



MINISTERIO DE MEDIO AMBIENTE
Y RECURSOS NATURALES

GOBIERNO DE
EL SALVADOR
UNÁMONOS PARA CRECER

Coping with climate change in the Central American Dry Corridor

November, 17th, 2016

Central American Dry Corridor in brief

CORREDOR SECO CENTROAMERICANO



159,183 Km²

MAR CARIBE

0 50 100 200 300 400 Km

Leyenda
Corredor seco

OCEANO PACIFICO

Fuente: Atlas Centroamericano para la gestión sostenible del territorio (IICA - 2015)

GTIC-SIAR

Especialista SIG: Aldrin Estrada (2016)

DC concentrates 90% of the population, the "productive life" and the main cities

Predominates "Agricultura Familiar" - 70% of total production - with more than 2.1 million productive units

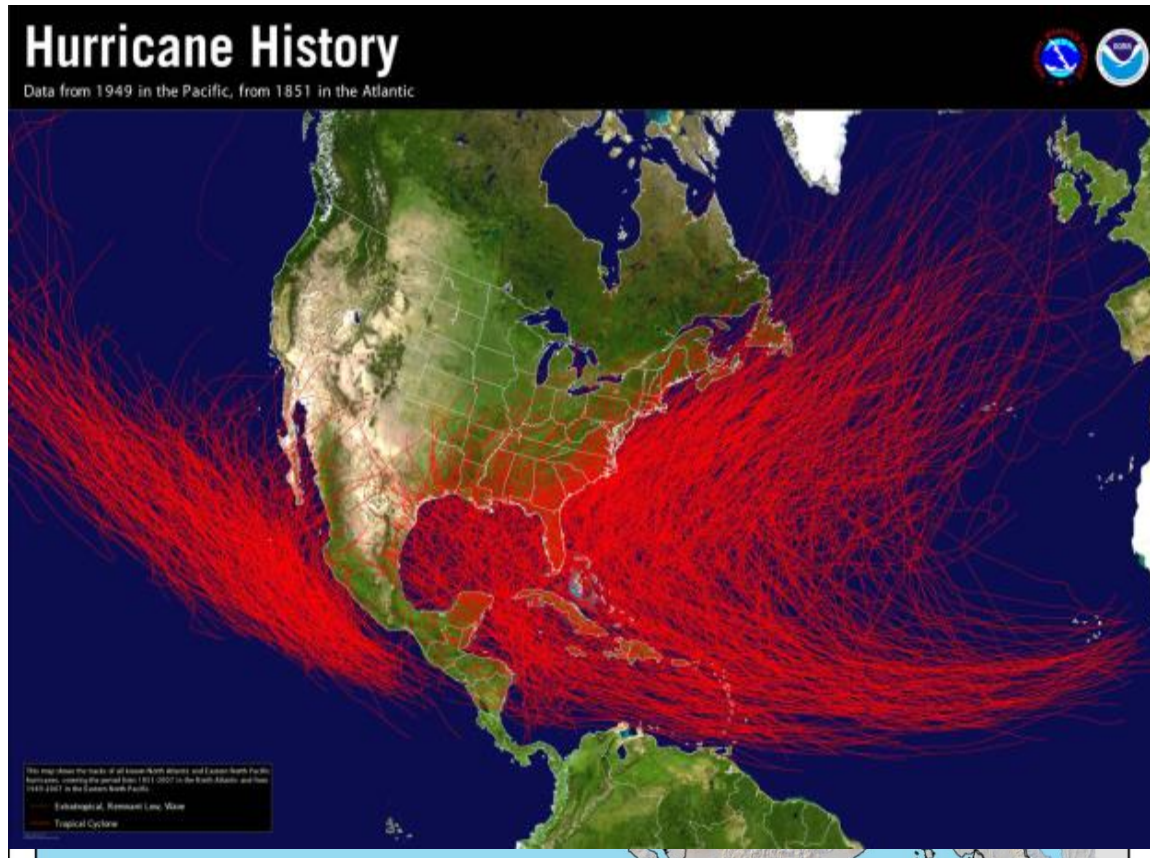
Population dependent on remittances - main income

Non-traditional crops and agro-industrial production linked to global markets (Economic Elites)

Promotion of public and private investment for the development of a Central American Logistic Corridor

Ecorregión: Bosques Tropicales Secos de Centroamérica

Central American Dry Corridor in brief



Before eighties all storms were originated in the Atlantic Ocean, at present the storms also have formed in the Pacific Ocean

El Salvador passes from one extreme weather event per decade to 8 per decade

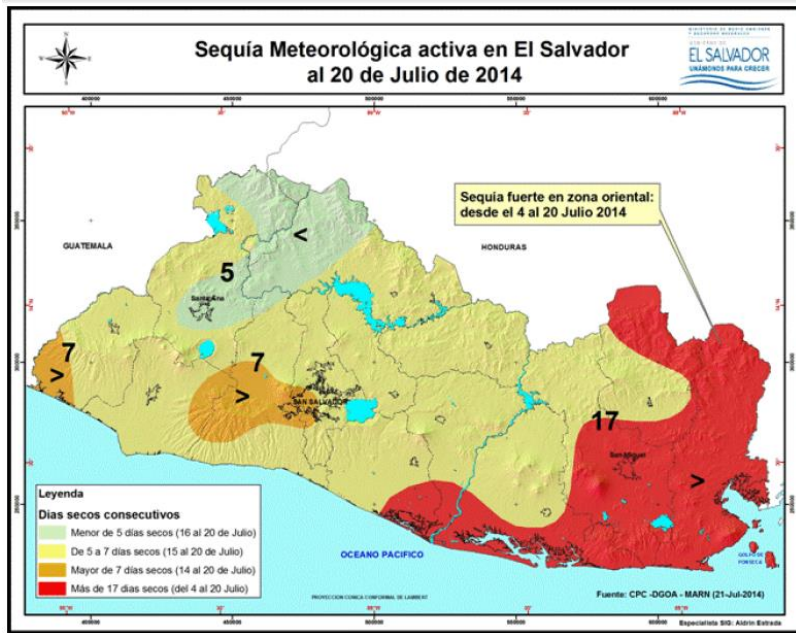
Geographical position is subject to extreme climate phenomena

