

A SMARTER WAY OF MANAGING DISASTER RISKS: THE USE OF SCIENCE & WEATHER & CLIMATE INFORMATION

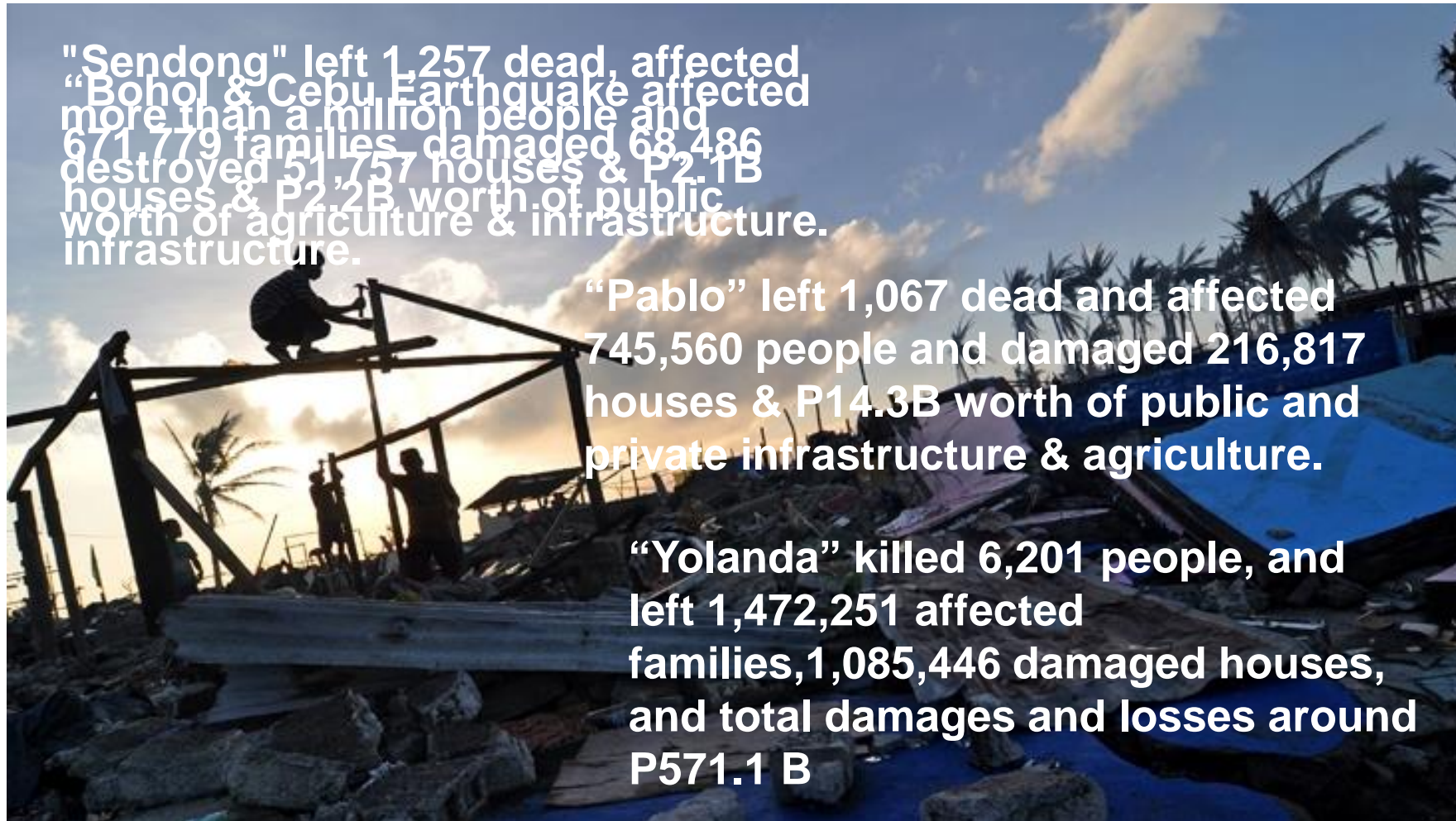
APEC CLIMATE SYMPOSIUM
November 3, 2015



WORLD BANK GROUP

Lesley Jeanne Y. Cordero
*Senior Disaster Risk Management
Specialist*

Impact of Disasters in the Philippines

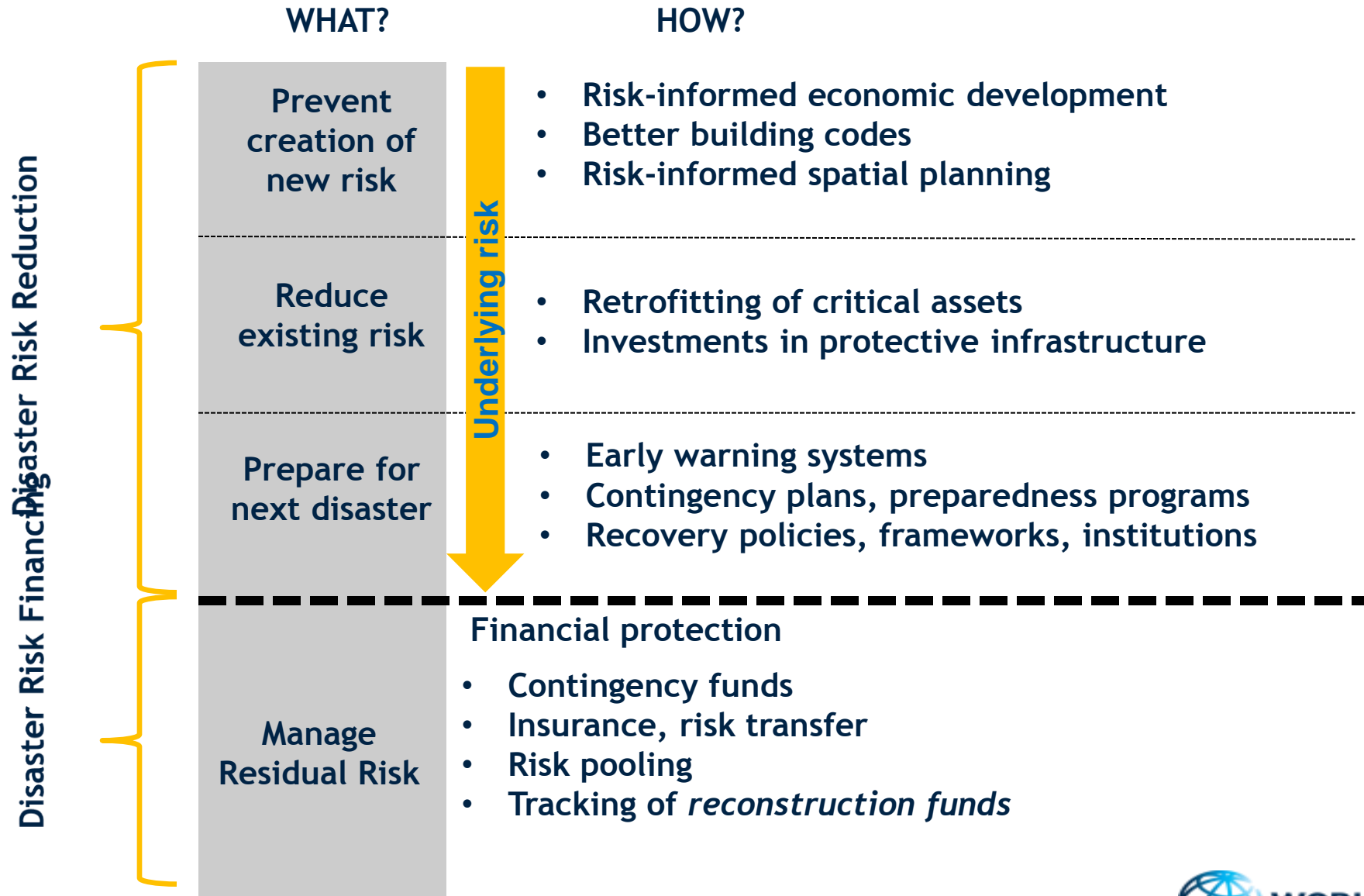




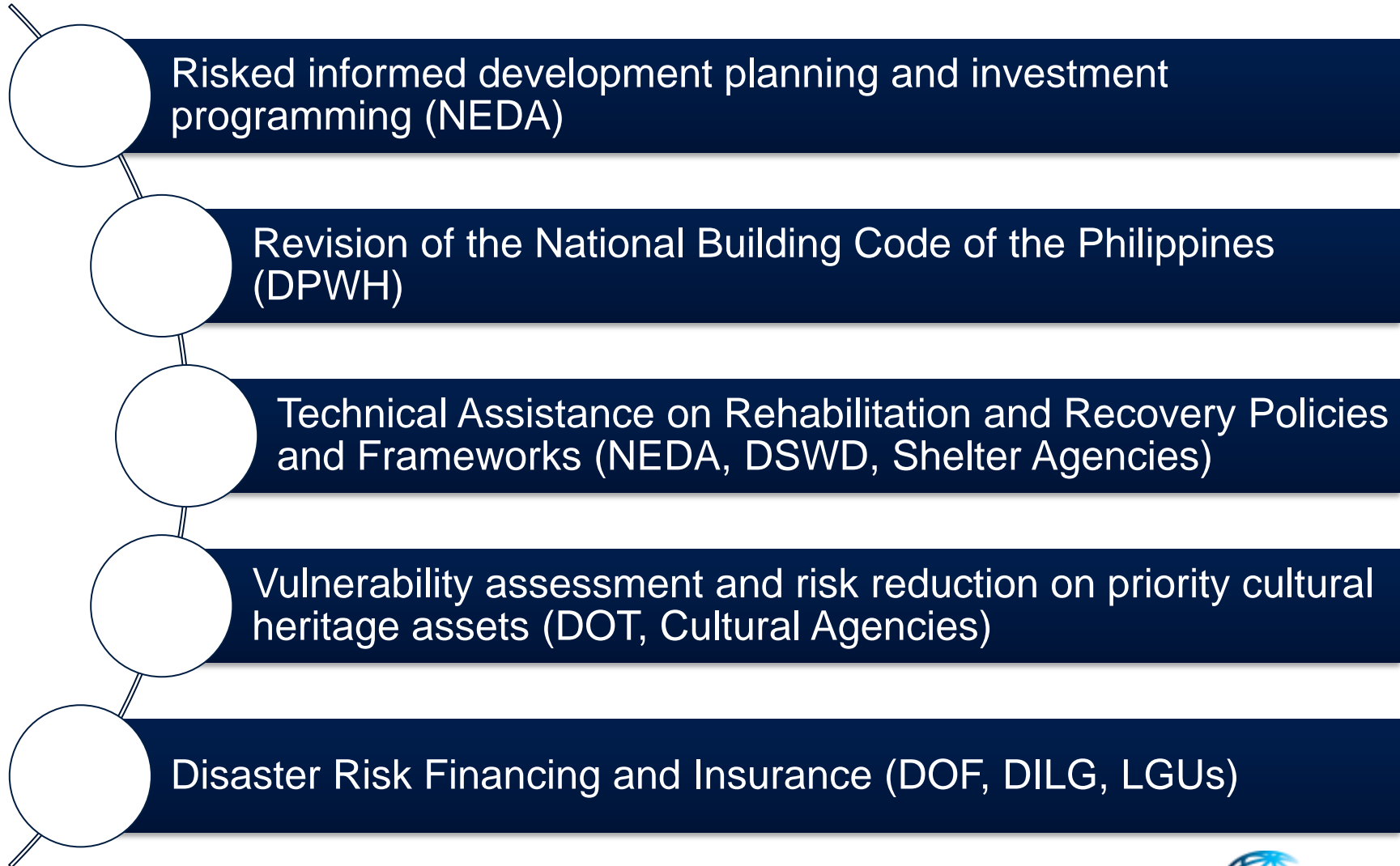
the Philippines
focuses on risk resiliency
1.9 billion \$
(Php88 billion)

