



Managing risk to promote sustainable development

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Agenda

- ▶ A conceptual framework
- ▶ From theory to practice
- ▶ Role of international organizations/cooperation
- ▶ Conclusions
- ▶ Comments and questions

A conceptual framework

Most still react only when disaster occurs

Be it a **natural disaster**:

Indian Ocean Tsunami, 2004: 230,000 deaths; **Haiti Earthquake, 2010**: 230,000 deaths; **Pinatubo Eruption, 1991**: ash cloud travelled around the world; **Tohoku Earthquake, 2011**: Fukushima Daiichi Nuclear Power Plant Disaster

A **technological disaster**:

Minamata (1950s): Hg Disease; **Bhopal, 1984**: worst industrial accident; **Chernobyl, 1986**: worst nuclear accident; the **BP Oil Spill, 2010**: largest accidental marine oil spill.

Or other **human-related disasters**:

Terrorist attacks, wars, displaced populations, climate change, unplanned-urbanization, under-development, poverty or pandemics

Our **most recent, ongoing case**:

COVID-19 disease: +2.5M confirmed cases, +170,000 deaths, expected economic impact worse than Great Depression of 1930s.

But we can act earlier by managing risks

R = f(H,E,V) Risk: Potential losses (magnitude, probability)

H: Triggering event

A natural extreme event, an extreme technological failure or man-made extreme event

E: Exposed elements

Population, assets (including industrial facilities, public works, etc.), economy, social structure, governance, etc.

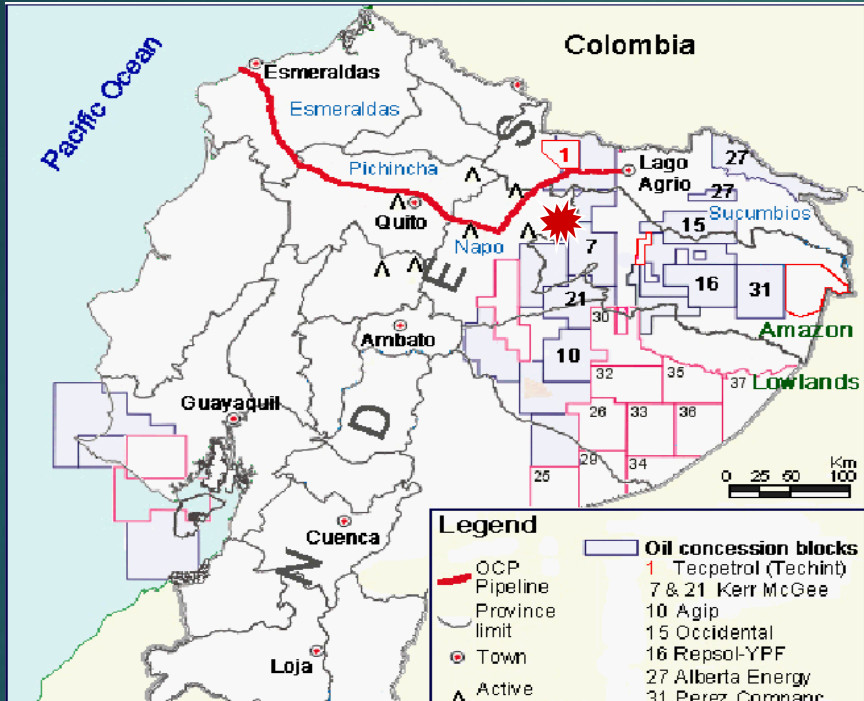
V: Susceptibility to the damaging effects of a triggering event

Usually higher due to weak governance or poor regulations/QC (private sector)

Our goal: Minimize potential losses and negative impacts on society and environment

Shifting the risk management approach

1987 Earthquake - Ecuadorian Oil exports impeded



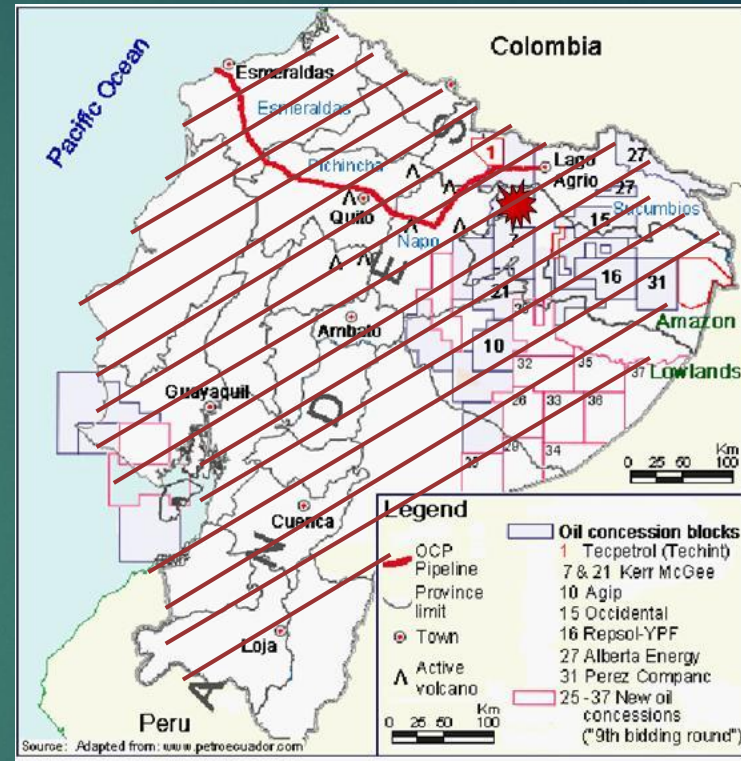
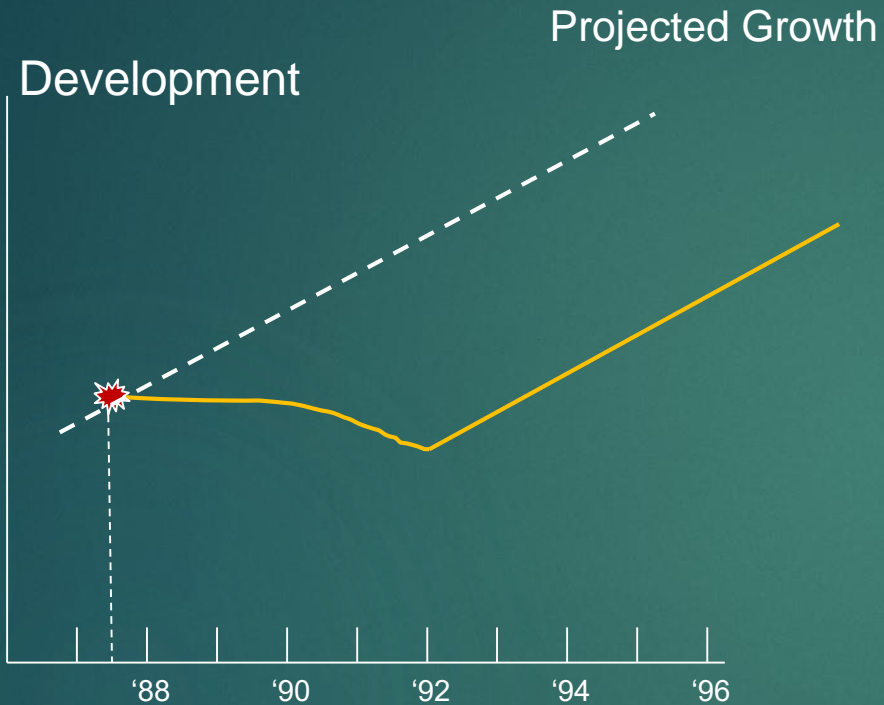
Damage to the oil pipe