Activities and livelihoods depend strongly on agriculture and climate

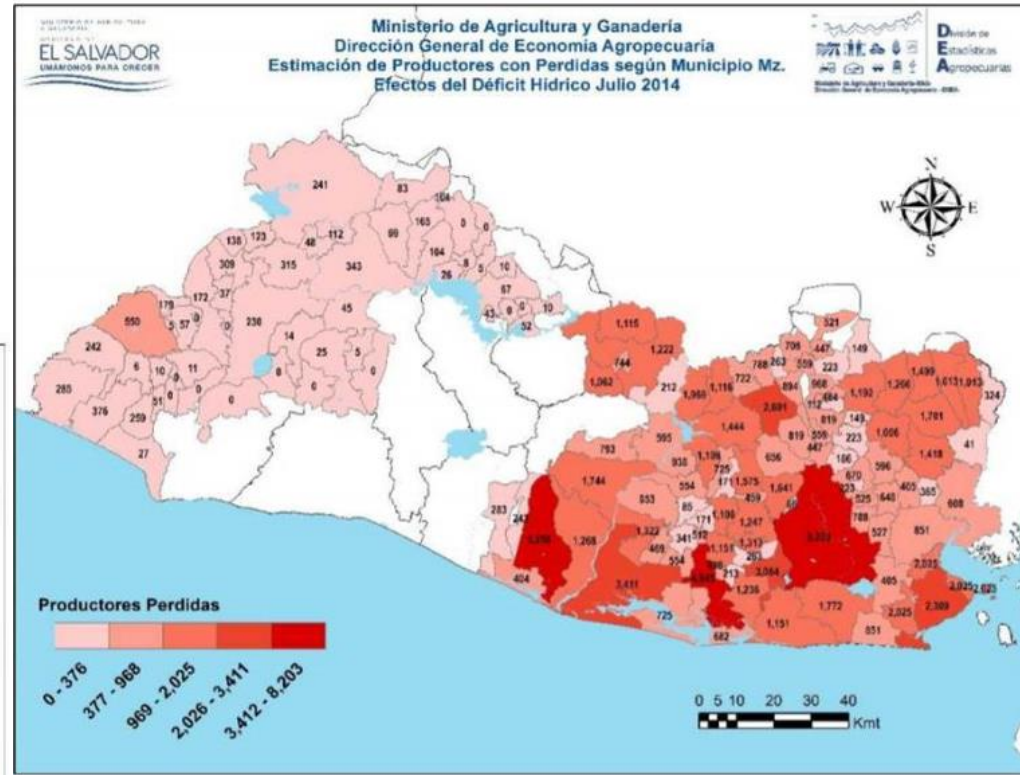
Inequality in the access and use of resources

Inadequate management of soil and water, with high degradation of ecosystems and pollution

Unsustainable agricultural practices, high use of agrochemical use with negative impacts on health



Areas affected by Drought
 in El Salvador
 104 Municipalities



2009-2015 Seven consecutive years of losses

3 floods and 4 droughts

Drought has effects on environmental, affecting ecosystem composition and functions, reducing ecosystem services provision, with negative impacts on availability of water resources, quality of soils and land productivity, economic activities and local welfare.

Drought directly affects agricultural production, livelihoods and health leads to food insecurity and poverty.

Climate Change will exacerbate the frequency, severity, and duration of drought events and associated impacts.



Drought

**Loss of Biodiversity
& Ecosystem services**

Soil degradation

Water stress

Local social capital

**Low Agricultural
Productivity**

Reduced income for farmer;
increased food prices;
increased unemployment,
migration and displacement

