



Agroecology and
Safe Food System
Transitions

Impacts of shocks and crisis on agriculture and food systems transformations: key issues around agroecology and safe food systems in Lao PDR

Stéphane Guéneau, CIRAD

National Foresight and Theory of Change Workshop on Agroecology and Safe Food System

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FONDS FRANÇAIS POUR
L'ENVIRONNEMENT MONDIAL

Shocks and crisis

Shock : a shock is generally defined in literature as ***an unexpected or unpredictable event that affects a system*** : e.g. Wall Street crash in 1929, COVID 19 pandemic, weather ...

Extremely disruptive events leads to crisis: i.e. ***Radical changes to the social, economic, environmental... conditions of a country (including food production, distribution and consumption)***

Extremely disruptive events can be intern (within the borders) or extern (producing spillovers that reach far beyond their geographical point of origin)

Extreme events (like weather events or pandemics) will occur with ***greater frequency in the future.***



2001

Climate change and extreme weather events - Implications for food production, plant diseases, and pests

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ARTICLE

Intensity and frequency of extreme novel epidemics

Marco Marani, Gabriel G. Katul, William K. Pan and Anthony J. Parolari

CITE

<https://doi.org/10.1073/pnas.2105482118>

Published in Proceedings of the National Academy of Sciences

Publisher National Academy of Sciences

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eISSN 1091-6490

Published August 23, 2021

Shocks and crisis

nature

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nature > articles > article

Article | Published: 28 April 2022

Climate change increases cross-species viral transmission risk

Colin J. Carlson, Gregory F. Albery, Cory Merow, Christopher H. Trisos, Casey M. Zipfel, Evan A. Eskevich, Kevin J. Olival, Noam Ross & Shweta Bansal

Nature 607, 555–562 (2022) | Cite this article

32k Accesses | 39 Citations | 7897 Altmetric | Metrics

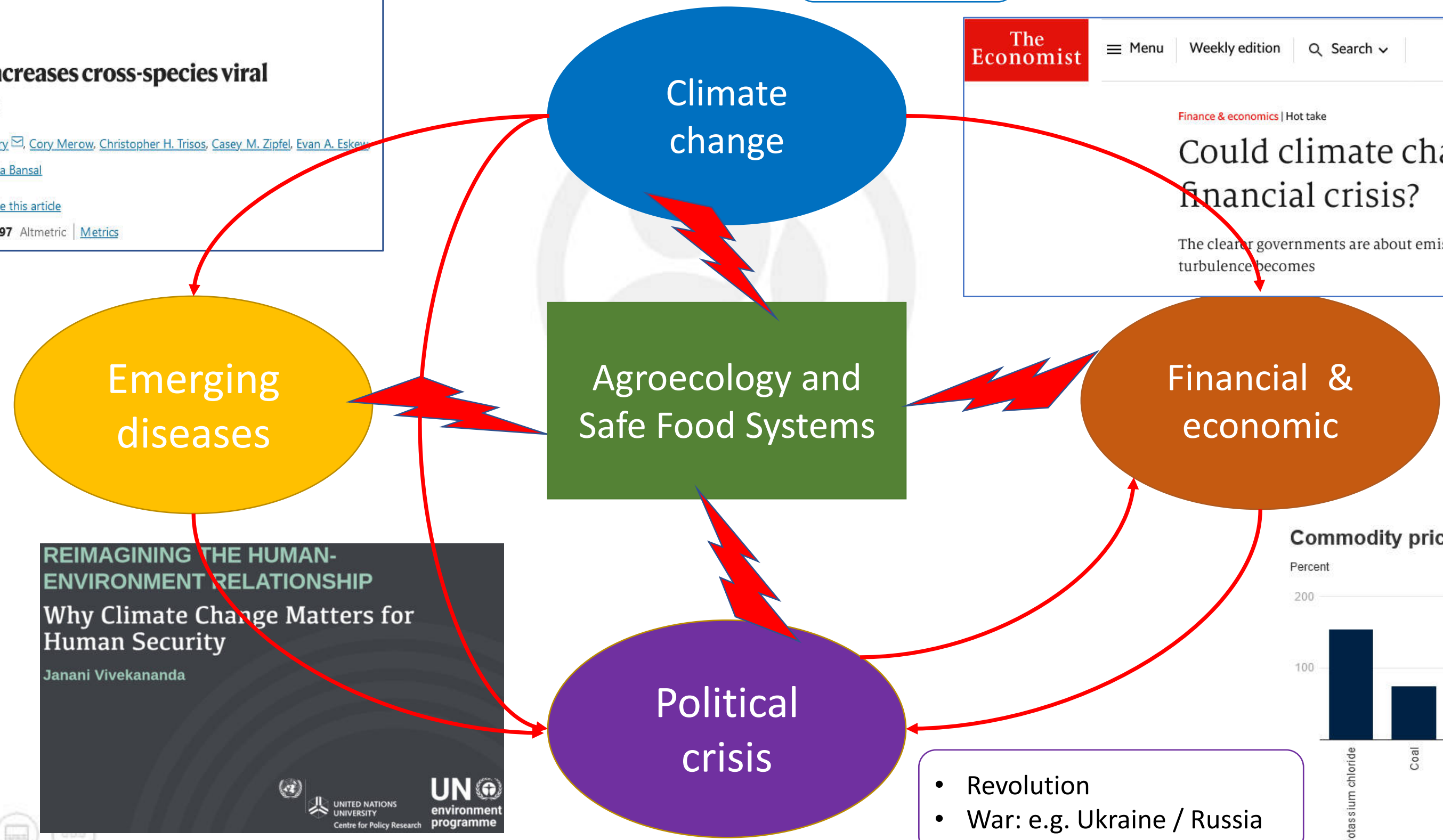
- Floods, storms, droughts

The Economist Menu Weekly edition Search ▾

Finance & economics | Hot take

Could climate change trigger a financial crisis?

The clearer governments are about emissions reduction, the less likely financial turbulence becomes



- COVID 19

- Stock market crash
- Oil crisis

- Revolution
- War: e.g. Ukraine / Russia

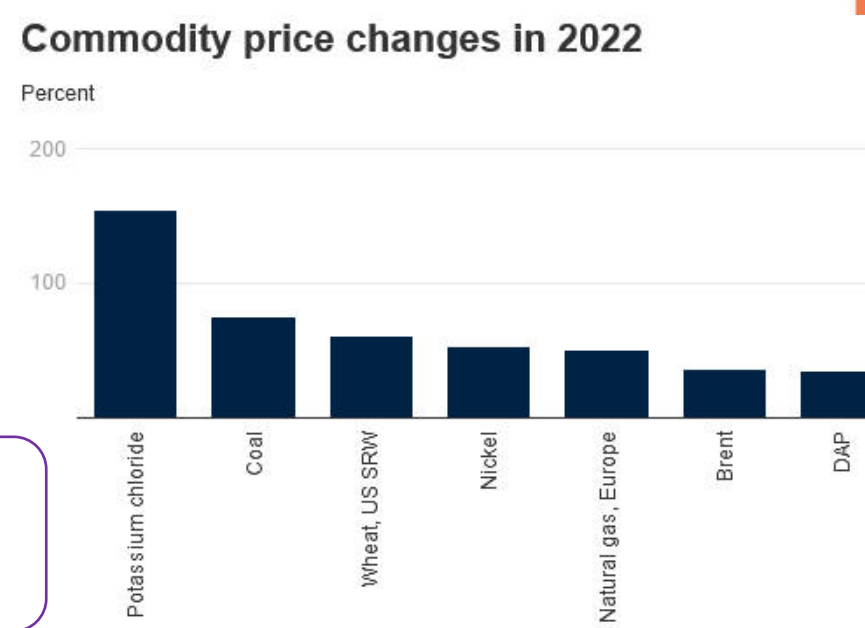
REIMAGINING THE HUMAN-ENVIRONMENT RELATIONSHIP