Risk Resiliency Program

Integrated DRM and current WBG engagement areas



DRRM Projects with government & stakeholders





Socio-economic resilience to natural disasters

Preliminary application to the
Philippines

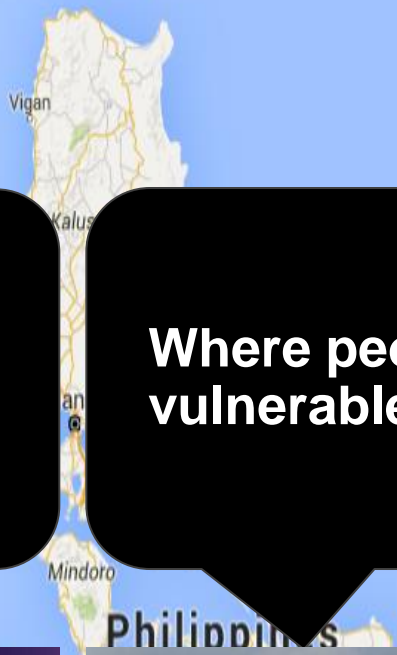
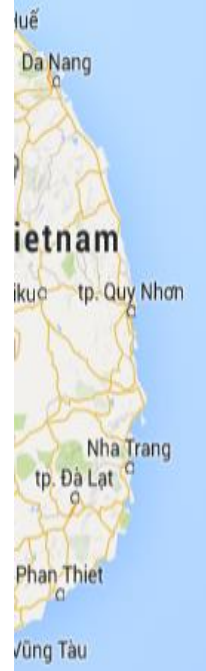
Climate Change Group, World Bank



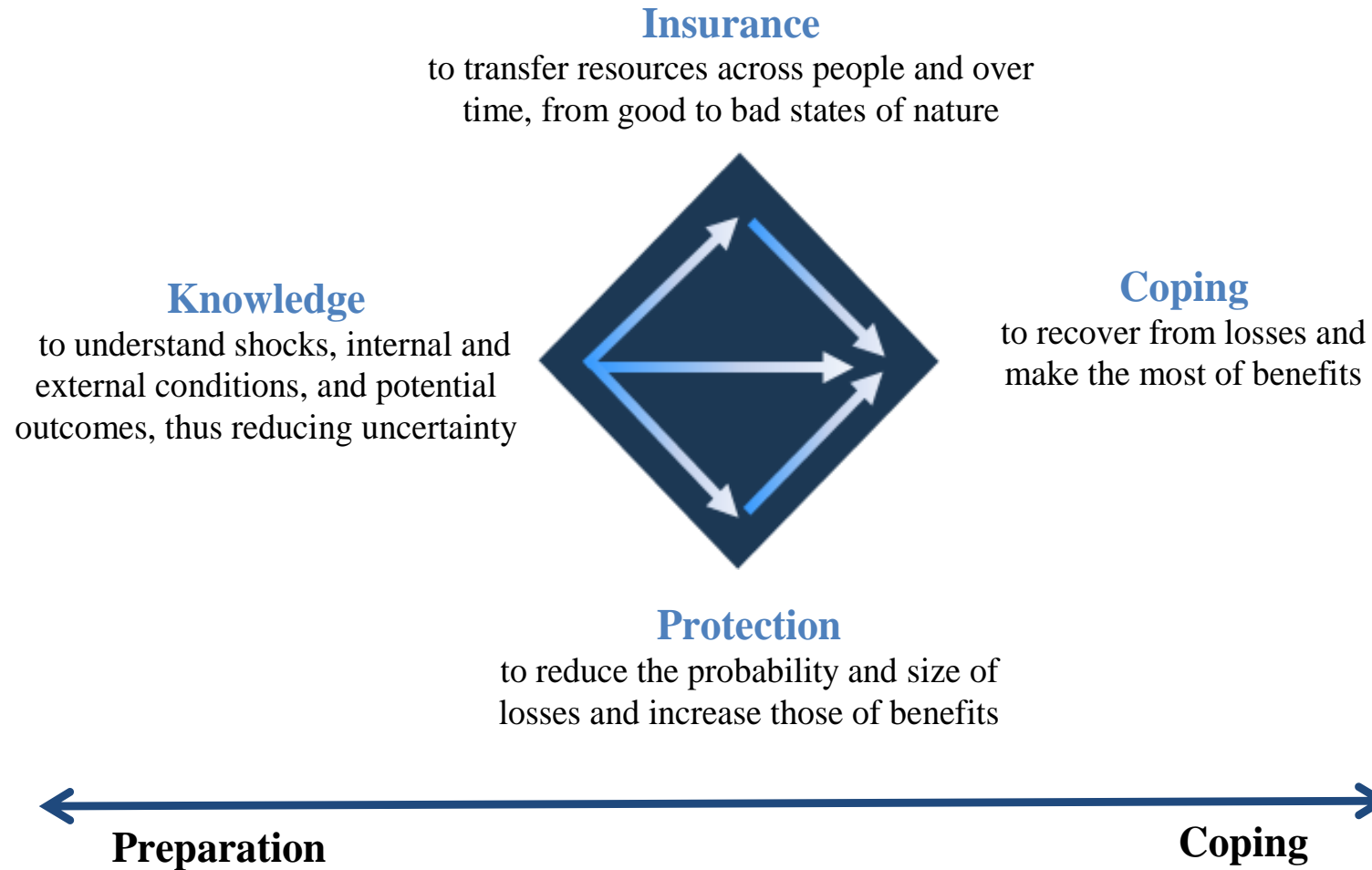
Where should investments in resilience be concentrated?

Where they are most cost-effective!

Where people are most vulnerable!



Disaster risk management is the combination of many policies – but how to design a strategy?



World Development Report, 2014

Disaster risk management is the combination of many policies – but how to design a strategy?

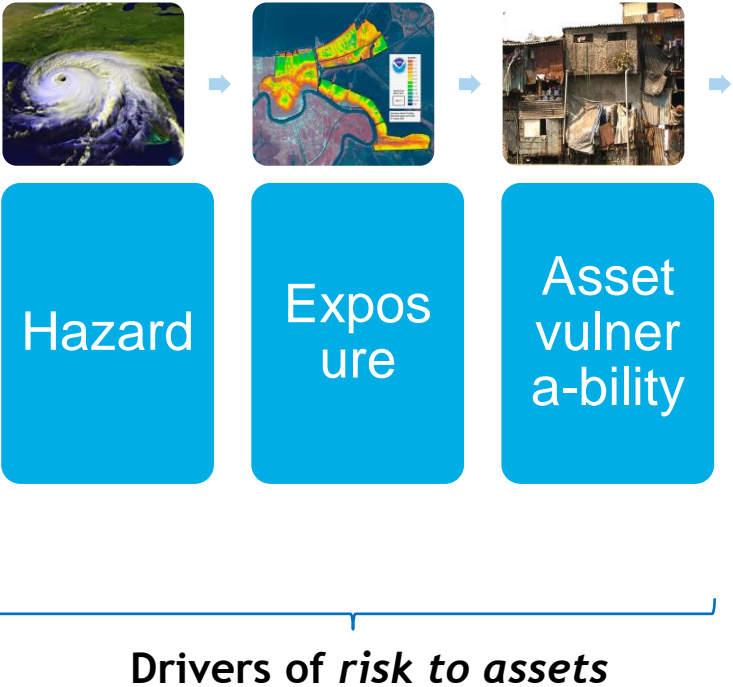
**Prevention is the key:
we should avoid
disasters!**

**Risk cannot be
reduced to zero: we
need to help affected
people!**



A tool to identify geographic and policy priorities

Risk assessment – from asset to well-being losses



We mostly report – and discuss – asset losses



WORLD NEWS

Typhoon Left Nearly \$13 Billion in Damage

Government Report Details Losses Along With a Rebuilding Plan

By JOSEPHINE CUNETA

Updated Dec. 18, 2013 10:41 a.m. ET

MANILA—President [Benigno Aquino III](#) said Typhoon Haiyan caused nearly \$13 billion in damage as his government released a report detailing the costs and a rebuilding plan that would help the Philippines better survive future storms.