**Food Insecurity,
malnutrition and poverty**



MINISTERIO DE MEDIO AMBIENTE
Y RECURSOS NATURALES

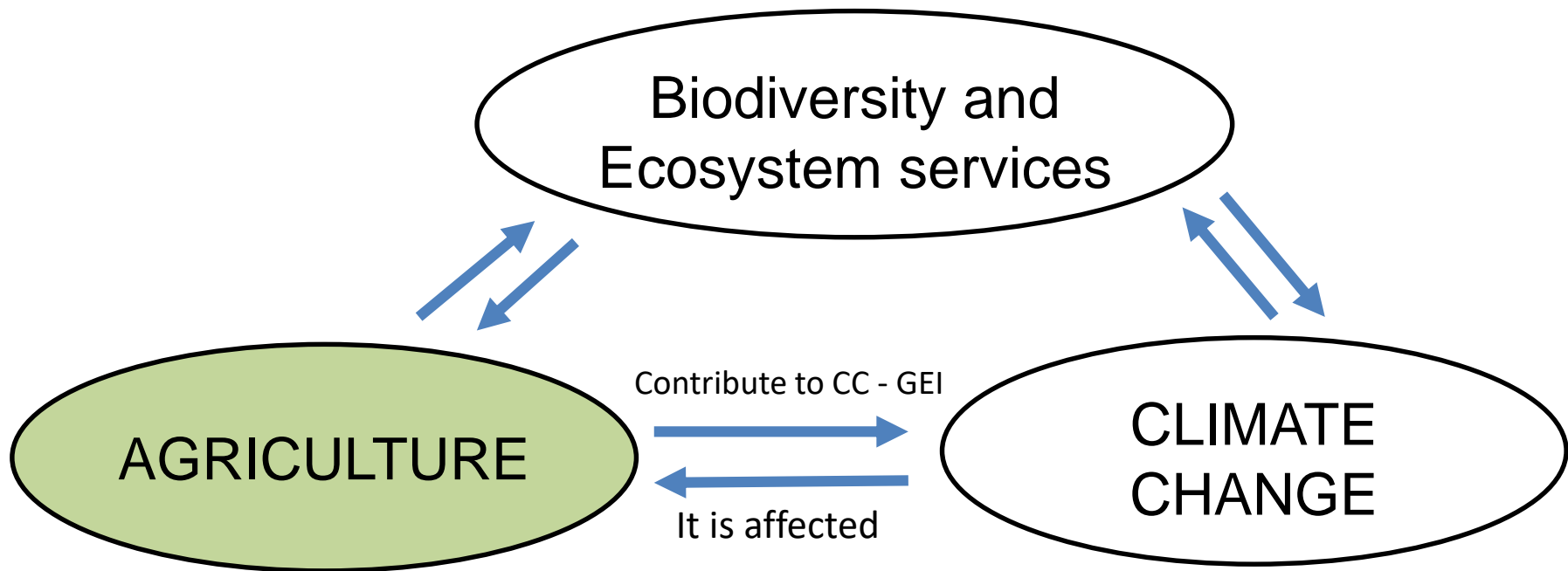
GOBIERNO DE

EL SALVADOR

UNÁMONOS PARA CRECER

TOWARDS A NEW AGRICULTURE

Sustainable Agriculture and Resilient to Climate Change



1. Sustainable agricultural practices
2. Work at the landscape level



INPUTS

- Fertilizers
- Pesticides
- Irrigation
- Technology
- Machinery
- Farming
- Seeds

OUTPUTS

- Food
- Agricultural Products
- Fibers
- Fuels

AGRICULTURE & FOOD SYSTEMS**Resultant Negative Flows:**

- Impact on Health
- Pollution
- Soil Erosion
- GHG Emissions
- Loss of Complexity of Ecosystems
- Destruction of habitat Wildlife

BIODIVERSITY AND ECOSYSTEMS

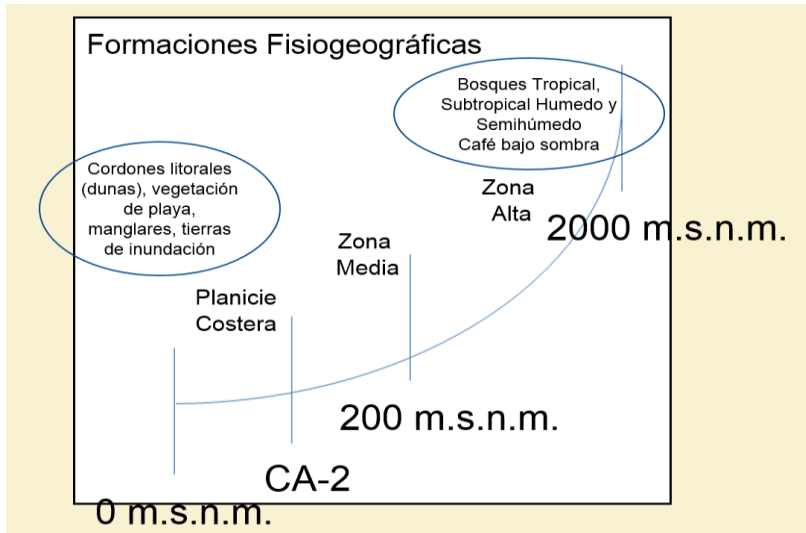
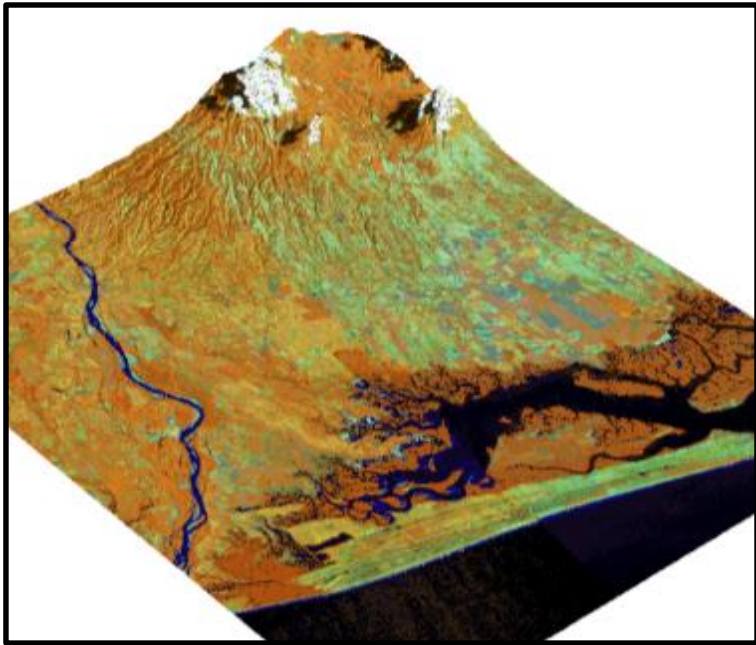
Resultant Positive Flows
 Erosion Control; Soil formation; Water regulation, Water Provision and Climate Regulation; Pollination; Pest Control; Nutrient Cycle; Genetic resources resistant to Extreme Events

