Measuring adaptation outcomes: approaches and early experiences

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GIZ Climate Policy Group

Adaptation Metrics Conference

Rabat, 27 September 2016

On behalf of

BMZ Federal Ministry for Economic Cooperation and Development

of the Federal Republic of Germany

Assessing adaptation outcomes

- **Success of adaptation is context-specific**
- **There is no single universal indicator/metric for adaptation**
- **Appropriate metrics depend on the M&E purpose**, e.g.:
  - Tracking achievement of project objectives
  - Assessing performance of a climate portfolio
  - Learning why adaptation went well (or not)

The **Adaptation M&E Navigator** indicates suitable M&E approaches: AdaptationCommunity.net ➜ M&E

Book (Open access): Evaluating Climate Change Action for Sustainable Development. Springer. November 2016.

Assessing adaptation outcomes

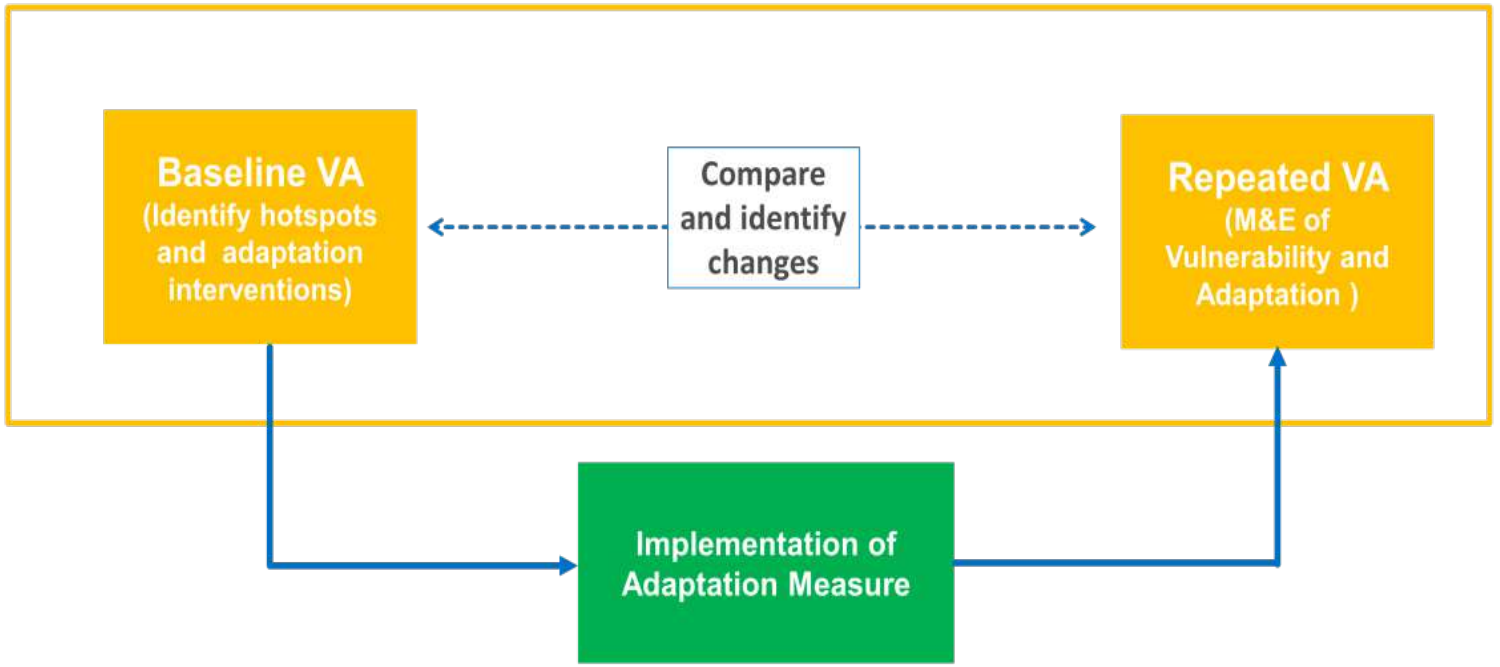
GIZ has piloted the following approaches to assess adaptation outcomes:

1. **Adaptation metrics: „Saved health/Saved Wealth“**
   - ➢ Standard metrics, but calculation adjusted to each case
2. **Repeated vulnerability assessments**
   - ➢ Standardized method, but contex-specific indicators
3. **Impact evaluations**

These approches would be used alongside the regular results-based project monitoring.

1. Repeated vulnerability assessments

Based on a climate impact chain

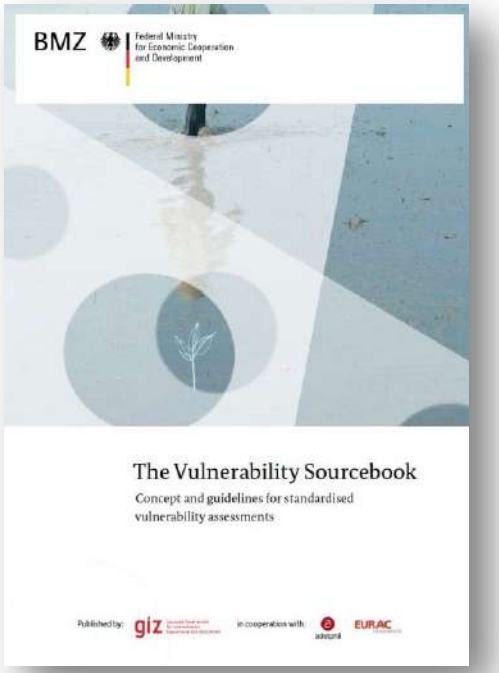


Repeated vulnerability assessments

Example from irrigation measure in Bolivia:

	Potential CC Impact	Adaptive capacity	Vulnera-bility
Before irrigation	0,92	0,63	0,77
With irrigation	0,17	0,35	0,25

See Vulnerability Sourcebook for details



Requirements:

- Identical VA method & indicators
- Sufficiently long time horizon and level of detail
- Analysis of **contribution** of the adaptation intervention needed

2. Saved wealth / saved health due to CCA

Saved wealth: Economic losses avoided through adaptation

- Estimated frequency and damage of CC impacts
- Estimated absolute and relative (per capita) economic damage

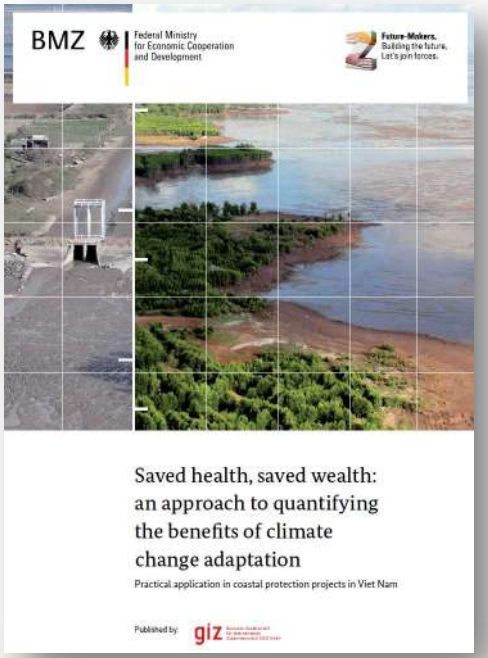
Saved wealth: avoided human health impacts

- Based on „Disability adjusted life years“ (DALYs)
- DALYs: injuries and illnesses on a scale from 0-1
  - ‘years of life lost’ (due to premature mortality) and
  - ‘years lived with disability’

➢ **Quantification of adaptation benefits**

- **Excel tools** available for calculation

See study & excel tools for details



Application to coastal protection project in Viet Nam‘s Soc Trang province

Narrow mangrove belt along a highly dynamic coast line

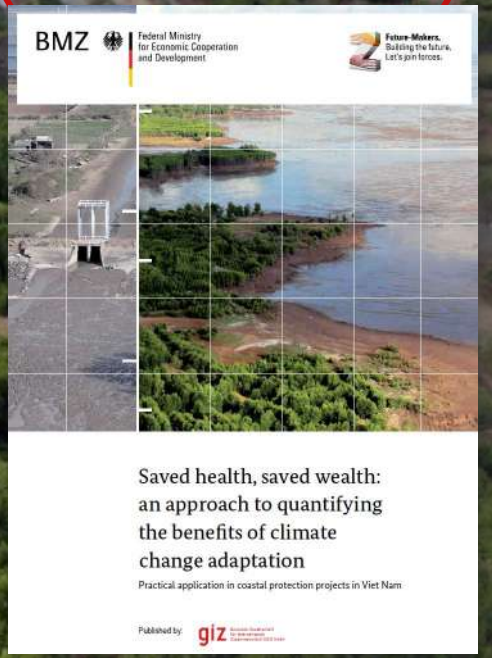
- Storms (coastal erosion)
- Sea level rise

- Flooding (Mekong)
- Saline intrusion
- Changes in precipitation
- Temperature increase

Adaptation

- **Mangroves**
- **Sea dyke**, wave breakers

shrimp farming & rice cultivation



2b. Saved wealth/health: Requirements

- **Data intensive**
- **Assumptions**, e.g. on CC impacts, damages, economic development
- **Needs experts** for calculation
- Only applicable to certain types of adaptation projects
  - Not to capacity building
  - Longer term measures

➢ Complex, costly and context-specific

Benefits:

- **Rigerous quantification of benfits**
- Can be used ex-ante and ex-post

Minimum data requirements*:

- Maximum damage potential of climate change impacts
- Probability of occurrence of climate change impact for every year t (i.e. probability per each year)
- Negative economic impact due to project implementation
- Percentage of wealth and health (if applicable) projected to be lost due to climate change in year t
- Total wealth of the region

3. Impact evaluation techniques

➢ Assessing results and **contribution** of adaptation actions

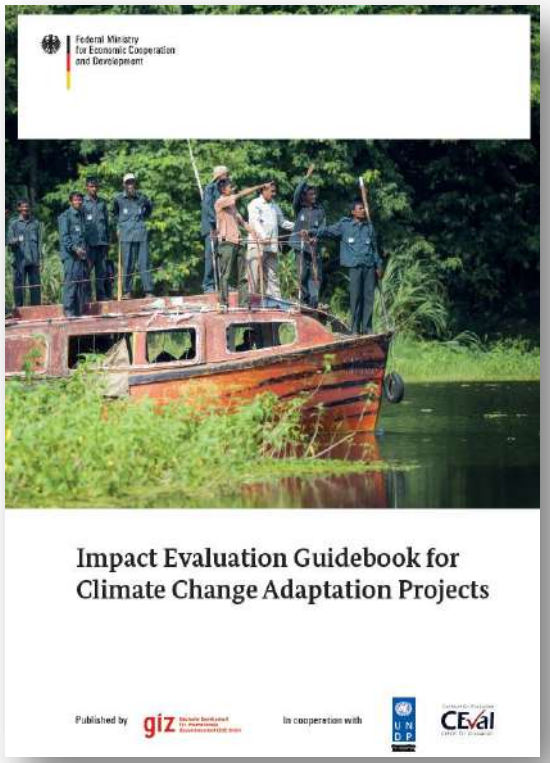
Different techniques, e.g.

- Randomized controlled trials
- Quasi experimental designs
- Propensity score matching

Requirements:

- Limited applicability, e.g. if small sample
- Significant data needs
- Experts to design and perfom IE
- **High costs**

See **guidebook** for details

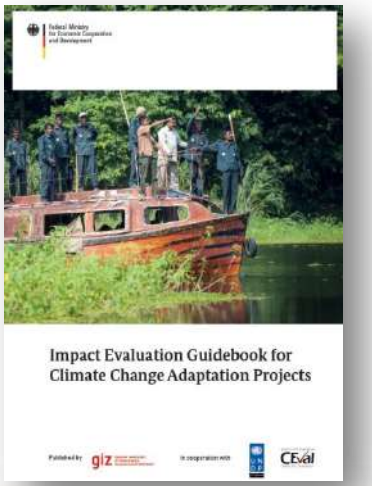


3. Impact evaluation techniques

Webinar

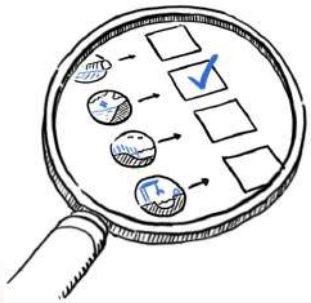
- **Wednesday, 5 October 4 PM CET**
  - ✓ Applying Impact evaluation to adaptation projects
  - ✓ Example IE of an adaptation project in Morocco

Linkt to webinar will be posted soon in News at www.AdaptationCommunity.net

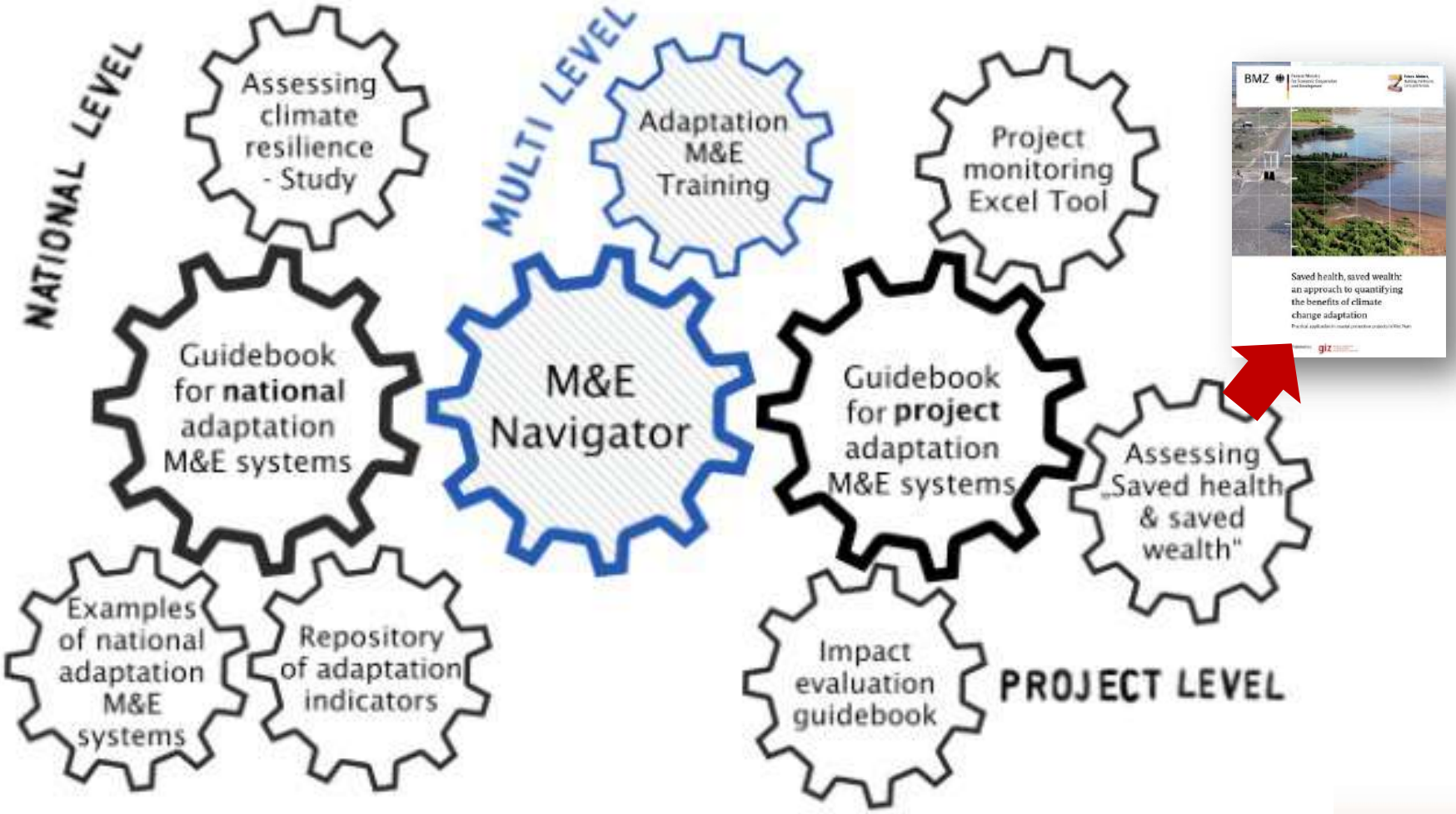


Conclusions

- **There is no simple & universal indicator for adaptation**
- Methods to assess adaptation outcomes exist, but are:
  - Data intensive
  - Costly
  - Often require expert knowledge to undertake
- **Adaptation metrics only suitable to certain purposes!**
  - Mainly for accountability and climate performance
  - **Learning needs more than metrics!**



GIZ‘s Adaptation M&E Toolbox



Thank you!