Why Climate Change Matters for Human Security

Janani Vivekananda

UN environment programme

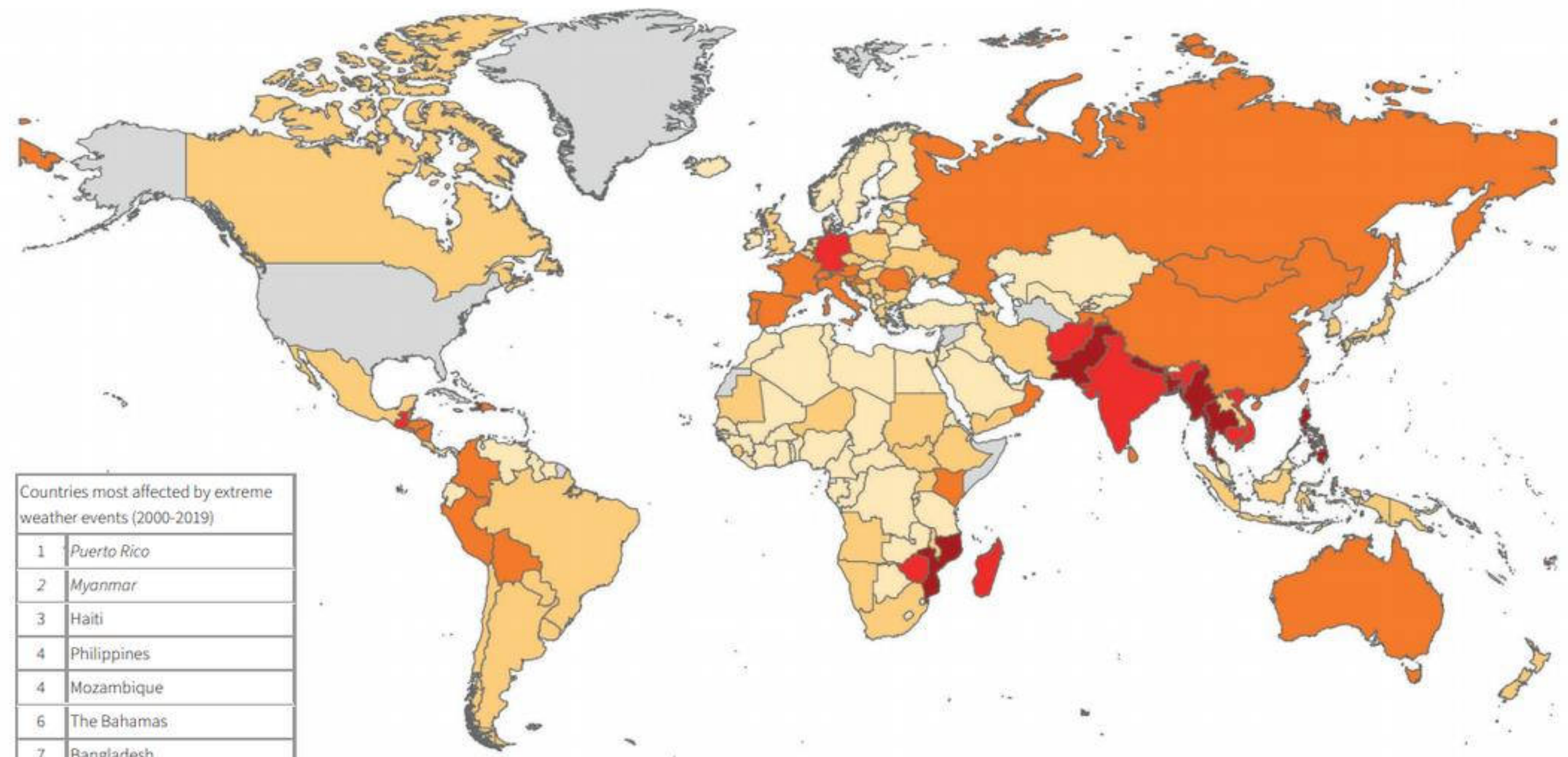
UNITED NATIONS UNIVERSITY Centre for Policy Research



Climate risk in Lao PDR

Figure 1: World Map of the Global Climate Risk Index 2000 – 2019

Source: Germanwatch and Munich Re NatCatSERVICE



| Countries most affected by extreme weather events (2000-2019) | |
|---|--------------------|
| 1 | <i>Puerto Rico</i> |
| 2 | <i>Myanmar</i> |
| 3 | Haiti |
| 4 | Philippines |
| 4 | Mozambique |
| 6 | The Bahamas |
| 7 | Bangladesh |
| 8 | Pakistan |
| 9 | Thailand |

Italics: Countries where more than 90% of the losses or deaths occurred in one year or event