- 60 km oil pipeline damaged
- 6 months without oil exports
- 65% national budget lost
- 5-year national economic recession



Environmental Impact

Disaster's impact: not just a point in time/space



Prevent / mitigate disaster impact - DRM

By including DRM into long-term development plans

Recurrent disasters hinder development

1972 Earthquake in Nicaragua: 42% GDP

1998 Hurricane Mitch (1998) in Nicaragua: 49% GDP

1976 Earthquake in El Salvador: 31% GDP

2001 Earthquake in El Salvador: 12% GDP

2005 Earthquake in Pakistan: 5% GDP

2010 Floods in Pakistan: 10% GDP

2010 Earthquake in Haiti: 125% of GDP

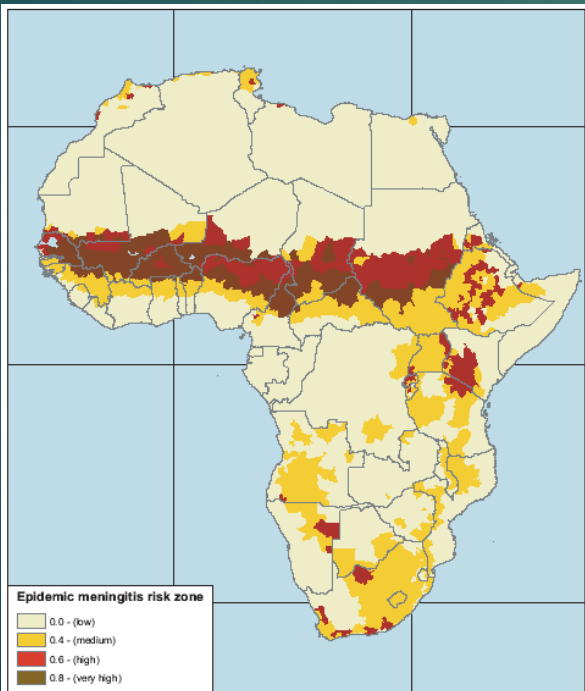
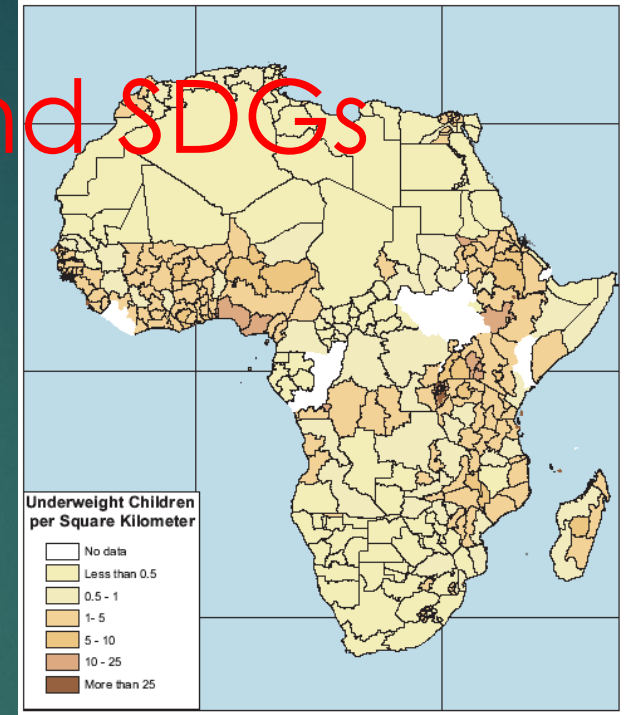
Question: When will these countries develop?