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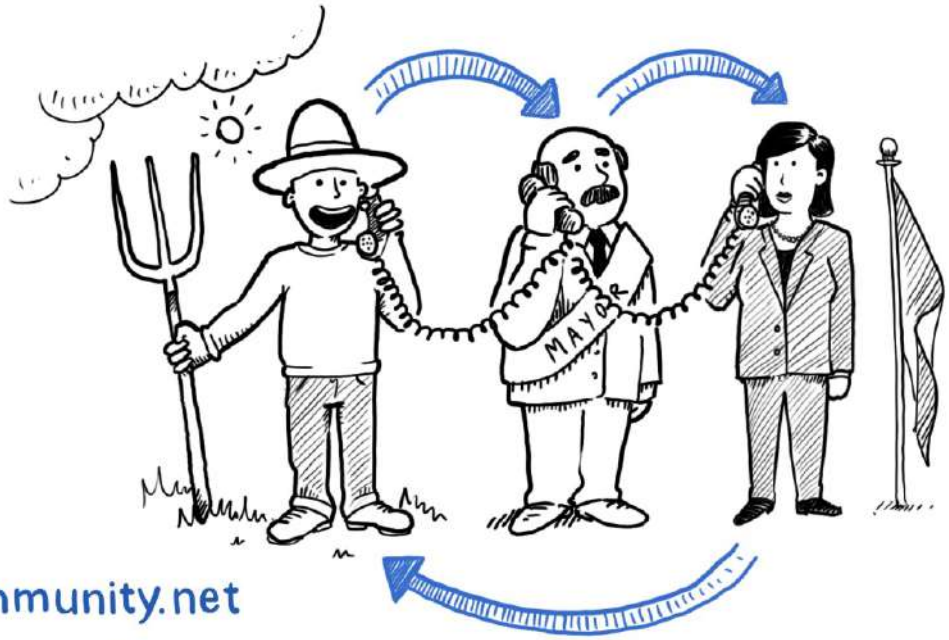
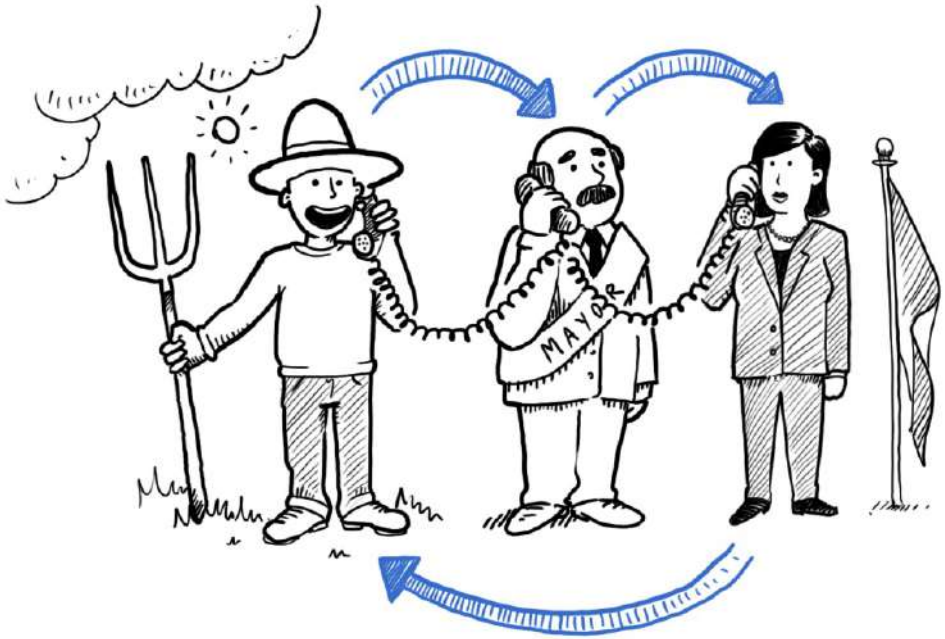


AdaptationCommunity.net

Background slides



Vulnerability assessment

Example from Bolivia

To assess how the Technified Irrigation project helped to reduce the vulnerability of small-scale farmers.

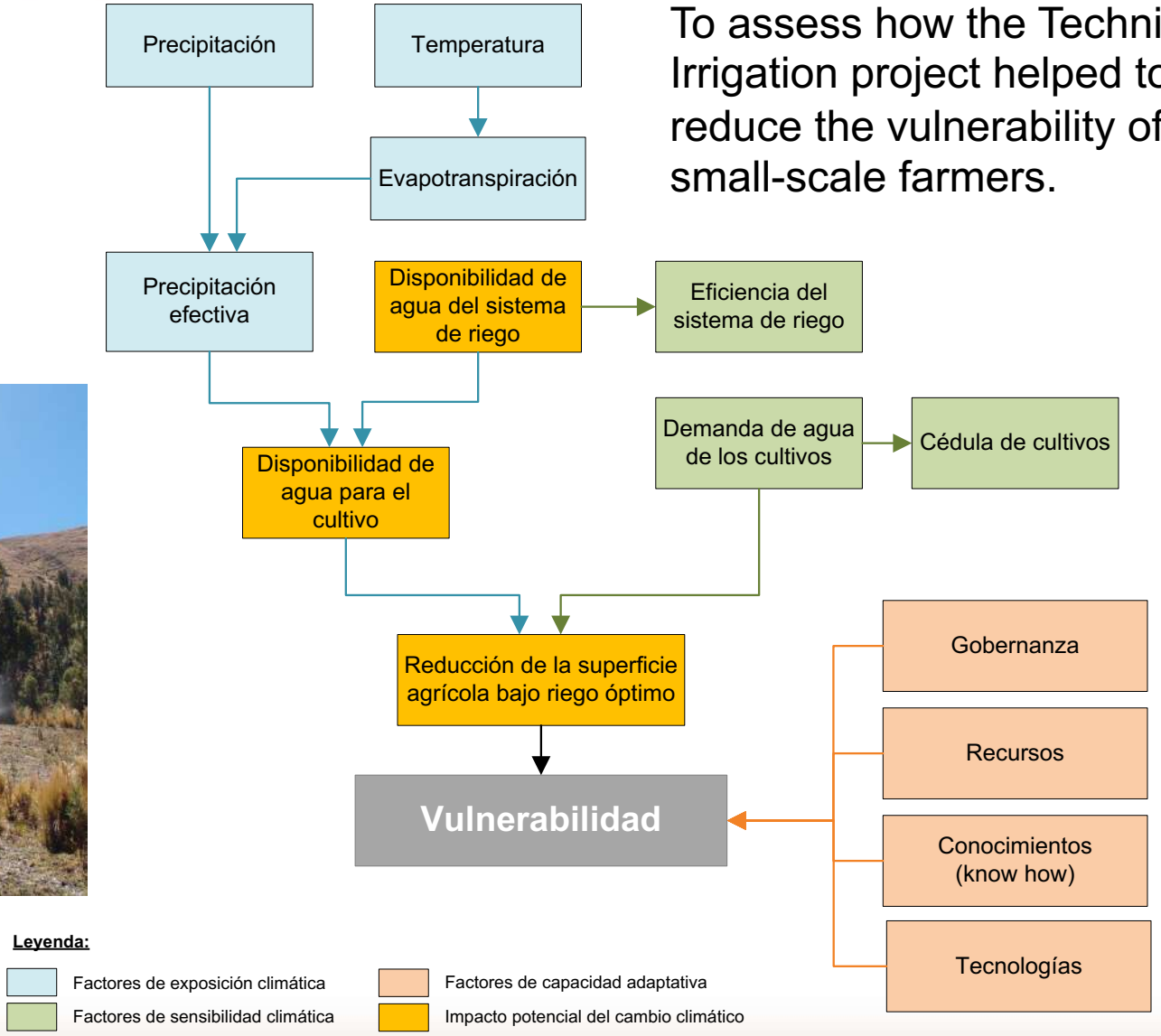


Table 3: Expected annual wealth losses (in USD million/yr). Source: 'Damage Curve' tab in the spreadsheet

Type of wealth	Total value: average over lifetime; deflated)	10 yr floods	6-9 yr floods	1-5 yr floods	2 week spring tide	Total
Public infrastructure	0.54	0.03	0.00	0.00	0.00	0.03
Private property, rich						
Private property, poor	1.53	0.02	0.02	0.01	0.00	0.05
Total private property	*1.53*					*0.00*
Avoided erosion	3.24	0.01	0.01	0.01	0.00	0.03
Avoided salinisation	1.29	0.00	0.00	0.00	0.03	0.03
Total wealth losses per year		0.063	0.027	0.021	0.035	**0.15**

Table 4: Expected annual health losses (in DALYs/yr). Source: 'Damage Curve SH' tab in the spreadsheet

Average health loss	10 yr floods	6-9 yr floods	1-5 yr floods	2 week Spring tide	Total	Average duration (years)	DALYs
Deaths	0.03	0.1	-	-	0.1	n. a.	4
Fractures	0.1	0.1	-	-	0.1	0.167	0.024
Diarrhoea	1.6	1.8	2.1	110.9	116	0.115	13.429
...						**Grand total DALYs p. a.**	**17**

Royaume du Maroc

Ministère Délégué Auprès du Ministère de l'Énergie, des Mines, de l'Eau et de l'Environnement, Chargé de l'Environnement

OREDD SM

التعاون الألماني
DEUTSCHE ZUSAMMENARBEIT

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Programme ProGEC

METRICS OF ADAPTATION CONFERENCE

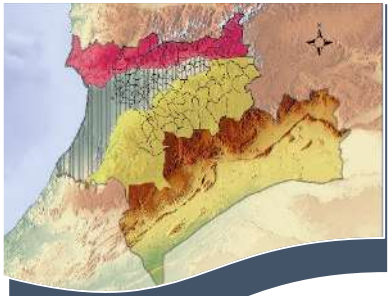
MEASURING ADAPTATION FOR CONCRETE ACTION

Système de suivi et évaluation sur la vulnérabilité de l'adaptation aux changements climatiques – Région Souss Massa

SEPTEMBER 27th 2016, Skhirat, MOROCCO

MARRAKECH COP22|2016|CMP12 UN CLIMATE CHANGE CONFERENCE

OREDD SM



MISSIONS

- Gérer l'information environnementale
- Suivre l´état de l´environnement
- Développer des outils d'aide à la décision

COMITÉS THÉMATIQUES

1. Eau et Assainissement
2. Biodiversité et espace naturelle
3. Littoral et milieu marin
4. Déchets et assainissement solide
5. Changement Climatique
6. Education , Formation et Sensibilisation environnementale
7. Recherche Scientifique

RÉALISATIONS

- Etude de l'évaluation intégrée de l'environnement
- Institutionnalisation des comités thématiques
- **Elaboration du SSE ACC**
- Intégration de l´ACC dans la planification stratégique locale
- Réalisation d'un plan de renforcement des capacité en ACC

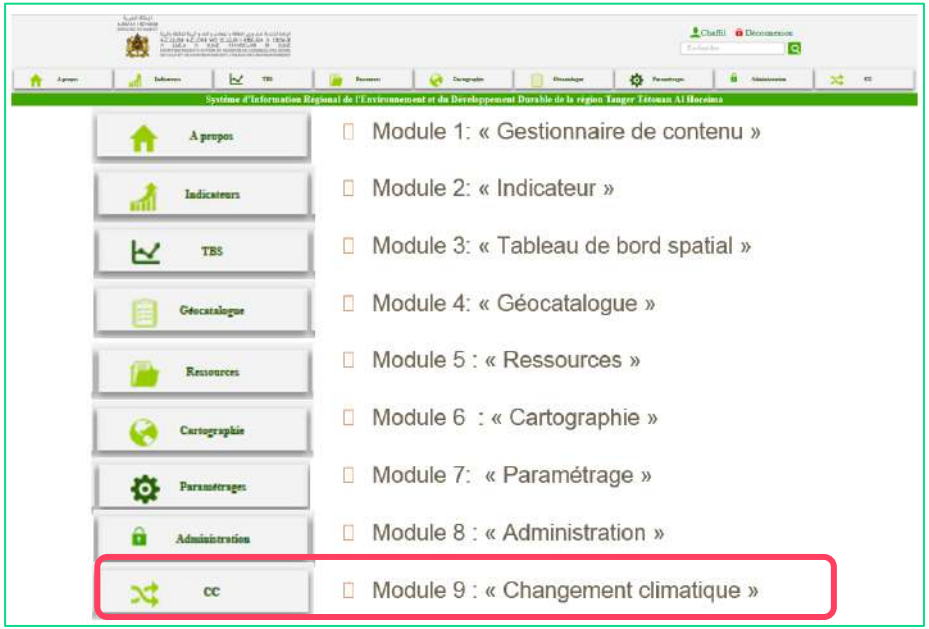
PROJETS EN COURS

- Mise en place du SIREDD-modèle
- **Ajustement et actualisation du SSE ACC**
- Etude de l'évaluation intégrée de l'environnement
- Création d´un Pool Régional de compétences sur les CC
- Etude de l'analyse et cartographie de la vulnérabilité aux événements climatiques extrêmes et estimation des coûts de ces évènements
- Elaboration du PTRC SM

SIREDD

Interface d´accueil

Modules du SIREDD



SYSTEME DE SUIVI ET EVALUATION DE LA VULNÉRABILITÉ ET L'ACC

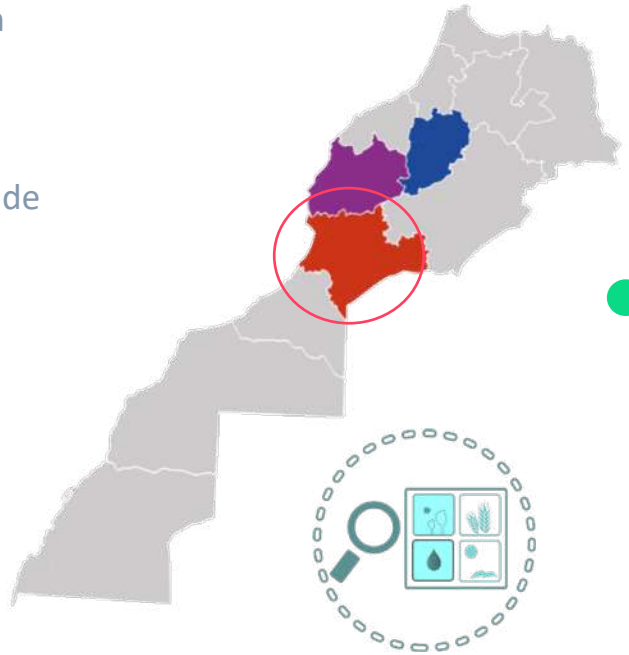
OBJECTIF

Doter la région SM d'une méthode et d'un dispositif institutionnel en mesure d´assurer le suivi de la vulnérabilité climatique et les résultats de l'adaptation dans les secteur choisis en tenant compte de l'aspect genre.