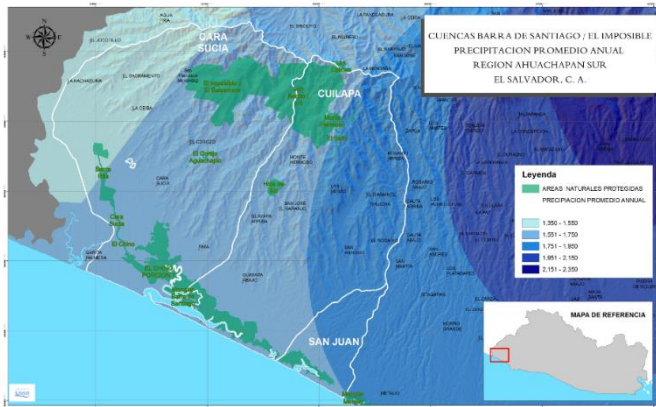
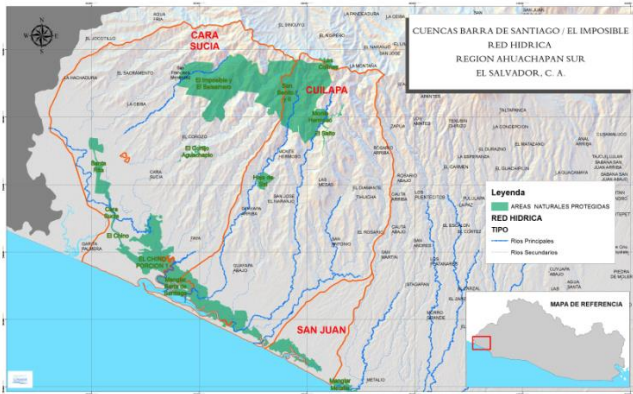
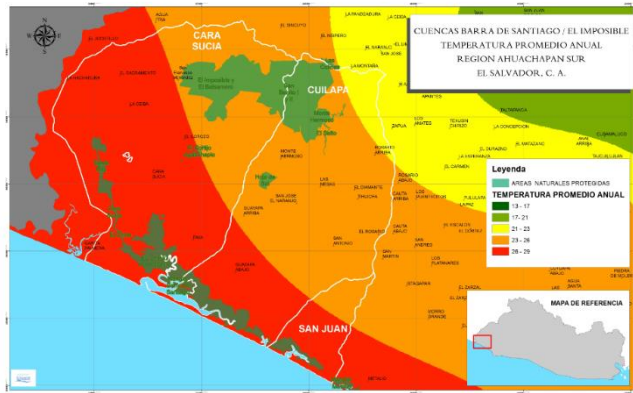
Working at landscape level



MINISTERIO DE MEDIO AMBIENTE
Y RECURSOS NATURALES

GOBIERNO DE
EL SALVADOR
UNÁMONOS PARA CRECER







National Landscape and Ecosystem Restoration Program

Objective: Reverse environmental degradation and reduce vulnerability to climate change

Restore highly degraded lands, through establishing a climate resilient and biodiversity-friendly agro-forestry system



Restore critical ecosystems through socially inclusive processes to recover key ecosystem services



Establish a more synergic integration of physical and natural infrastructure.



Zona Franca -Arenal Seco entre Municipios de San Martín e Ilopingo



PREP: What will we achieve

- Resilient territories
- Functional Ecosystems and Agroecosystems delivering key environmental services to the territories
- More productive and resilient agricultural and livestock systems
- Increased water availability for different uses in the territory
- Risk reduction to landslides and floods
- Increased soil moisture and increased tolerance to drought



MINISTERIO DE MEDIO AMBIENTE
Y RECURSOS NATURALES

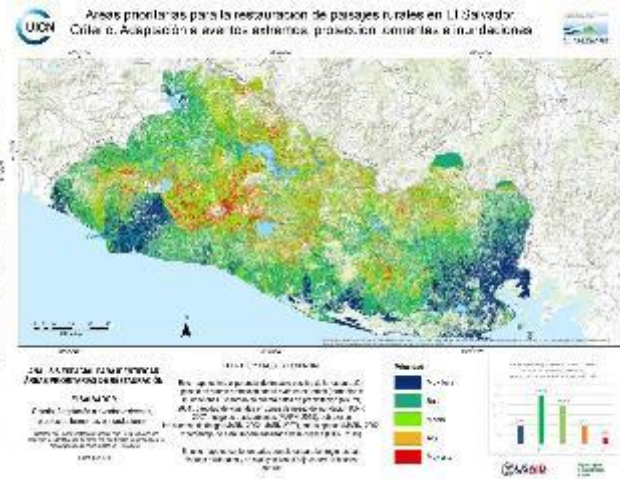
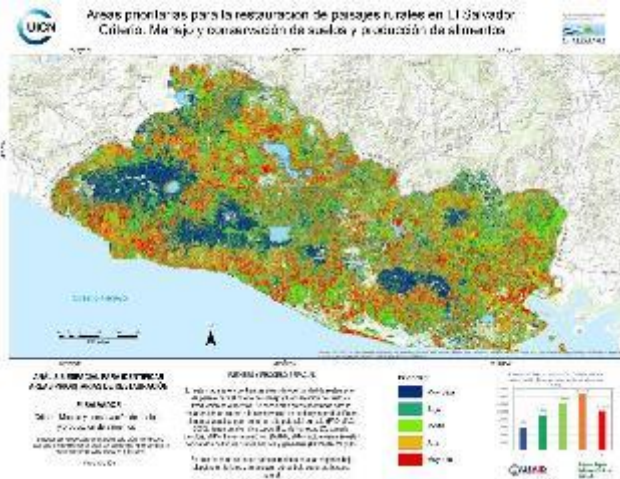
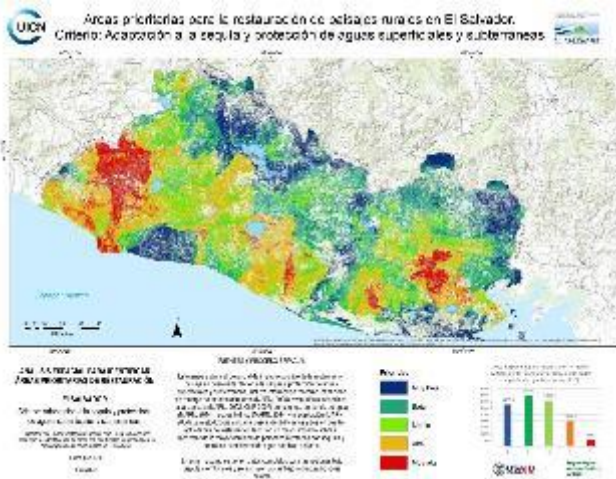
GOBIERNO DE
EL SALVADOR
UNÁMONOS PARA CRECER