Linking disaster risk and SDGs



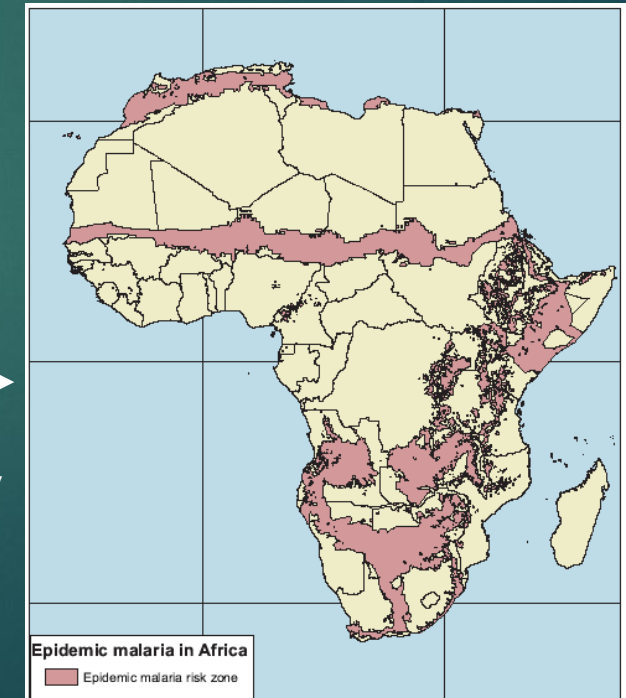
← Disaster-related mortality risk

Underweight children



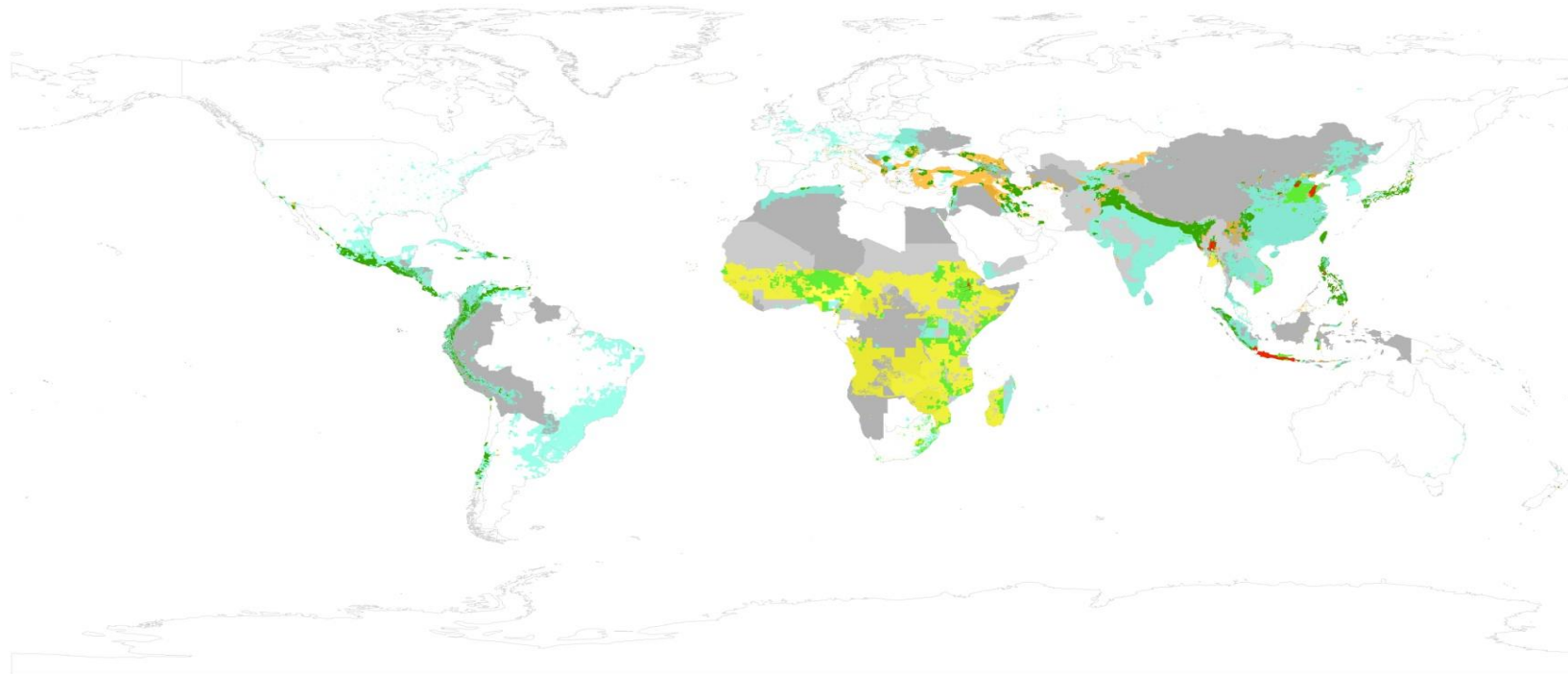
← Epidemic meningitis

Epidemic malaria



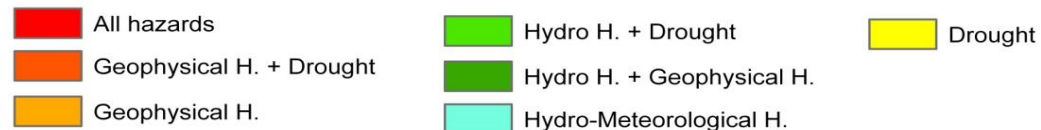
Source: Columbia University

Global Disaster Risk Distribution and Poverty



Legend

Hazard RiskType



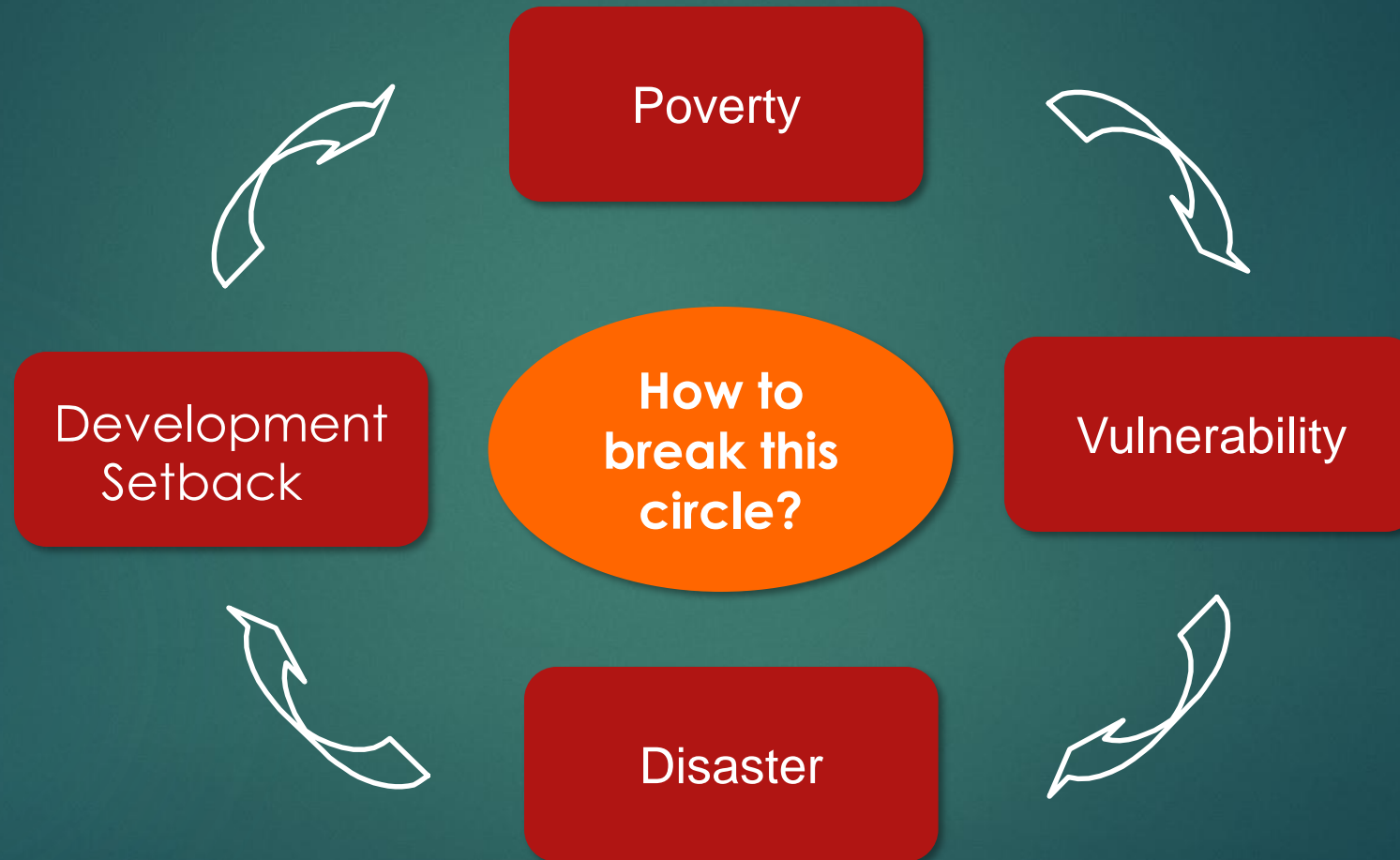
Poverty Level



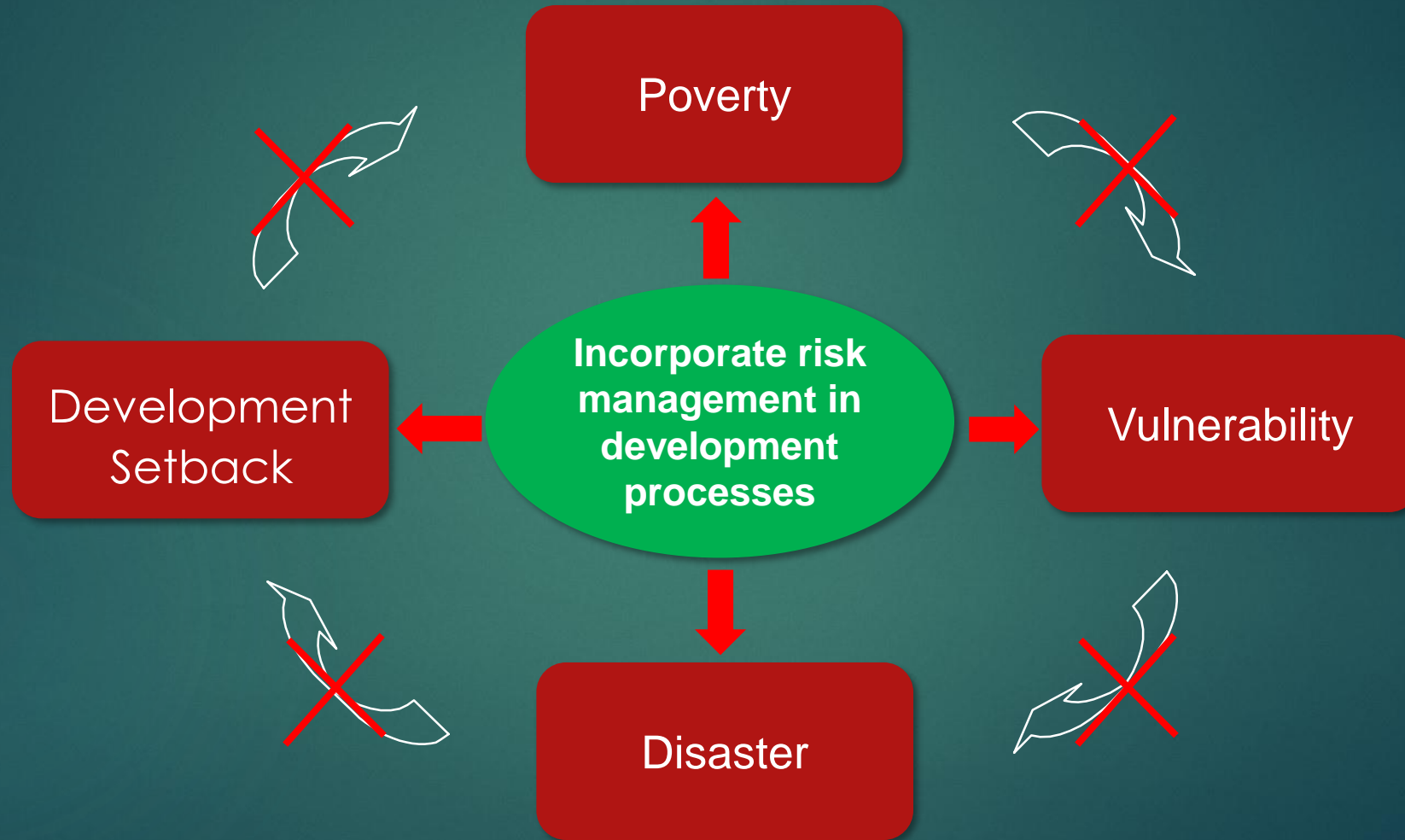
Disaster risk: a development issue

- Weak governance
- Weak institutions
- Poor planning

The Disaster-Development Vicious Circle



Breaking the D-D Vicious Circle



Where do we stand?

In 2017,

- ▶ 335 natural disasters reported
- ▶ 9,697 persons killed
- ▶ 95.6 million people affected (~ 0,75 Mexico's population)
- ▶ USD 335 billion in economic damages (~ 14x Honduras' GDP)

Note: These are only **major reported events** (≥ 10 killed, ≥ 100 affected, state of emergency, call for international assistance)

Source: Annual Disaster Statistical Review, CRED, 2018

Why are we not effective?

