From Science to Action: Bridging Researchers and Practioners

Rodel D. Lasco

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Science for Climate Resilient Communities

Effectively Communicating Climate Science beyond Academia
(Howarth et al., 2020)

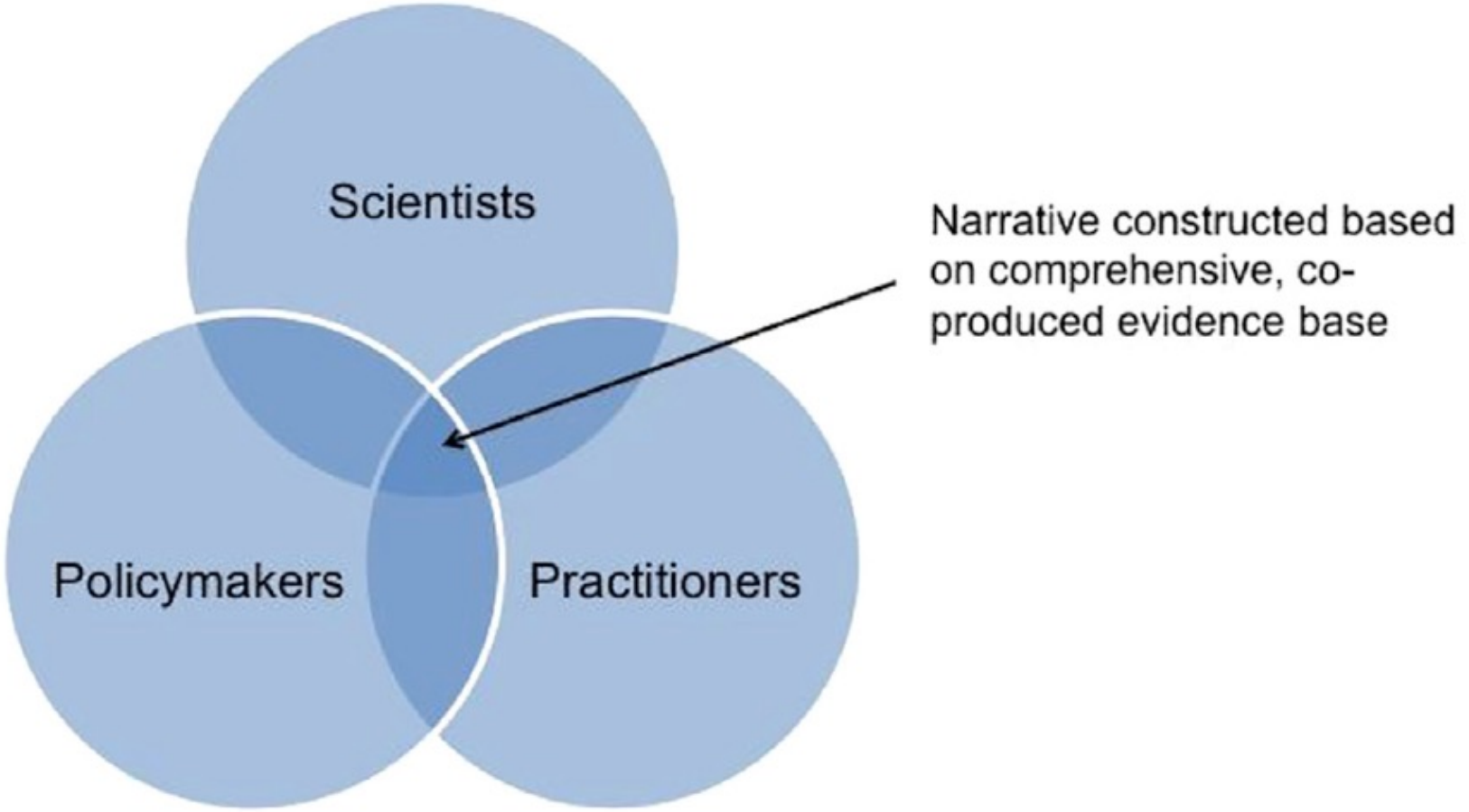

Figure 3. Narrative Construction Based on the Consolidation and Negotiation of a Co-produced Evidence Base by Scientists, Policymakers, and Practitioners
Adapted from Viner and Howarth, 2014.

