs
  - Local management
    - Local level coordinating body oversee vulnerability assessments, implementation and monitoring of adaptation activities

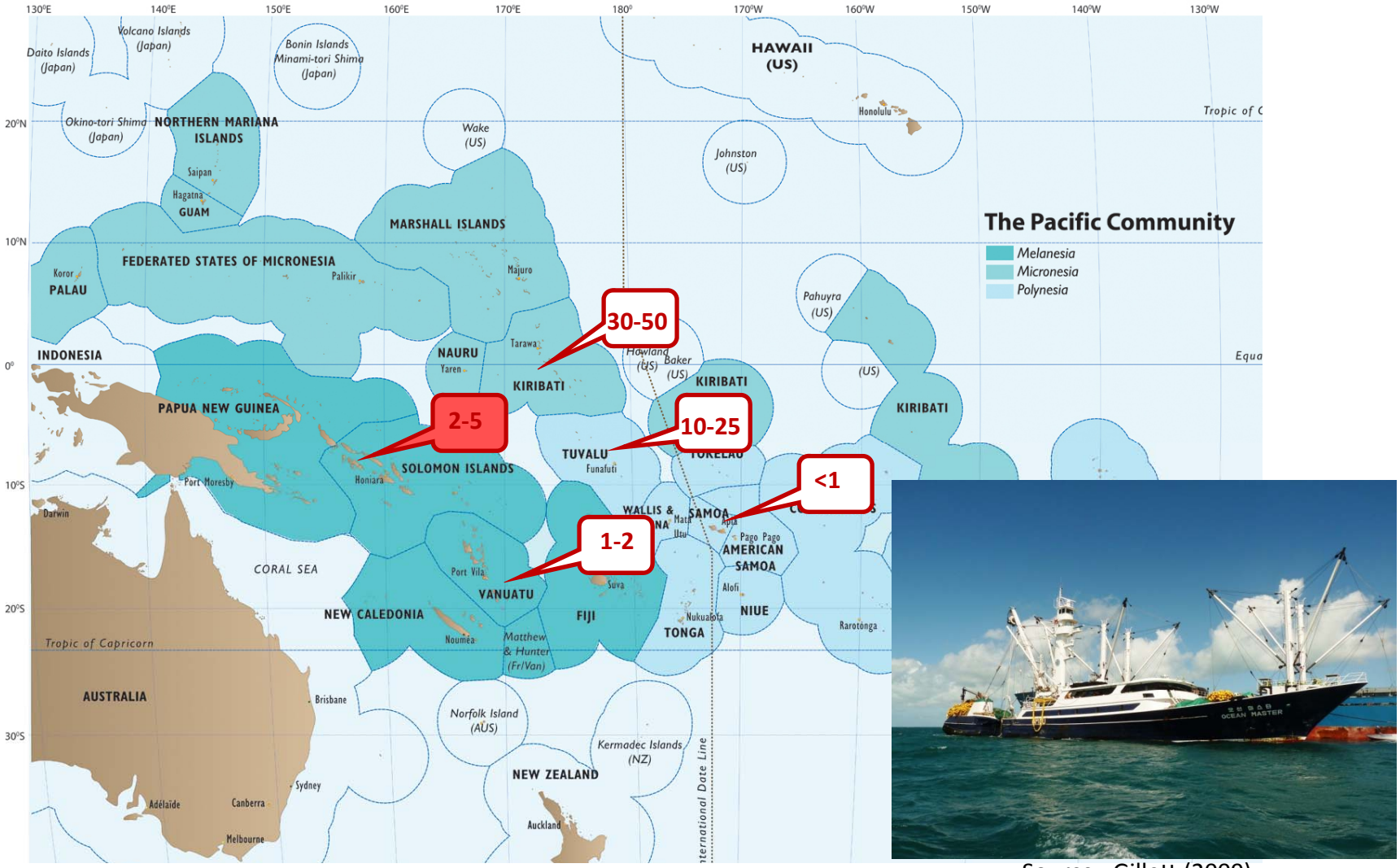
In depth Vulnerability assessment to inform policy (SPC)