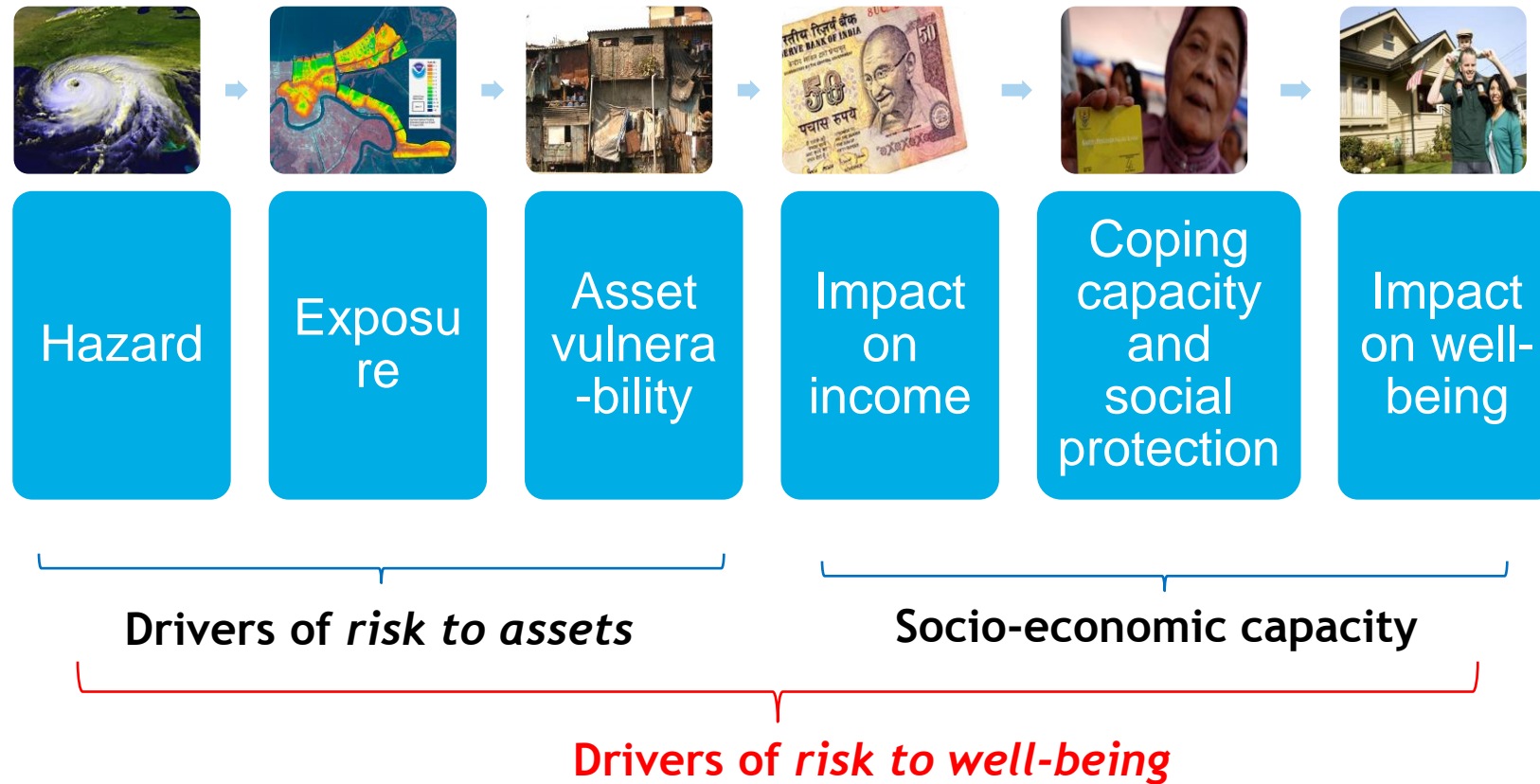


An aerial image shows Tacloban coastal villages on Dec. 8, 2013 in the aftermath of Super Typhoon Haiyan. AP/WIDE WORLD

President Aquino attributed the severity of the storm to "the escalating effects of climate change," saying Wednesday that the country must "rebuild what was destroyed but...build back better."

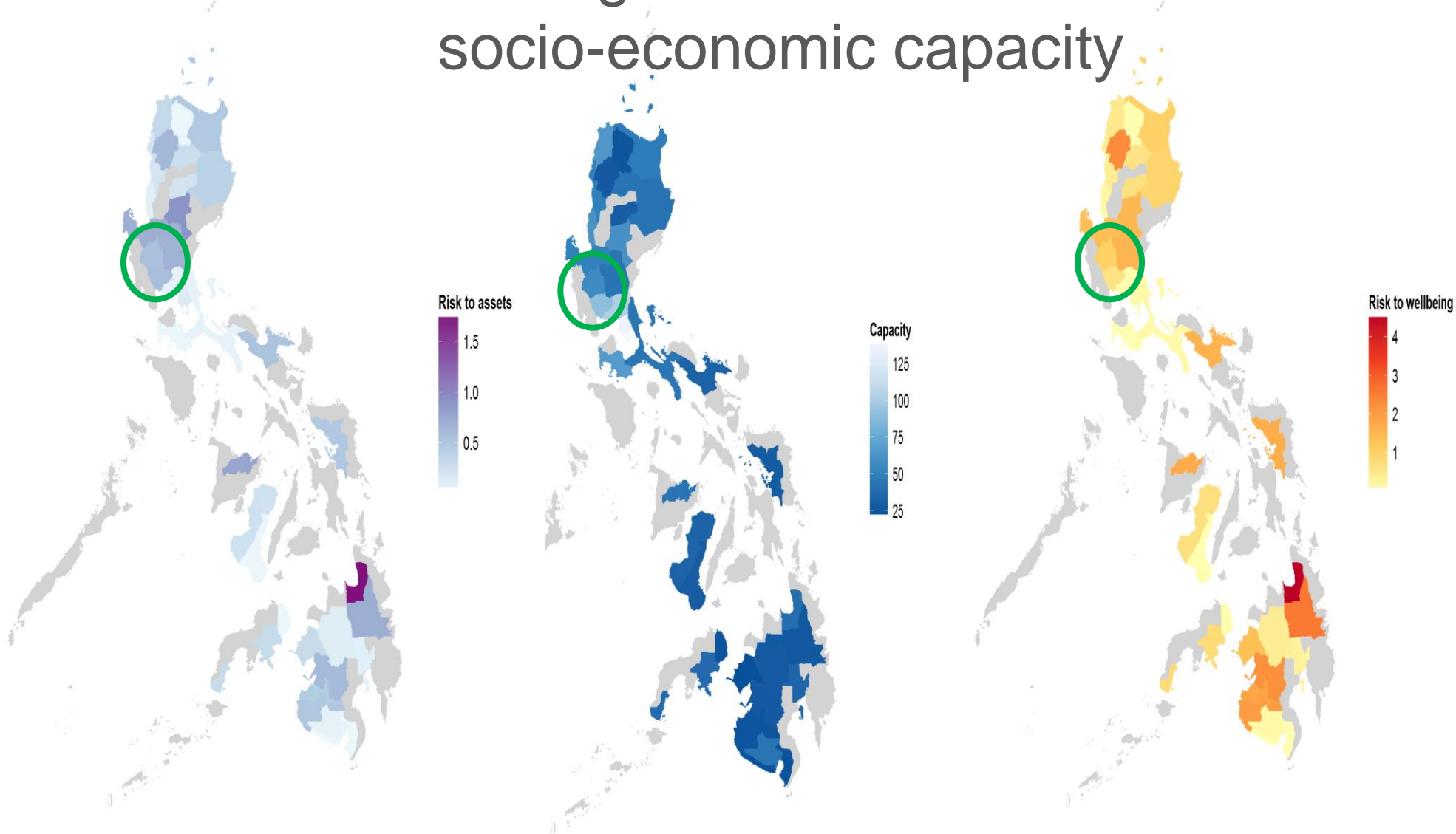
"We know that we cannot allow ourselves to be trapped in a vicious cycle of destruction and reconstruction. We know that it is more efficient to prioritize resilience now rather

Risk assessment – from asset to well-being losses



P1 million in asset losses cause more well-being losses if the losses happen in poorer provinces, are concentrated on the poorest individuals, or if the victims have less access to financial tools and support from family and social safety nets

Risk to well-being combines risk to assets and socio-economic capacity



Risk to assets (% of GDP)