Surface water, groundwater and adaptation to drought

Soil Conservation and agriculture

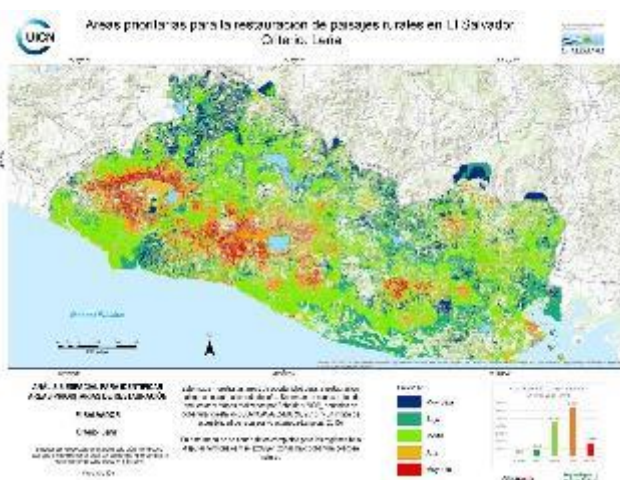
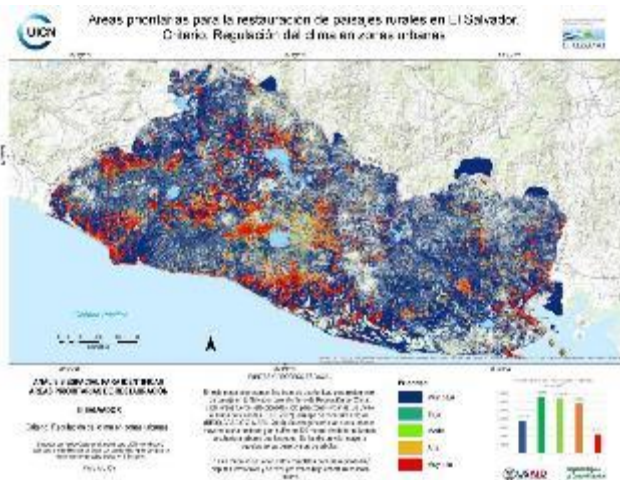
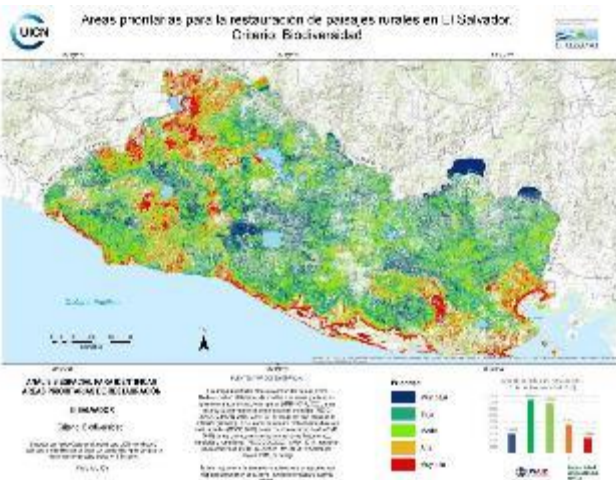
Adaptation: floods and storms