Poor understanding of the problem

i.e. Null or flawed risk assessment



Lack of proper planning

i.e. No evidence-based decision making



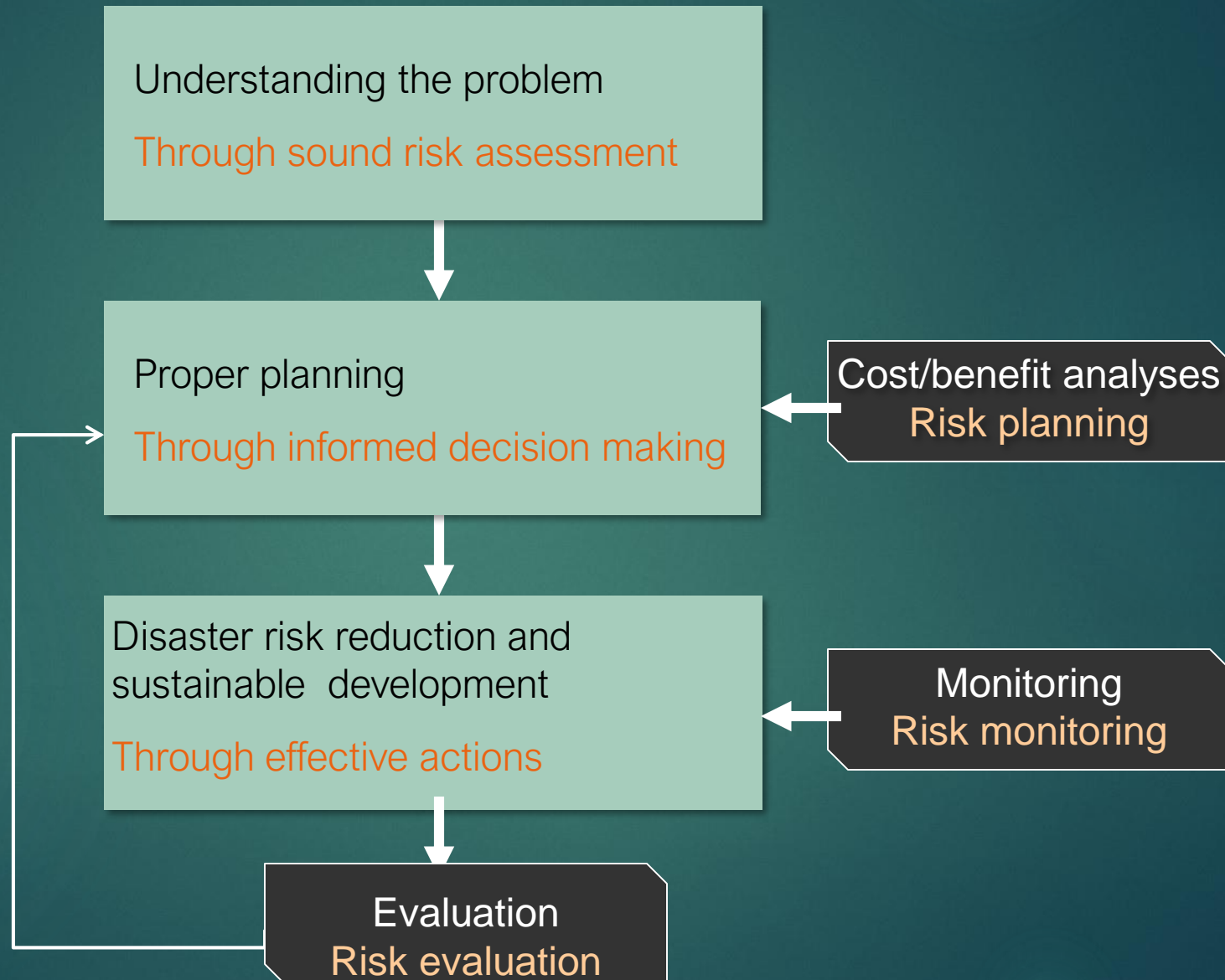
Poor disaster risk reduction +
Unsafe development process

i.e. Lack of effective actions

Sometimes
process stops
here. Nothing is
done

Many times
decision-makers
jump directly here
(**a shot in the dark**)

Integrating risk management into governance





From theory to practice

REAL LIFE, COMPLEX CASES

Preventing an urban disaster: Tijuana, MX

- ▶ An uncontrolled urban growth stimulated by NAFTA
 - ▶ Assembles 95% of all TV sets sold in the US
 - ▶ From 300,000 to 2.5 million inhabitants in 8 years
 - ▶ Annual surface growth > 6% (3 ha per day)
 - ▶ Lack of identity – 70% was migrant population
 - ▶ No. 1 Mexican City in crime, prostitution, drug trafficking, AIDS
 - ▶ Very high seismicity, recurrent floods, seasonal wildfires

Solution: engaging ALL sectors of society

- ▶ Having a common understanding of the problem
- ▶ To align and integrate the interests of all
- ▶ With active participation of key players/stakeholders
- ▶ To implement a locally-supported, long-term strategy

Engaging all sectors promotes sustainability



RADIUS Tijuana Group

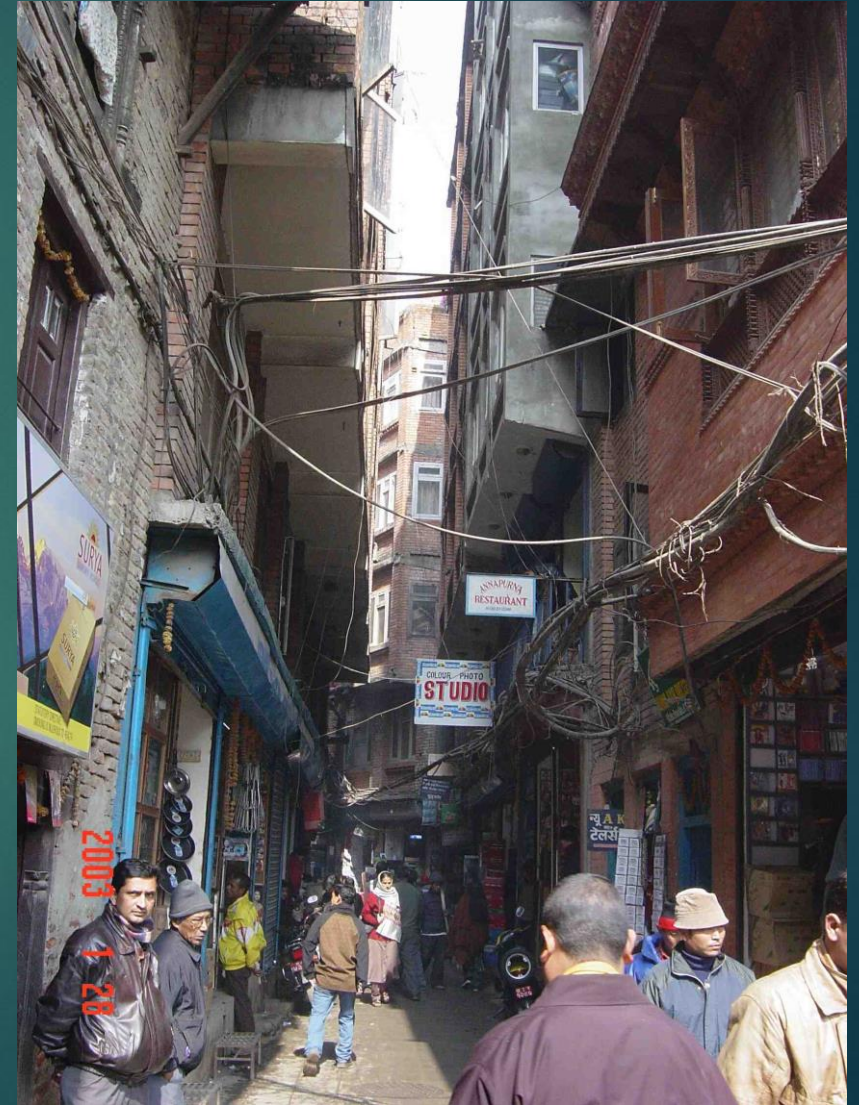
- ▶ 60 members – 45 institutions
- ▶ 197 monthly meetings
- ▶ Official advisors to City Council
- ▶ Promoted similar programs in Mexicali, Ensenada and Rosarito
- ▶ Expanded scope of work to address additional issues

- * Solutions based on common, complete understanding of the problems
- * Accounting for the interests of all promotes trust and the common good