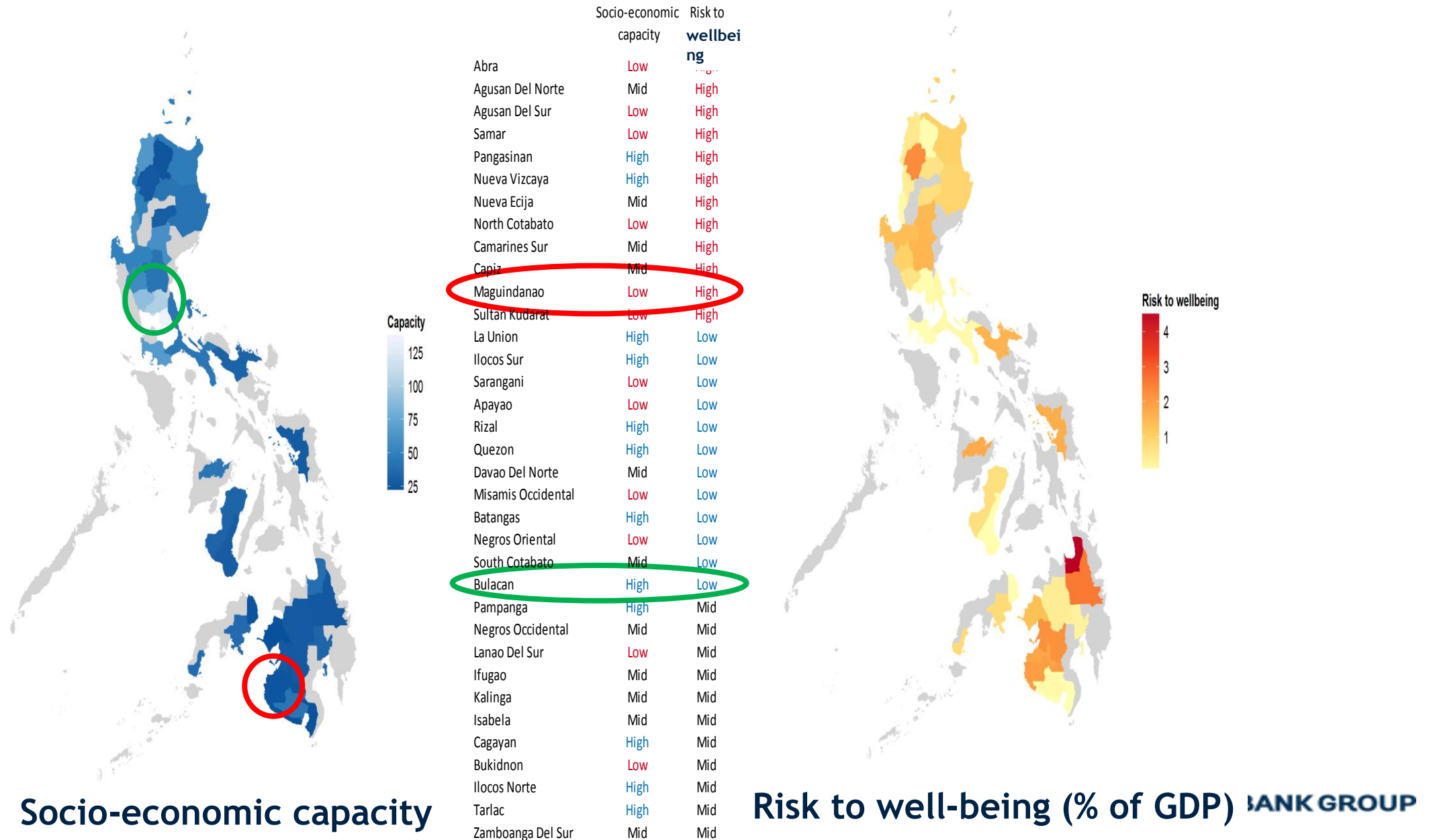
Socio-economic capacity

Risk to well-being (% of GDP)

1st application: using the tool to select priority provinces

Balancing exposure to hazards with social capacity

Categorizing provinces to prioritize investments



2nd application: using the tool to measure project benefits in well- being terms

Translating benefits in terms of avoided asset losses into
benefits in terms of avoided welfare losses

Province-level *socio-economic capacity*

Socio-economic capacity is a scaling factor to translate asset risk into risk to well-being

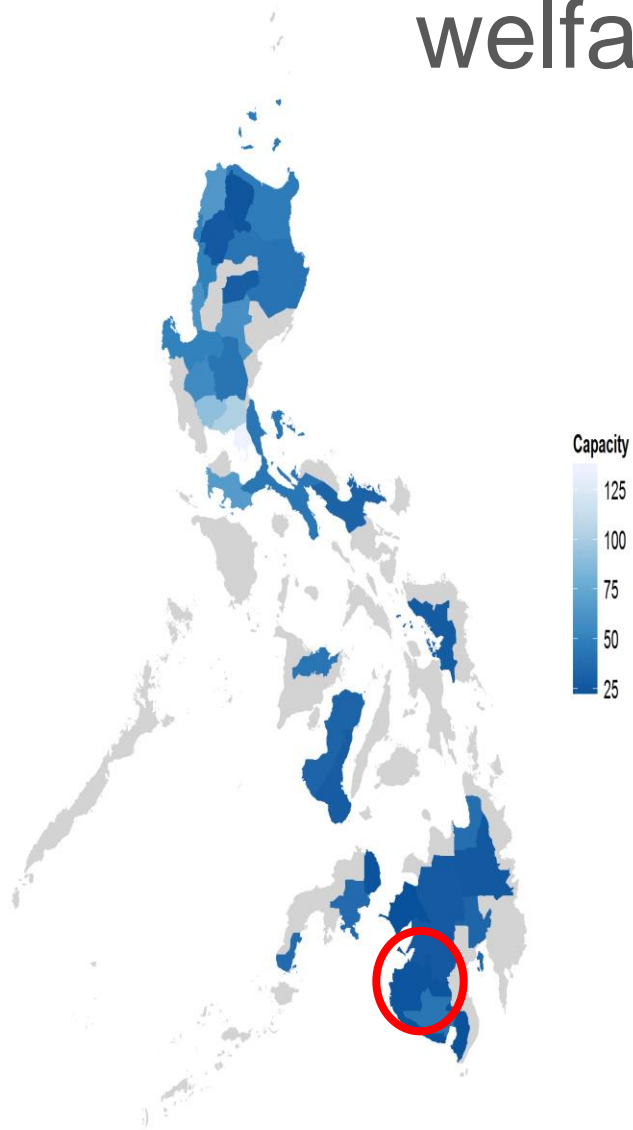
$$\text{Risk to well-being} = \text{Risk to assets} / (\text{socio-economic capacity})$$

It is also a scaling factor to translate benefits in terms of asset risks into benefits in terms of well-being:

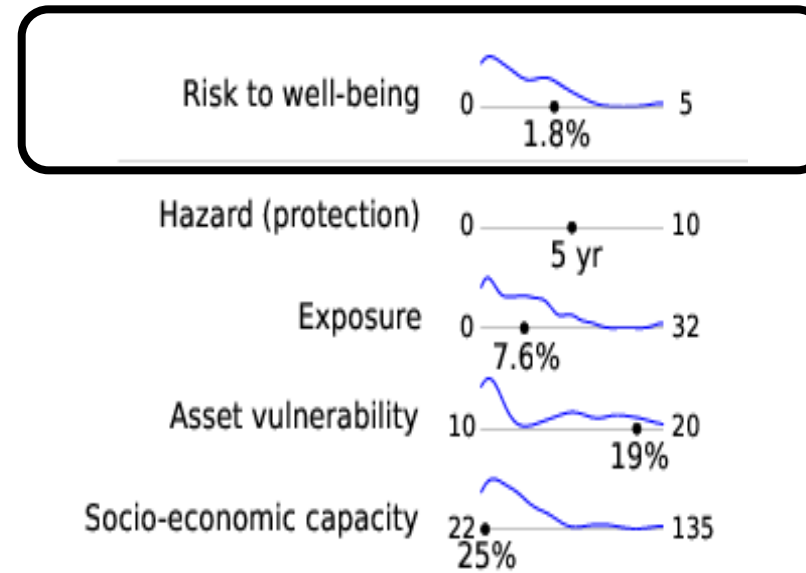
$$\text{well-being gains from project} = (\text{avoided asset losses}) / (\text{socio-economic capacity})$$