Climate Risk Index: Ranking 2000 - 2019

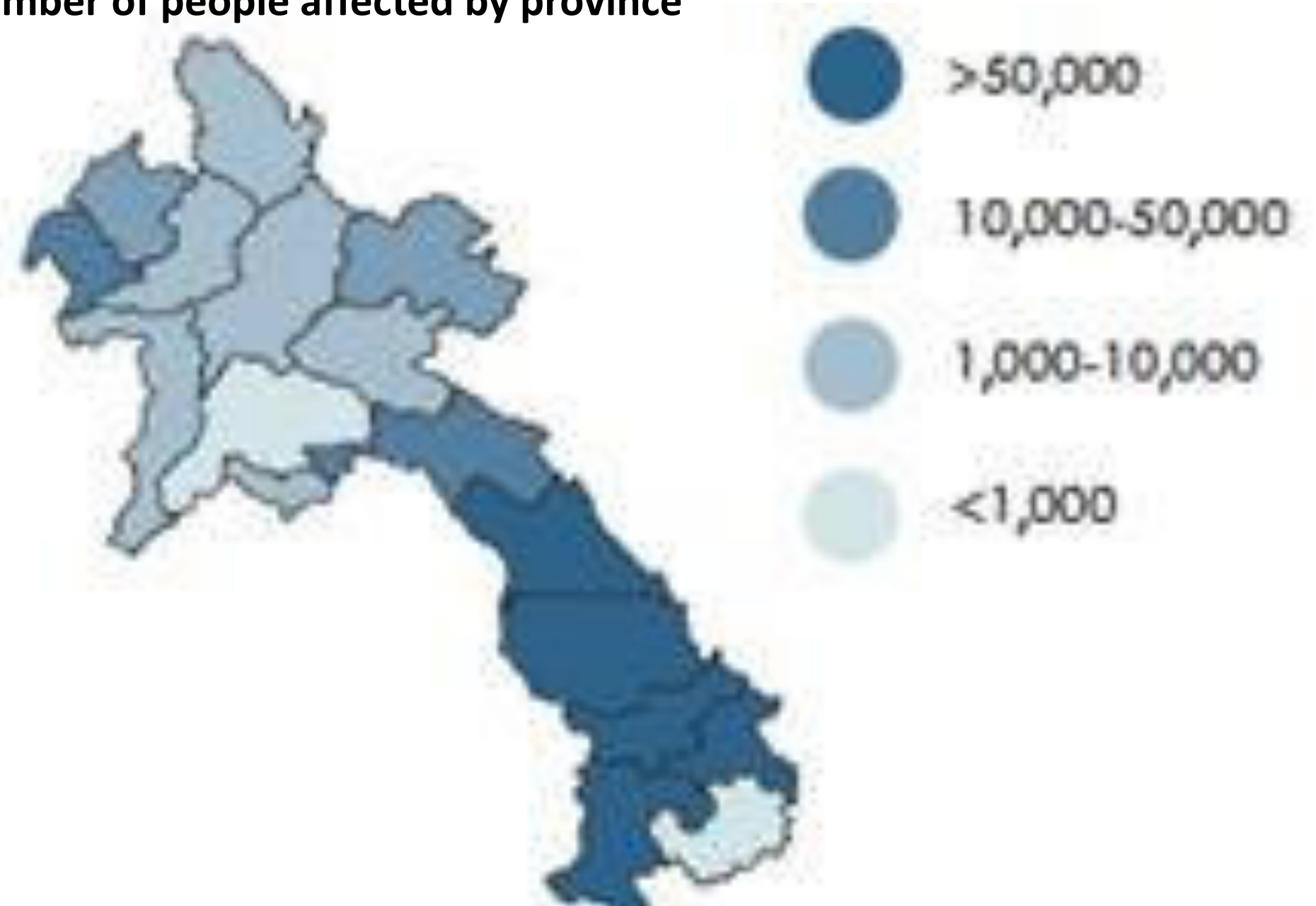


© 2021 Germanwatch

Storms



Number of people affected by province



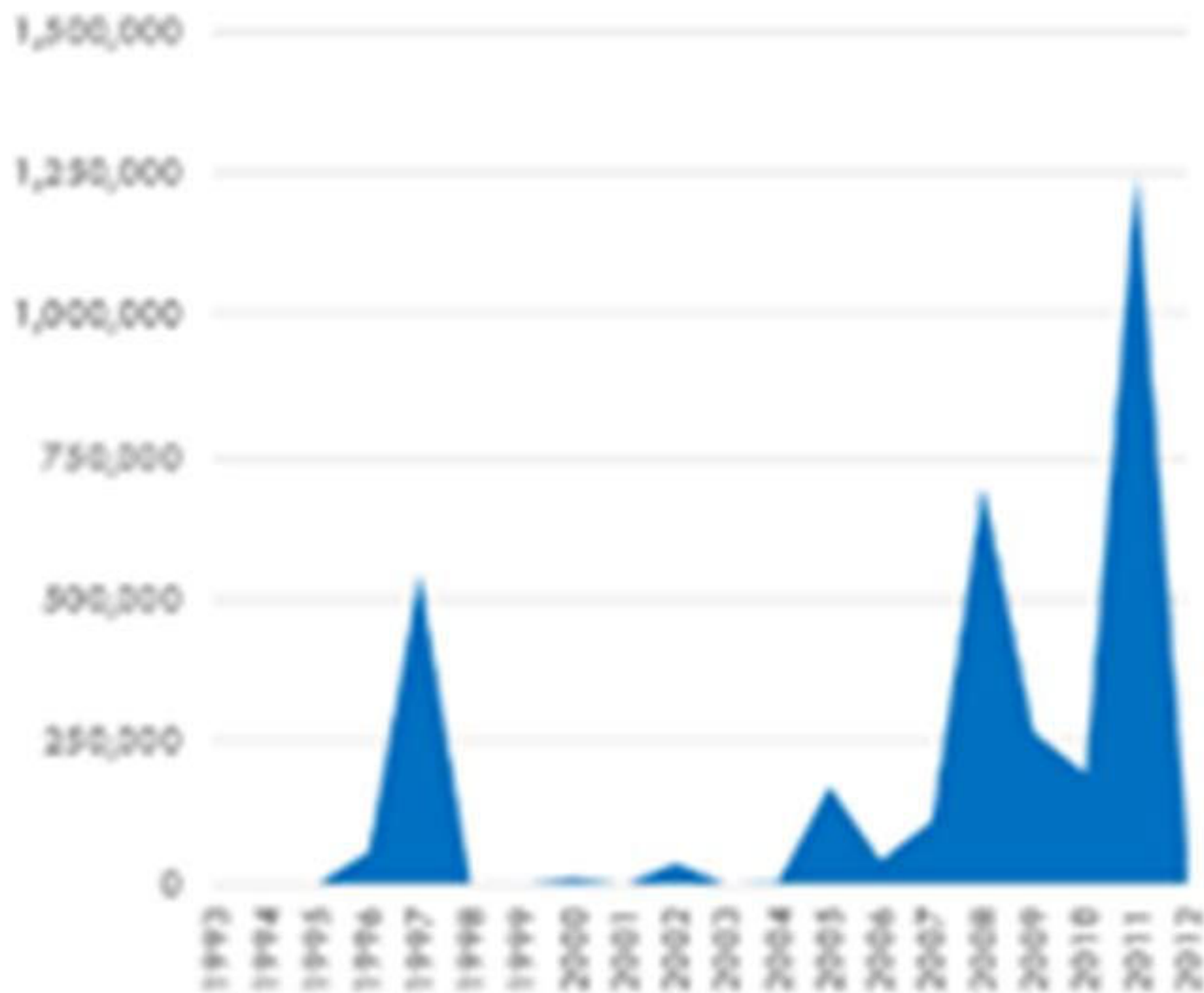
Number of People affected over time



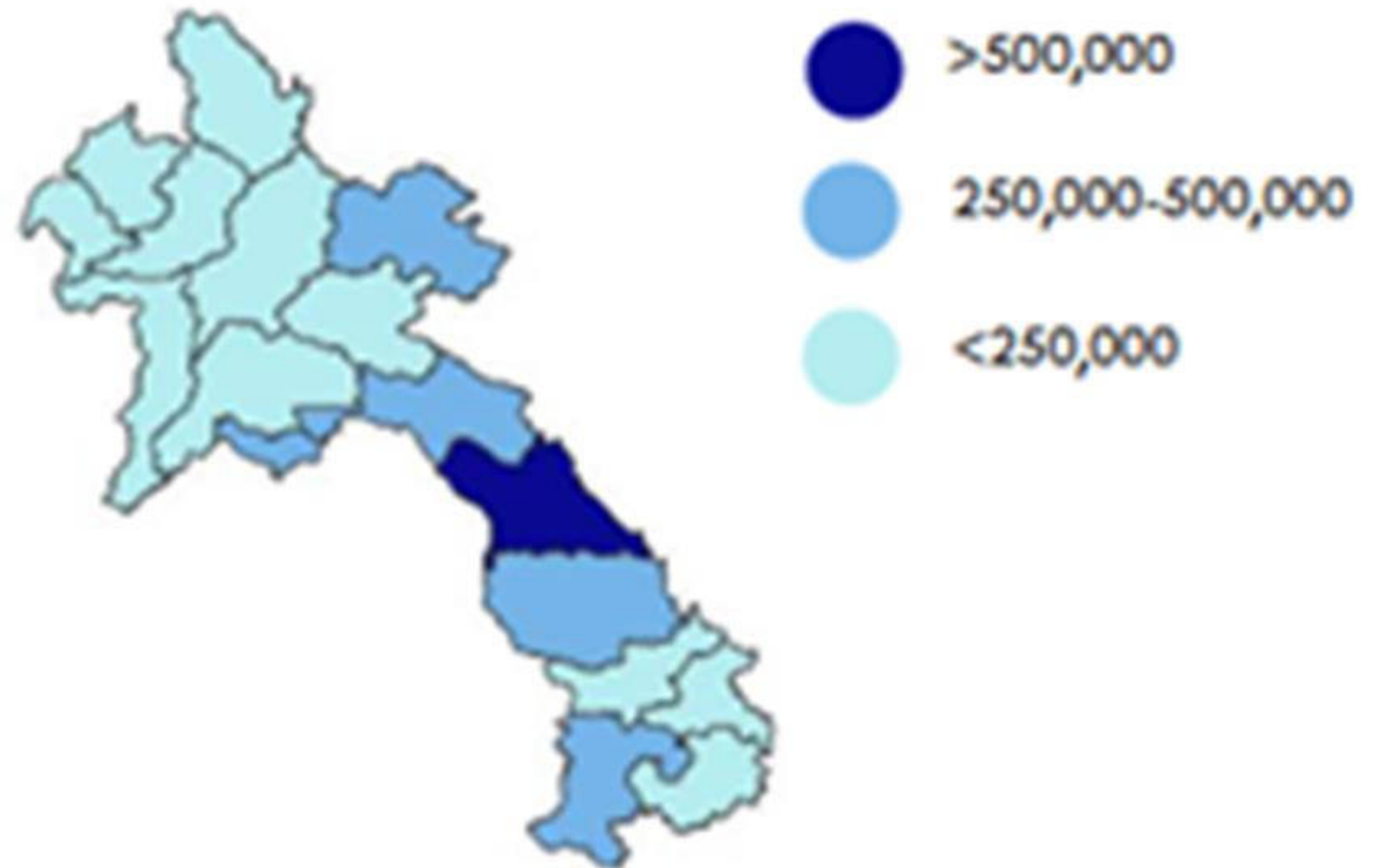
Source: WFP. 2016. Lao People's Democratic Republic, consolidated livelihood exercise for analyzing resilience (CLEAR) report. <https://www.wfp.org/publications/lao-pdr-report>; FAO, European Union and CIRAD. 2022. Food Systems Profile – The Lao People's Democratic Republic. Catalysing the sustainable and inclusive transformation of food systems. Rome, Brussels and Montpellier, France. <https://doi.org/10.4060/cc0302en>

Floods

Number of people affected over time

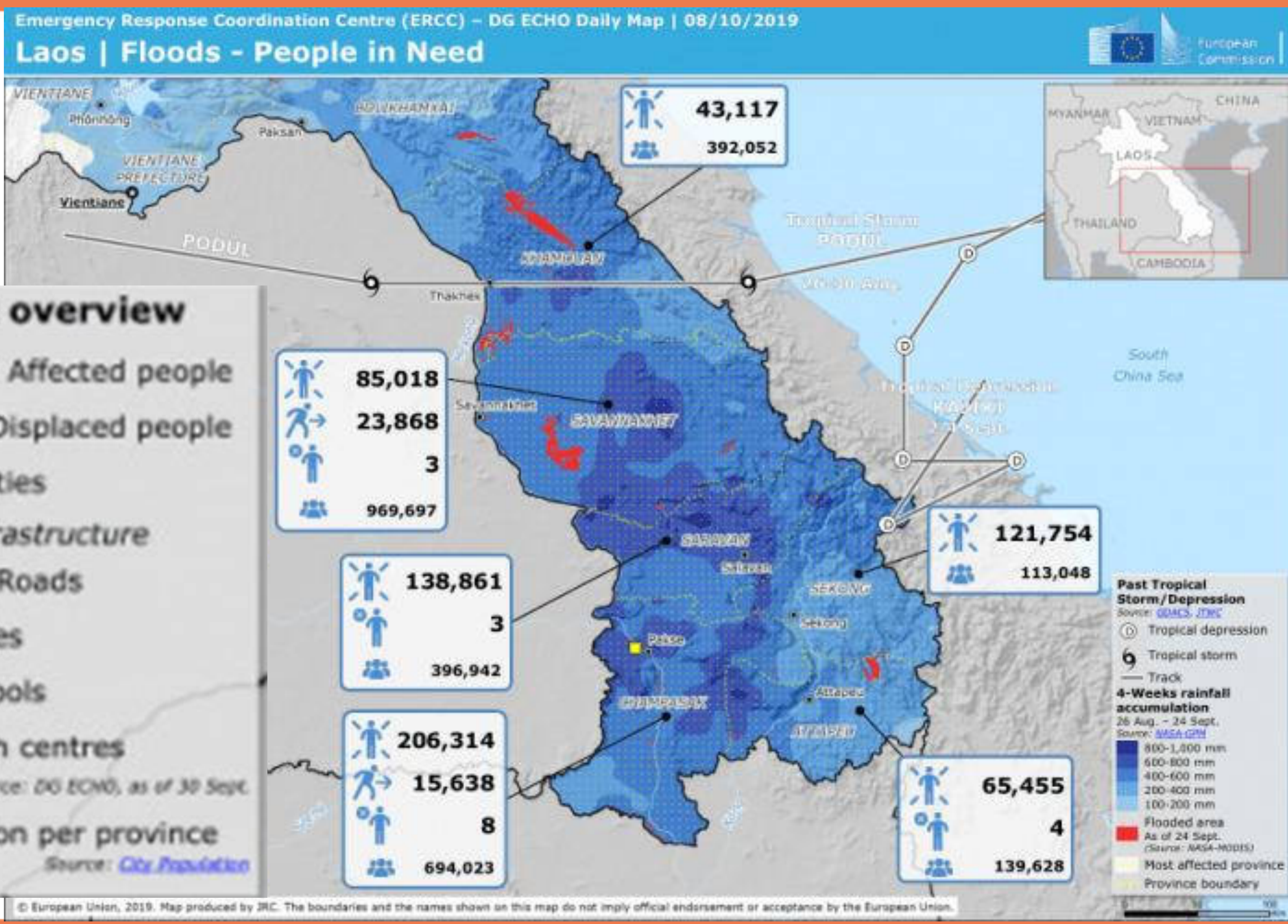


Number of people affected by province



Source: WFP. 2016. Lao People's Democratic Republic, consolidated livelihood exercise for analyzing resilience (CLEAR) report. <https://www.wfp.org/publications/lao-pdr-report>; FAO, European Union and CIRAD. 2022. Food Systems Profile – The Lao People's Democratic Republic. Catalysing the sustainable and inclusive transformation of food systems. Rome, Brussels and Montpellier, France. <https://doi.org/10.4060/cc0302en>