Tackling earthquake risk: Kathmandu, NP

Nepal is:

- ▶ One of the poorest countries
- ▶ An economy based on tourism and international assistance
- ▶ Located on the world's most active seismic region
- ▶ One of the countries with the highest levels of earthquake risk
 - ▶ 1934 Earthquake – killed 10% of the population
 - ▶ Population: 1934 – 400,000 inh, 2018 – More than 4 million



Earthquake Risk in Kathmandu

Solution: from projects to programmes

- ▶ 1994-1996 – Risk assessment → 10-Year Action Plan
- ▶ 95% of buildings are non-engineered, unreinforced-masonry
- ▶ 65% of schools would collapse – 700 children/school
- ▶ School retrofitting program
- ▶ Masons trained on sound construction techniques
- ▶ Professional certifications

From projects to programmes: results

- ▶ 1998-2014: 300 schools retrofitted – 210,000 lives protected!
- ▶ 2015 Earthquake: Schools not damaged – Utilized for shelter
- ▶ 200+ head-masons certified: 10 buildings each per year
- ▶ Community engagement: Increase in earthquake-safe construction
- ▶ New economic activity generated and micro-financed
 - ▶ Self-sufficient – generates profit
 - ▶ Direct product: Safer community



Incentives for changing ways of thinking

- ▶ Public exhibitions to promote safe construction
- ▶ Quantifying the benefits to building owners
 - ▶ Cost increase of safe construction: 3-5% cost of the structure
 - ▶ Currently 7-10% for bribes to build without permits
 - ▶ Very significant savings for protecting lives and property
- ▶ Information is key!

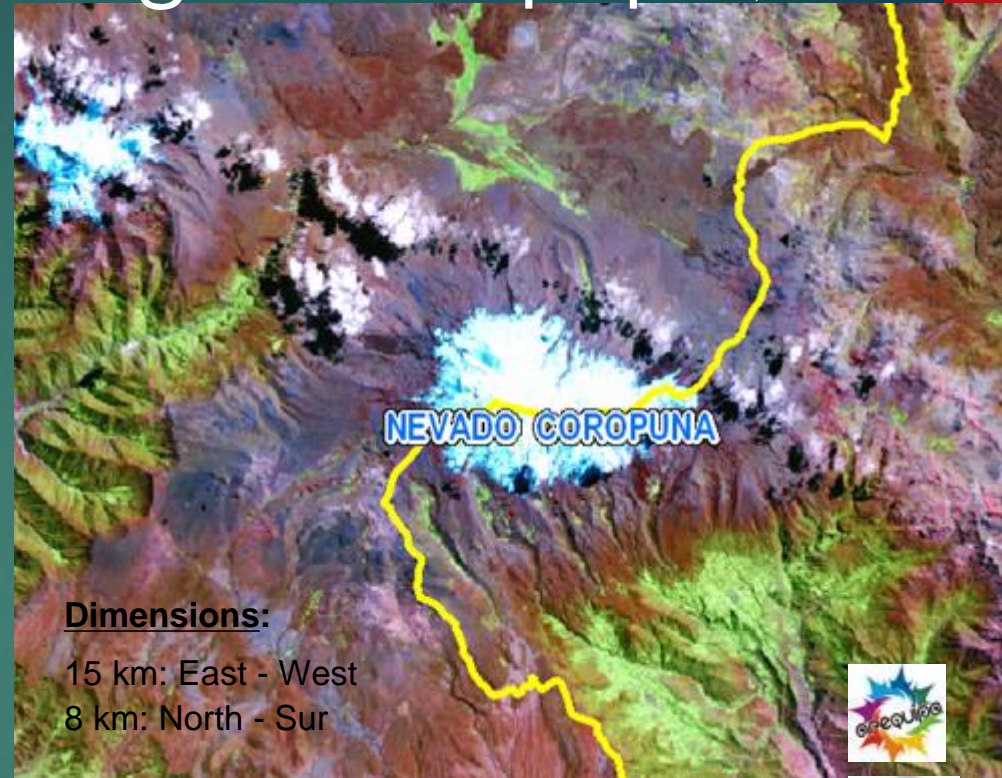
The right information can change poor practices and ways of thinking

Investing in the future in Kathmandu

- ▶ New knowledge incorporated into formal education
- ▶ Most common structural building problems addressed
- ▶ Textbooks for Nepalese children include self-assessment of homes
 - ▶ Cost-free evaluation of thousands of buildings
 - ▶ Awareness-raising among homeowners
 - ▶ A 'family champion' cannot be influenced / remains impartial
 - ▶ A whole generation grows with prevention and planning skills

In 20-30 years, Nepal's situation will be different!

