



Climate Change & Security – Military Considerations

Kim VETTING, J9 Civil Military Interaction, SHAPE, NATO


Richard BREWIN, Energy & Environment Systems, EDA

Wg Cdr Neil WOOD, EUMS, EEAS

**THIS PRESENTATION IS:
UNCLASSIFIED**

SCOPE

1. Operational challenges presented by climate change (military-strategic level) - **Kim**
2. Adaptation strategies (what has and can be done to overcome the challenges?) - **Richard**
3. Alternative approaches (e.g. the Ecosystems approach) which can also help build the bridge between civilian-military organisations - **Neil**

The background of the slide is a close-up photograph of parched, cracked earth. The soil is a light tan or beige color, and the cracks are deep and dark, forming a complex, irregular network across the entire surface. The lighting creates shadows within the cracks, emphasizing their depth and the texture of the dry soil.

**1. Operational challenges
presented by climate change
(military-strategic level)**



Brussels Dialogue on Climate Diplomacy

Climate Change and the Military

Center Albert Borchette – Rue Froissart - June 28th 2018

Kim Vetting
Civilian – Military Interaction
SHAPE J9

Supreme Head Quarters Allied Powers Europe

- Provides military advice to the NATO's political and military leadership (in NATO HQ, Brussels)
- Plans for future NATO operations including force generation
- Directs and monitors ongoing NATO operations
- Cooperate closely with the other Strategic Command – ACT (US)

Mons/Bergen - Belgium



Operational Challenges

- Although increasingly on the agenda, **no systematic approach** to climate changes' impact on operations at this stage
- A threat multiplier, which can be approached by looking at **personnel, equipment and logistical systems**, which **impacts air, maritime, land (cyber, space) operations, as well as planning** for operations
- More studies to understand the challenges better



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2. Adaptation strategies (what has and can be done to overcome the challenges?)



BDCD – 28 June 2018

EDA Energy and Environment Programme

Richard BREWIN

Project Officer Energy and Environment Systems, EDA

richard.brewin@eda.europa.eu

Tel: +32 (0)2 504 2955; Mobile: +44 7811 169601 OR +32 468 454783

Why is climate change important to Defence?

- **EU Global Strategy** - climate change and energy insecurity endanger our people and territory, while wider environmental stresses could exacerbate potential conflict.
- **Risk multiplier:** loss of land/livelihood, famine, drought...
- **Affect most areas of Defence activities/capabilities:** frequency & nature of deployments (where/how), equipment (functionality), people, planning, logistics, infrastructure, etc.
- Enhanced need for **humanitarian assistance & disaster relief.**
- Impact on **technological & industrial base** including **supply chains**, e.g., floods in Thailand slowed automotive and ICT production in Europe & US.
- Challenges require society to work together. Defence is no different.
- Maintain effective delivery of Defence capability that is robust to climate change while reducing contributions to its causes.....
- **Research & technology:** military capability development.



Climate change mitigation: energy efficiency reduces life & costs risks

Cost

- Increasing costs of energy to budgets
- Increase of 1p per litre of fuel adds ~£13M per annum to UK equipment energy bill

Delivery to front line user

- Cost of fuel at furthest point of use 2 -10 times greater than initial purchase price: transportation, supply fleet, personnel and force protection costs
- Energy efficiency saves lives and resources - resupply convoys are a target

Operational effectiveness / Mission endurance

- Improving fuel efficiency impacts on ability to deliver expeditionary capability
- Reduce logistics = further, faster, longer on mission in hostile environments



Smart Camps research projects

- **EU Training Mission Mali: Koulikoro Training Centre**
 - **Phase I smart system: renewable energy, energy storage, power management in one building**
 - **Monitoring: air-con** around **71%**; **lighting** around **12%**; and **water heating** around **10%** of load.
 - **Rigid PV system** (roof) supplied **80%** of building's peak load.
 - **Demand Management** reduce the average instantaneous demand through cycling each unit on/off.
 - **Raising the set point** from 20°C to 24°C meant systems held temperature within $\pm 0.5^\circ\text{C}$ and provide a **reduced energy demand of up to 50%**.
 - **Phase II: test the feasibility of deploying environmental technologies** (energy/fuel, water, waste) across entire military camp and develop sustainable camp blue-print.
- **Smart Blue Water Camps: hydro-informatics, technology, sustainability perspectives: various climatic zones across Europe.**