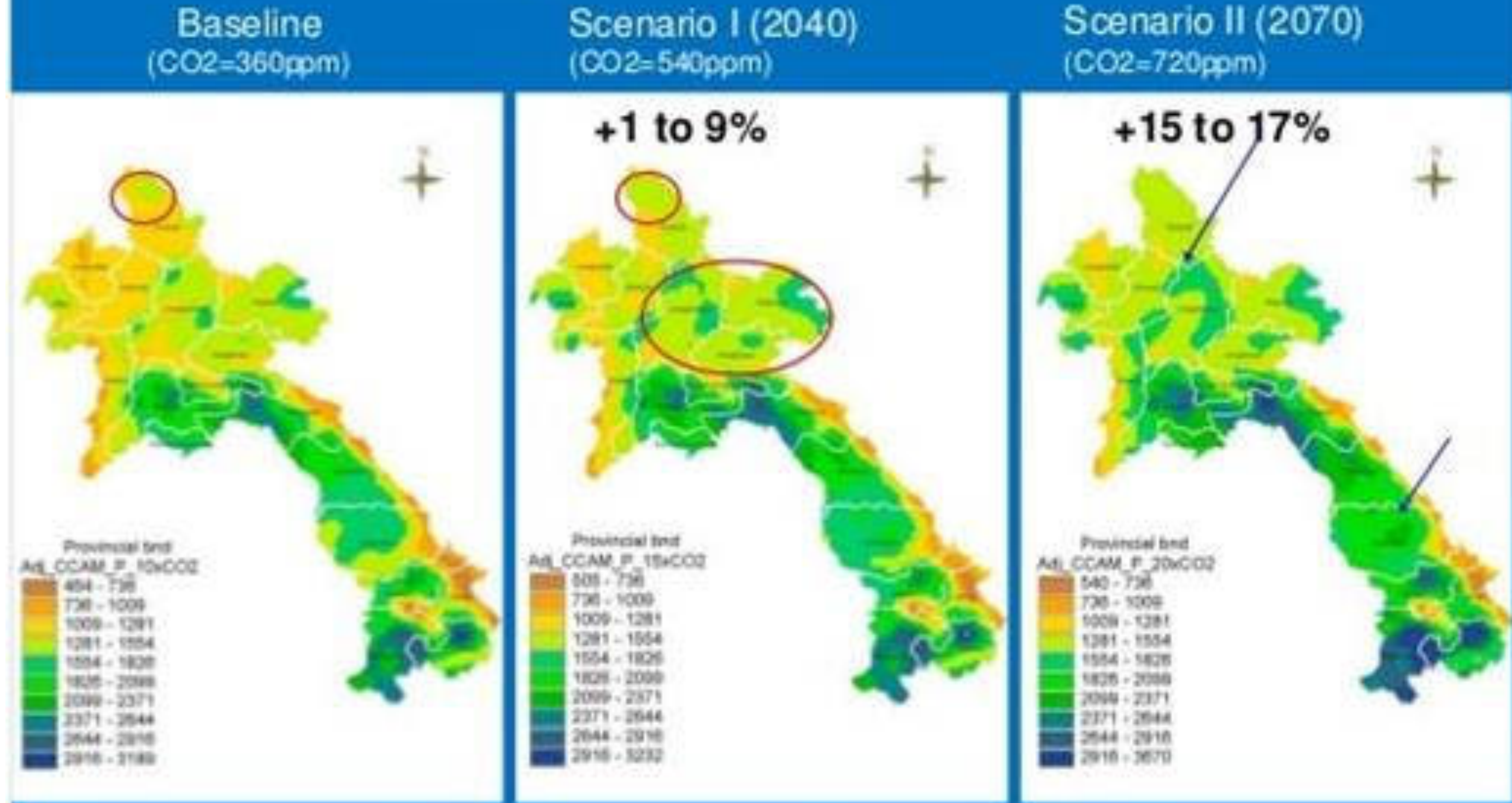
Floods



Predictions of future climate change

II-Climate change in Lao PDR

Average rainfall and change in the future (CCAM)





Drought

Rural Laotians Suffer as Drought in Mekong Region Worsens

Radio Free Asia

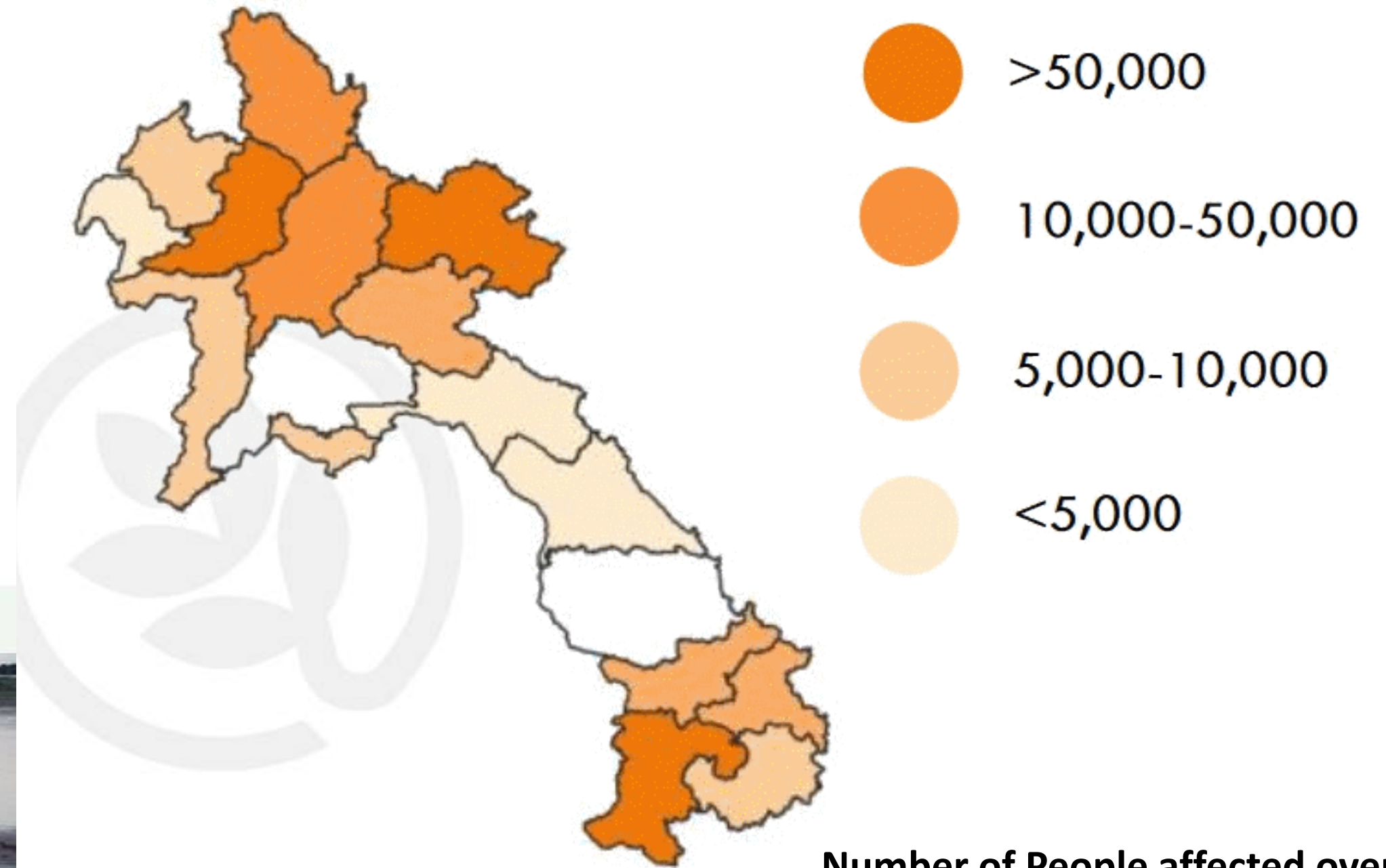
한국어 ភាសាខ្មែរ བོད་སྐད་ ئۇيغۇر Tiếng Việt English



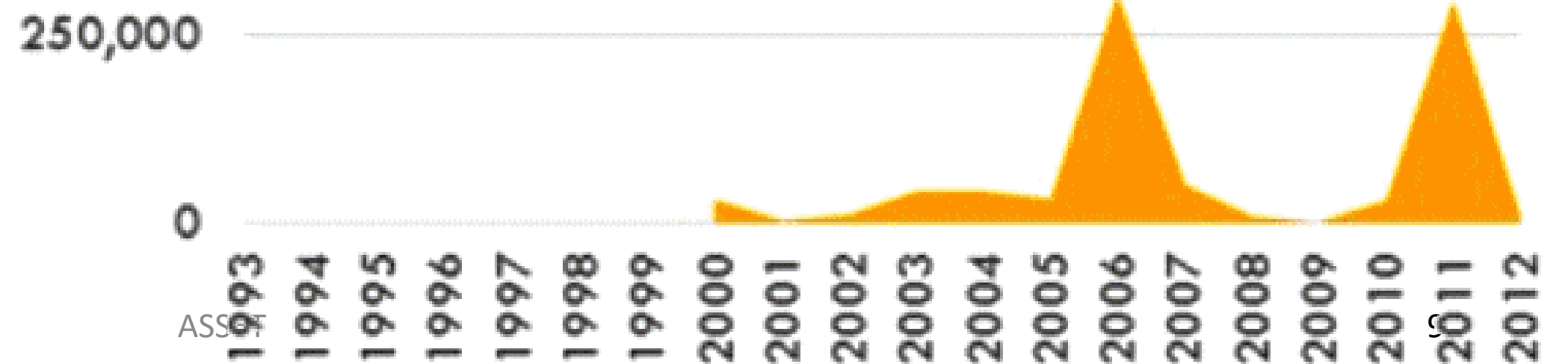
In July 2019, a severe drought in the Mekong river region caused an alarming drop in water levels. In some parts of Laos, the river was about one eighth of its normal depth.