Assessing project benefits in welfare terms

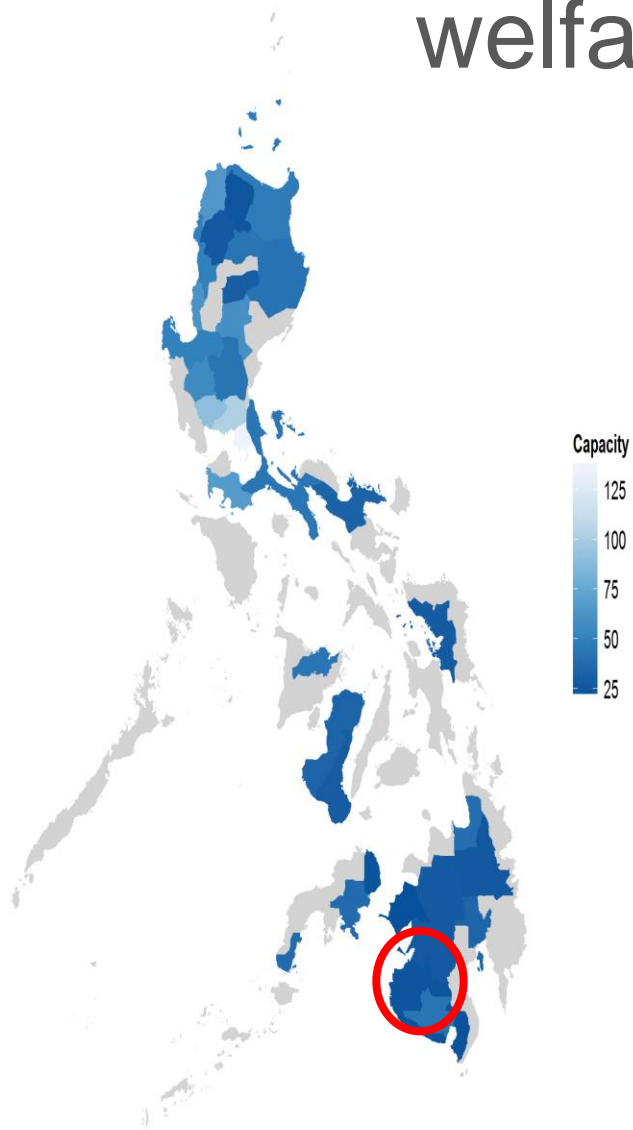
Maguindanao



Socio-economic capacity

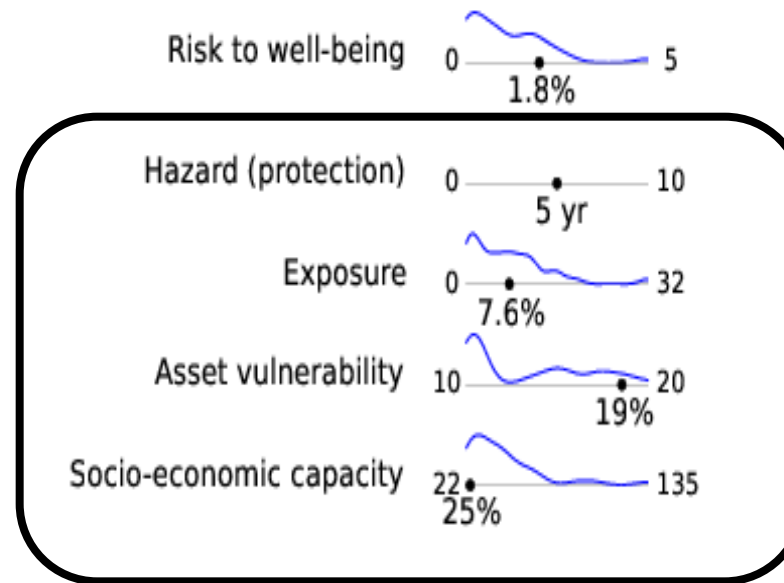


Assessing project benefits in welfare terms

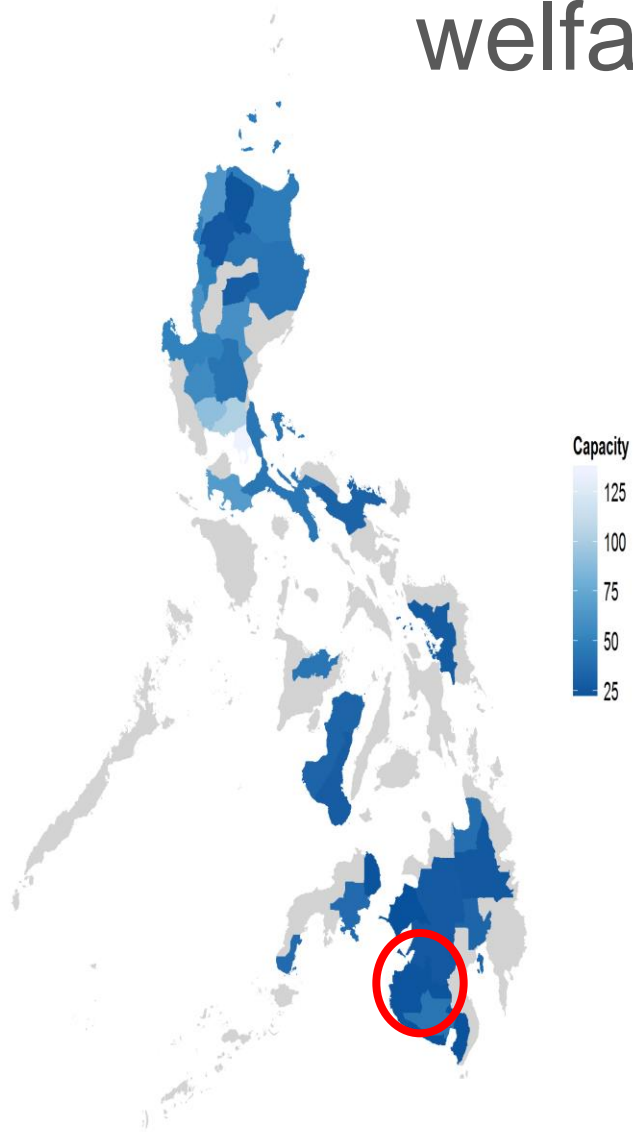


Socio-economic capacity

Maguindanao

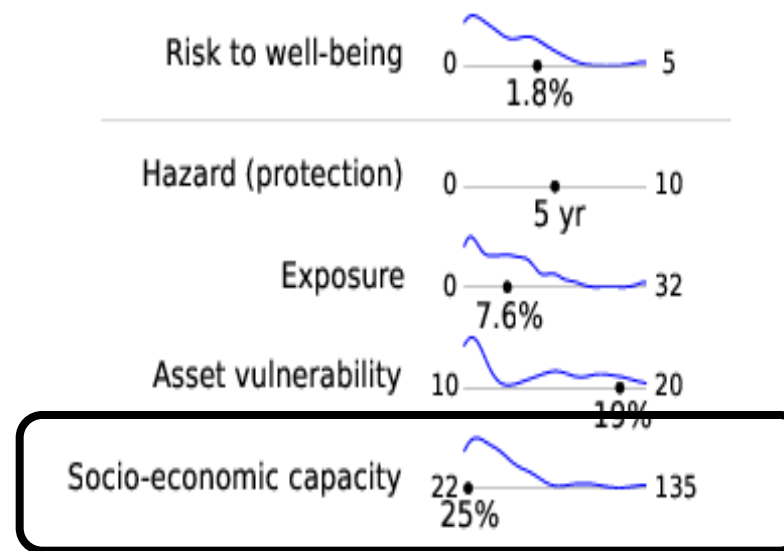


Assessing project benefits in welfare terms



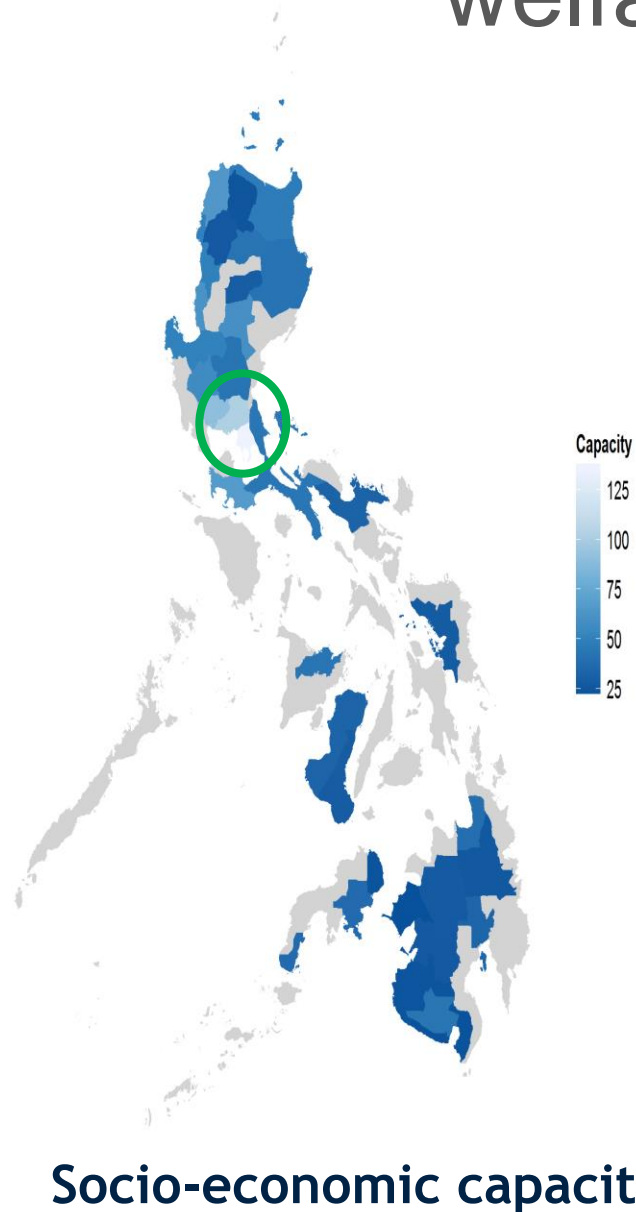
Socio-economic capacity

Maguindanao

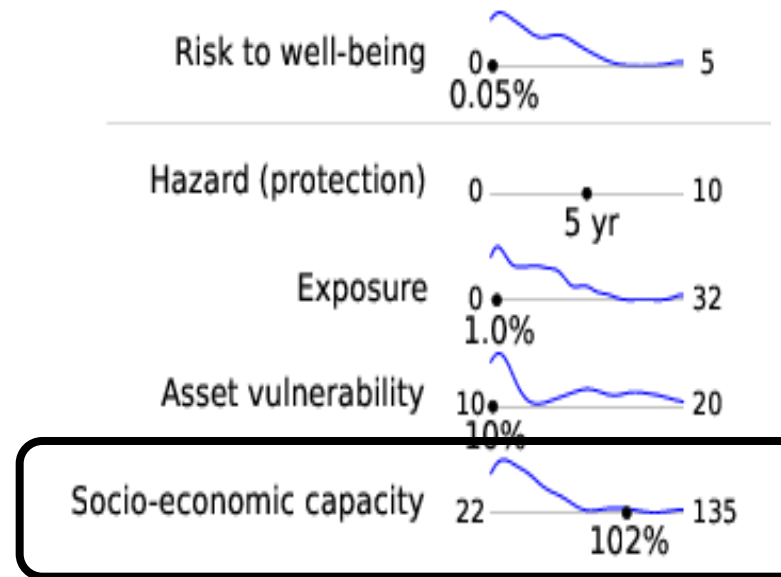


In Maguindanao, a project - say a dike - that prevents P1 million of expected annual *asset* losses increases welfare by P4 million (=P1/25%).

Assessing project benefits in welfare terms



Bulacan

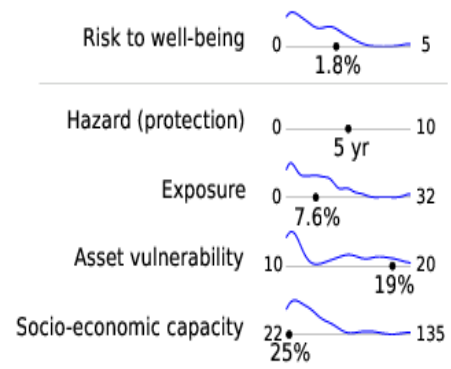


In Bulacan, a project - say a dike - that prevents P1 million of expected annual losses increases welfare by P1 million.

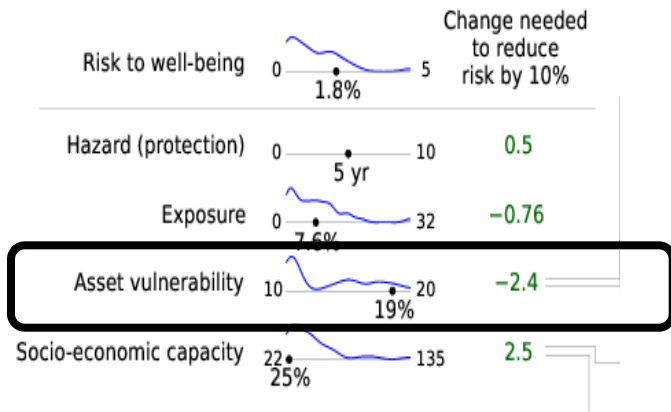
(it was P4 million in Maguindanao)