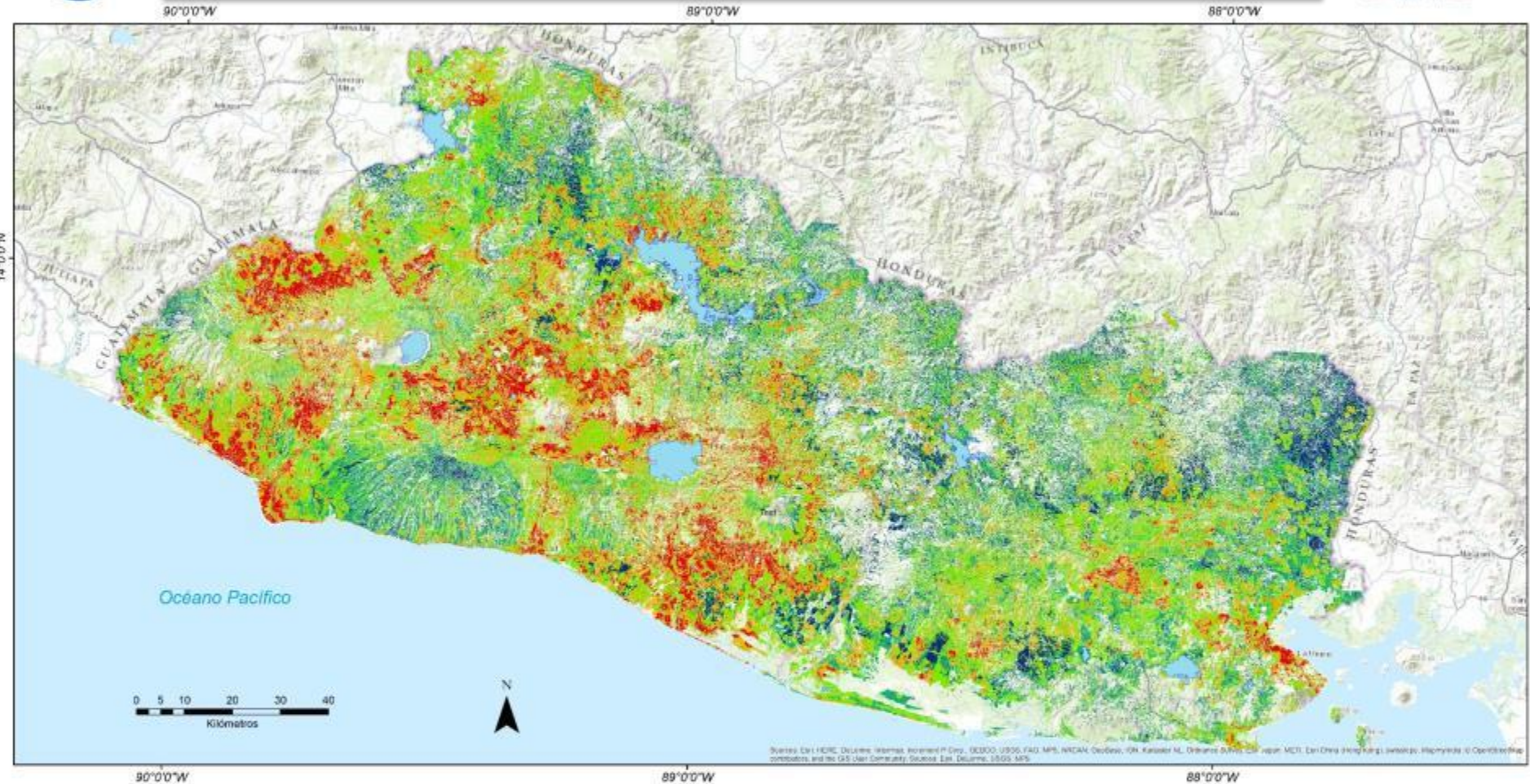


Biodiversity

Climate regulation by urban cities

Firewood





ANÁLISIS ESPACIAL PARA IDENTIFICAR ÁREAS PRIORITARIAS DE RESTAURACIÓN

EL SALVADOR

Todos los criterios

Elaborado por Héctor Castañeda-Langlois para UICN como Insumo base para la identificación de áreas con oportunidad y prioridad para la restauración de paisajes rurales en El Salvador.

Fecha Julio 2015

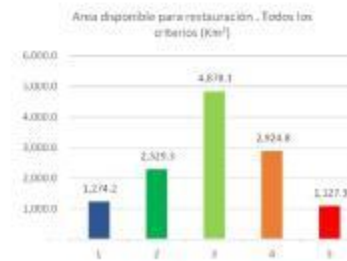
FUENTES Y PROCESO ESPACIAL

Este mapa identifica las oportunidades para a restauración de paisaje para El Salvador en cuanto los criterios establecidos durante el taller de consulta sobre el tema. Este mapa se generó seleccionando todas las zonas que presentaban una prioridad alta o muy alta para cualquiera de los criterios establecidos. Una vez seleccionadas se representa su relevancia en cinco categorías (I a V) que indican la relevancia relativa de cada sitio.

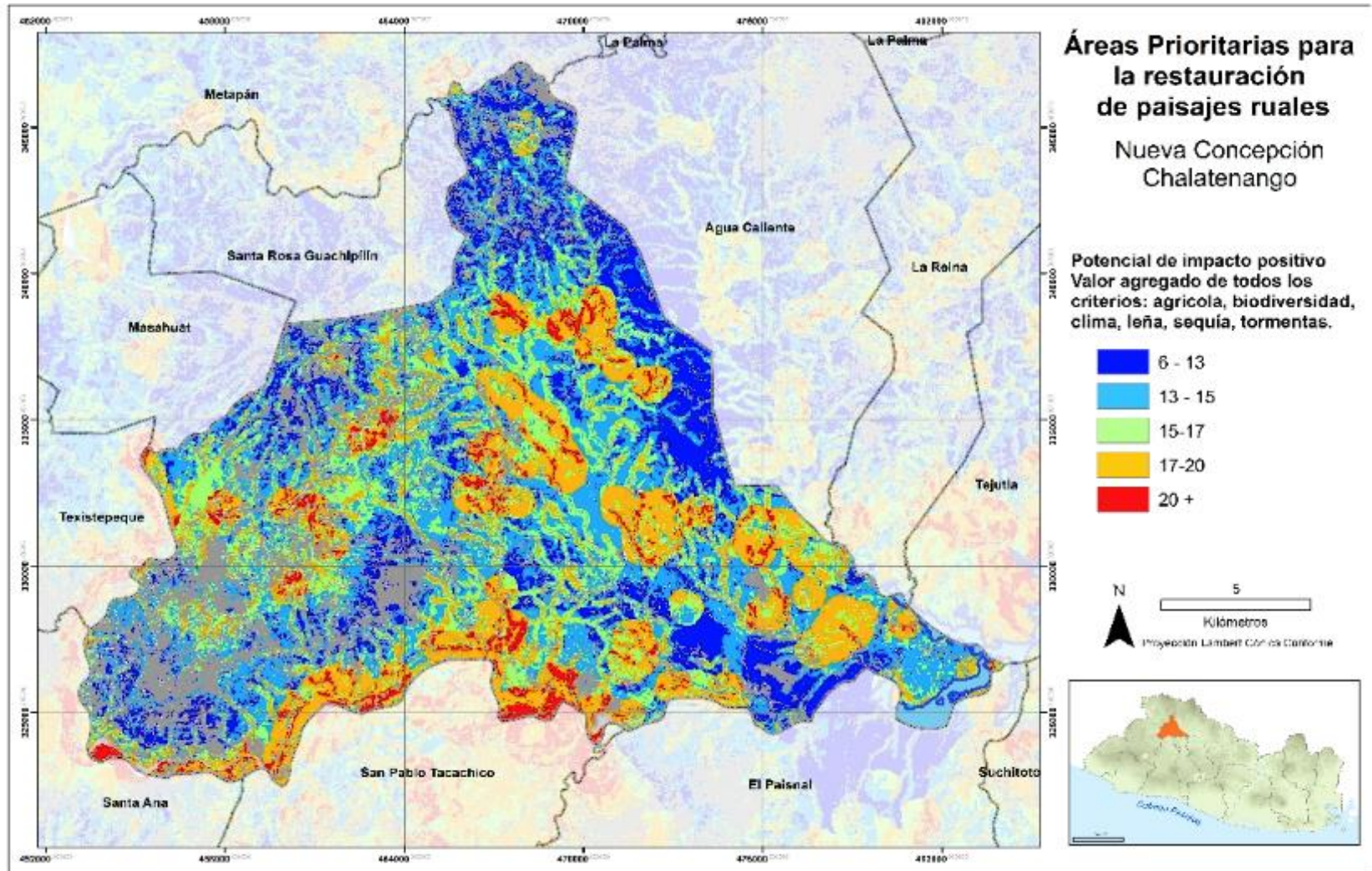
En este mapa no se tienen datos completos para las regiones bajo disputas territoriales y se excluyen zonas bajo cobertura boscosa natural.