12/12/2022

Number of people affected by province



Number of People affected over time



ASSET

Impacts of climate change on food systems in Lao PDR

LAO PDR Climate risk country profile , World bank / ADB, 2021 :

- Water resource availability and seasonality,
- Soil organic matter transformation, soil erosion,
- Changes in pest and disease profiles, arrival of invasive species,
- Decline in arable areas due to flooding or desertification,
- Damage to crop yields, crop losses
- Rice is particularly vulnerable to elevated night-time minimum temperatures. Climate change could depress local rice yields by around 5–20% by the 2040s in Lao PDR (Li, Wang and Chun, 2017).
- Impacts on the global supply chain: distribution channels (e.g. broken roads and bridges, isolated villages),
- Impacts on food security: projections suggest there could be approximately 53.8 climate-related deaths per million population linked to lack of food availability in Lao PDR by the 2050s (Springmann et al., 2016)

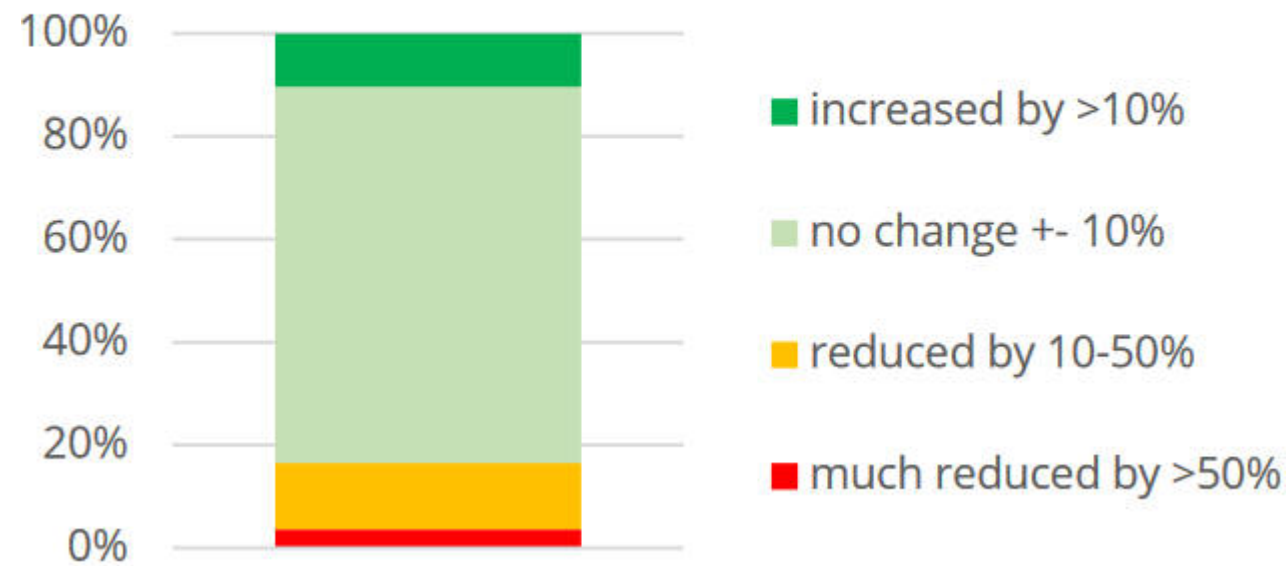
Impacts of COVID 19

Rapid Assessment of Food Security and Agriculture in Lao PDR

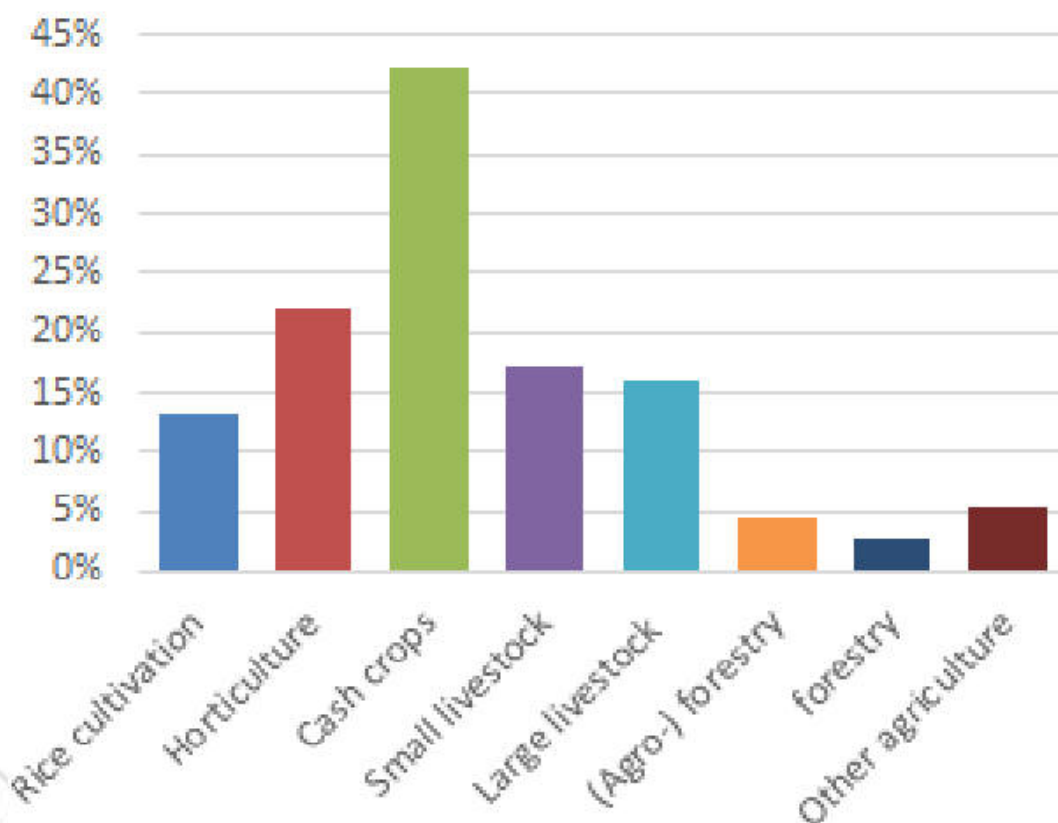


May 2020

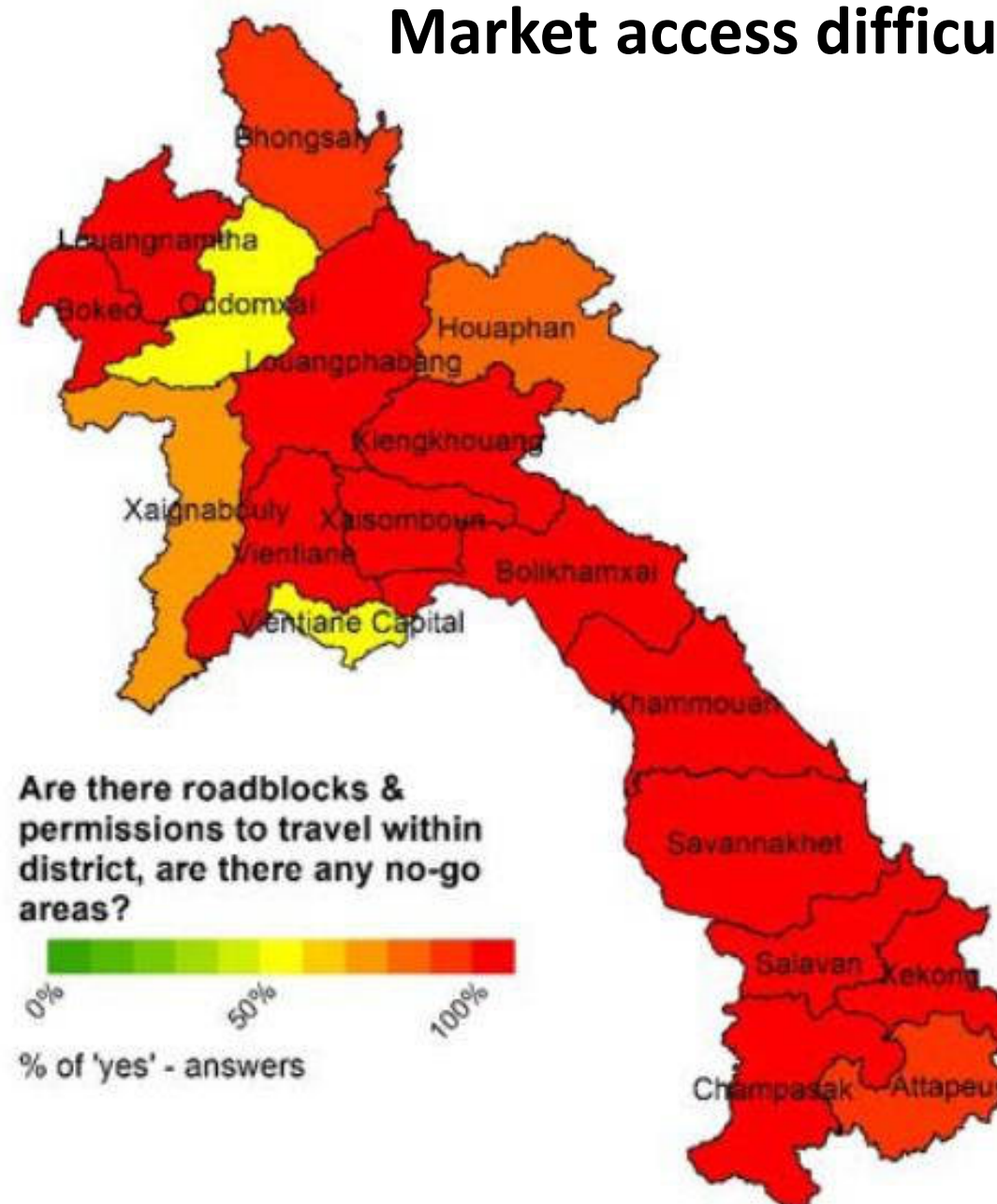
Are agriculture activities going on as normal?