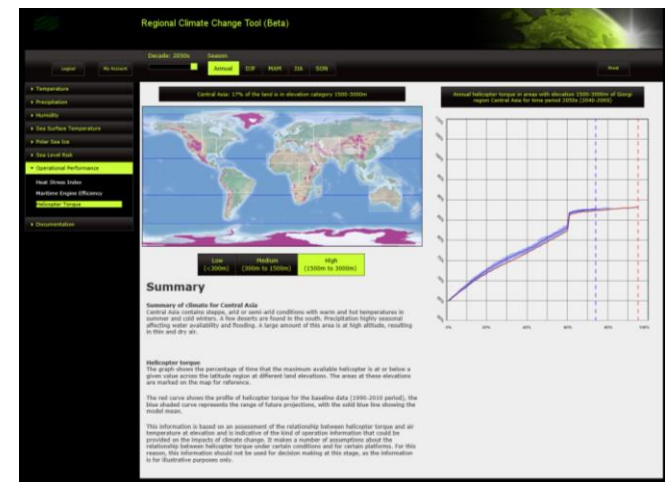


Research and Technology – Innovation

- At higher temperatures air has lower density (thinner) = reduced lift generated on aircraft wings = engines need to generate more thrust to be airborne = increased fuel consumption.
- Helicopters: each 1°C rise – negative impact on torque: 80% torque is available 50% of time in today's (2010 data) climate.... reducing to 45% of time in 2050s
- How might this effect a mission's energy profile?
- Chinook helicopter (loads & search/rescue): 714 engine developed and introduced to improve performance, for requirement to operate hot / high.
- Could we have planned for this?
- EDA developing a sustainable defence interactive framework including use of artificial intelligence.
- Energy and future operating environment scenarios including changing environmental and climatic conditions and military capability effect.
- Adapt and mitigate simultaneously in military planning.

Phoenix flights cancelled because it's too hot for planes

3 hours ago | US & Canada



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3. Alternative approaches (e.g. the Ecosystems approach) which can also help build the bridge between civilian-military organisations



WINNING THE ENVIRONMENT
THE ECOSYSTEM APPROACH AND ITS VALUE
FOR MILITARY OPERATIONS,
A WAY TO IMPROVE YOUR MISSION





THE BASICS

No security without ecological security
No stability without sustainability

Every soldier depends on nature

- For his survival
- To achieve his mission
- To avoid future conflicts



Quick but not so dirty

Four steps for a
rapid ecological assessment

- INSTRUCTION CARD
- ASSESSMENT TABLES



STEP 1: Assessing the resource base (the physical system)

Abiotic factors:

- Weather and climate
- Geology and geomorphology.
- Soils and soil fertility.
- Hydrology and geo-hydrology

Biotic factors:

- Flora and vegetation
- Fauna
- Man



STEP 2: Assessing resource use (the socio-economic system)

Extractive uses:

- Land system based:
- Water systems based

Non-extractive uses

- Conservation, Nature Protection
- Tourism and recreation
- Scientific research
- Cultural use.





STEP 3: Assessing resource management, institutions and regulations (the institutional system)

- Modern state representations
- Traditional authorities
- Moral authorities
- Economic powers
- The international Community