3rd application: using the tool to assess policy changes

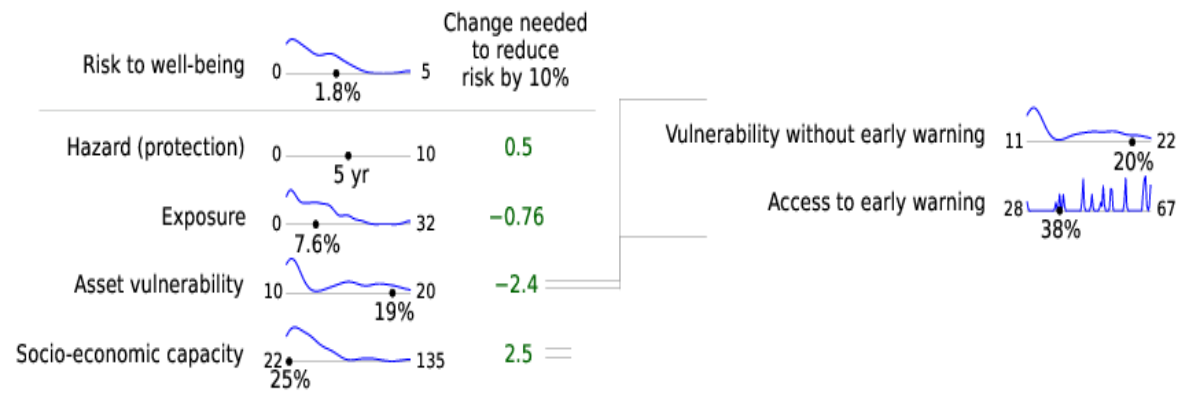
Balancing prevention with ex post support



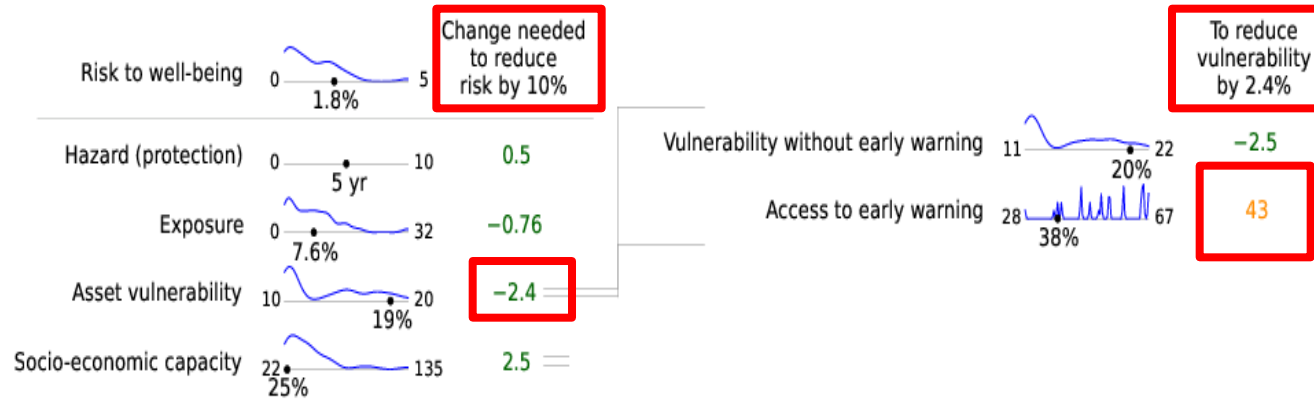
Policy options in Maguindanao



Policy options in Maguindanao

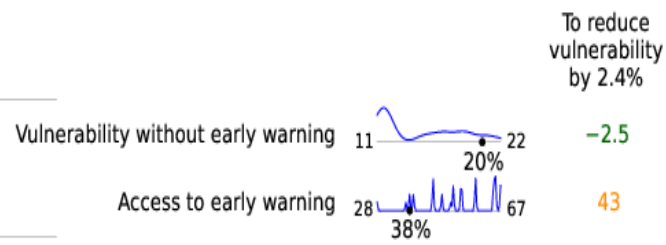
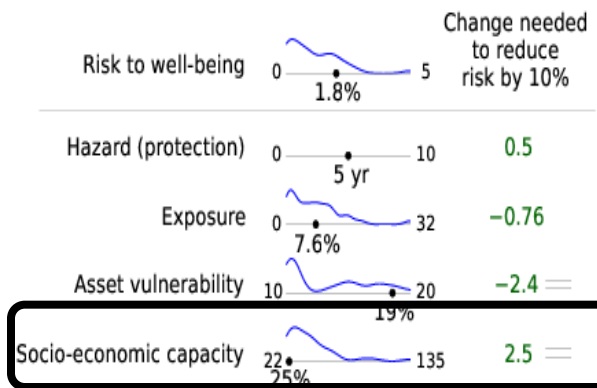


Policy options in Maguindanao

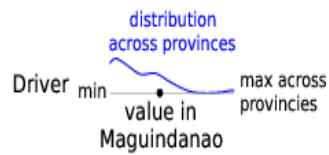
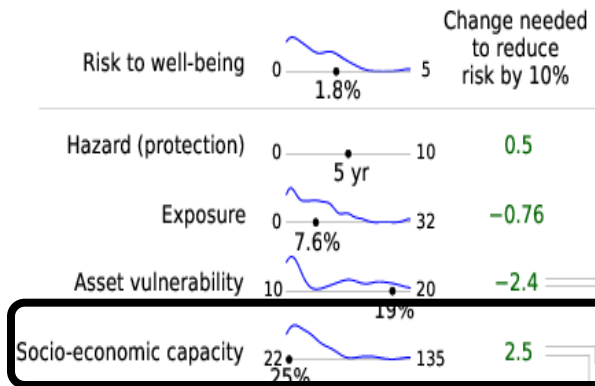


Policy options in Maguindanao

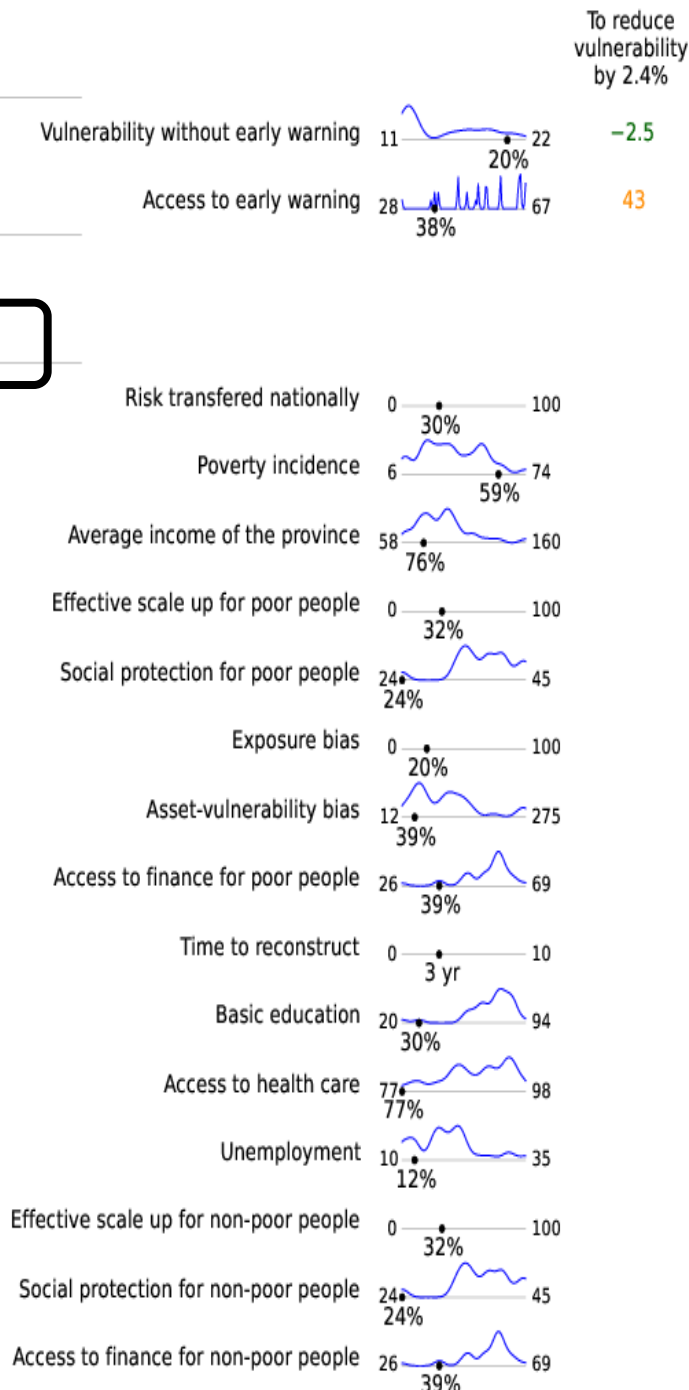
Increasing access to early warning by 43 percent (from 38 to 81 percent) would decrease risk to well-being by 10 percent.



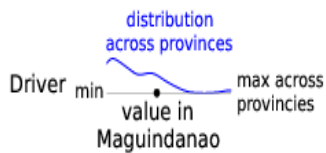
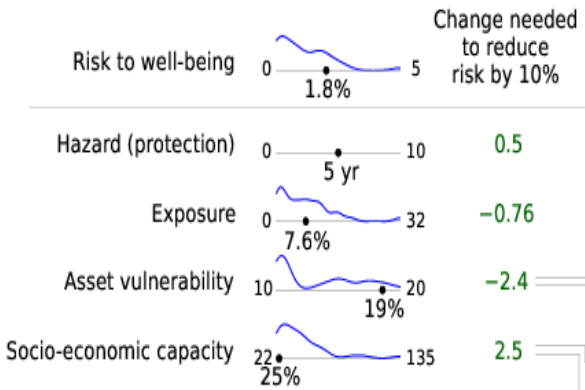
Policy options in Maguindanao