SECTEURS PRIORITAIRES

Région SM : L´eau comme thématique principale dans les secteurs de : agriculture, forêts/ biodiversité et tourisme

Région SM : eau + agriculture + forêt/biodiversité



PILOTAGE DU SYSTÈME:

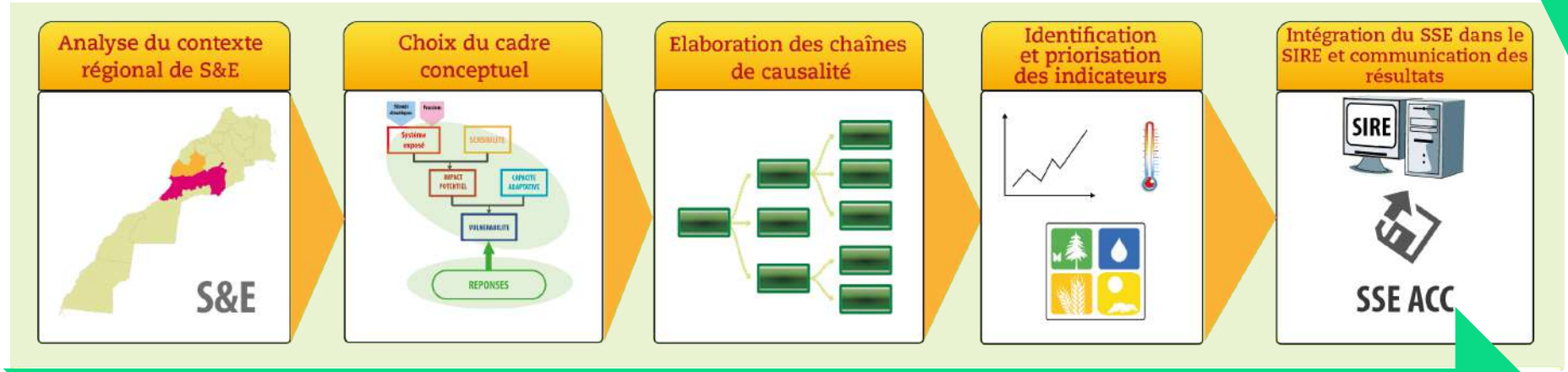
Piloté par les OREDD appuyé par le Comité thématique changement climatique

CHAMPS D´ACTION

Suivi de l´évolution de la vulnérabilité au CC par rapport aux secteurs prioritaires

Suivi de la réalisation et les résultats des actions ACC

DÉROULEMENT DU PROCESSUS



Phase 1:
Contexte pour le montage d'un système

Tenue d´un atelier maghrébin sur le suivi de l´ACC

Phase 2:
Mise au point de la méthodologie de suivi et évaluation des stratégies et actions ACC

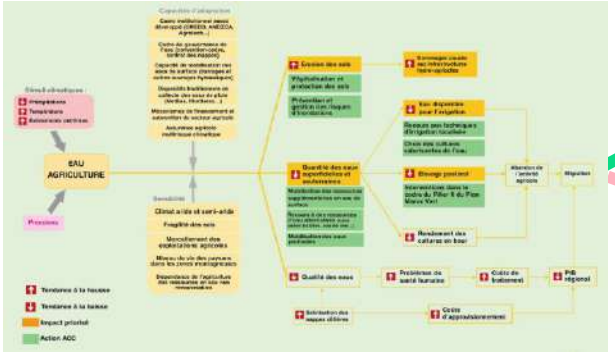
Tenue de deux ateliers régionaux sur la méthodologie de S&E de la Vulnérabilité et de l'Adaptation au Changement Climatique

Phase 3:
Montage et finalisation du système

Tenue de deux ateliers régionaux de validation des indicateurs prioritaires et d´interprétation collective

UTILISATION DES OUTPUTS

CHAÎNE D´IMPACTS



Ateliers de validation des indicateurs prioritaires

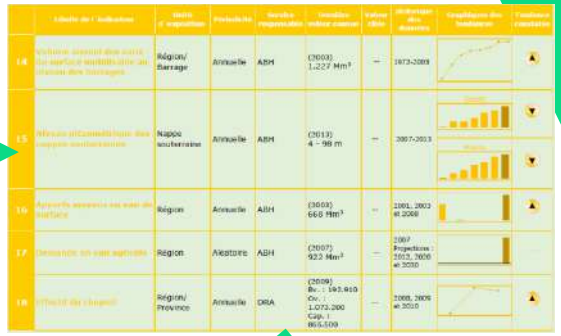
Liste A

Liste B

Indicateurs pertinents mais difficile à renseigner

Ateliers d´interprétation collective

ETAT DE RÉFÉRENCE



BD

SIREDD

Etat de l´environnement

PTRC

Plateforme électronique

UTILISATEURS IDENTIFIÉS

ACQUIS ET BESOIN

ACQUIS

- Mise en place et institutionnalisation des organes de gouvernance (comité CC)
- Renforcement des capacités des partenaires locaux
- Conduite de plusieurs études complémentaires portant sur l'analyse et cartographie de la vulnérabilité (échelle régional et communal)
- Appropriation des méthodes et processus afférents du processus SSE ACC
- Etablissement d'un premier état de référence

BESOINS

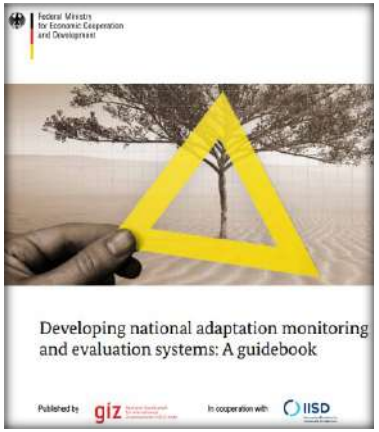
- Etendre le système à d'autres secteurs au-delà des secteurs priorisés;
- Appuyer la dimension spatiale des indicateurs retenus (outils SIG);
- Assurer le suivi de la mise en œuvre (indicateurs de réalisation) des programmes et actions contribuant à l'ACC à l'échelle de la région;
- Ajuster et actualiser les données du système (compléter l'état de référence réalisé) ;
- Appuyer la mise en ligne du SSE ACC;
- Appuyer la mise en place d'un pool régional de compétences et des plateforme dédiées à l'information climatique et à la diffusion des bonnes pratiques en matière d'ACC ;
- Renforcer les capacités du comité CC , notamment en matière de croisement et d'interprétation des données relevant du système;
- Renforcer l'échange d'expériences sur le plan national et international en matière de S&E de l'ACC…

POUR PLUS D´INFORMATION

Dépliants

Guide

Recueil des indicateurs



Guidebook

United Nations Framework Convention on Climate Change

Measuring Adaptation through its impact on resilience – a perspective from the UNFCCC Adaptation Committee

Conference on Adaptation Metrics

27 September 2016, Skhirate, Morocco

Klaus Radunsky, member of the Adaptation Committee

Overview

- Role of the Adaptation Committee (AC) under the Convention
- Work of the AC on measuring adaptation in the context of monitoring and evaluation (M&E) of adaptation
- The 2016 technical examination process on adaptation (TEP-A) with respect to M&E
- Work of the AC in addressing relevant mandates related to the Paris Agreement, including those jointly with the Least Developed Countries Expert Group (LEG)
- Conclusion

What is the Adaptation Committee and what does it do?

The AC is the overall advisory body on adaptation under the Convention

It seeks to raise the profile of adaptation and to promote greater coherence in the way

Considering information by Parties **on monitoring & review support provided and needed**

Providing recommendations to COP on **means to incentivize implementation**

Mandate

- The Adaptation Committee was established in 2010 as part of the Cancun Adaptation Framework (decision 1/CP.16)

- At the Paris Climate Change Conference in 2015, Parties re-affirmed and amplified the role of the AC, and:

  - Requested the Committee, along with others, to develop further methodologies and modalities in support of adaptation planning and implementation (decision 1/CP.21, paras 41, 42, 45)
  - Requested the Committee and the LEG to consider how they can provide more information on accessing funding from the GCF for the process to formulate and implement national adaptation plans (NAPs) (decision 4/CP.21, para 10)

AC work related to monitoring and evaluating adaptation (1)

2013 Workshop on the M&E of adaptation: policy questions addressed

Q1: How can communities, countries and development and adaptation agencies build on a common understanding of success in achieving climate resilience?

Q2: How can a framework be created that links individual assessments with national level assessments to broaden the focus from the means of achieving outcomes (individual interventions) to the desired end result (countries' becoming less vulnerable and having more adaptive capacity)?

Q3: How can results from M&E be reported and disseminated so as to ensure that they are fed back into the respective adaptation process but also to allow for lessons learned and good practices identified to be shared with the wider community of adaptation planners and practitioners?

AC work related to monitoring and evaluating adaptation (2)

2013 Workshop on the M&E of adaptation: Lessons and key messages

Q1: How can we build a common understanding of success?

- M&E has multiple purposes and benefits, including raising awareness, learning, accountability etc., it is a tool not an end in itself;
- Planning and allocation of resources, both technical and financial, are key for effective M&E systems;
- M&E frameworks need to be appropriate and relevant to the needs and tailored to country-circumstances, there is no one-size fits all framework and not just one measure of success for adaptation – clearly formulated goals, objectives, and output measures are essential for good M&E frameworks;
- Indicators are useful, but not the only means to monitor progress – if used, indicators should not only be used to monitor the process, but also outcomes and impacts; a common set of indicators that can be applied to monitor any adaptation action is not useful due to the context-specific nature of adaptation.

AC work related to monitoring and evaluating adaptation (3)

2013 Workshop on the M&E of adaptation: Lessons and key messages

Q2: How can a framework be created that links individual assessments with national level assessments?

- Adding up indicators from local level to get an aggregate number is neither necessarily possible nor desirable.
- Rather than creating a framework that links the two levels, experts suggested that the AC consider that national level assessments measure different aspects of adaptive capacity than subnational/project-based assessments. National level assessments could, for example, seek to measure the degree of coordination and integration of adaptation into national priorities.

AC work related to monitoring and evaluating adaptation (4)

2013 Workshop on the M&E adaptation: Lessons and key messages

Q3: How can results from M&E feed back into the adaptation process and be shared?

- Formal and informal learning is a key part of M&E and should be encouraged, including through creating the necessary enabling environment, drawing from different sources of knowledge, establishing respective communication channels and incentives, building in and budgeting for learning and involving all relevant stakeholders including communities and civil society;
- Peer-to-peer learning and participatory approaches can be effective and help to reveal underlying inequality/rights/ structural causes for vulnerability;
- Learning should also include sharing of negative experience and challenging of fundamental assumptions.

The 2016 technical examination process on adaptation: Background

- The technical examination process on adaptation (TEP-A) was established at COP 21 as part of the enhanced action prior to 2020 to be organized by the subsidiary bodies, conducted by the AC and supported by the secretariat through organizing technical expert meetings and preparing technical papers.
- The TEP-A will take place during 2016-2020 and its objective is to identify concrete opportunities for strengthening resilience, reducing vulnerabilities, and increasing the understanding and implementation of adaptation actions
- 2016 umbrella topic: Reducing vulnerability and mainstreaming climate change adaptation, including through the process to formulate and implement national adaptation plans (NAPs)
- M&E of adaptation was considered during the meetings and in the technical paper

The 2016 technical examination process on adaptation: M&E (1)

- Monitoring and evaluating and learning from adaptation plans, policies, programmes and actions is an important element for Parties engaging in national adaptation planning processes and implementation of actions.
- M&E can be viewed as a mechanism for ensuring adequacy, effectiveness and efficiency and also as a tool for learning and can answer the following set of questions:

1. Does resource allocation for adaptation reflect prioritized adaptation needs?
2. Are policies and plans implemented in a cost-effective and efficient manner?
3. Are assigned institutions adequate and effective in planning and implementing adaptation? and
4. Are cooperative links and networks helpful?

The 2016 technical examination process on adaptation: M&E (2)

- As a tool to support continuous learning, M&E could help to answer a different set of questions:

  1. What progress has been made to implement strategic adaptation policies or plans?
  2. Is the country over time becoming less vulnerable or more resilient to the impacts of climate change? and
  3. What adaptation tools and processes have been successful and which ones deserve rethinking?

- M&E of adaptation poses multiple challenges:

  - Measuring output and outcome variables for adaptation projects is often more uncertain than for other types of initiatives;
  - The potential synergies between adaptation and other development and disaster risk reduction workstreams necessitate that M&E of adaptation efforts review the entire process, including integrative components with overlapping beneficial impacts.

Adaptation under the Paris Agreement (Article 7)

Global goal on adaptation
Paragraph 1

Recognition of adaptation efforts of developing country Parties
Paragraph 3

Guiding principles
Paragraph 5

Cooperation
Paragraph 8

Planning and implementation
Paragraph 9

Communication
Paragraph 10

Support
Paragraph 13

Global stocktake
Paragraph 14

The operationalizing decision to the Paris Agreement: 1/CP.21

The AC is requested to undertake five tasks and provide recommendations for CMA 1

Review, in 2017, the work of adaptation-related institutional arrangements under the Convention

(AC)

Consider methodologies for assessing adaptation needs

(AC)

Develop modalities to recognize the adaptation efforts of developing country Parties

(AC & LEG)

Develop methodologies on taking the necessary steps to facilitate the mobilization of support for adaptation in developing countries

(AC & LEG, in collaboration with the Standing Committee on Finance (SCF) and others)

Develop methodologies on reviewing the adequacy and effectiveness of adaptation and support

(AC & LEG, in collaboration with SCF and others)

Status of addressing the mandates assigned to the AC (1)

- **Review of adaptation-related institutional arrangements under the Convention in 2017**
  - Call for submissions from Parties and other stakeholders will be made by mid-October (including guiding questions) with a deadline of 6 January 2017.
- **Methodologies for assessing adaptation needs**
  - Call for submissions from Parties and other stakeholders will be made by mid-October (including guiding questions) with a deadline of 6 January 2017 and organization of an expert meeting early 2017.
- **Modalities to recognize adaptation efforts of developing country Parties, methodologies to facilitate the mobilization of support and for reviewing the adequacy and effectiveness of adaptation and support**
  - AC and the LEG agreed to establish a joint working group consisting of 4 members each to work inter-sessionally. The working group will invite participation from the SCF.

Status of addressing the mandates assigned to the AC (2)

- AC and LEG agreed to request the secretariat to prepare the following, under the guidance of the joint working group:
  - A synthesis of submissions from Parties and other stakeholders on the three joint mandates. A draft of this synthesis will be shared with the AC/LEG members before COP22.
  - An information paper, to include a list of options for each mandate, of methodologies and modalities, and their respective strengths and weaknesses, building upon the desk reviews and the synthesis of submissions.

- A joint in-session event by AC and LEG at COP 22 will inform Parties and allow for receiving feedback on the options emerging.

Conclusion

- The M&E workshop organized under the Adaptation Committee in 2013 provides very useful insights for the meeting in Rabat
- The Technical examination process from May 2016 provided additional relevant insights and confirmed the findings of the 2013 workshop
- The joint work programme of AC/LEG in fulfilling the mandates under the Paris Agreement will provide further guidance to Parties in 2017, with options for Parties and organizations to share their views

THANK YOU

Adaptation Committee
Website: unfccc.int/6053

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Mr. Don Lemmen: don.lemmen@canada.ca

PRISE

Pathways to resilience in semi-arid economies

Innovative Value Chains approach to assess options for adaptation

Value Chain Analysis for Resilience in Drylands (VC-ARID)

Catherine Simonet, Research Officer, ODI

Research for climate-resilient futures

PRISE - Research Aim and Questions

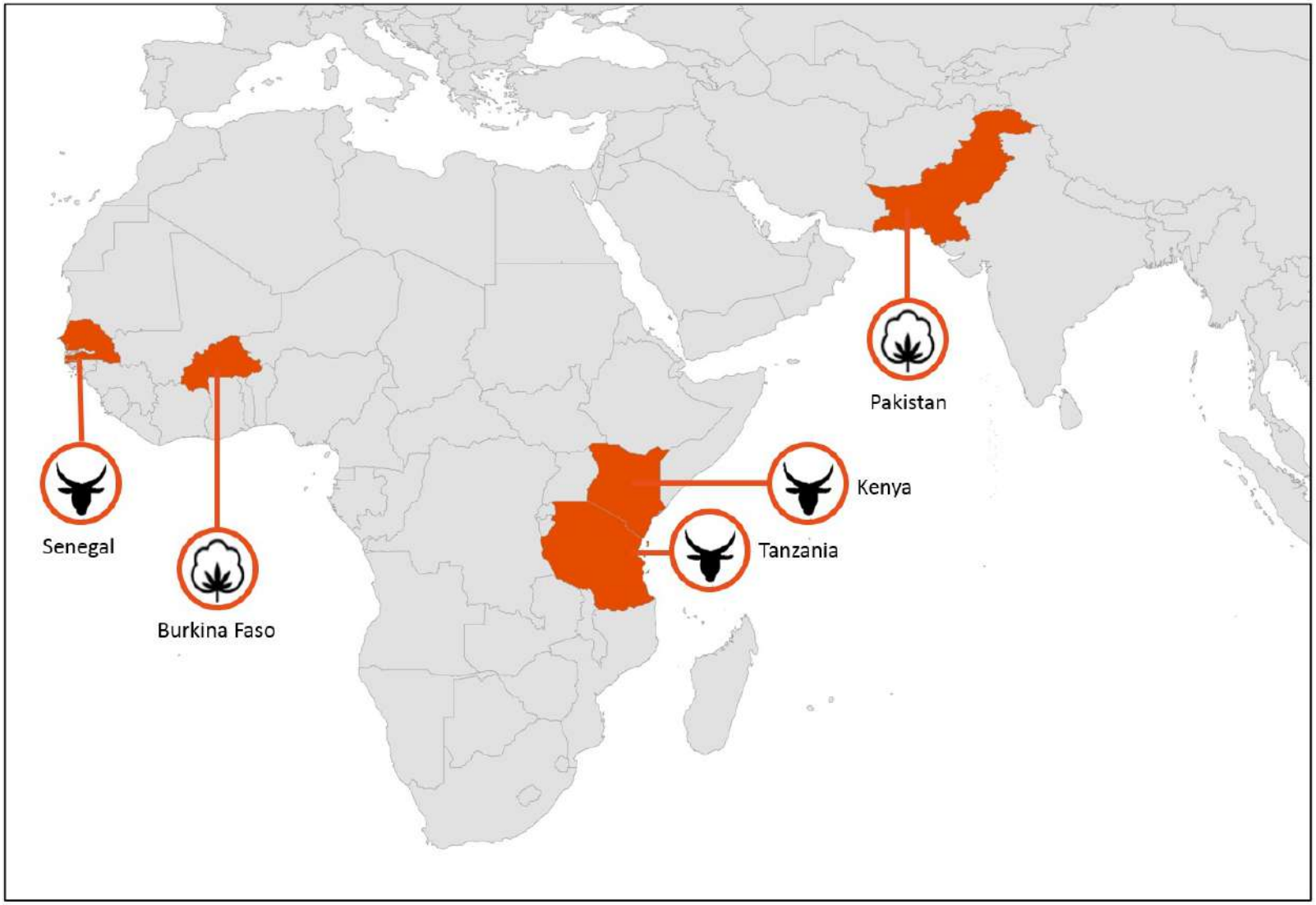
Pathway to Resilience in Semi-Arid Economies (PRISE) is a 5 years research project funded by IDRC. ODI leads a consortium of 6 research organisations working in 5 countries.