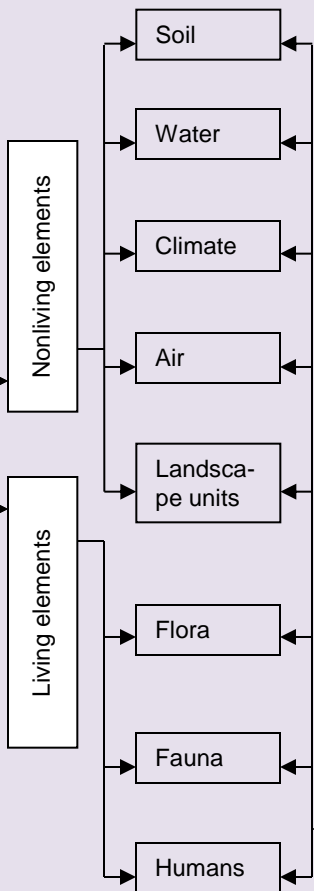


STEP 4 Adaptive management

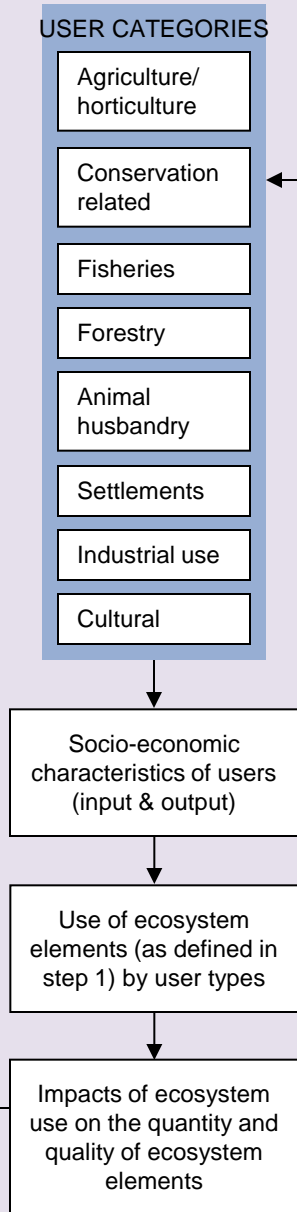
To analyse the potential impacts of proposed activities, go over step 1, 2 and 3 again:

- Positive and negative impacts
- On-site and off-site impacts.
- Impacts during and after (re-)construction.
- Direct and indirect (induced) impacts.