Adapting to climate change: Arequipa, PE



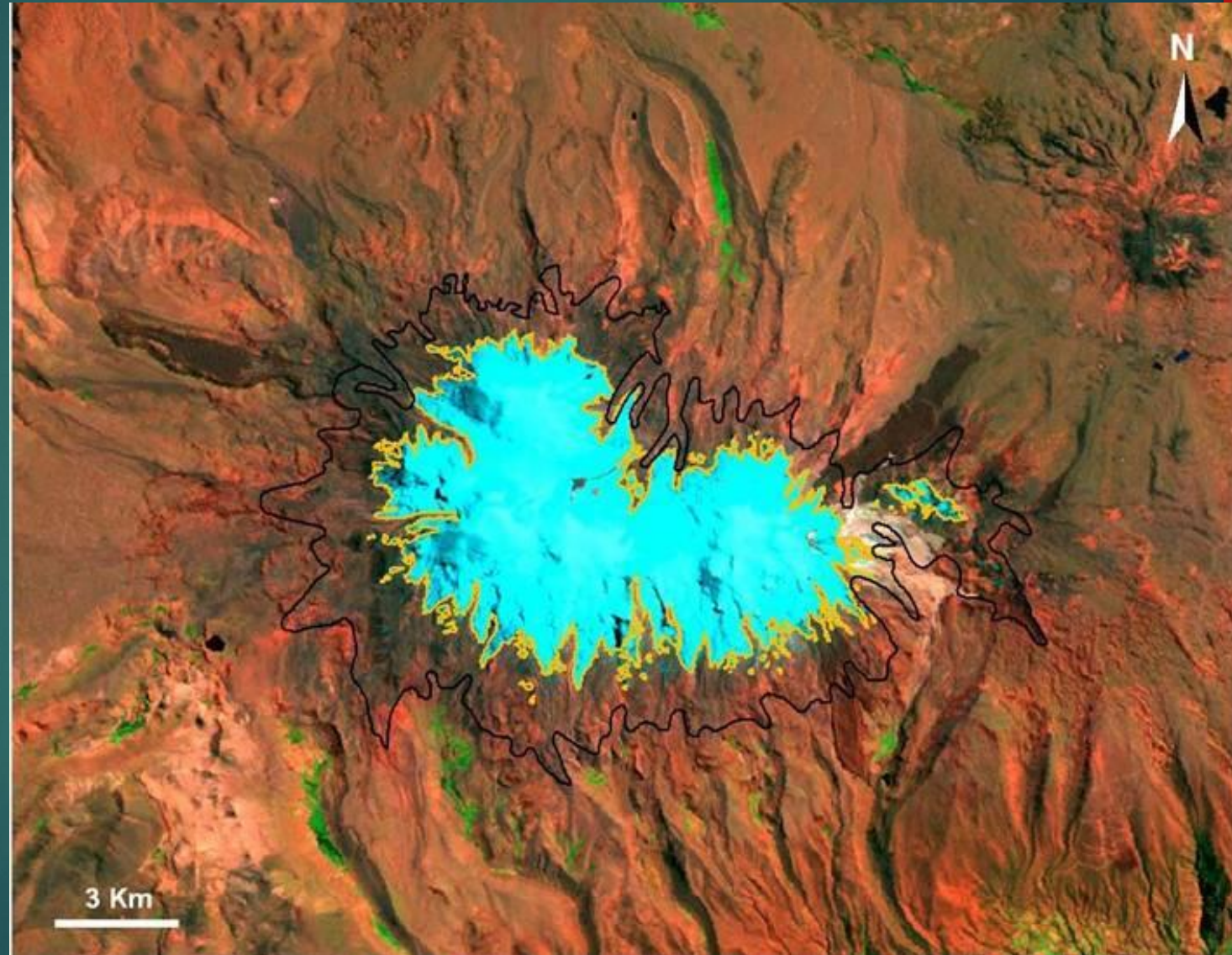
Maximizing the impact

Main problem: melting of Andes glaciers

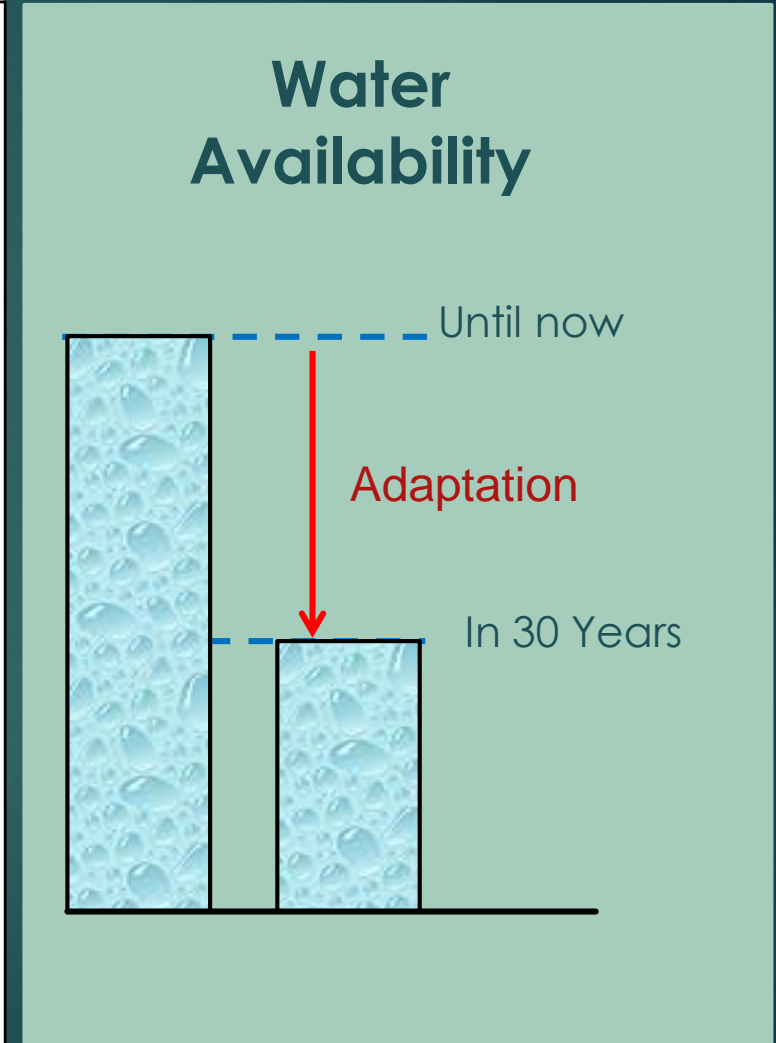
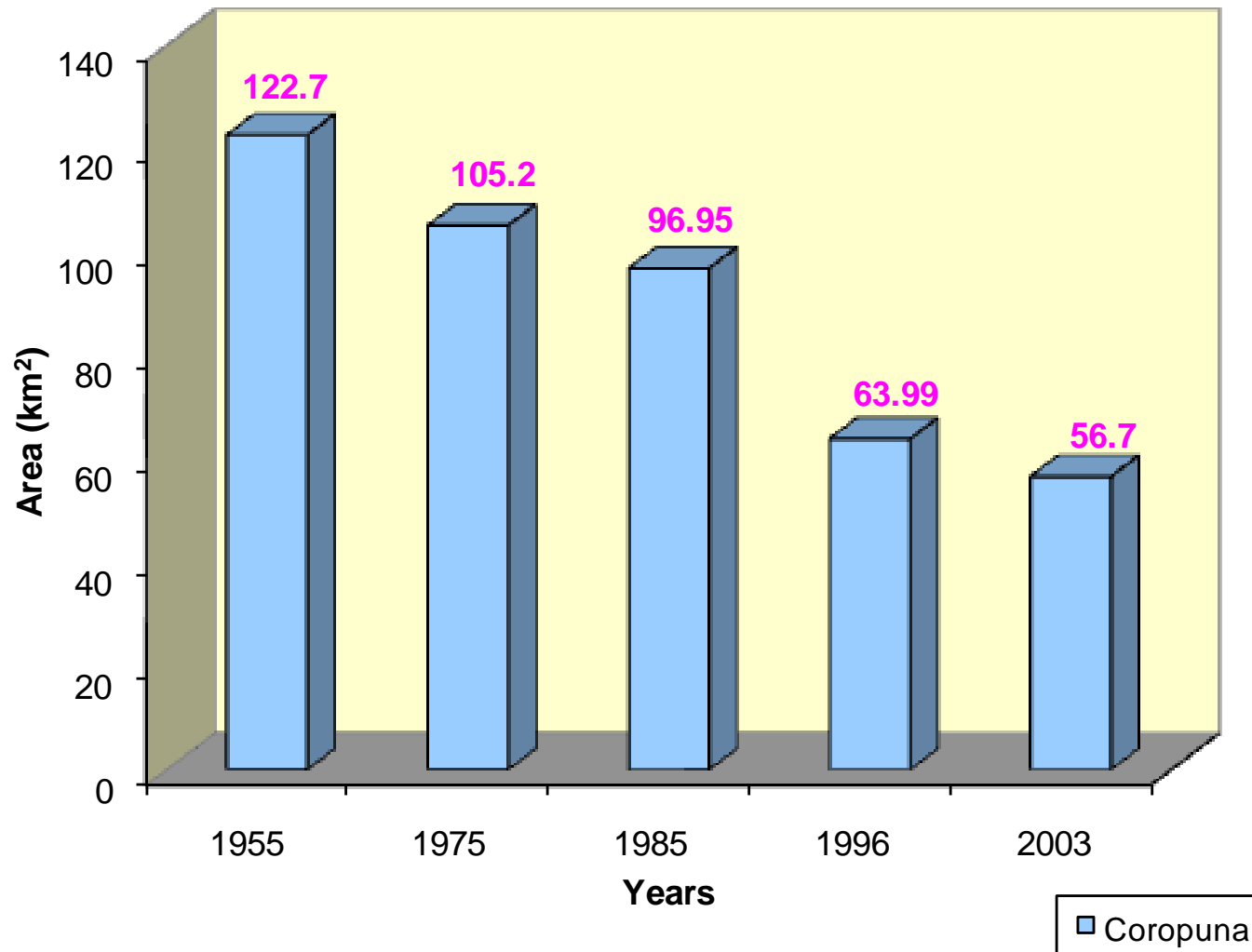
Nevado Coropuna glacier coverage in 1955 (outlined in black) and