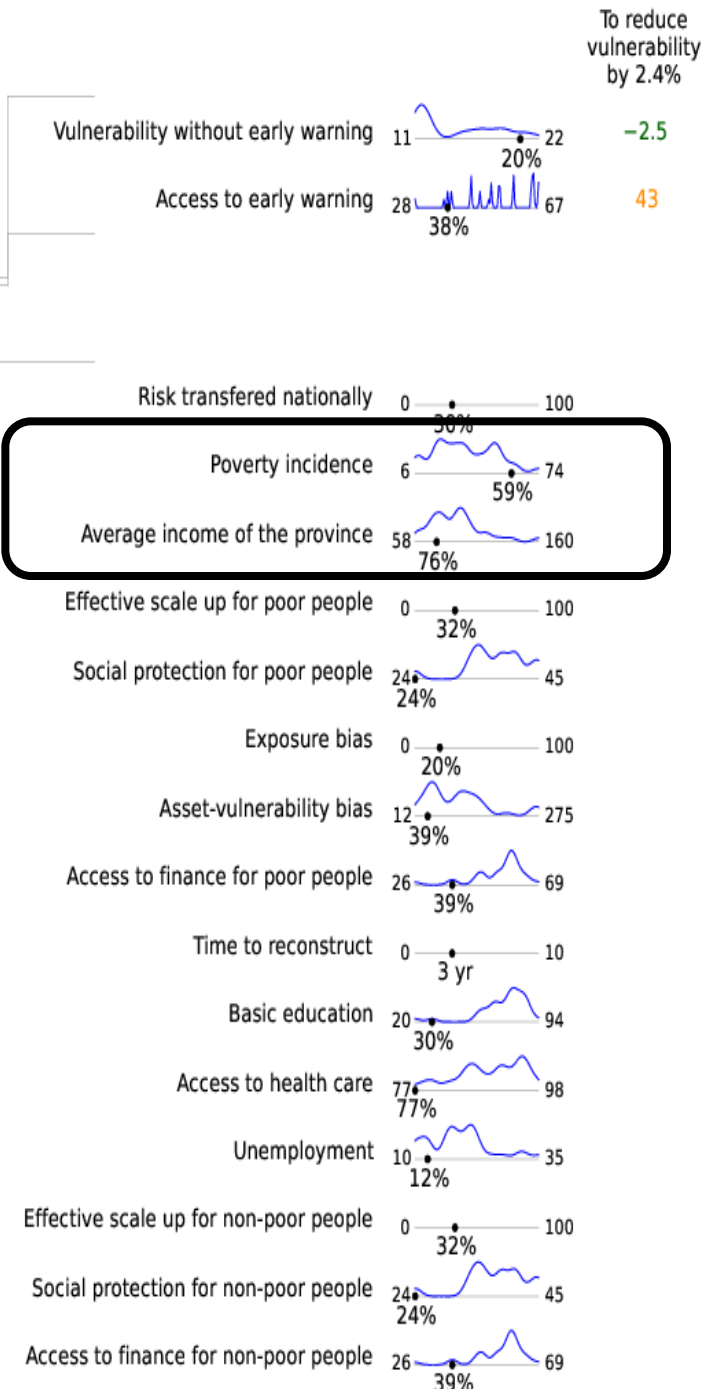
This tool shows the risk to welfare in Maguindanao (expected welfare losses in percent of GDP), and its drivers: hazard (captured with protection level), exposure, asset vulnerability, and socio-economic capacity. Drivers are ranked according to their efficacy to reduce risk, from the most to the least promising. Limited improvements in the drivers at the top of the list can substantially reduce risk, while large improvements would be required in drivers at the bottom to obtain a similar reduction. This information is quantified in the right-most column, which indicates how much each driver needs to change to reduce risk by 10%. For each driver, the tool provides the distribution of values across all provinces with the minimum and the maximum, to indicate where Maguindanao stands with respect to the 34 other provinces for which we have data. The number is green if the corresponding change is achievable without exceeding the best performance among all provinces in the sample. It is orange if one tenth of the change is achievable without exceeding the best performance. Otherwise, the number is red. On the right, asset vulnerability is broken down into 2 sub-indicators, and socio-economic capacity into 15 sub-indicators. Similarly to drivers, sub-indicators are ranked according to their efficacy to improve capacity by 2.5% or reduce asset vulnerability by 2.4%.



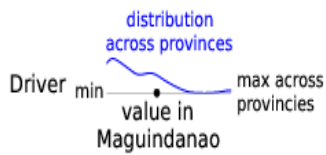
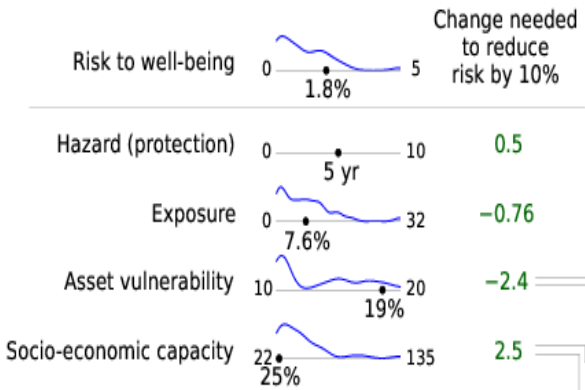
Policy options in Maguindanao



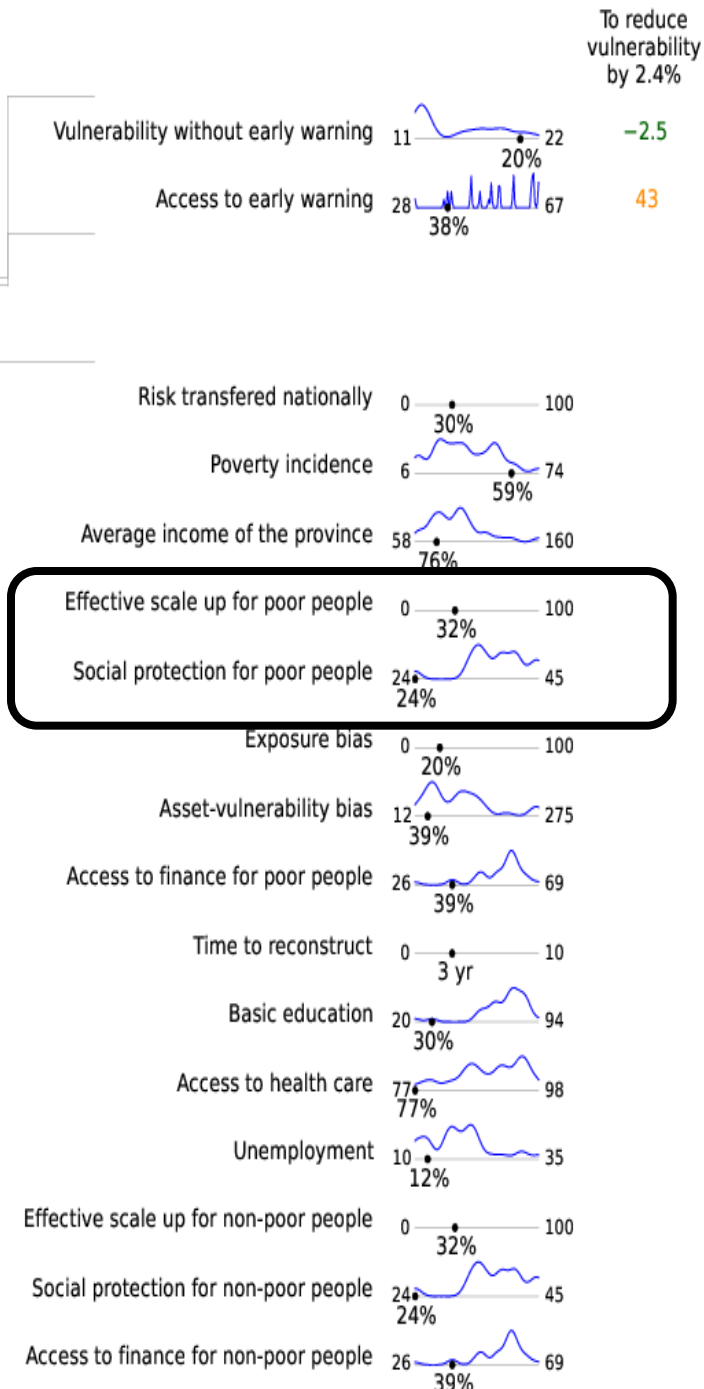
This tool shows the risk to welfare in Maguindanao (expected welfare losses in percent of GDP), and its drivers: hazard (captured with protection level), exposure, asset vulnerability, and socio-economic capacity. Drivers are ranked according to their efficacy to reduce risk, from the most to the least promising. Limited improvements in the drivers at the top of the list can substantially reduce risk, while large improvements would be required in drivers at the bottom to obtain a similar reduction. This information is quantified in the right-most column, which indicates how much each driver needs to change to reduce risk by 10%. For each driver, the tool provides the distribution of values across all provinces with the minimum and the maximum, to indicate where Maguindanao stands with respect to the 34 other provinces for which we have data. The number is green if the corresponding change is achievable without exceeding the best performance among all provinces in the sample. It is orange if one tenth of the change is achievable without exceeding the best performance. Otherwise, the number is red. On the right, asset vulnerability is broken down into 2 sub-indicators, and socio-economic capacity into 15 sub-indicators. Similarly to drivers, sub-indicators are ranked according to their efficacy to improve capacity by 2.5% or reduce asset vulnerability by 2.4%.



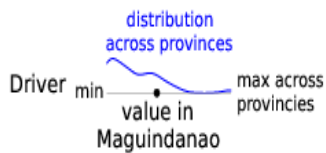
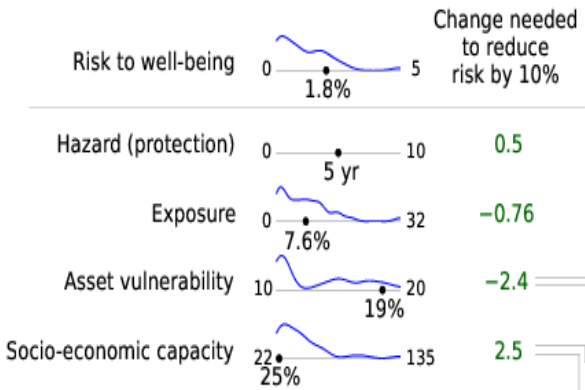
Policy options in Maguindanao