Prioridad

- Categoría I
- Categoría II
- Categoría III
- Categoría IV
- Categoría V



Landscape Restoration Priorities at Municipal Level



Cabinet for Environmental Sustainability and Vulnerability



National Program Requirements for Success


1. Achieving political support at the Highest Level
2. Leadership and Good Governance, with full participation in decision-making and monitoring system
3. Strategic alliances and logistics for implementation
4. Resource mobilization strategy (and design of an incentive mechanism
5. Attack drivers of deforestation and forest degradation (forest fires; plagues and diseases; illegal logging; selective logging)

2016-2017 Biennial Plan: National Reforestation and Restoration Actions





RESTAURACIÓN Y REFORESTACIÓN DE ECOSISTEMAS CRÍTICOS
 (Restauración Ecológica de Manglares – REM-, producción de plantas en viveros, reforestación y regeneración natural en ANP: riberas de ríos y carreteras, zonas de recarga, rutas turísticas y parques)
 FIAES, GIZ, MARN/ACID, Juntas de Agua, ONG, FAES, MOE, INJUVE, MITUR

plano
 CRONOGRAMA
 MAYO 2016 – DICIEMBRE 2016
 PRESUPUESTO
 1.5 MILLONES



ACCIONES INTEGRALES DEL MANEJO DEL FUEGO EN ÁREAS BOSCOSAS DENTRO Y FUERA DE ANP
 (Brechas "corta fuego", equipamiento, capacitación)
 MARN, REDD +/WE, Municipalidades

plano
 CRONOGRAMA
 ENERO 2016 – DICIEMBRE 2016
 PRESUPUESTO
 3.000.000



CONSERVACIÓN DE SUELO Y AGUA EN ZONAS DE PRODUCCIÓN DE GRANOS BÁSICOS
 (Promoción de la no quema y el manejo de rastrojos)
 FIAES, MAG-CENTA/Centro Nacional de Tecnología Agropecuaria y Forestal

plano
 CRONOGRAMA
 MAYO 2016 – DICIEMBRE 2016
 PRESUPUESTO
 1.000.000



RENOVACIÓN DEL PARQUE CAFETALERO CON VARIEDADES RESILIENTES A LOS EFECTOS DEL CAMBIO CLIMÁTICO
 (Roya y sequía)
 MAG/CENTA-CAFÉ, Catholic Relief Services (CRS El Salvador)

plano
 CRONOGRAMA
 MAYO 2016 – DICIEMBRE 2016
 PRESUPUESTO
 1.400.000



ESTABLECIMIENTO DE SISTEMAS AGROFORESTALES CON CACAOC
 (Incluye zonas de amortiguamiento de ANP)
 ALIANZA CACAOC EL SALVADOR, Catholic Relief Services El Salvador

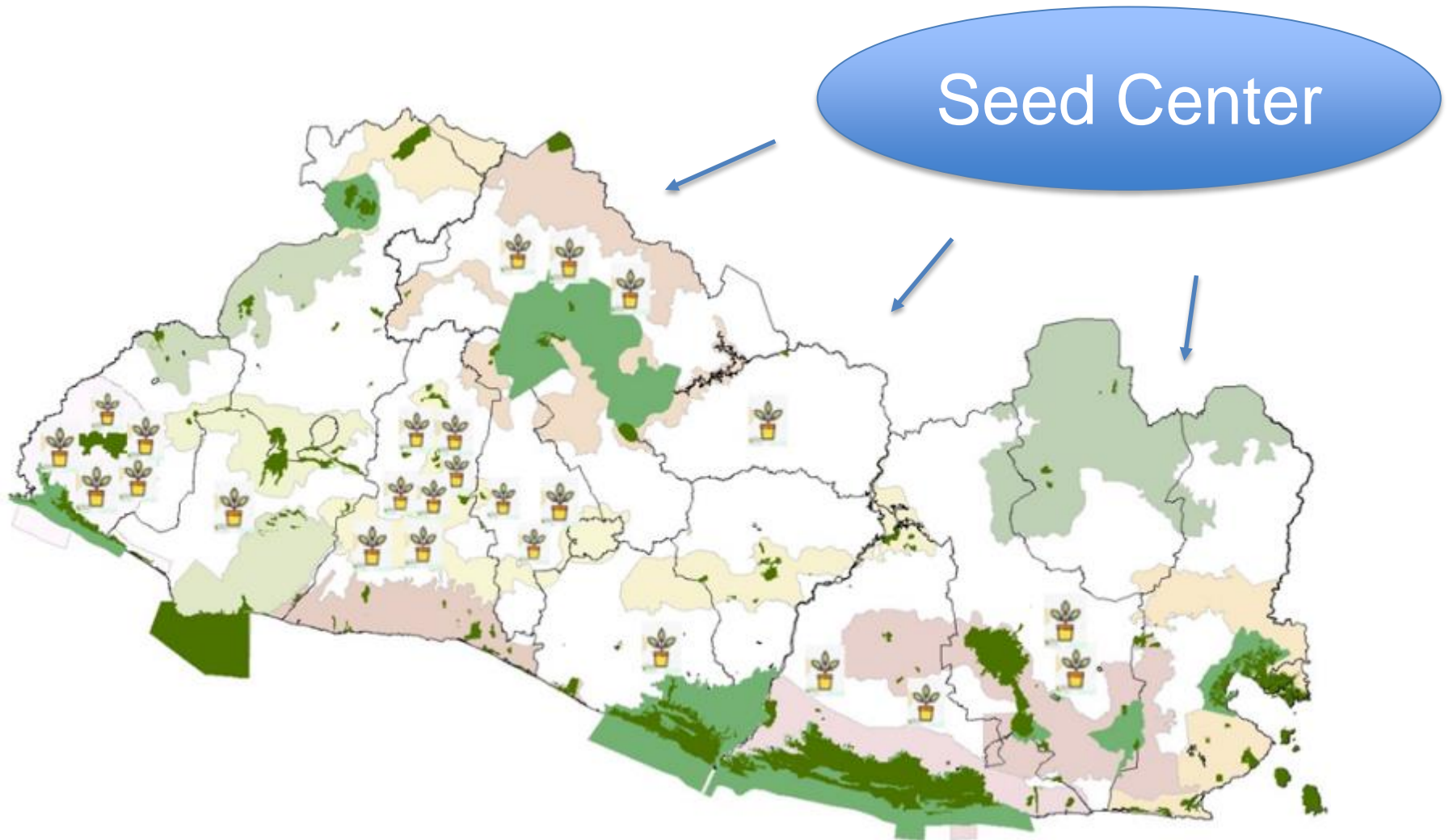
plano
 CRONOGRAMA
 MAYO 2016 – DICIEMBRE 2016
 PRESUPUESTO
 1.100.000