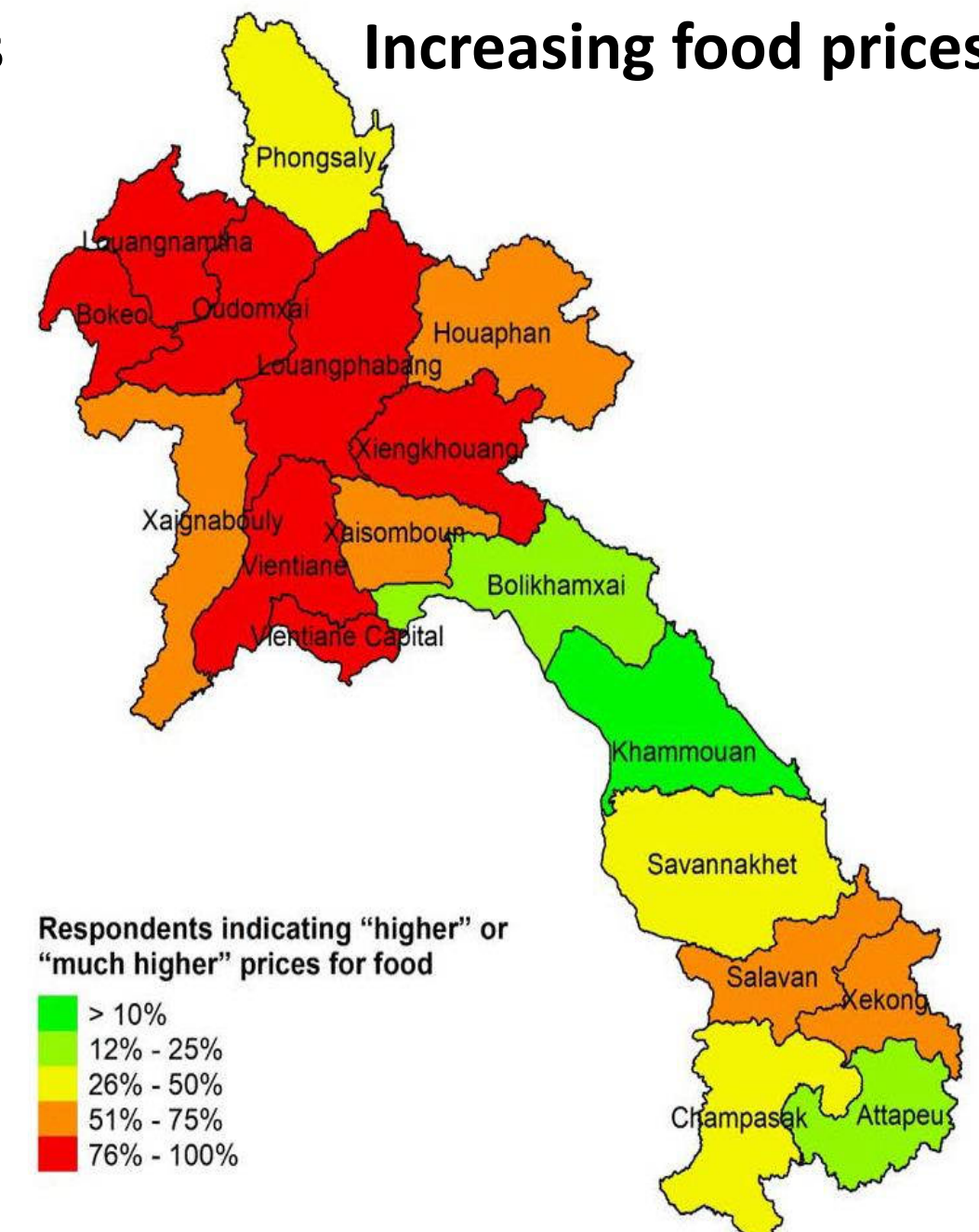
Sectors most impacted by the crisis



Market access difficulties



Increasing food prices



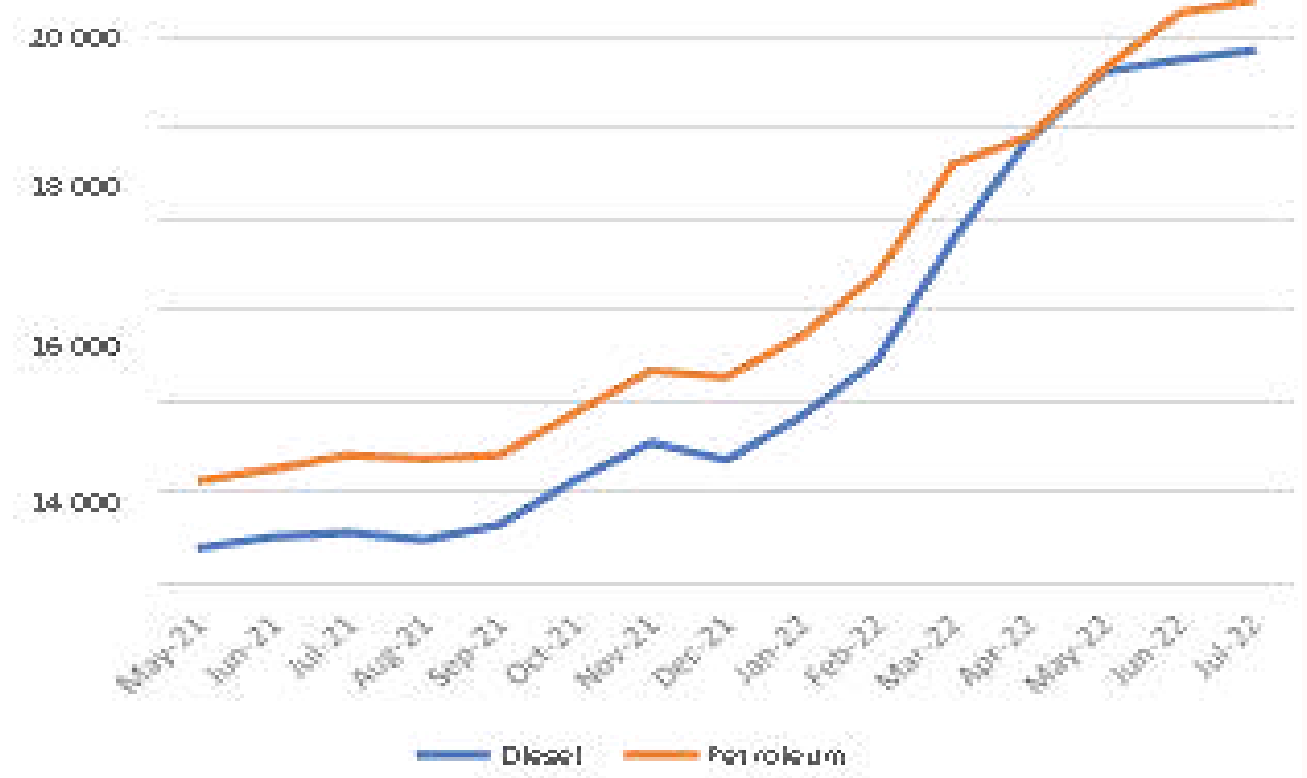
Impacts of war financial crisis



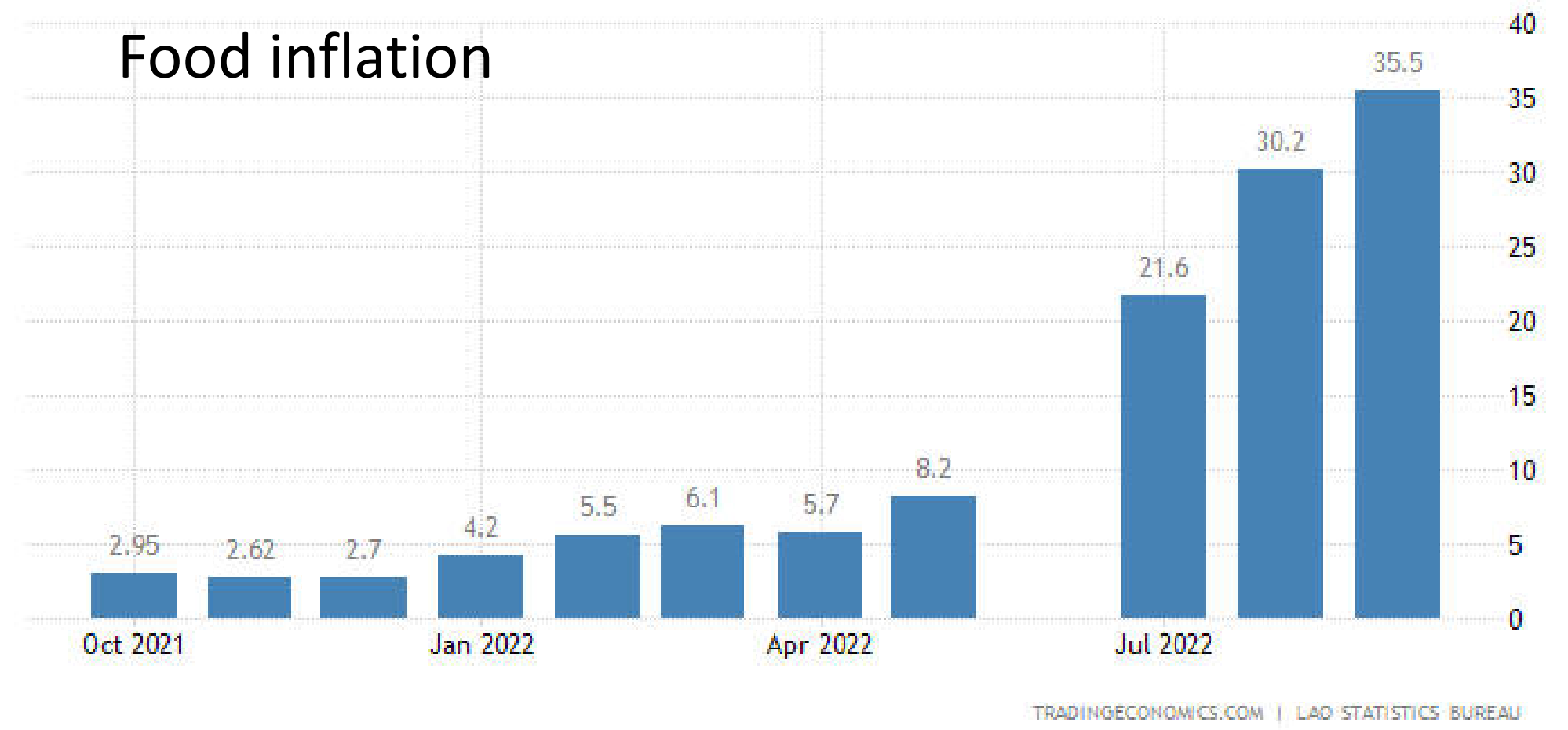
Rapid Assessment on the Impact of the 2022 Financial Crisis on Food Security & Livelihoods in Lao PDR