→ To identify climate change impacts and adaptation options in selected sectors with potential for economic transformation and diversification in the semi-arid lands of PRISE countries.

1. What are the pathways for climate-resilient economic development in semi-arid lands through vertical and horizontal transformation?

2. What are the adaptation options for business and private sector investment opportunities in responding to climate change in semi-arid lands?

Value Chain Analysis for Resilience in Drylands



VC-ARID: Three-step approach

Step 1: Map the value chain

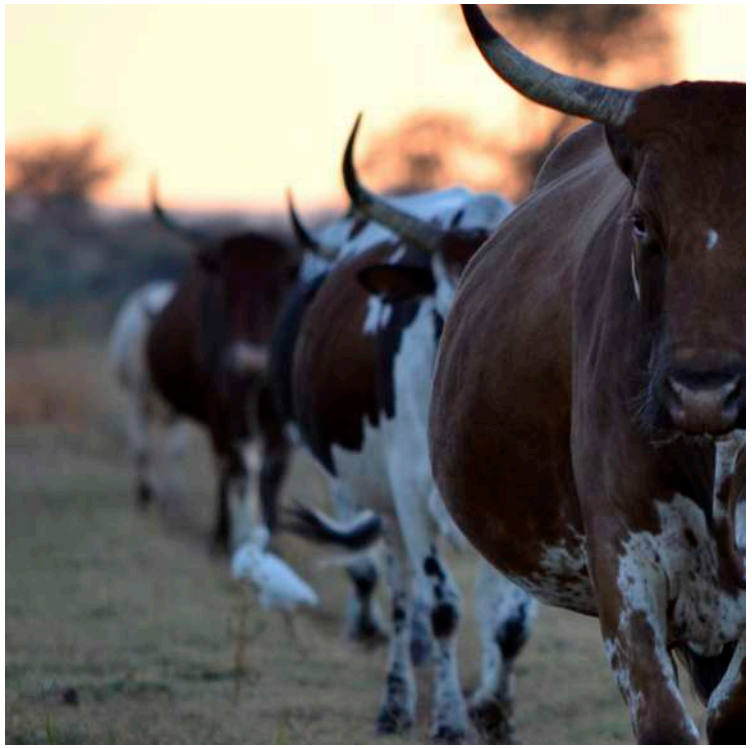
Step 2: Identify climate risks

Step 3: Identify options for adaptation and private sector investment

1. Seasonality

Semi-arid lands have highly variable ecological & climatic conditions.

VC-ARID recognises seasonal effects on livestock & cotton value chains.



2. Informality & gender

2 billion people make a living in arid & semi-arid lands.

VC-ARID incorporates both informal & formal chains & gender dimensions.

3. Semi-arid lands at the centre

Semi-arid lands are nearly always marginalised, both politically & economically.

VC-ARID places these areas firmly at the centre, as drivers of growth in key national economic sectors.

4. Climate risk

Semi-arid agricultural systems will face increasing vulnerability as climate change interacts with other factors.

VC-ARID considers climate risk at each step along the chain.

Identify adaptation options & pathways to inclusive, climate-resilient economic development.

Where we are to date

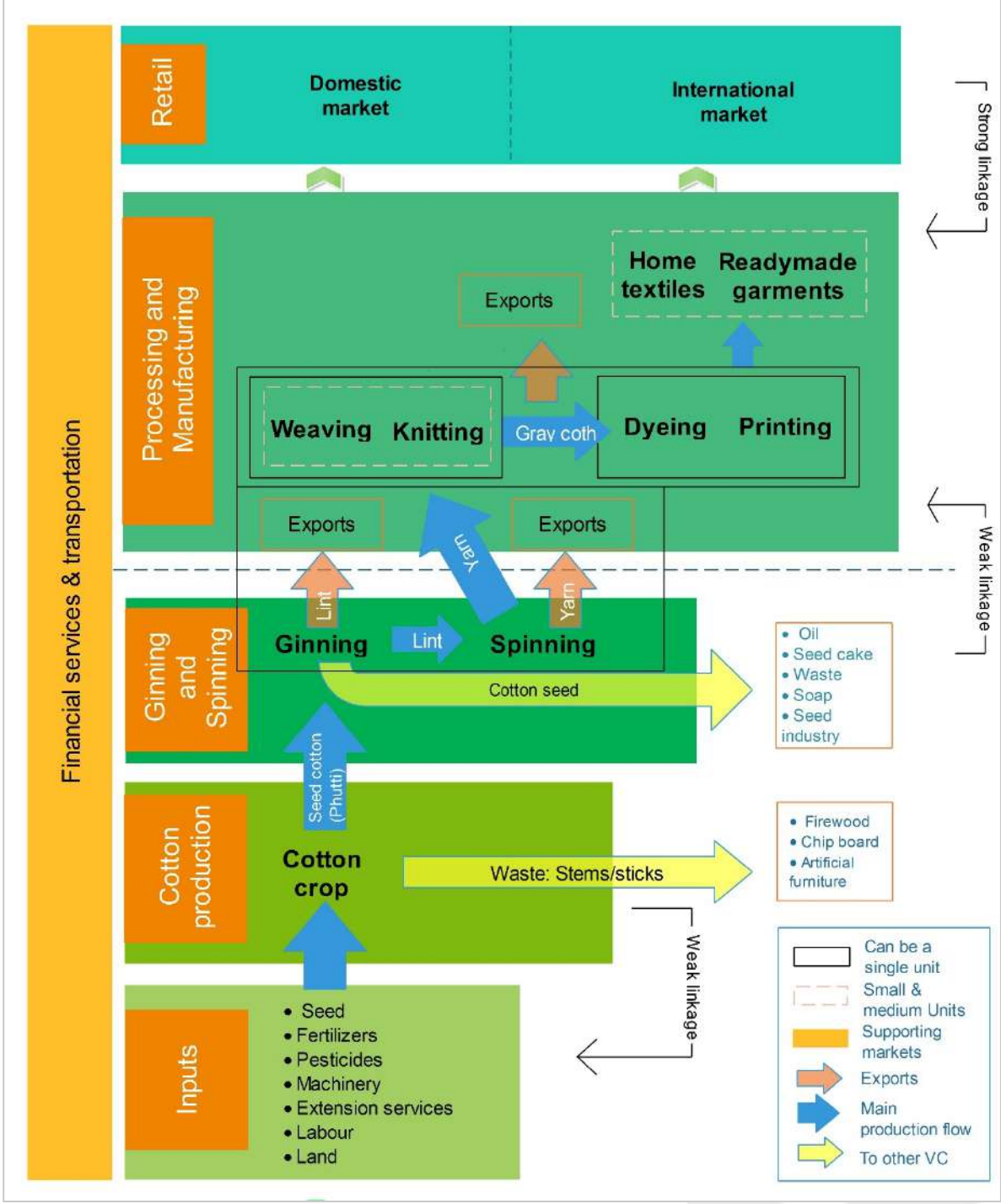
Step 1 completed for all countries and VCs.

- economic analysis of the sector
- VC Mapping and VC drawing
- stakeholder Mapping
- qualitative assessment of margin/costs and profit along the VC

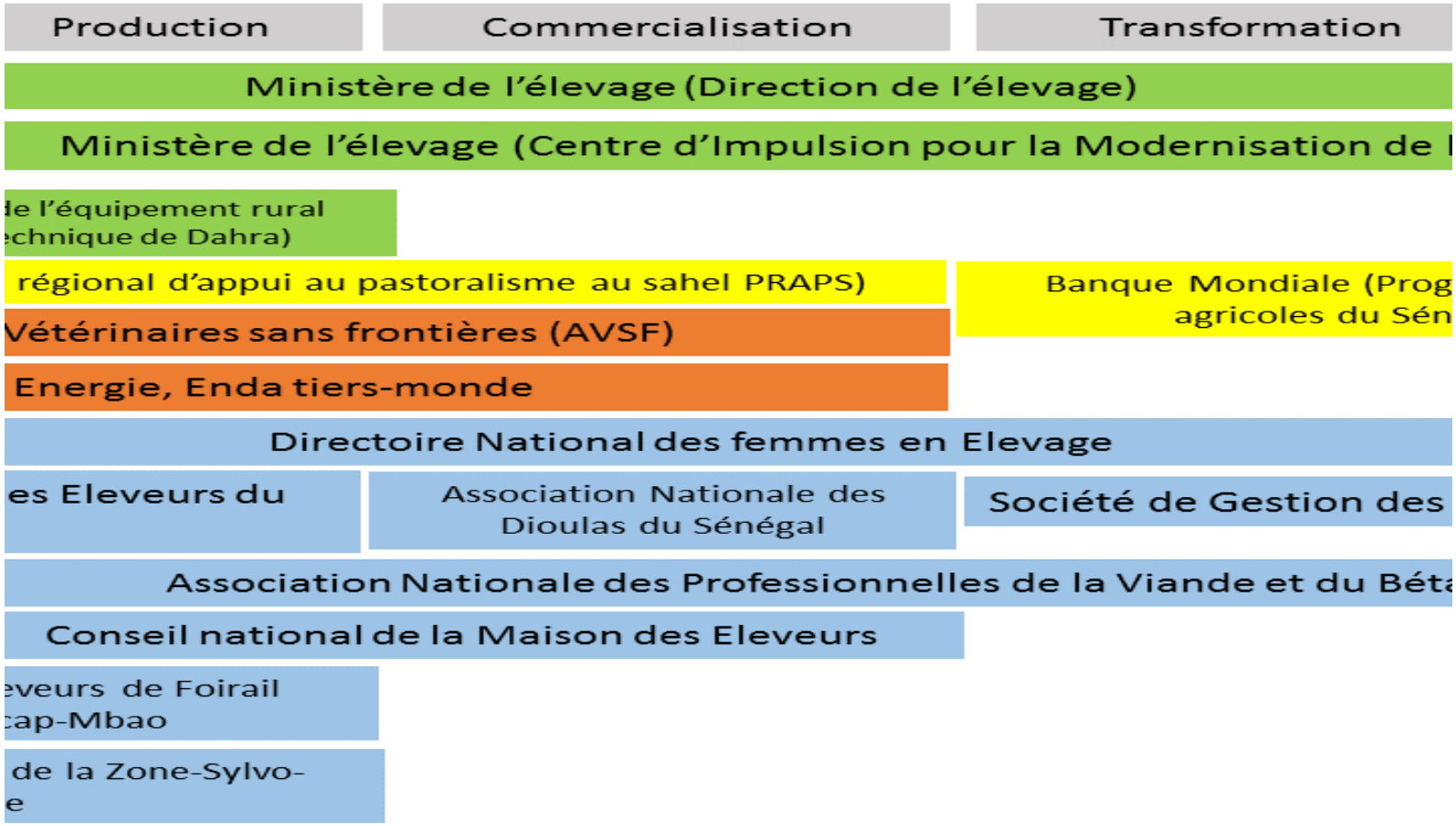
Step 2 is ongoing :

- 4 of 5 quantitative surveys implemented to producers and traders
- completed by key informants interviews at transformation and trade linkages
- common survey covering 6 sections : from production systems characteristics to climate risks

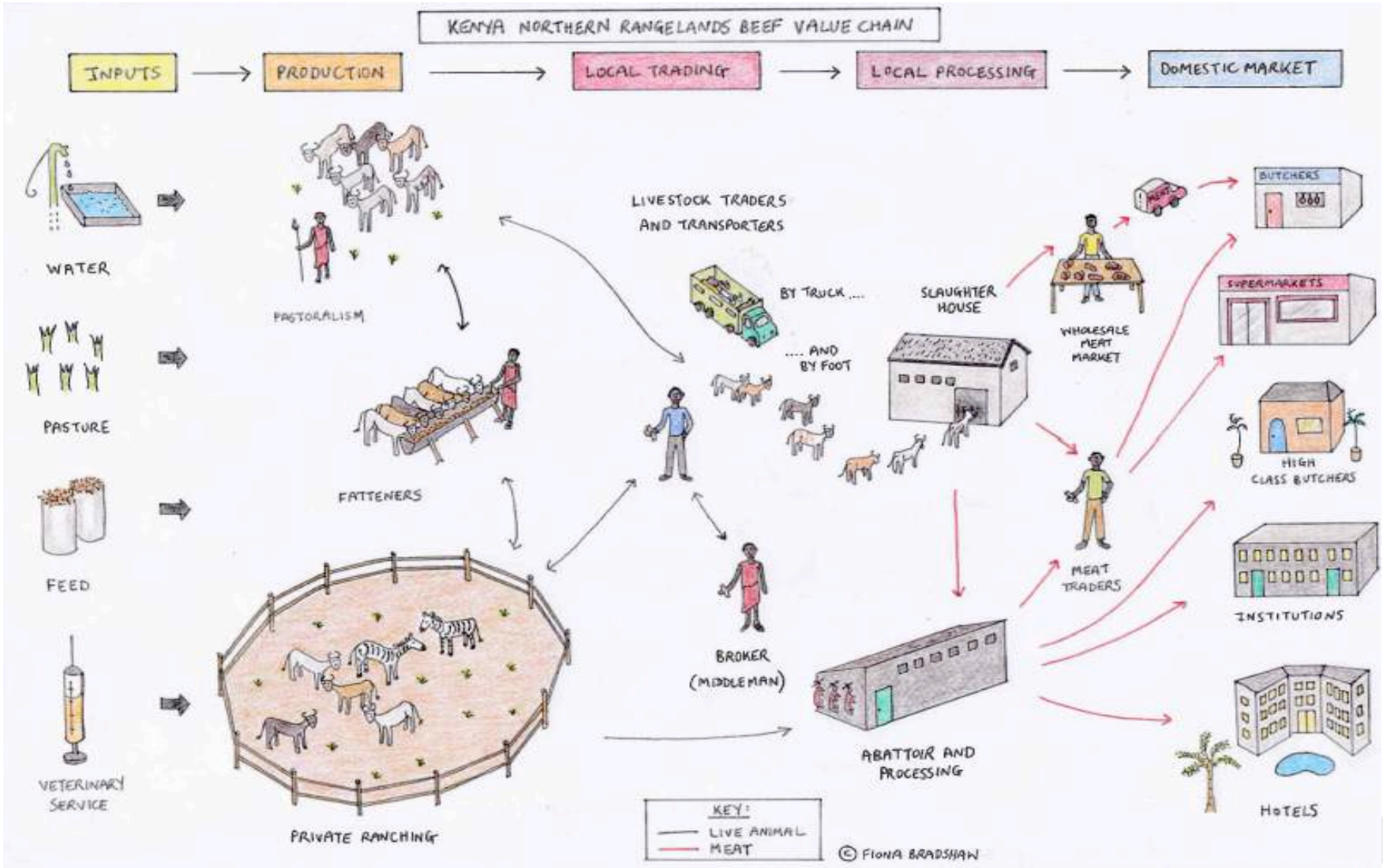
Pakistan Cotton Value Chain



Senegal Beef Value Chain



Kenya Northern Rangelands Beef Value Chain



Preliminary findings and research questions

Survey will be an opportunity to compare resilience at various level in several countries. For example:

- What can Burkina Faso's nationalised cotton sector learn from the more industrialised Pakistan cotton trade?
- What can Senegal's domestic livestock market learn from Kenya's financial and pharmaceutical livestock services?
- What is the role of land governance and management to support pastoralism adaptation strategies?
- What are the key factors influencing resilience in SALs?