in 2003 (orange outer boundary)

54% glacier volume lost!



Adapting to the new conditions



Glacial retreat

Maximizing water resources impact: Arequipa



Guidelines for CC adaptation in agricultural production



Incorporating adaptation in development plans



Applying strategies to multiple sectors



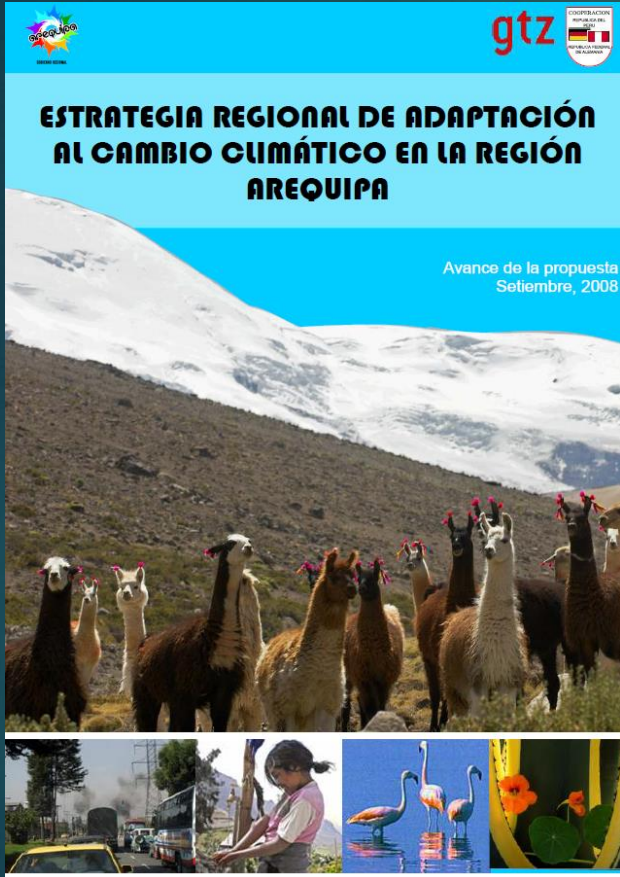
Irrigation, food storage and water storage

- ✓ 3 water and irrigation systems with minimal losses for optimized water usage
- ✓ 15 community silos to store food
- ✓ 5 mini-reservoirs for water storage



Concrete, tailored
measures implemented

Developing capacity and mainstreaming CCA



Scaling-up CCA strategy for the whole region



Mainstreaming CCA in daily life

Developed capacity applied in other regions

Estrategias aprobadas	3	Junín, Amazonas y Lambayeque
Estrategias en aprobación	3	Tumbes y Lima
Estrategias en formulación	5	Arequipa, Ayacucho, Callao, La Libertad y Apurímac, Cusco
Estrategias en etapa inicial	4	Loreto, Piura, San Martín y Cajamarca

Investing in the future: across the world - 1



UNESCO project to incorporate risk management in urban planning



Learning together

- Chile
- Nepal
- India
- Mexico
- California

Investing in the future: across the world - 2

Final symposium in
Tijuana and San José,
CA



Managing risk will be
much easier in the future
with these young
champions





Role of international organizations and cooperation

WHAT COUNTRIES REALLY NEED

Where does most assistance go?

- ▶ Development in Bangladesh (1991 study)
 - ▶ Country officially established in 1971
 - ▶ Billions of USD in foreign aid for development
 - ▶ ~ 75% went back to the donors
 - ▶ Most of remaining funds went to national counterpart
 - ▶ Very little permeated to improve people's lives

In 2019, Bangladesh ranks 135 in human development index
(out of 189 countries)

International Aid may worsen the problem

Working with central governments only is not advisable

- ▶ May promote corruption and politization of processes
- ▶ Does not usually address local needs
- ▶ Reduces delivery effectiveness and increases cost

A 2005 Study in a Latin American country shows:

- ▶ **1991-2004: ~US\$ 500M per year for development**
- ▶ **80% of public investment paid for by international assistance**
- ▶ **Exports are 30% of the imports. Ever-increasing debt**

Result: Country remains entirely dependent on foreign assistance

So, what do countries really need ?

International cooperation should:

- ▶ **Support the countries' work, not do their work (e.g. Africa)**
- ▶ **Rely mainly on national/local organizations**
 - They have clear roles and mandates
 - May be cheaper: usually they have staff, offices, computers, expertise, data, etc.
 - They are part of an institutional system – so it is a positive systemic influence
 - Capacity and knowledge remains – Promotes application, sustainability, replication
 - Local knowledge and adaptation is included in the process
 - Results and recommendations reflect local reality, needs and priorities

Technology transfer and capacity building (technical & institutional) should be the first priority of cooperation

Conclusions

Main messages to take home

- ▶ Disaster risk management is a development issue. It should not be addressed in isolation
- ▶ Risk management must be integrated into public policy, development plans and investment decisions
- ▶ For effectiveness and impact, move from projects to long-term programs
- ▶ All sectors of society must be actively engaged in the process
- ▶ Investing in the education of new generations is the best investment
- ▶ Technology transfer and capacity building should be the priority of international cooperation



Thank you!

READY TO ADDRESS YOUR COMMENTS OR QUESTIONS