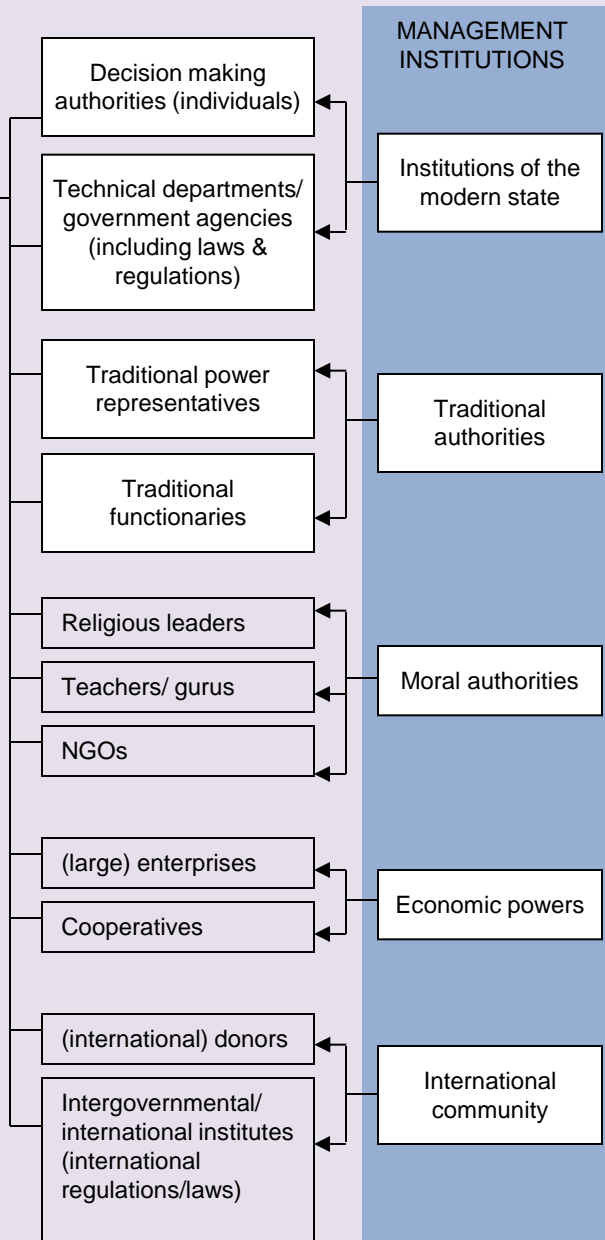
STEP 1: RESOURCE BASE



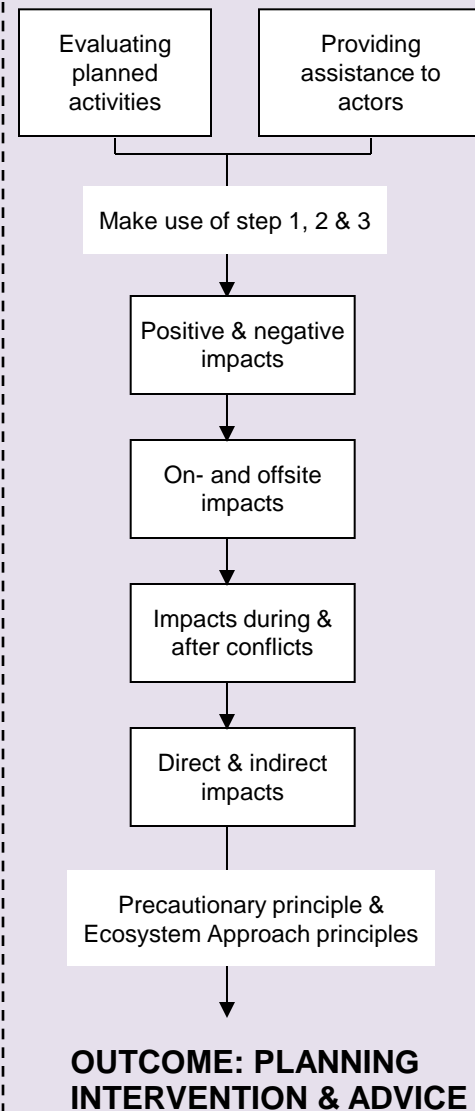
STEP 2: RESOURCE USE



STEP 3: RESOURCE MANAGEMENT



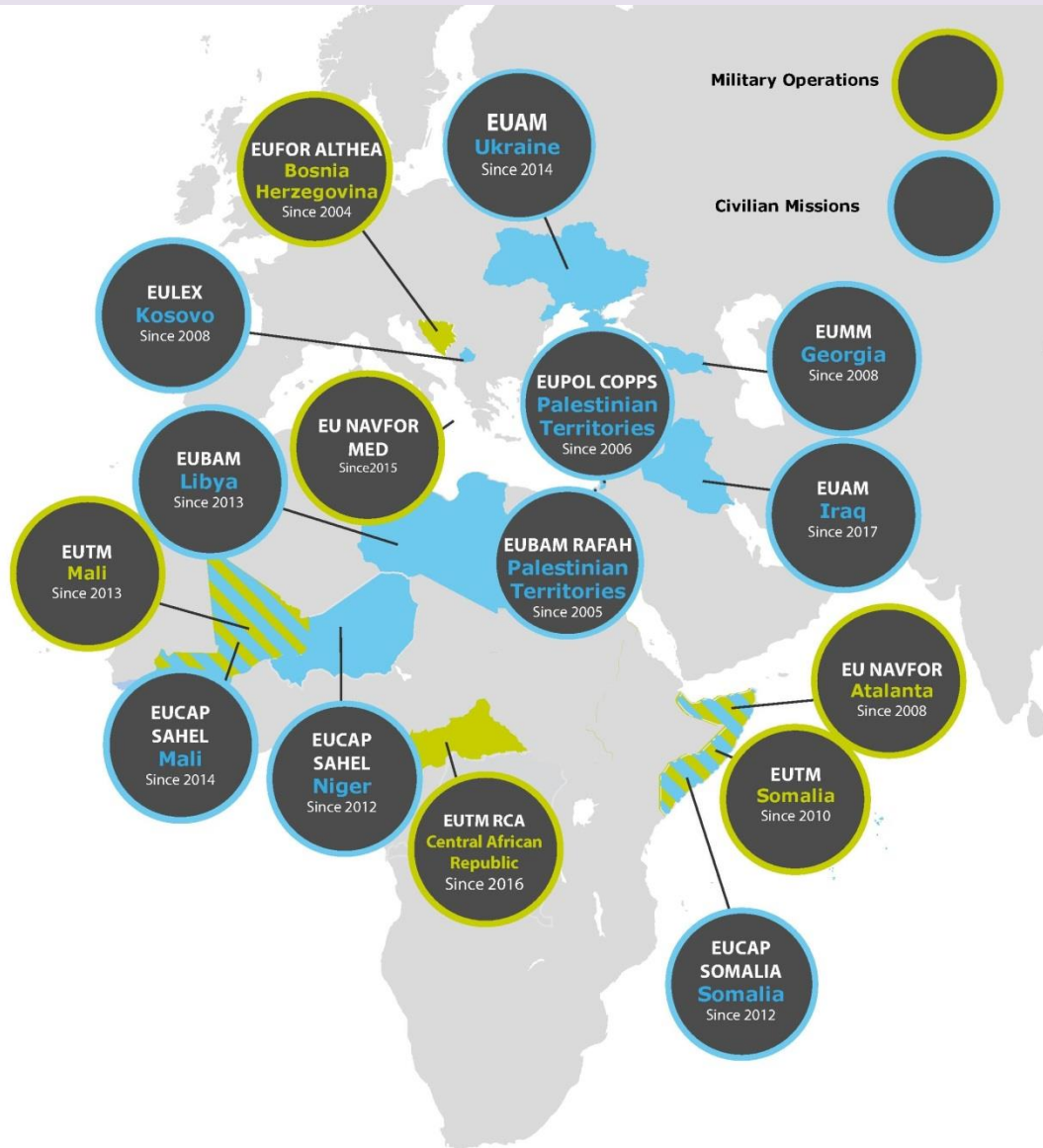
STEP 4: ENVIRONMENTAL PRECAUTION



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**Military in support of resilience-
building/adaptation/sustainable
development**