Way Forward on Adaptation Assessment

VC- ARID methodology will provide quantitative information and key insights on adaptation options at several scales: from households and production level to national economy.

Beyond PRISE, projects I work on other include resilience assessments at national level :

- Quantifying the role of trade as a buffer for national economies affected by drought events (quantitative analysis - international trade econometrics)
- Longitudinal evaluation of climate hazard impacts and economic growth and resilience. Quantification of the recovery process as a proxy for resilience

→ Main findings of this work highlights the importance of the "***for what purpose"*** **question** in adaptation assessment. There are as many measures as purposes and most of the time this question is not clear in the index and metrics produced.

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Research for climate–resilient futures

Socio-economic resilience to natural disasters

a framework for risk-informed development planning

Stephane Hallegatte, Mook Bangalore, Adrien Vogt-Schilb

The World Bank

Project A

Costs $100 million

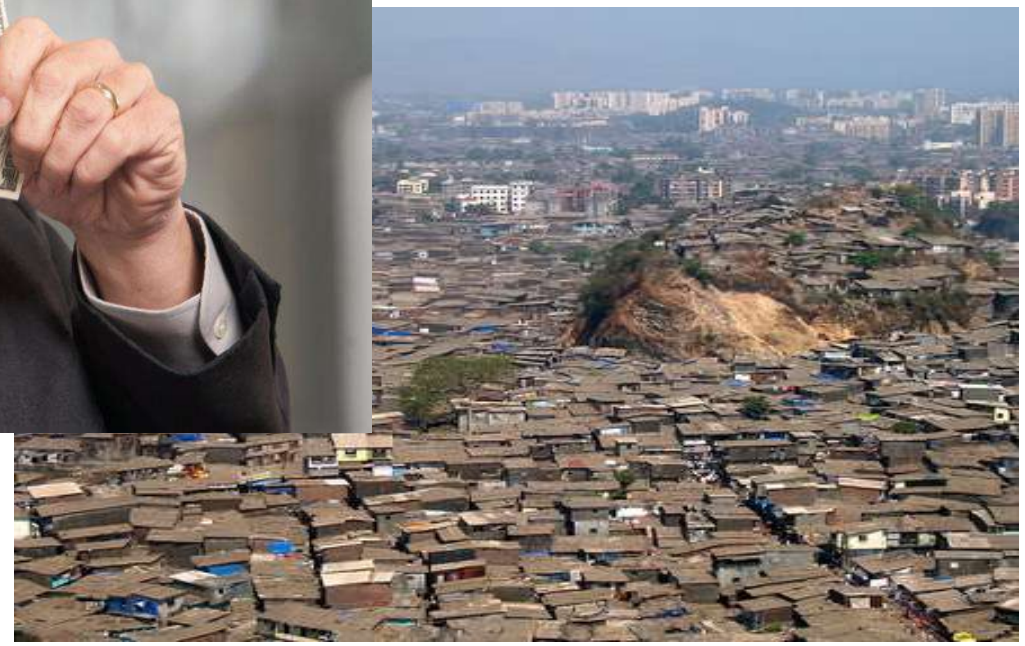
Prevents on average $20 million of losses per years

Project B

Costs $90 million

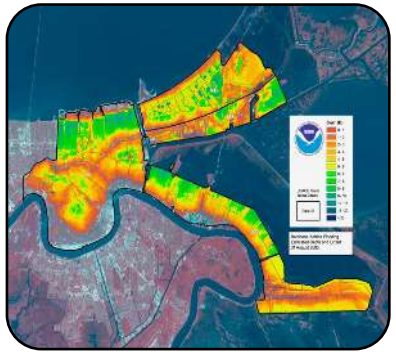
Prevents on average $5 million of losses per years


THANKS!



Usual risk assessment combines hazard, exposure and vulnerability of assets…

Hazard



Exposure

Vulnerability

Socio-economic capacity

ASSET LOSSES

Poor people are often more exposed to these shocks

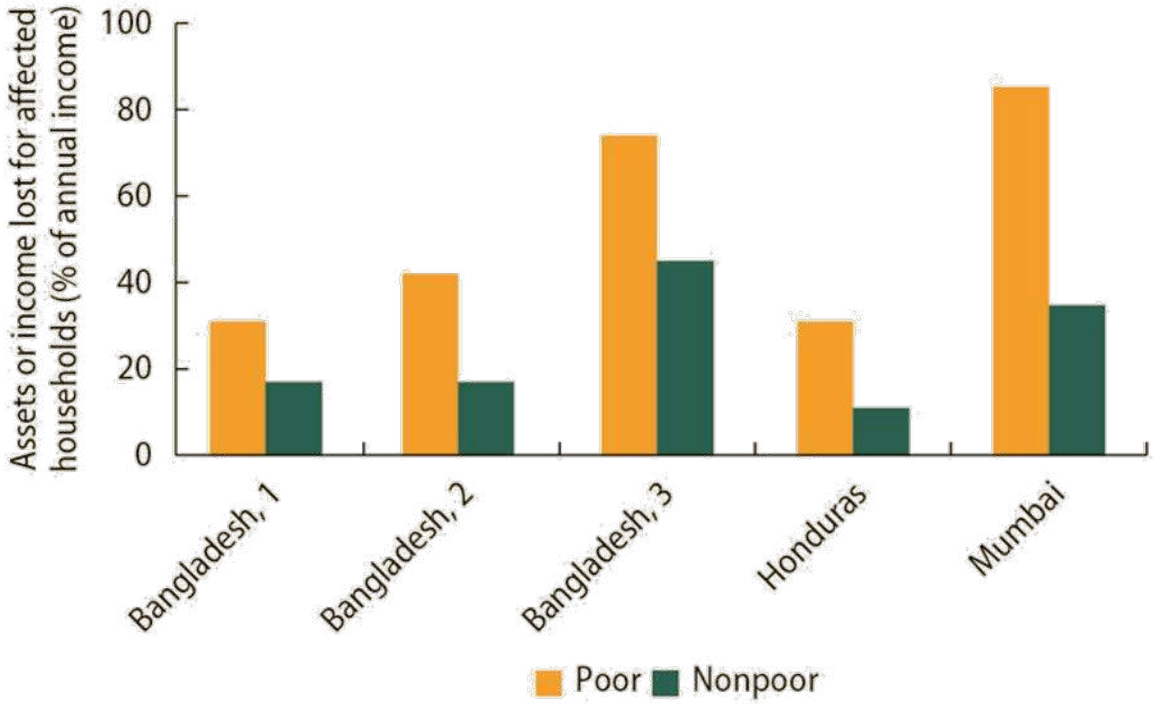
take the case of Nigeria

Poor people are 50% more likely to be flooded

Poor people are 130% more likely to be affected by a drought

Poor people are 80% more likely to be affected by extreme heat

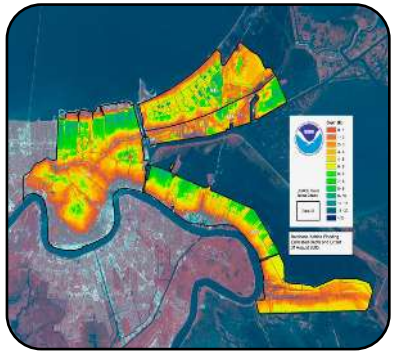
Poor people are losing more then they are affected



And poor people receive less support after shocks and disasters

Usual risk assessment combines hazard, exposure and vulnerability of assets…

Hazard



Exposure

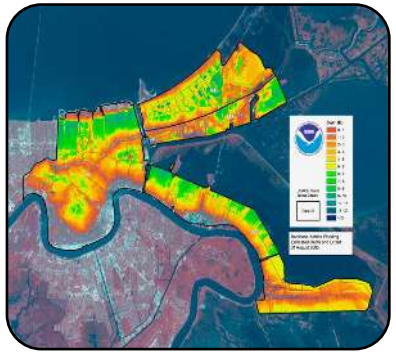
Vulnerability

Socio-economic capacity

ASSET LOSSES

And we account for the specific situation of the poor, to calculate the welfare losses due to disasters

Hazard



Exposure (poor people)

Exposure (non-poor people)

Vulnerability (Poor people)

Vulnerability (non-poor people)

Socio-economic capacity (poor people)

Socio-economic capacity (non-poor people)

ASSET LOSSES

WELL-BEING LOSSES = LOSSES IN TERMS OF WELL-BEING

$$\text{Socio-economic resilience} = \frac{\text{Asset losses}}{\text{Well-being losses}}$$

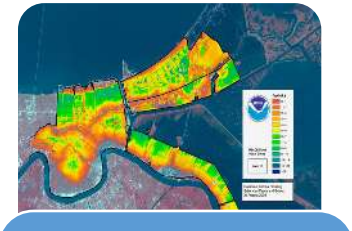
- If resilience is 100%, losing $1 in a disaster has the same effect on well-being as a decrease in GDP by $1, equally distributed in the population

- If resilience is 50%, losing $1 in a disaster has the same effect on well-being as a decrease in GDP by $2, equally distributed in the population

Data sources used for the global application

Hazard

- Flood level from GLOFRIS global model
- Protections using global database FLOPROS



Exposure

- Localization of people and assets based on Landscan global data
- Case study results for the over-exposure of poor people (WB Shock Waves report)

Asset vulnerability

- Housing quality based on USGS/PAGER global database and simple vulnerability functions
- Early warning (from HFA) reduces losses

Impact on income

- Diversification of income through transfers (from ASPIRE and others)
- Link between assets and income, using average capital productivity (PWT)
- Simple assumption for the duration of reconstruction

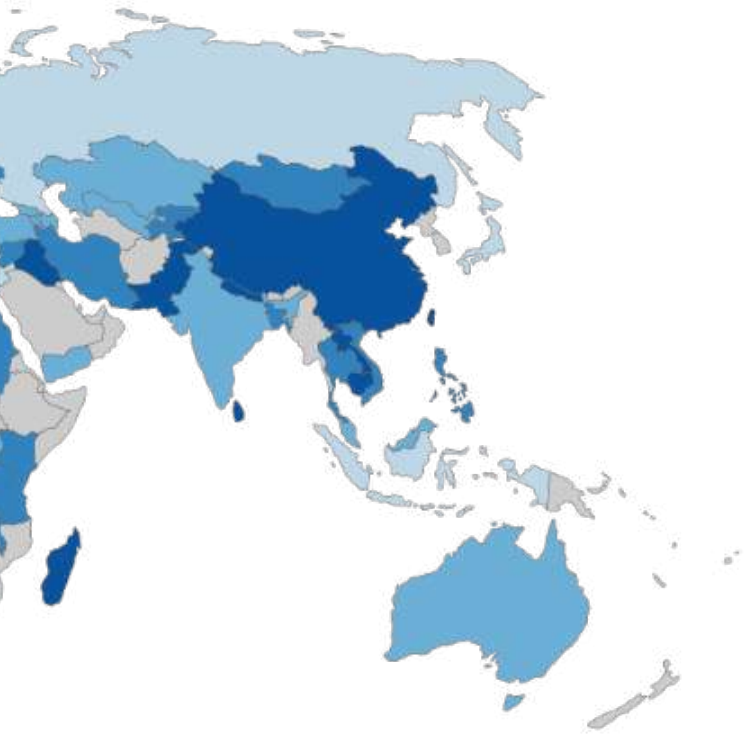
Coping capacity and social protection

- Scale-up of social protection, based on credit ratings and HFA monitor
- Financial inclusion from FINDEX
- Access to education and health and employment opportunity (WDI)

Impact on well-being

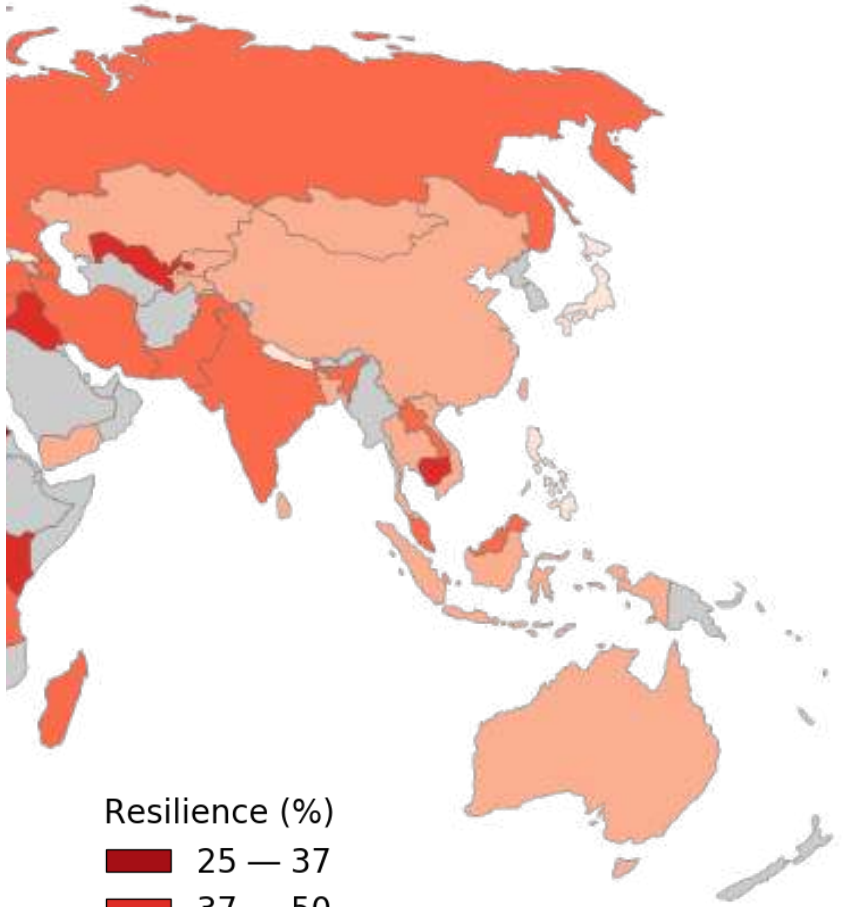
- Marginal utility of consumption ($\eta=1.5$)
- Share of income of bottom quintile (WDI)
- Poverty traps modeled as life-long reduced earning

Assessment of risk and resilience to floods in 116 countries…



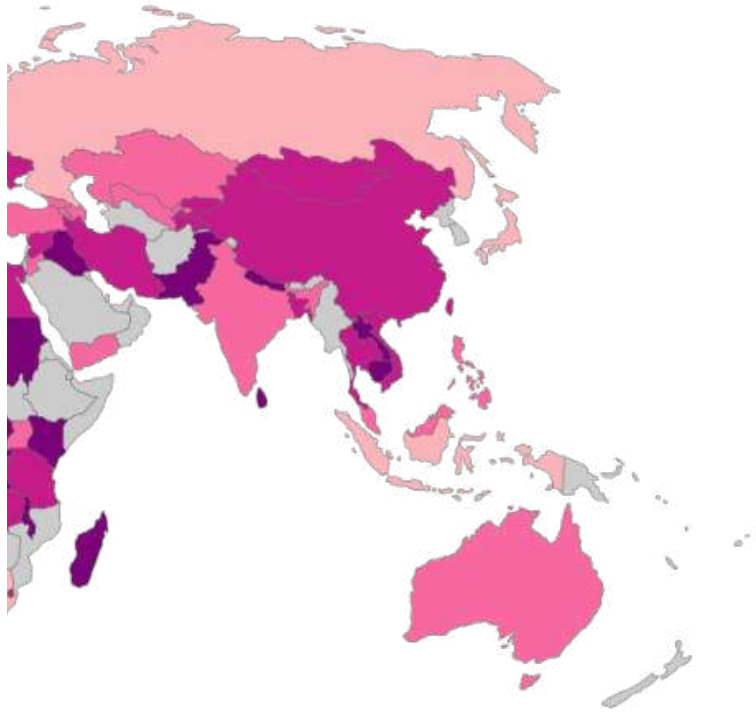
Expected asset losses (% of GDP)