Muhammad Banaras Khan
CCR Advisor FAO
27 Sep 2022

Figure 1: Lao People's Democratic Republic – Price trends of diesel and petroleum



Food inflation



Cost of food in Laos increased 35.50 percent in September of 2022 over the same month in the previous year

Table: Lao People's Democratic Republic - Comparison of NPK prices

| Type of NPK fertilizer | 2022 price (LAK/bag) | 2021 price (LAK/bag) | Change 2022 over 2021 |
|------------------------|----------------------|----------------------|-----------------------|
| 16:20:00 | 720 000 | 370 000 | + 94% |
| 46:00:00 | 750 000–800 000 | 300 000–400 000 | Approx. + 100–150% |
| 15:15:15 | 720 000 | 375 000 | + 92% |
| 16:08:08 | 585 000 | 270 000 | + 117% |
| 18:08:08 | 600 000 | 300 000 | + 100% |

TRADINGECONOMICS.COM | LAO STATISTICS BUREAU

Narratives on shocks and crisis and AE & SFS

Combating climate change outcomes with agroecology: evidence & actions needed

Agroecology can be defined as the combination of research, education, action & change that brings sustainability to the ecological, economic & social aspects of food systems is increasingly seen as an approach that can bring much-needed transformation to food systems.

A new academic review of over 10,000 studies finds substantial evidence that agroecological practices – like farm diversification, agroforestry and organic agriculture – can make a significant contribution in helping low- and middle-income countries (LMICs) meet their climate adaptation and mitigation targets through their food systems.



[Read the review here](#)

Agroecology and Climate Change Resilience

In Smallholder Coffee Agroecosystems of Central America

Katlyn S. Morris, V. Ernesto Méndez, Maarten van Zonneveld, Andrew Gerlicz, and Martha Caswell

December 2016



Emerging responses to the COVID-19 crisis from family farming and the agroecology movement in Latin America – A rediscovery of food, farmers and collective action

P. Tittonell ^{a, b, c, d, e}, M. Fernandez ^a, V.E. El Mujtar ^a, P.V. Preiss ^d, S. Sarapura ^e, L. Laborda ^a, M.A. Mendonça ^f, V.E. Alvarez ^a, G.B. Fernandes ^g, P. Petersen ^h, I.M. Cardoso ⁱ, 15 co-signing contributors

Urgent need for agroecology revolution, says Christian Aid

by Agency Reporter | Sep 28, 2021 | Briefing



CHRISTIAN AID HAS PUBLISHED A REPORT ON THE DAMAGE that conventional farming is doing to the climate and soil systems upon which humanity relies.

“A growing range of subsequent studies have shown productivity improvements of 5-12 per cent as farmers adopt more agroecological methods, and they recover faster after severe shocks, such as cyclones and droughts.”

Agroecology and the emergence of a post COVID-19 agriculture

Miguel A. Altieri [✉] & Clara Ines Nicholls

Agriculture and Human Values 37, 525–526 (2020) | [Cite this article](#)