IMPLEMENTACIÓN DEL MANUAL DE BUENAS PRÁCTICAS AGRÍCOLAS EN EL CULTIVO DE CAÑA DE AZÚCAR
 azúcar (disminución gradual de agroquímicos, no quema en colindancia de ANP y fuentes de agua, otros)
 Consejo Salvadoreño de la Agroindustrial Azucarera (CONSAIA)

plano
 CRONOGRAMA
 SEPTIEMBRE 2016 – OCTUBRE 2016
 PRESUPUESTO
 100.000

Establishing a Plant Nursery Network to Support Restoration and Reforestation Activities



Ex-ante Drought risk coping strategy (reducing risk exposure)

Ex-post risk coping strategy (adaptation and minimizing impact)

- Drought stress tolerant improved varieties
- Improved soil fertility & water management
- Sustainable intensification

Education and Training

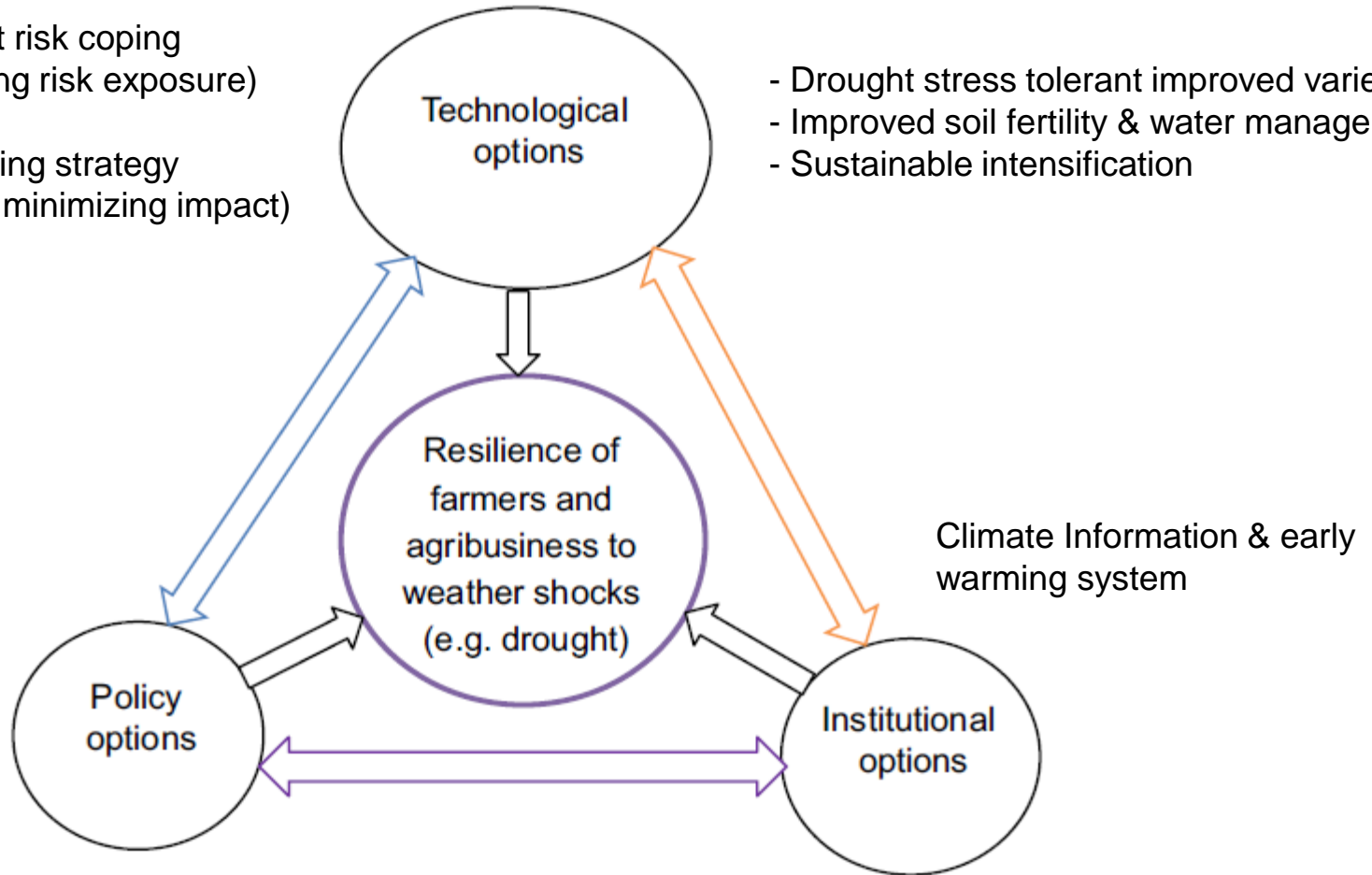


Fig. 4. Strategies for managing drought and enhancing resilience.

Thanks for your attention

Jorge Ernesto Quezada Diaz
Ministry of Environment and Natural Resources
El Salvador



MINISTERIO DE MEDIO AMBIENTE
Y RECURSOS NATURALES

GOBIERNO DE

EL SALVADOR

UNÁMONOS PARA CRECER