- 0.00 — 0.01
- 0.01 — 0.05
- 0.05 — 0.20
- 0.20 — 0.70
- 0.70 — 3.00
- No data



Resilience (%)

- 25 — 37
- 37 — 50
- 50 — 62
- 62 — 75
- 75 — 86
- No data

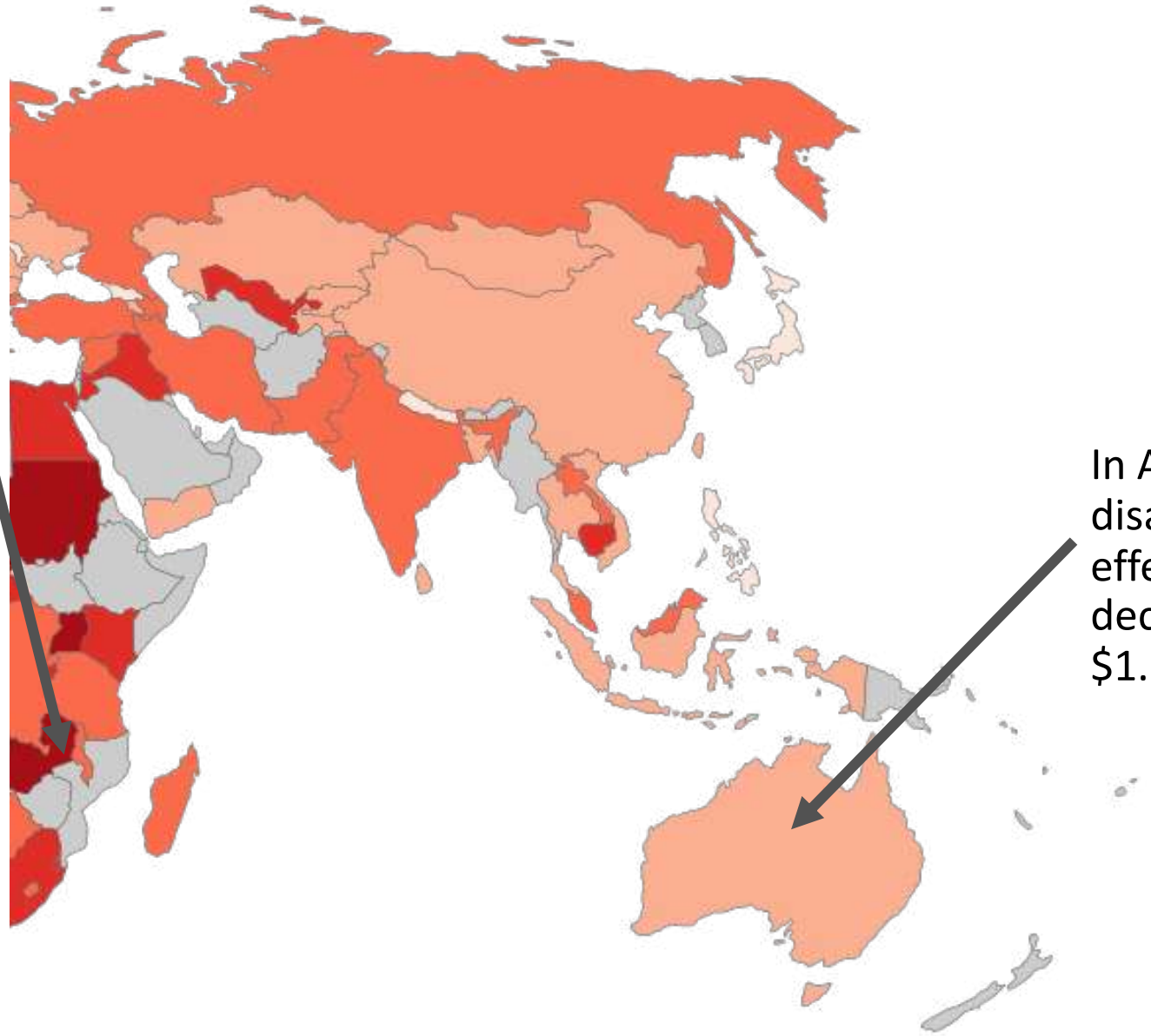


Expected welfare losses (% of GDP)

- 0.00 — 0.02
- 0.02 — 0.07
- 0.07 — 0.30
- 0.30 — 1.20
- 1.20 — 5.00
- No data

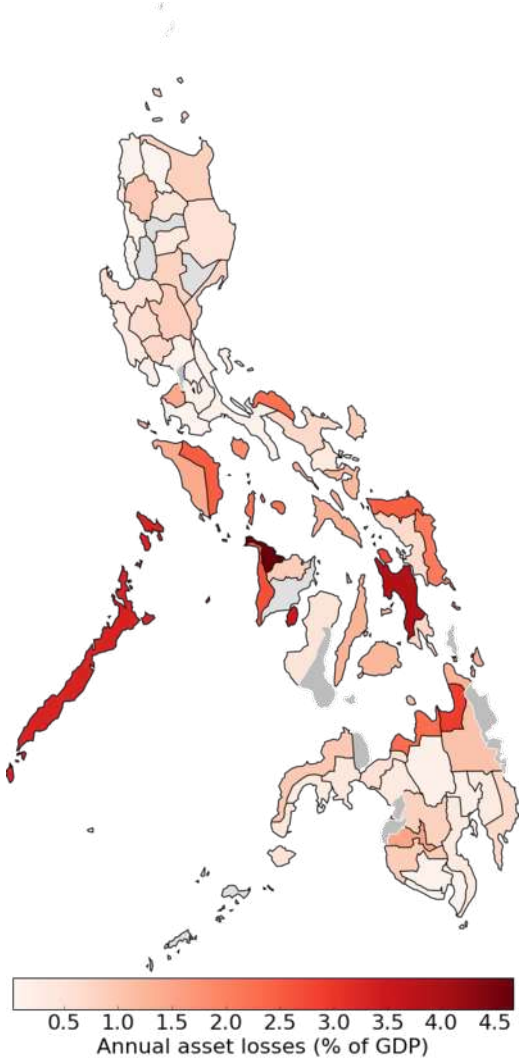
Assessment of risk and resilience to floods in 116 countries…

In Malawi, losing $1 in a disaster has the same effect on well-being as a decrease in GDP by $2

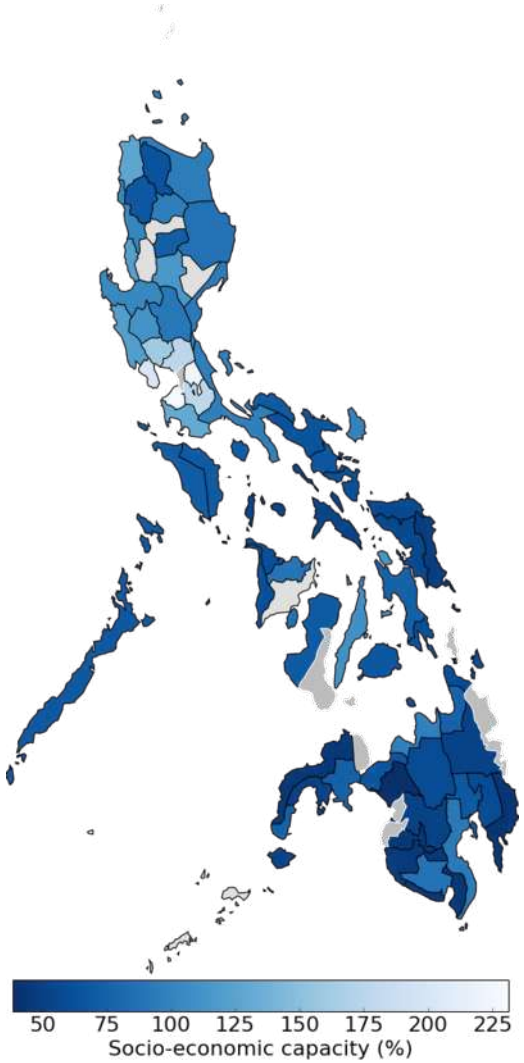


In Australia, losing $1 in a disaster has the same effect on well-being as a decrease in GDP by about $1.2

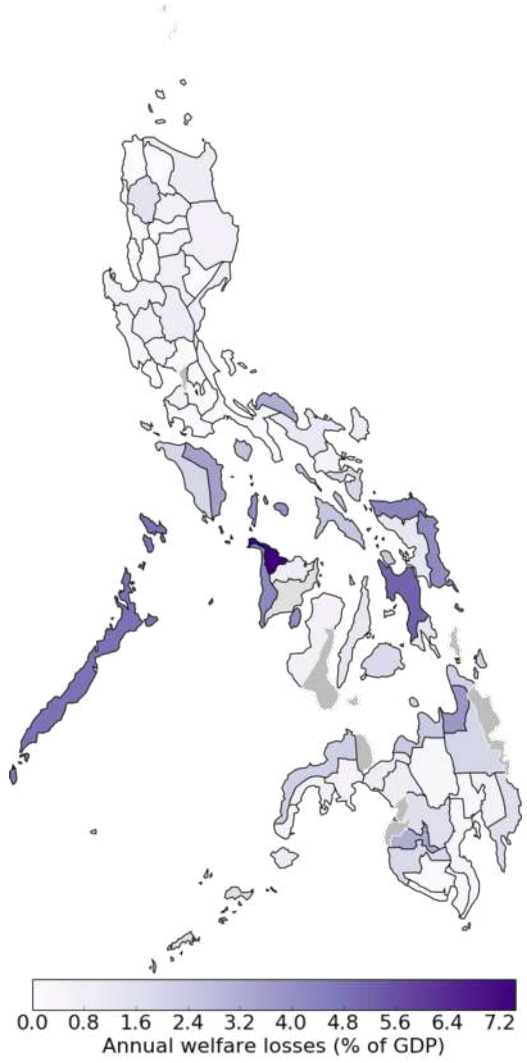
Application to the Philippines at the provincial level