ONGOING CSDP MISSIONS AND OPERATIONS

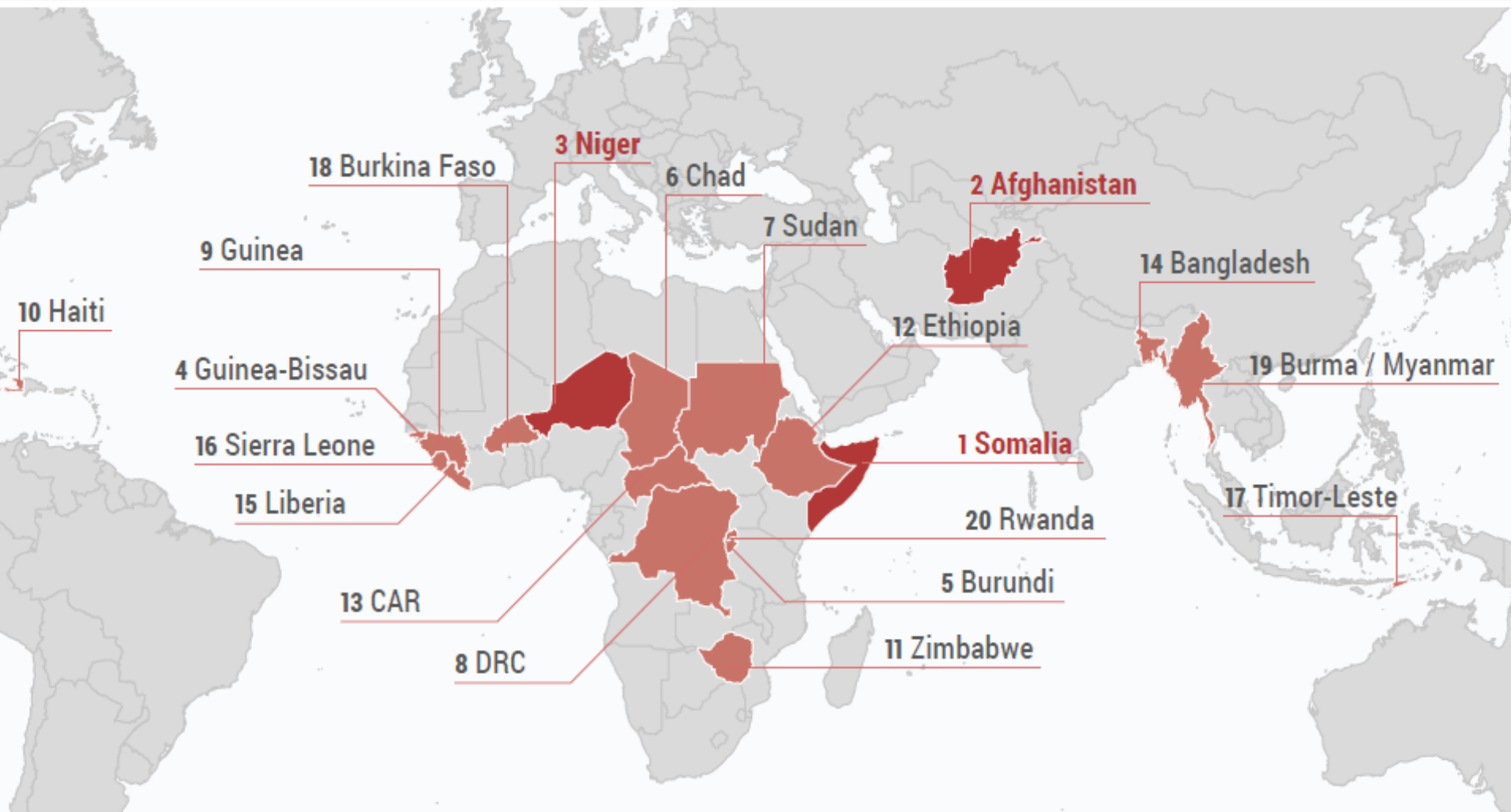


16 Ongoing Ops/ Missions

- 10 Civilian Missions
- 6 Military:
 - 3 Executive Ops:
 - . EUFOR ALTHEA
 - . EUNAVFOR ATALANTA
 - . EUNAVFOR MED SOPHIA
 - 3 non-Executive Missions:
 - . EUTM Somalia
 - . EUTM Mali
 - . EUTM CAR

Fragility hotspots

Ranking of countries with high levels of instability, disaster risk, poverty, and climate change vulnerability



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Questions/Comments?