Narratives on shocks and crisis and AE & SFS

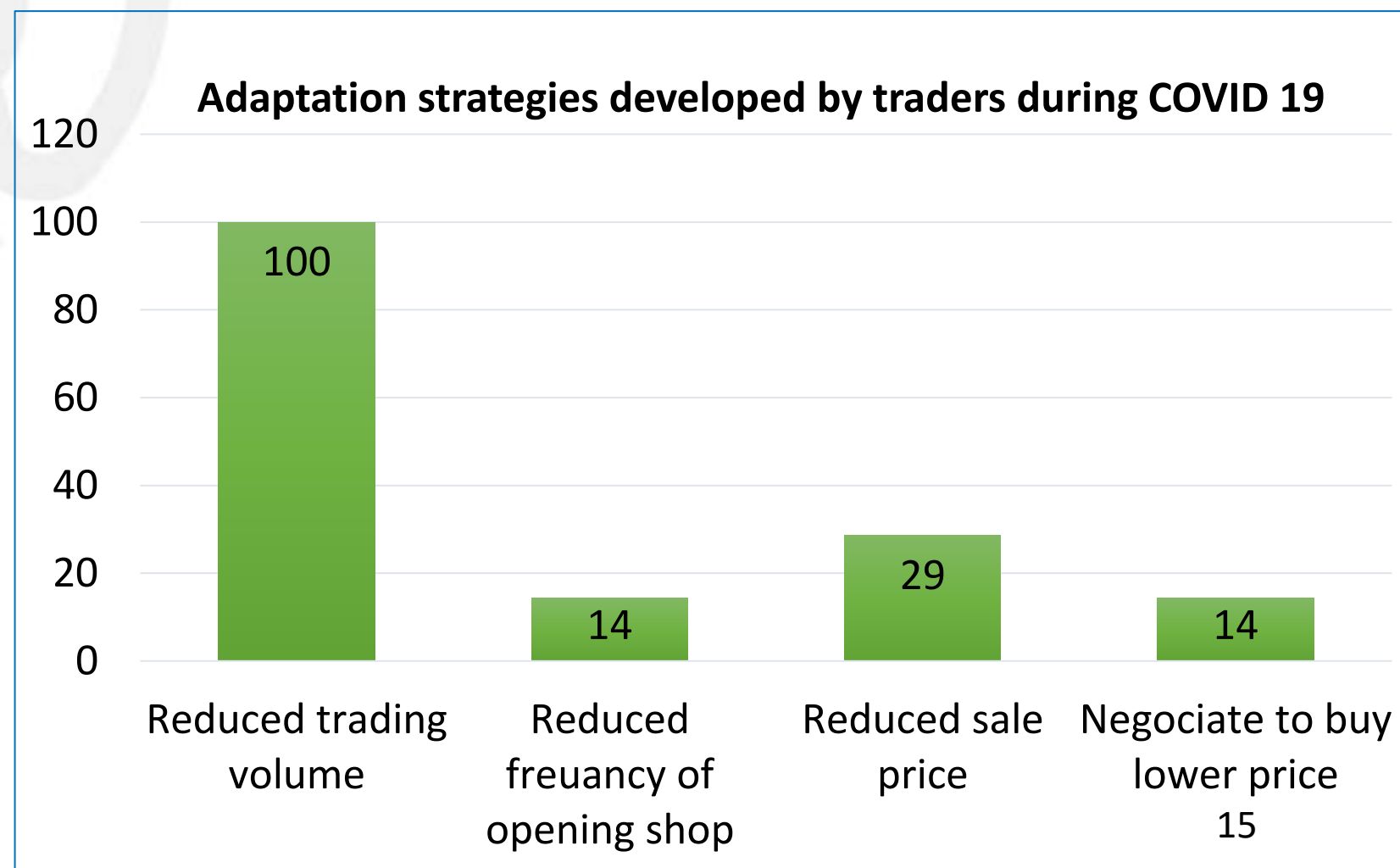
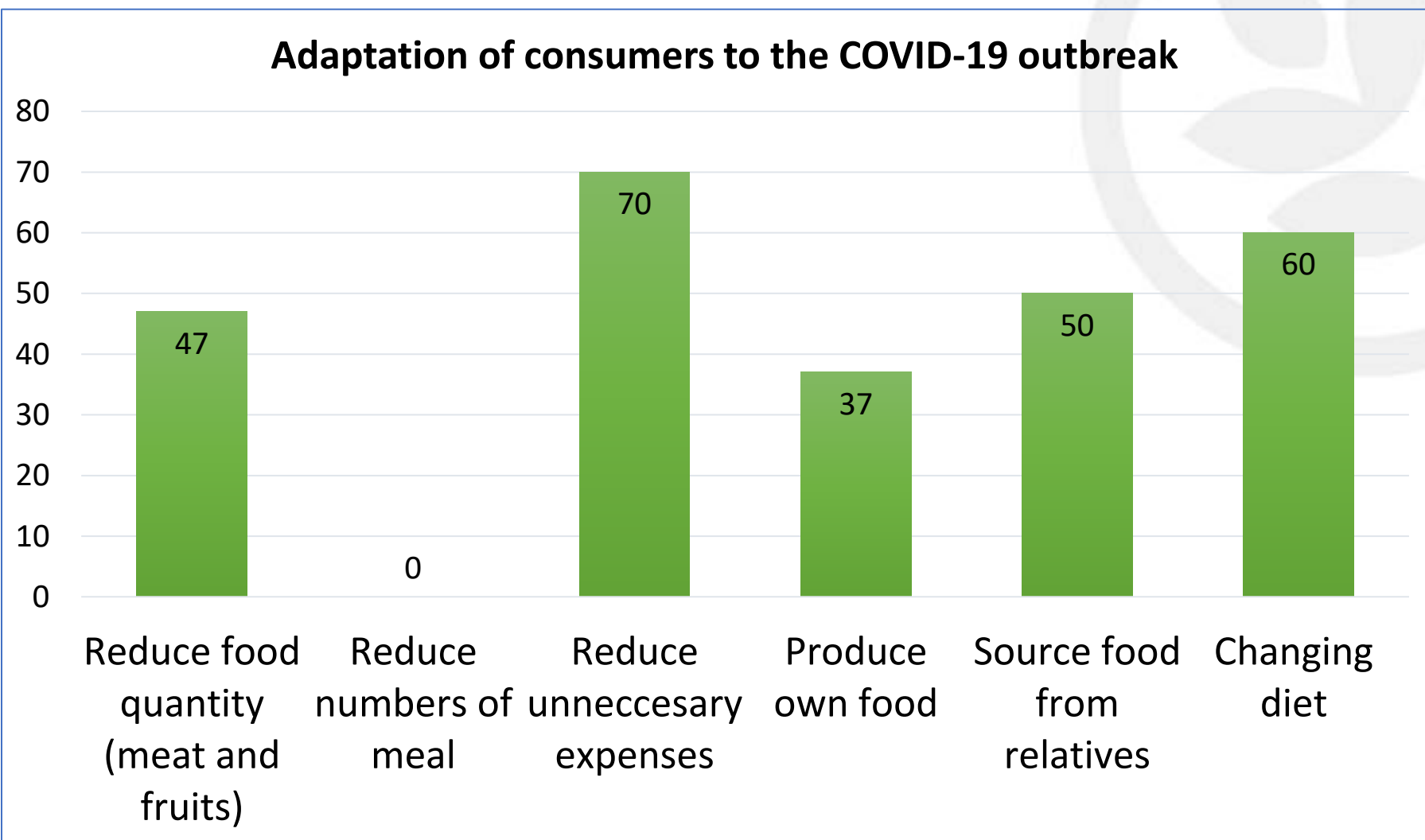
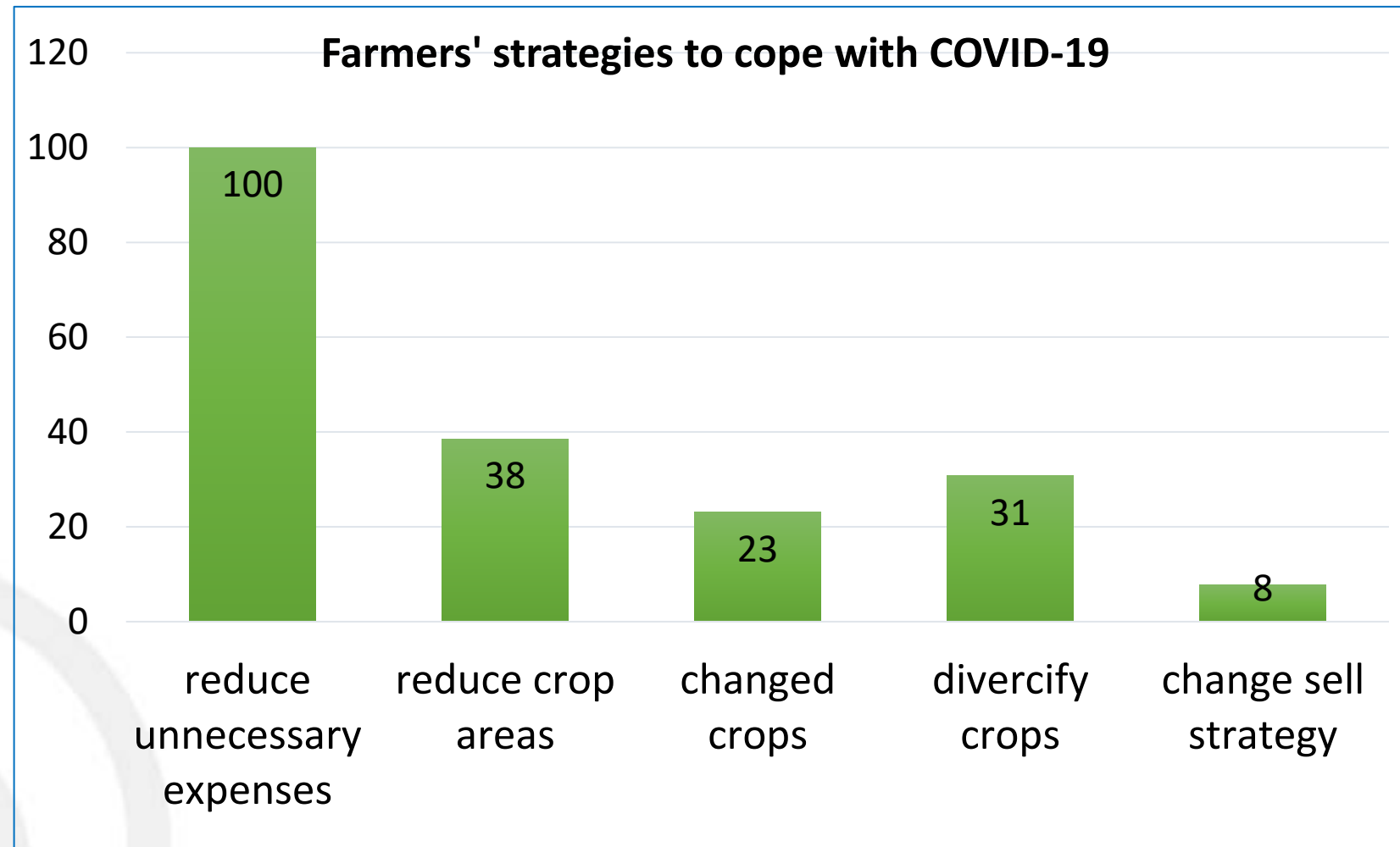
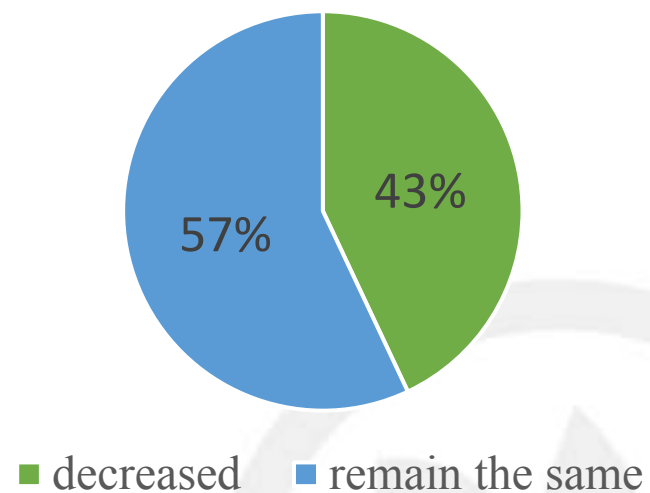
1. Recent crisis (e.g. COVID19) have revealed the **socio-ecological fragility of current industrial-globalized food systems;**
2. Agroecology can play a **major role in climate change adaptation and mitigation:**
 1. positive impacts of diversification on crop yield, pollination, pest control, nutrient cycling, water regulation and soil fertility;
 2. AE provides more climate change adaptation and mitigation than conventional agriculture by emphasizing locally relevant solutions, participatory processes and co-creation of knowledge.
3. Evidence that agroecological practices **improve household food security and dietary diversity.**
4. Agroecology offers **high levels of food diversity to provide greater resilience to risks;**
5. Key role played by **local food systems and value chains in times of crisis** (food resilience);

Covid 19 / AE & SFS in Lao PDR

Master Thesis. Maiyer Xiong, NUoL – Cirad. 2022

“Resilience of food systems in Laos in the face of Covid19, with a focus on Agroecological Food System in Xiengkhouang province”

Crop areas during Covid19



Food systems based on AE in Lao PDR: more resilient to shocks?

Master Thesis. Maiyer Xiong, ASSET, NUoL – Cirad, 2022. Main findings:

- Agroecological farmers were able to continue to produce
- Farmers who trade in short chain were less impacted by the Covid19 while non-AE farmers trading in long chain were more impacted => Consider AE not only as a production system (e.g. organic), but also in the light of the forms of exchange between the actors of the system
- Farmers and traders were mainly affected by the decline in sales of their products, and therefore in their incomes, mainly due to coping strategies of consumers who preferred forms of food procurement that limited physical contact.
- Income drop was only transitory and did not affect household food security.
- Even without any food program supported by the government, people were able to live without food shortage or skipping meal.
- Agricultural fresh markets remained open to provide food to the consumers, and
- when they were closed, consumers were able to continue sourcing food through family solidarity, drawing on their stocks of rice, having food delivered to their homes, growing vegetables in their own gardens and changing their food diets when certain food items were not available.

EFICAS project: Results of Agroecology on climate change resilience

THANK YOU

The project is funded by



ASSET Partners