Risk to assets

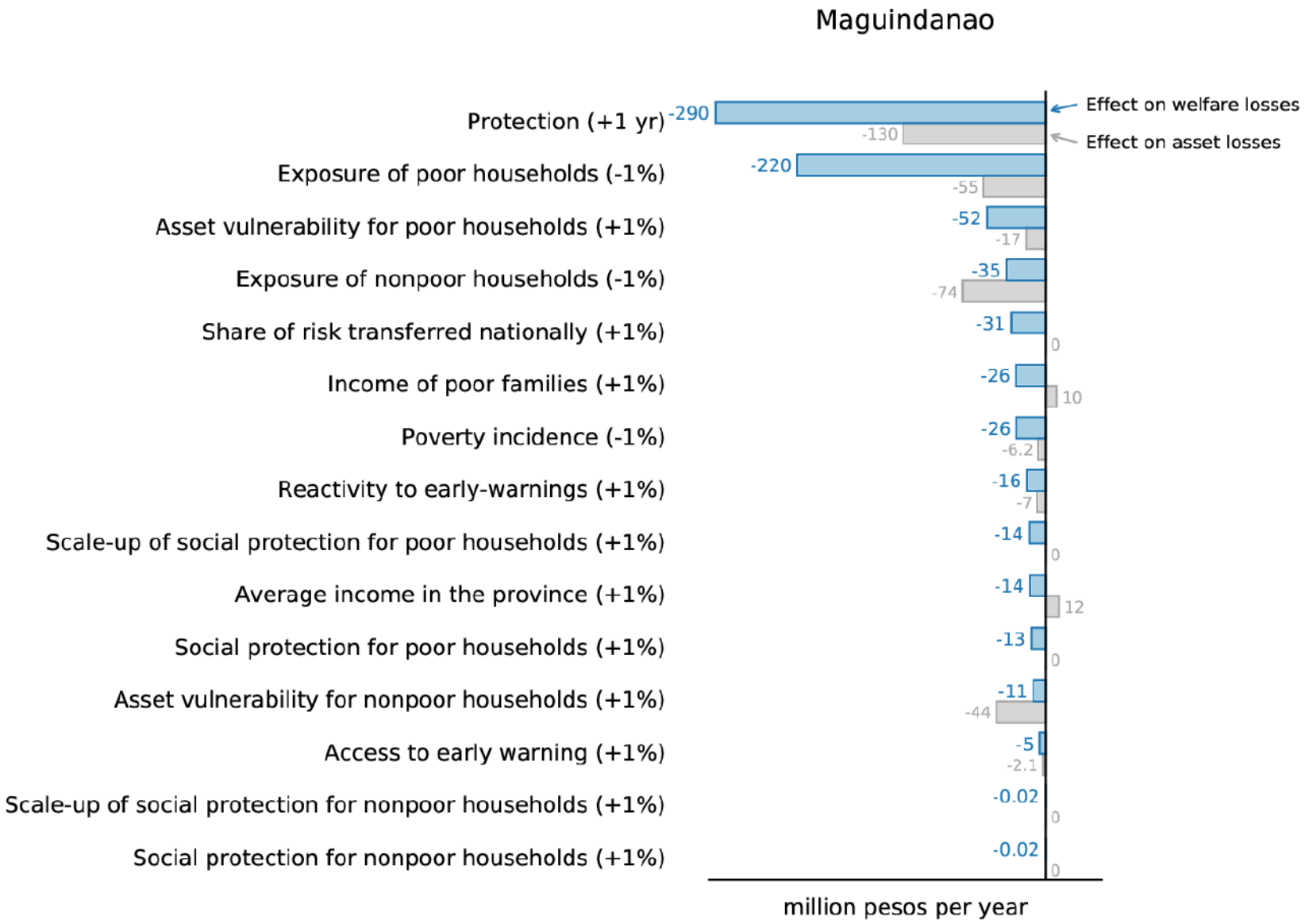


Socio-economic resilience

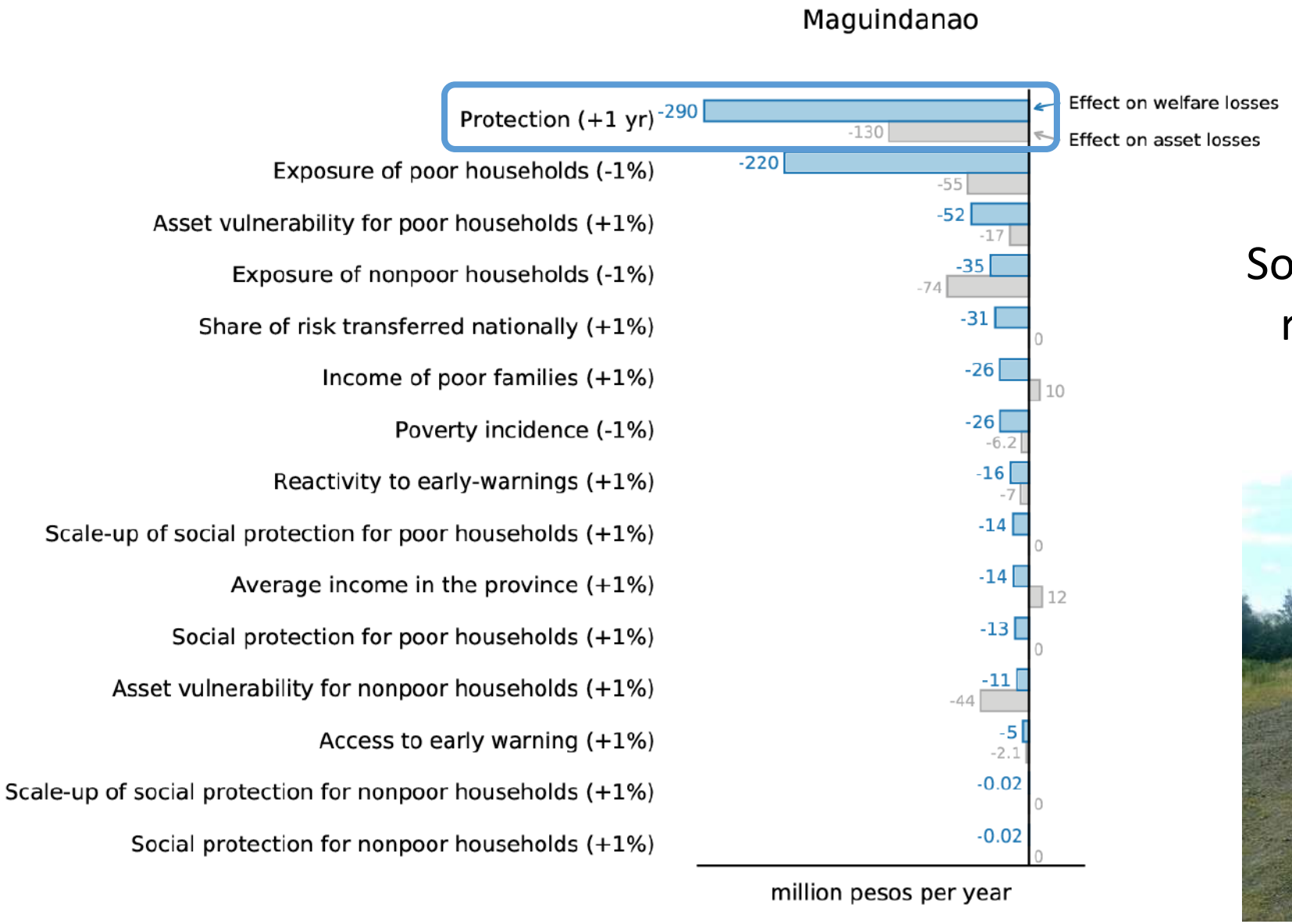


Risk to well-being

Assessing policy and project benefits in well-being terms

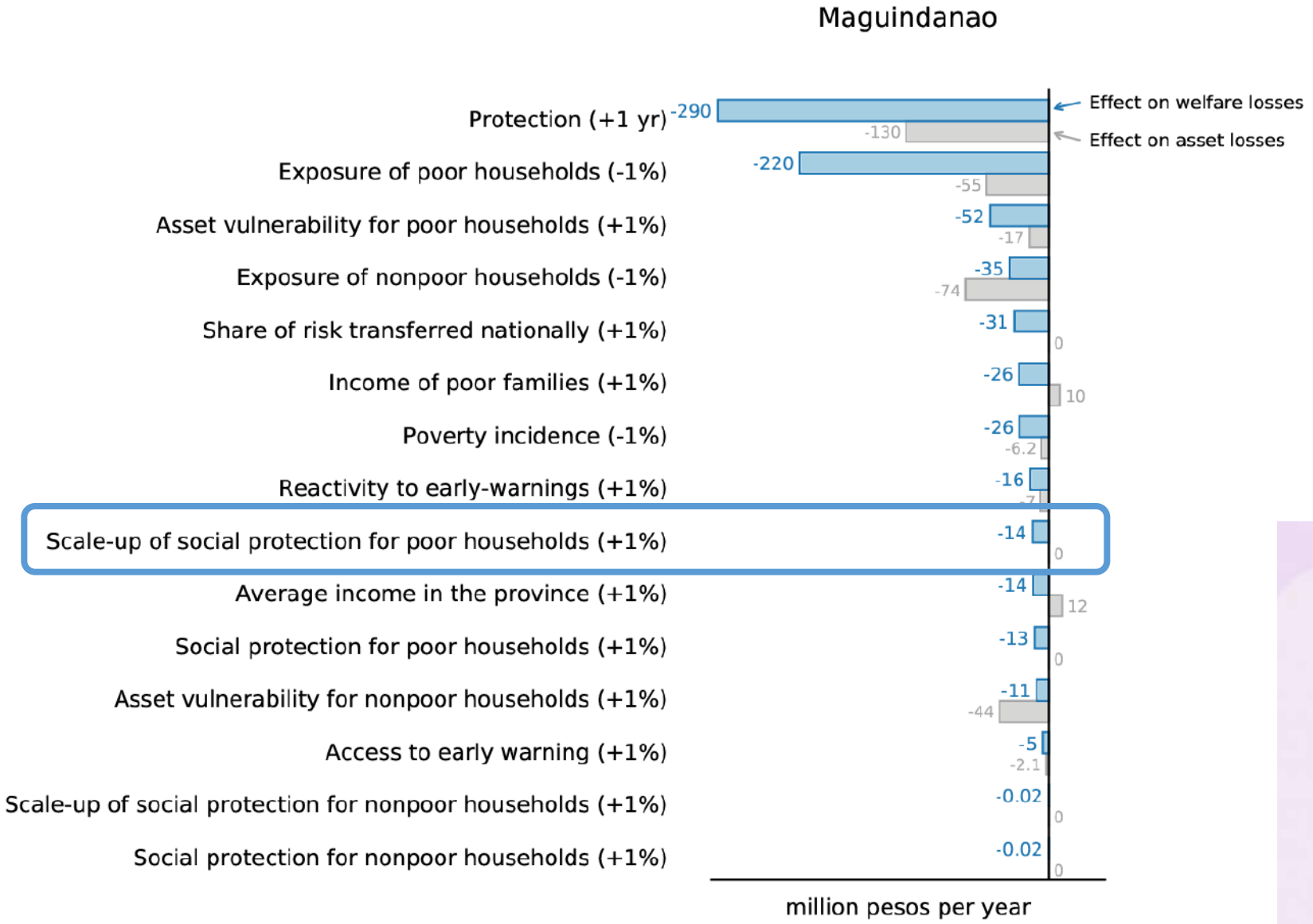


Assessing policy and project benefits in welfare terms



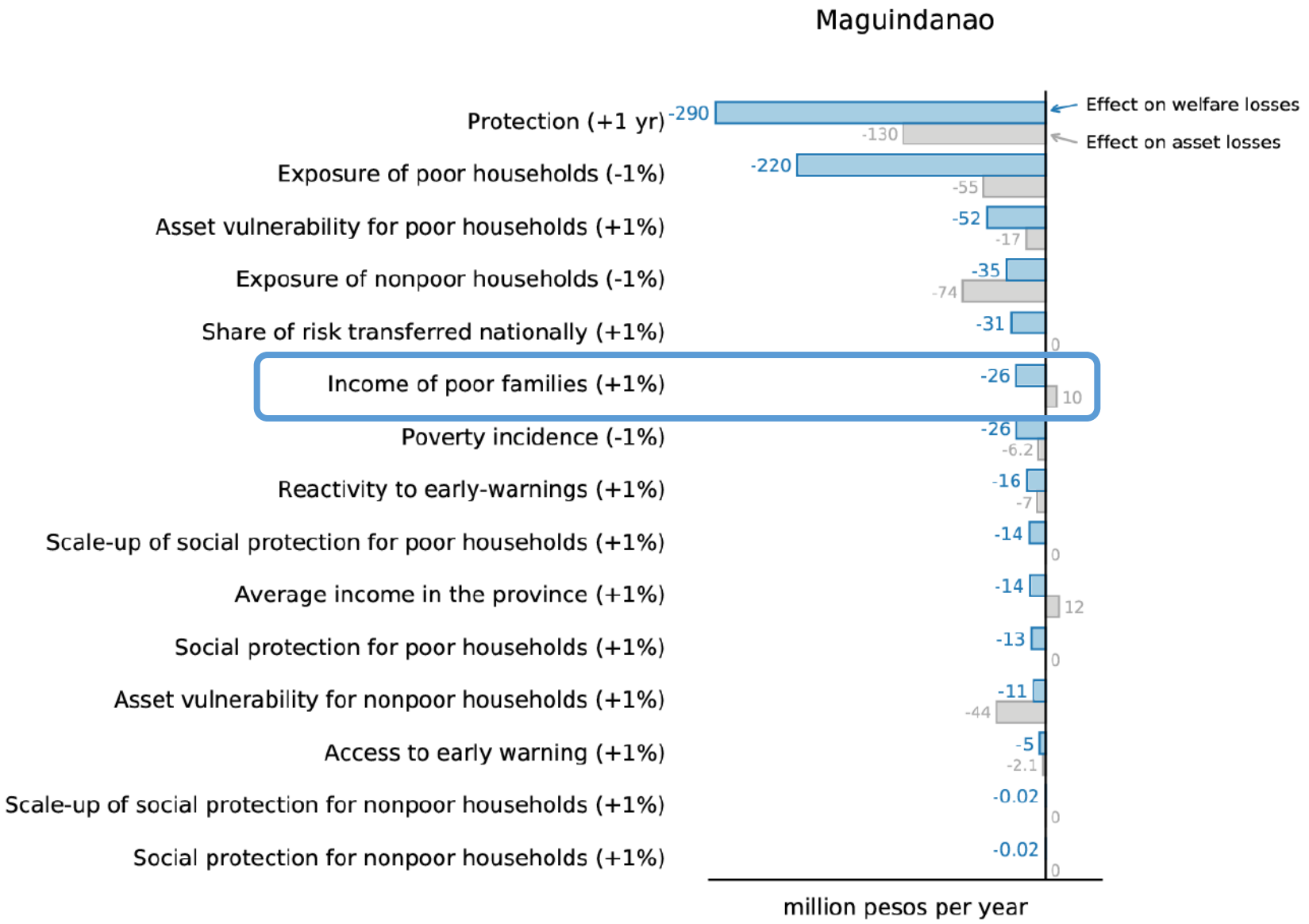
Some policies and projects can reduce well-being losses *by* reducing asset losses…

Assessing policy and project benefits in welfare terms



Other policies leave asset loses unchanged, but they decrease resulting well-being losses by building socio-economic capacity

Assessing policy and project benefits in welfare terms



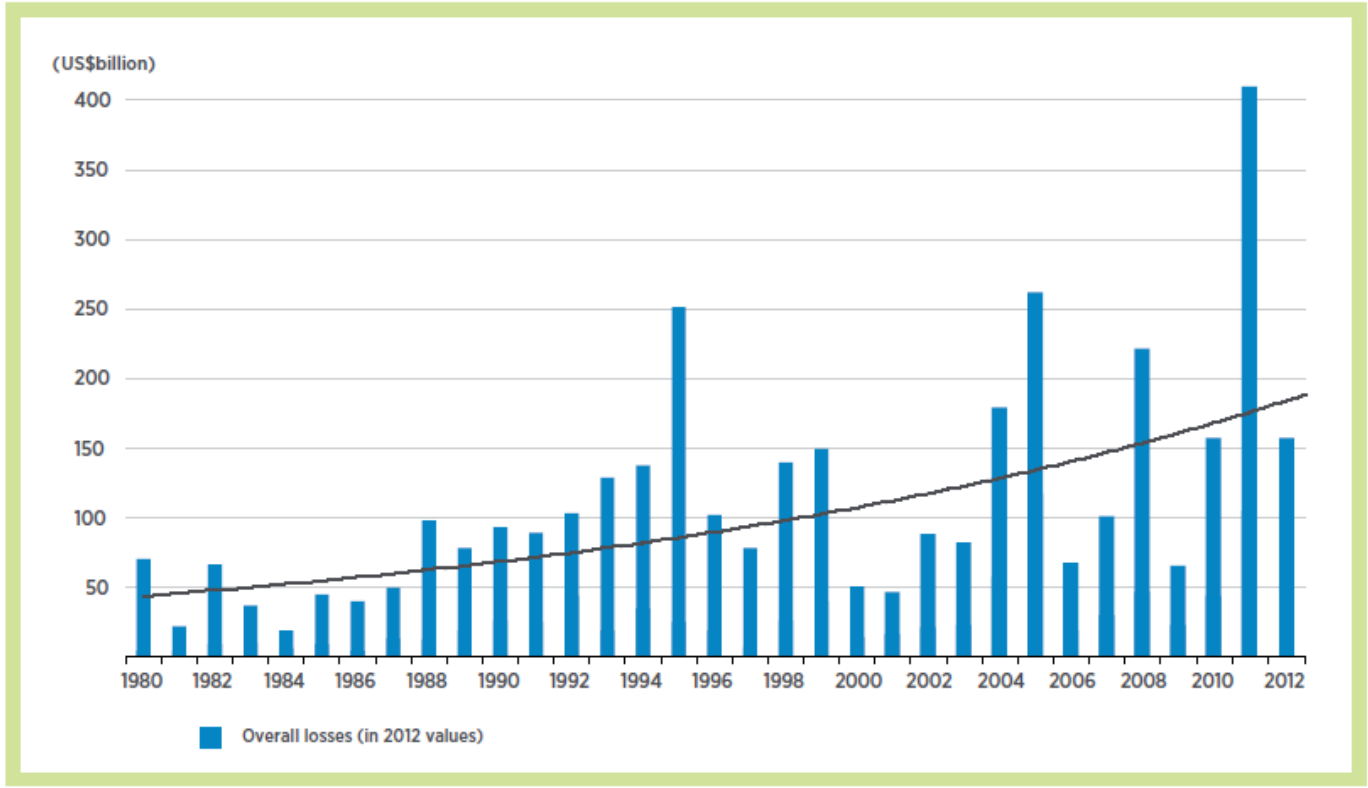
Finally, some policies increase asset losses, but they increase capacity even more, and ultimately reduce well-being losses.

How to interpret trends?

Disaster losses are increasing.

But it does not mean that the impact on well-being is increasing.

It depends on how fast resilience is increasing



The bars indicate annual disaster losses. The line indicates the trend.

Source: © 2013 Münchener Rückversicherungs-Gesellschaft, Geo Risks Research, NatCatSERVICE (as of January 2013)

The Higher Ground Foundation
- stand up to climate change

Towards a more universal metric for climate adaptation:
The Vulnerability Reduction Credit

Karl Schultz, Executive Chairman
The Higher Ground Foundation

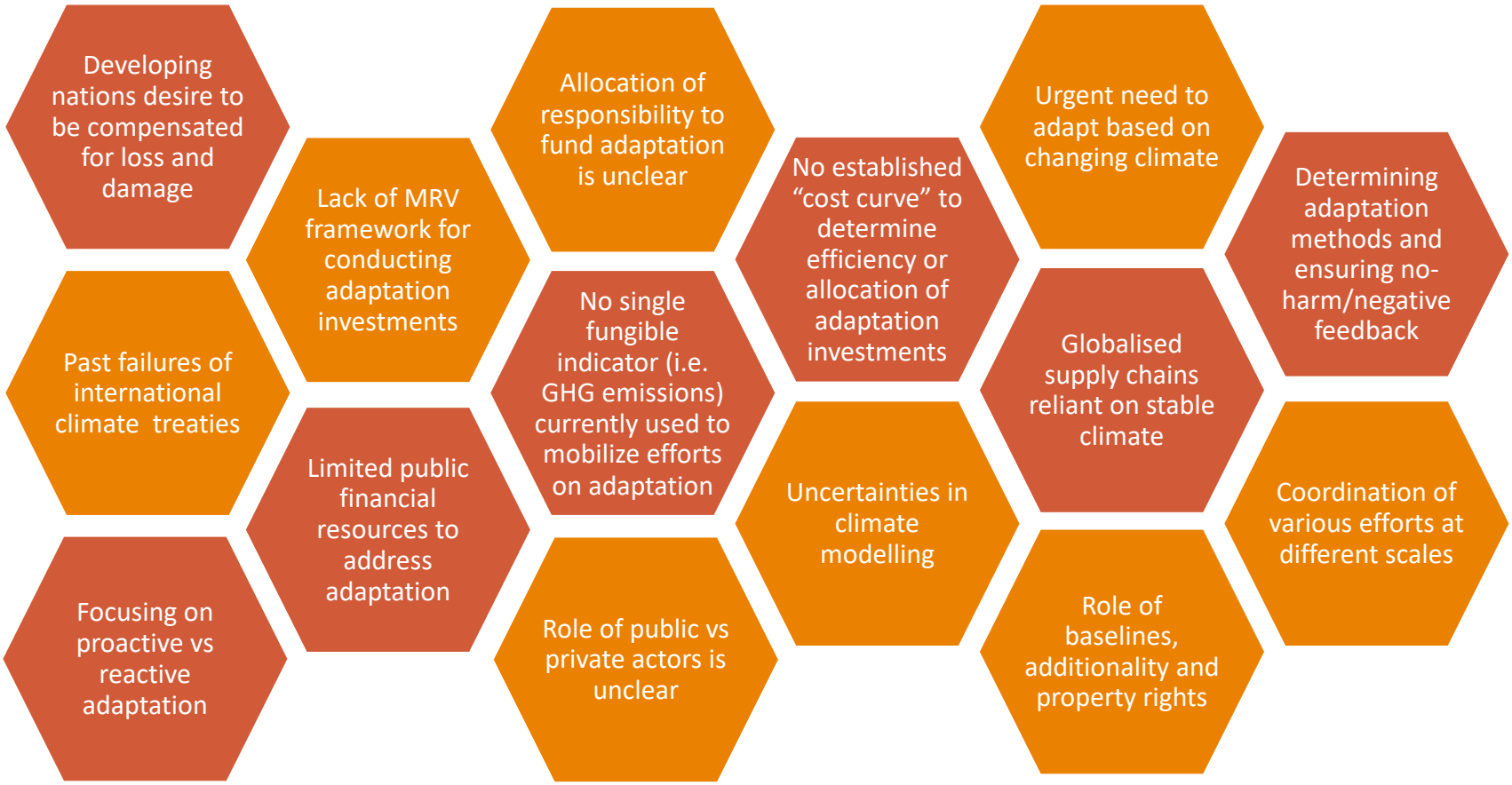
MARRAKECH
COP22|2016|CMP12
UN CLIMATE CHANGE CONFERENCE