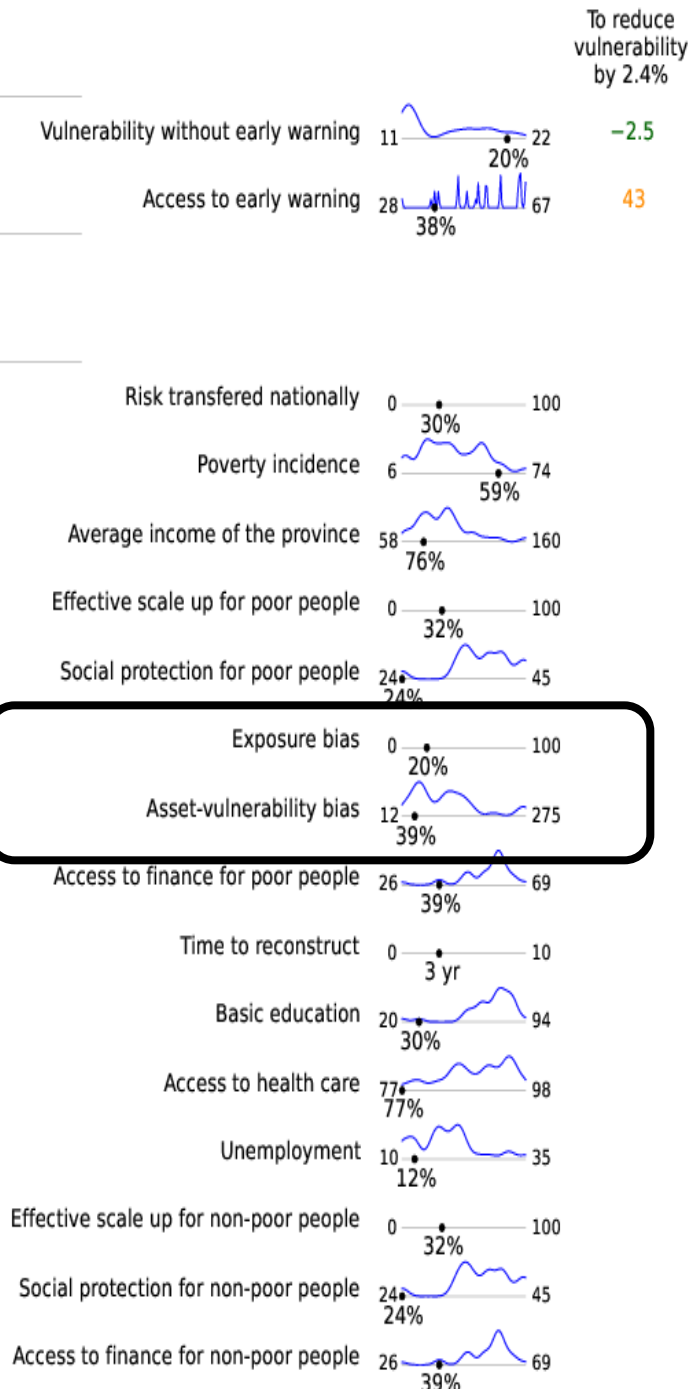
This tool shows the risk to welfare in Maguindanao (expected welfare losses in percent of GDP), and its drivers: hazard (captured with protection level), exposure, asset vulnerability, and socio-economic capacity. Drivers are ranked according to their efficacy to reduce risk, from the most to the least promising. Limited improvements in the drivers at the top of the list can substantially reduce risk, while large improvements would be required in drivers at the bottom to obtain a similar reduction. This information is quantified in the right-most column, which indicates how much each driver needs to change to reduce risk by 10%. For each driver, the tool provides the distribution of values across all provinces with the minimum and the maximum, to indicate where Maguindanao stands with respect to the 34 other provinces for which we have data. The number is green if the corresponding change is achievable without exceeding the best performance among all provinces in the sample. It is orange if one tenth of the change is achievable without exceeding the best performance. Otherwise, the number is red. On the right, asset vulnerability is broken down into 2 sub-indicators, and socio-economic capacity into 15 sub-indicators. Similarly to drivers, sub-indicators are ranked according to their efficacy to improve capacity by 2.5% or reduce asset vulnerability by 2.4%.



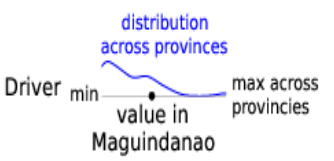
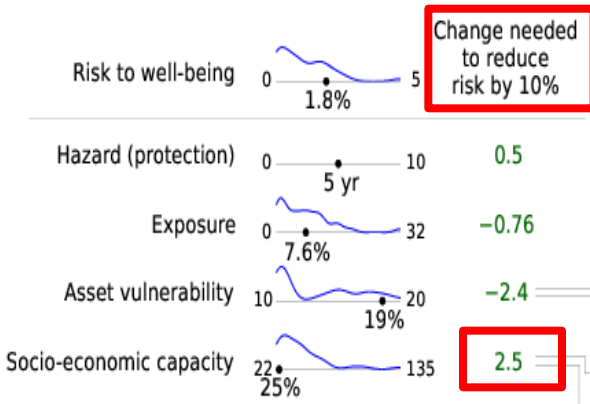
Policy options in Maguindanao



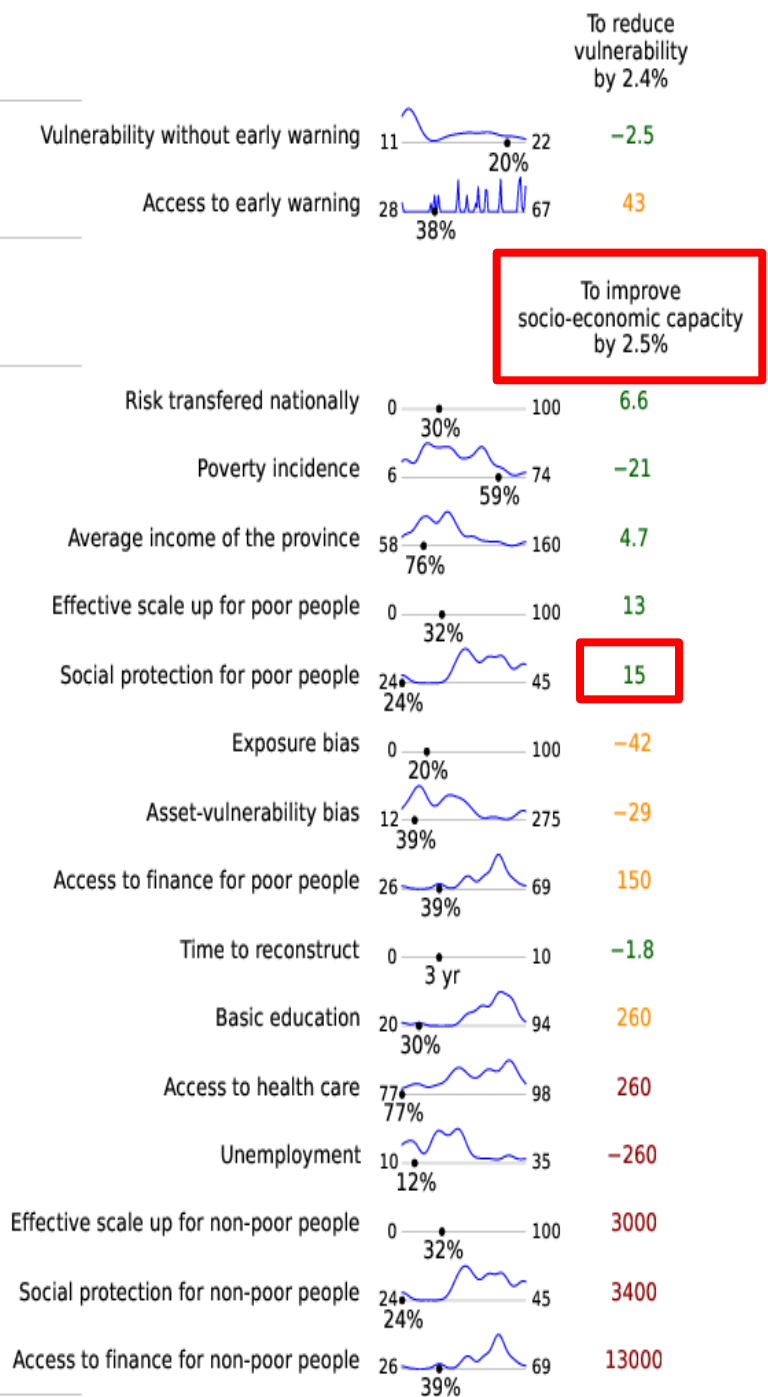
This tool shows the risk to welfare in Maguindanao (expected welfare losses in percent of GDP), and its drivers: hazard (captured with protection level), exposure, asset vulnerability, and socio-economic capacity. Drivers are ranked according to their efficacy to reduce risk, from the most to the least promising. Limited improvements in the drivers at the top of the list can substantially reduce risk, while large improvements would be required in drivers at the bottom to obtain a similar reduction. This information is quantified in the right-most column, which indicates how much each driver needs to change to reduce risk by 10%. For each driver, the tool provides the distribution of values across all provinces with the minimum and the maximum, to indicate where Maguindanao stands with respect to the 34 other provinces for which we have data. The number is green if the corresponding change is achievable without exceeding the best performance among all provinces in the sample. It is orange if one tenth of the change is achievable without exceeding the best performance. Otherwise, the number is red. On the right, asset vulnerability is broken down into 2 sub-indicators, and socio-economic capacity into 15 sub-indicators. Similarly to drivers, sub-indicators are ranked according to their efficacy to improve capacity by 2.5% or reduce asset vulnerability by 2.4%.



Policy options in Maguindanao



This tool shows the risk to welfare in Maguindanao (expected welfare losses in percent of GDP), and its drivers: hazard (captured with protection level), exposure, asset vulnerability, and socio-economic capacity. Drivers are ranked according to their efficacy to reduce risk, from the most to the least promising. Limited improvements in the drivers at the top of the list can substantially reduce risk, while large improvements would be required in drivers at the bottom to obtain a similar reduction. This information is quantified in the right-most column, which indicates how much each driver needs to change to reduce risk by 10%. For each driver, the tool provides the distribution of values across all provinces with the minimum and the maximum, to indicate where Maguindanao stands with respect to the 34 other provinces for which we have data. The number is green if the corresponding change is achievable without exceeding the best performance among all provinces in the sample. It is orange if one tenth of the change is achievable without exceeding the best performance. Otherwise, the number is red. On the right, asset vulnerability is broken down into 2 sub-indicators, and socio-economic capacity into 15 sub-indicators. Similarly to drivers, sub-indicators are ranked according to their efficacy to improve capacity by 2.5% or reduce asset vulnerability by 2.4%.



Policy options in Maguindanao

Increasing social protection for poor people by 15 percent (from 24 to 39 percent) would reduce risk to well-being by 10 percent.



THANK YOU!



WORLD BANK GROUP

Lesley Jeanne Y. Cordero
lcordero@worldbank.org