http://www.spc.int/climate-change/fisheries/assessment/

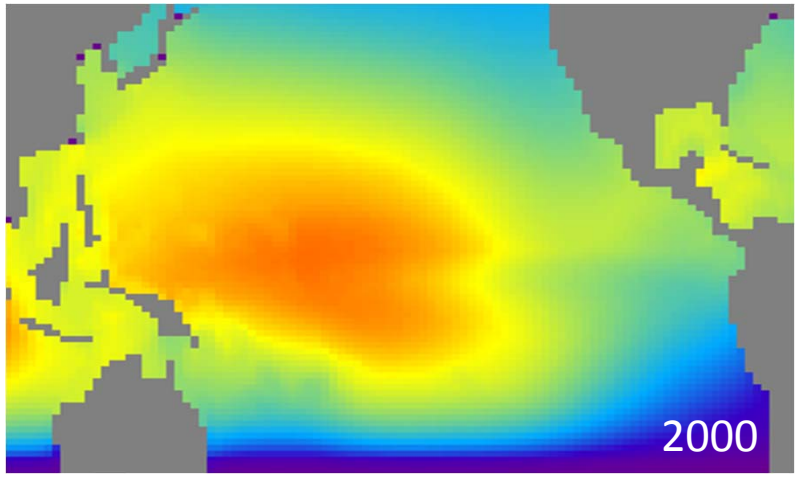
Contributions to government revenue (%) 1999-2008

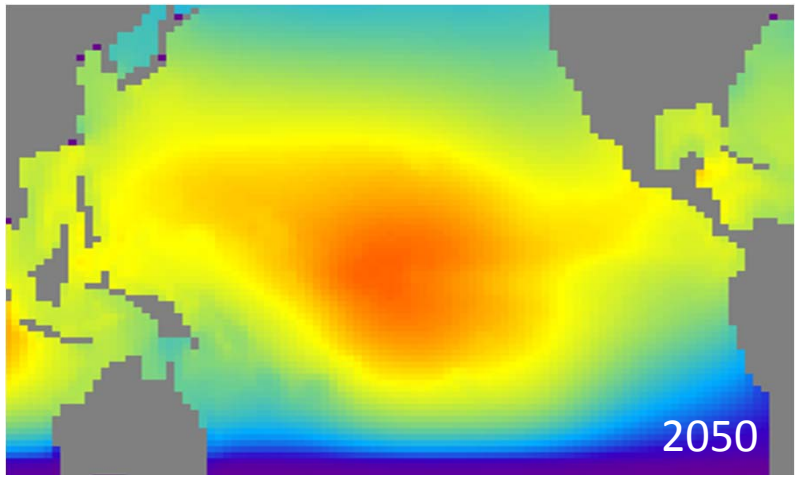


Source: Gillett (2009)

Projected effects on skipjack tuna

A2 emissions scenario





Source: Lehodey et al. (2011)

Redistribution east due to:

- Increases in sea surface temperature in eastern Pacific
- Shift of prime feeding areas to the east

Expected benefits or losses

PICTs	1999–2008		2035		2050		2100	
	L	U	L	U	L	U	L	U
Government revenue								
FSM	6	12	+1	+2	0	+1	-1	-2
Kiribati	30	50	+11	+18	+13	+21	+7	+12
Nauru	10	25	+2	+6	+2	+5	0	0
Palau	2.5	3.2	+0.2	+0.3	0	+0.1	-0.7	-0.9
Tokelau	2	15	+1	+9	+1	+10	+1	+9
Tuvalu	10	25	+4	+9	+4	+10	+2	+6
GDP								
American Samoa	20	25	+3	+6	+2	+4	-1	-2
Marshall Islands	10	25	+2	+6	+2	+6	+1	+2
PNG	1.5	4	0	+0.1	-0.2	-0.4	-0.4	-1.2
Solomon Islands	2	5	+0.1	+0.2	-0.1	-0.3	-0.3	-0.8

To keep in mind

- New **opportunities**
  - E.g. Range shifts mean new fisheries become available or new aquaculture potential on flooded agricultural land

- New **challenges**
  - There may legal or social barriers to accessing these new opportunities, however communication about new opportunities and needs across sectors and policy making bodies can reduce these barriers