METRICS OF ADAPTATION CONFERENCE

MEASURING ADAPTATION FOR CONCRETE ACTION

SEPTEMBER 27th 2016, RABAT, MOROCCO
9:00—19:00

Adaptation: the mosaic of challenges



Conference Concept Note Insights:

"Building the business case for adaptation could prove to be a simpler endeavour with a consistent and holistic set of metrics"

"Common adaptation metrics are a prerequisite for aggregating individual adaptation efforts to review the overall progress made in achieving the collective global goal on adaptation"

"Metrics are also needed to review the adequacy and effectiveness of adaptation, and support for adaptation, as stipulated by the Paris Agreement"

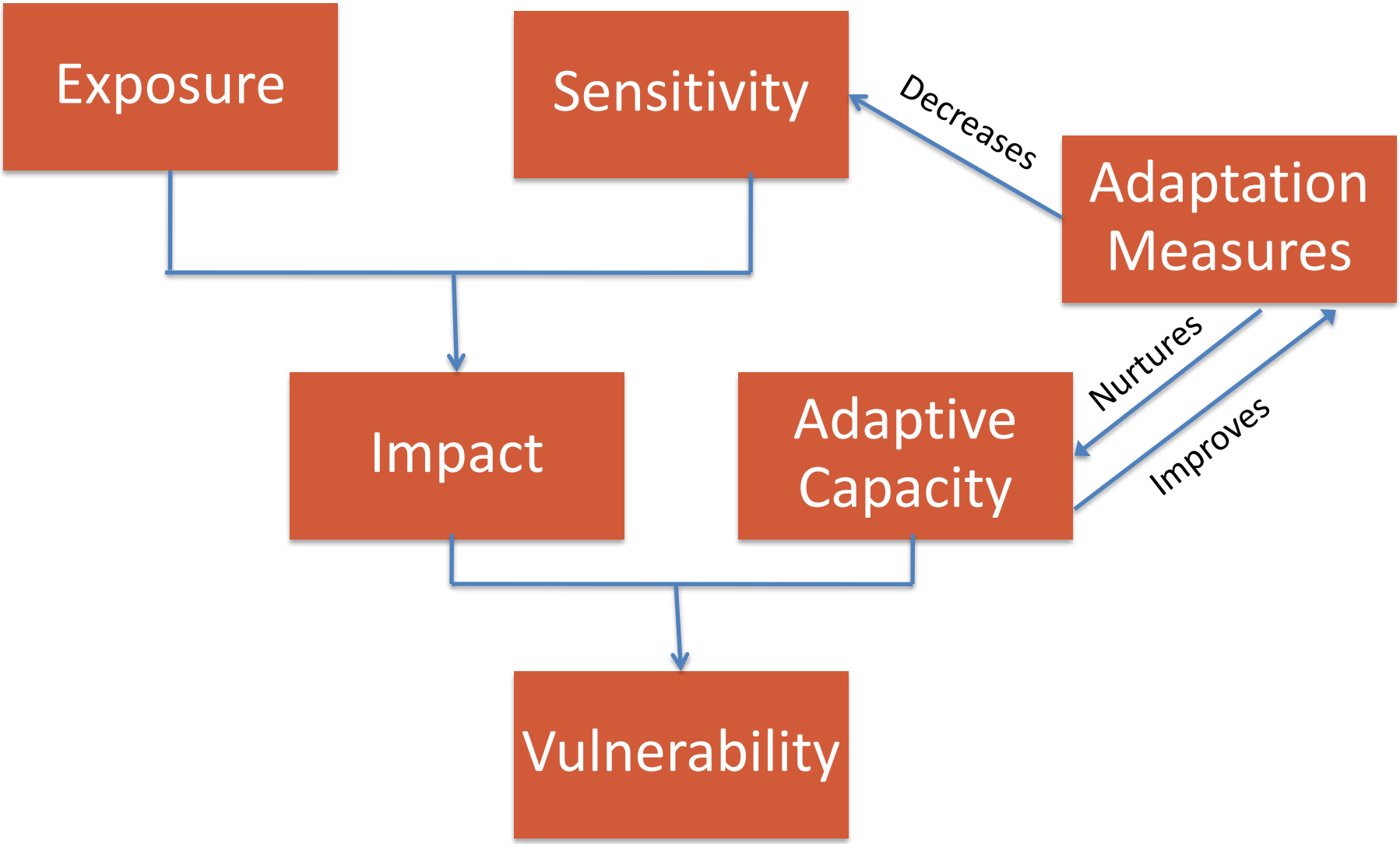
Momentum is building….

Vulnerability Reduction Credits (VRCs™)

Metrics Challenges

- Indicators
- Definition
  - What is adaptation success?
- How gauge success across sectors without universal metric?
  - Tonnage of CO_2equivalent, 100 Year Global Warming Potentials
    = “imperfect” but useful

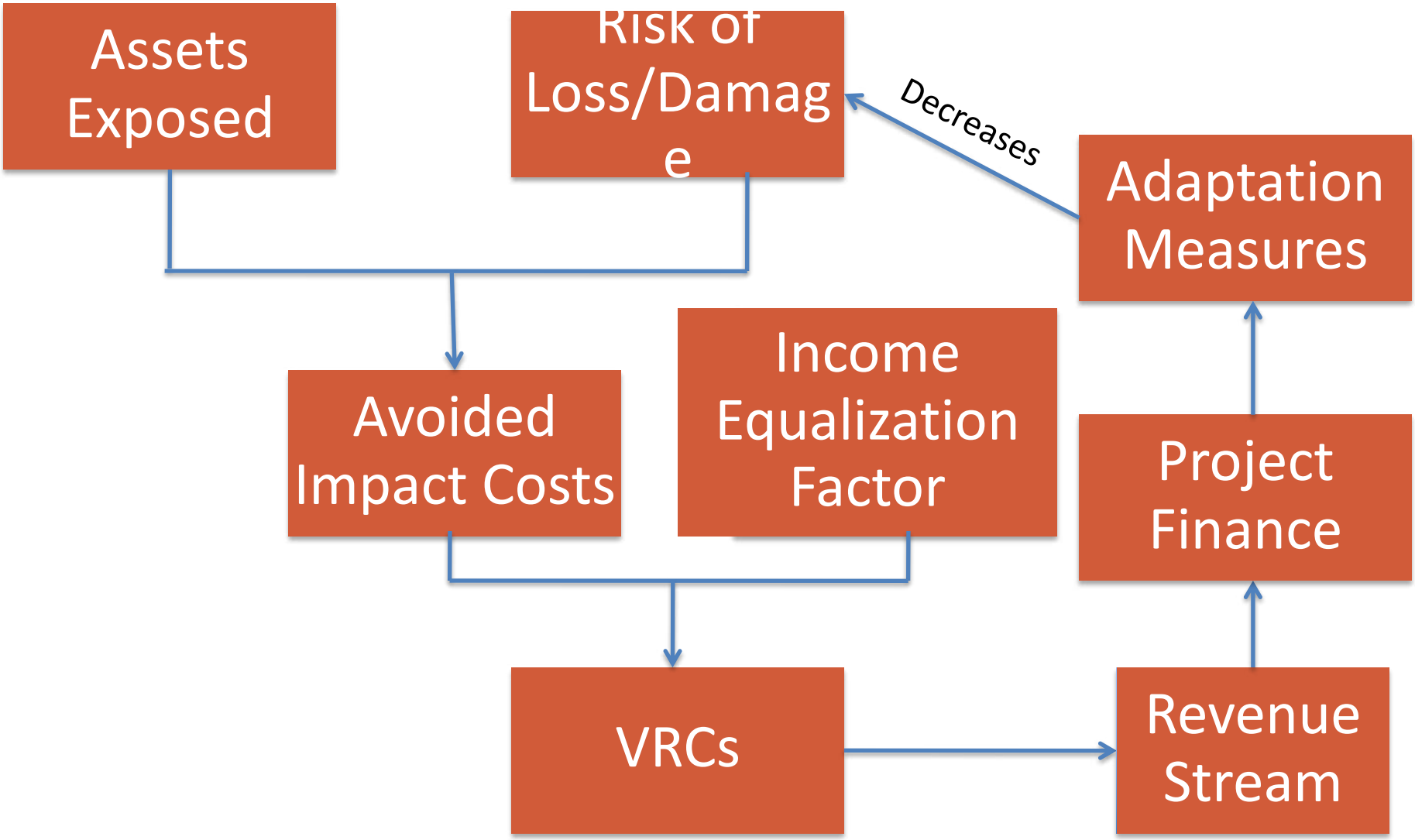
What does adaptation look like?



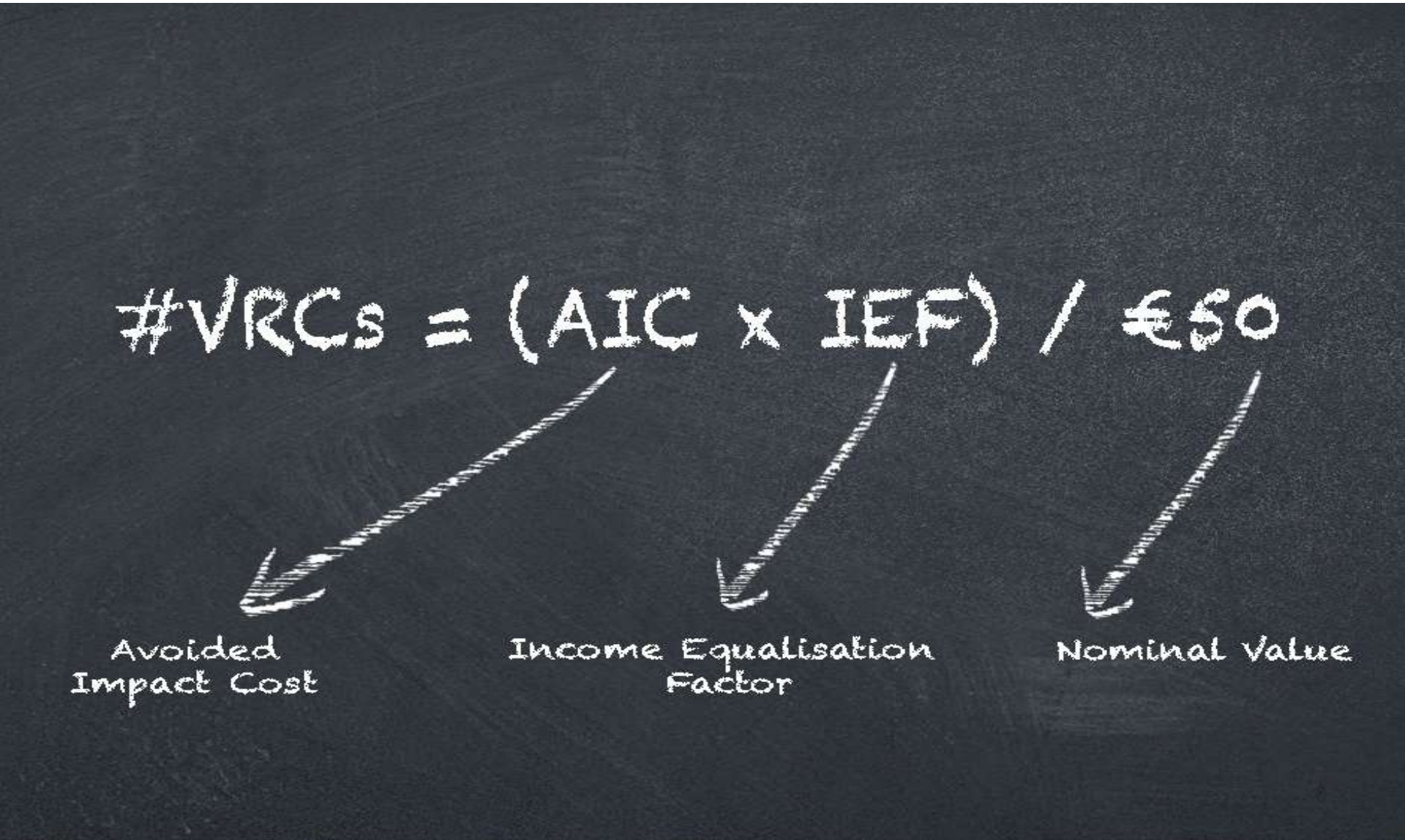
Premises of VRC Analysis:

- Risk of economic loss and damage reflects human vulnerability
- Loss and damage can be equalized for poorer communities by factoring in per capita income
  - Economic wellbeing ≠ human wellbeing

What do VRC's look like?



The Vulnerability Reduction Credit (VRC):



VRC Value-Added

Uses	*Benefits*
Monitoring and evaluation tool	***Transparent standard to evaluate a project's contribution to climate vulnerability reduction***
Traded/retired credit to leverage finance	***Mechanism to support adaptation; encourages long term sustenance of projects/programs***
International/Domestic policy target setting	***Targets set based on transparent, verified results***
Rating instrument/investment parameter	***Tool to show vulnerability of sovereign or company***

From Concept to Practice:

Higher Ground Foundation VRC™ Standard Framework

Draft Version 1.17: August 2016
Working Document with Annotations

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Standard Framework Principles

Avoidance of Catastrophic Harm	Community Acceptance	Accuracy
Self-Sustaining		Completeness
Consistency	Transparency	Conservativeness

How VRCs are Generated – Project Example

- A farm community suffering droughts reducing yields
- Interventions may reduce the loss in productivity
- The project may generate VRCs with a value equivalent to the expected difference in impact costs from business as usual, adjusted for community income.

How VRCs are Generated – Example

	Farmers net income over 10 years
No climate change, No project	€4,000,0000
Climate change, No project, (V_0)	€2,500,0000
Climate change, With project. (V_1)	€3,500,000
Project costs	€500,000
AIC (Avoided impact costs)	(V_1) - (V_0)= €1,000,000
IEF (Income equalization factor)	9 [based on p.c. income of $450
No. of VRC's	(AIC (Avoided impact Costs) x IEF) / €50 = **180,000**
Project cost per VRC	€500,000 / 180,000 **= €2.78/VRC**

VRC "Price" of €2.78+ required

VRC's: Potential Sectors

Criteria:

1. Quantifiable link to climate change;
2. Adaptation measures quantifiably reduce impacts;
3. Cost effectiveness;
4. Climate impacts convertible into economic costs; and
5. Scale

Coastal Zones	***Biological sea defences; Physical sea defences***
Agriculture forestry and fisheries	***Drought resistant crops; Irrigation techniques***
Water Supplies	***Protecting water supply infrastructure; Reduced salinization of water table***
Extreme events	***Landslide reduction; Flood protection;***
Cities	***Housing/built environment/urban infrastructure***

Some VRC Framework Issues

- Acceptable uncertainties
- “Leakage” impacts
- Discount rates
- Baseline/additionality assumptions
- VRCs for indigenous communities

To Register:

https://higherground.clickmeeting.com/366615623/register

Thursday, September 29, 2016 5 p.m. London Time

شـــكـــراً

Thank You!

Please contact me if you are interested in learning more

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