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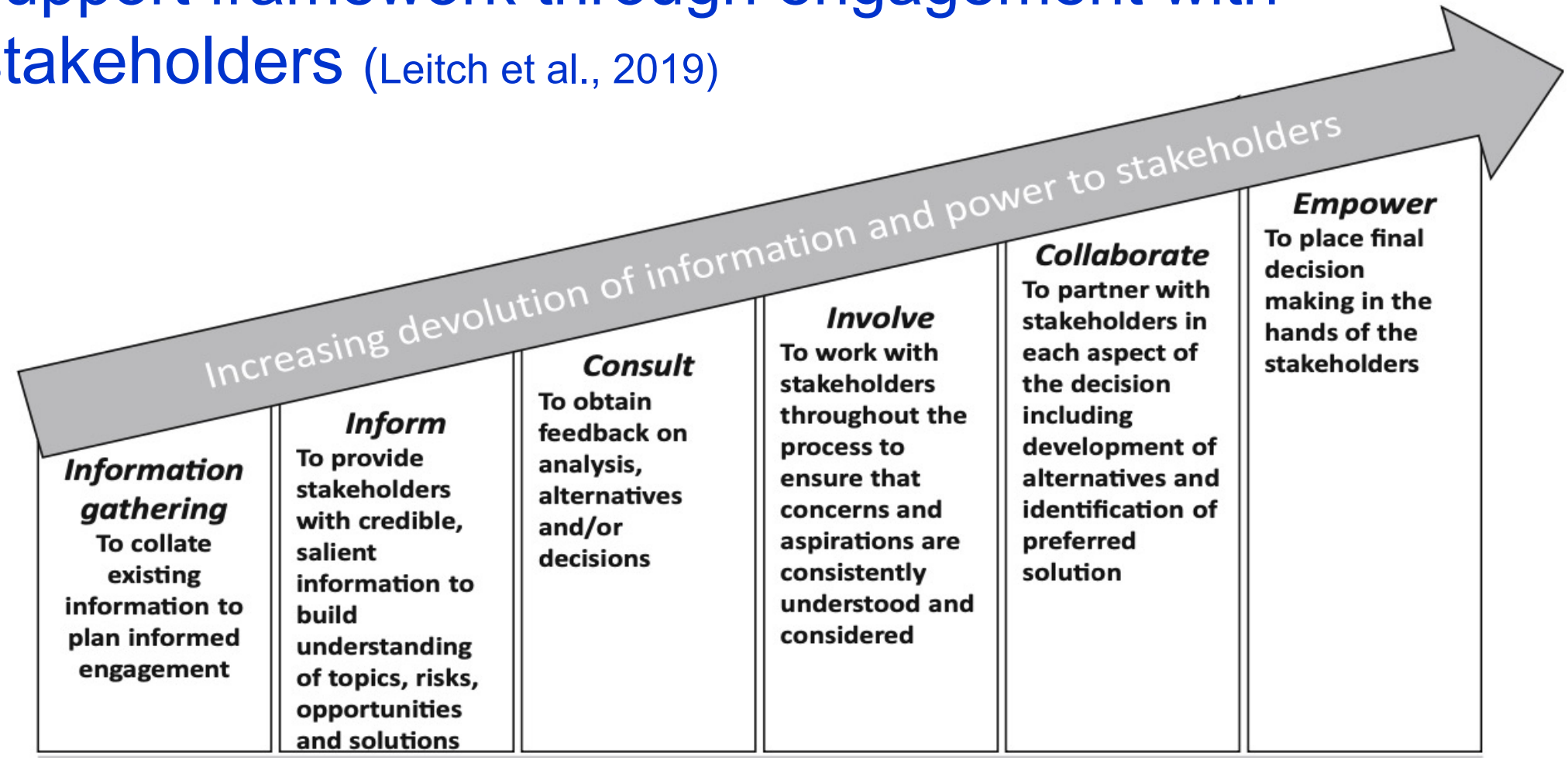
Co-development of a climate change decision support framework through engagement with stakeholders (Leitch et al., 2019)



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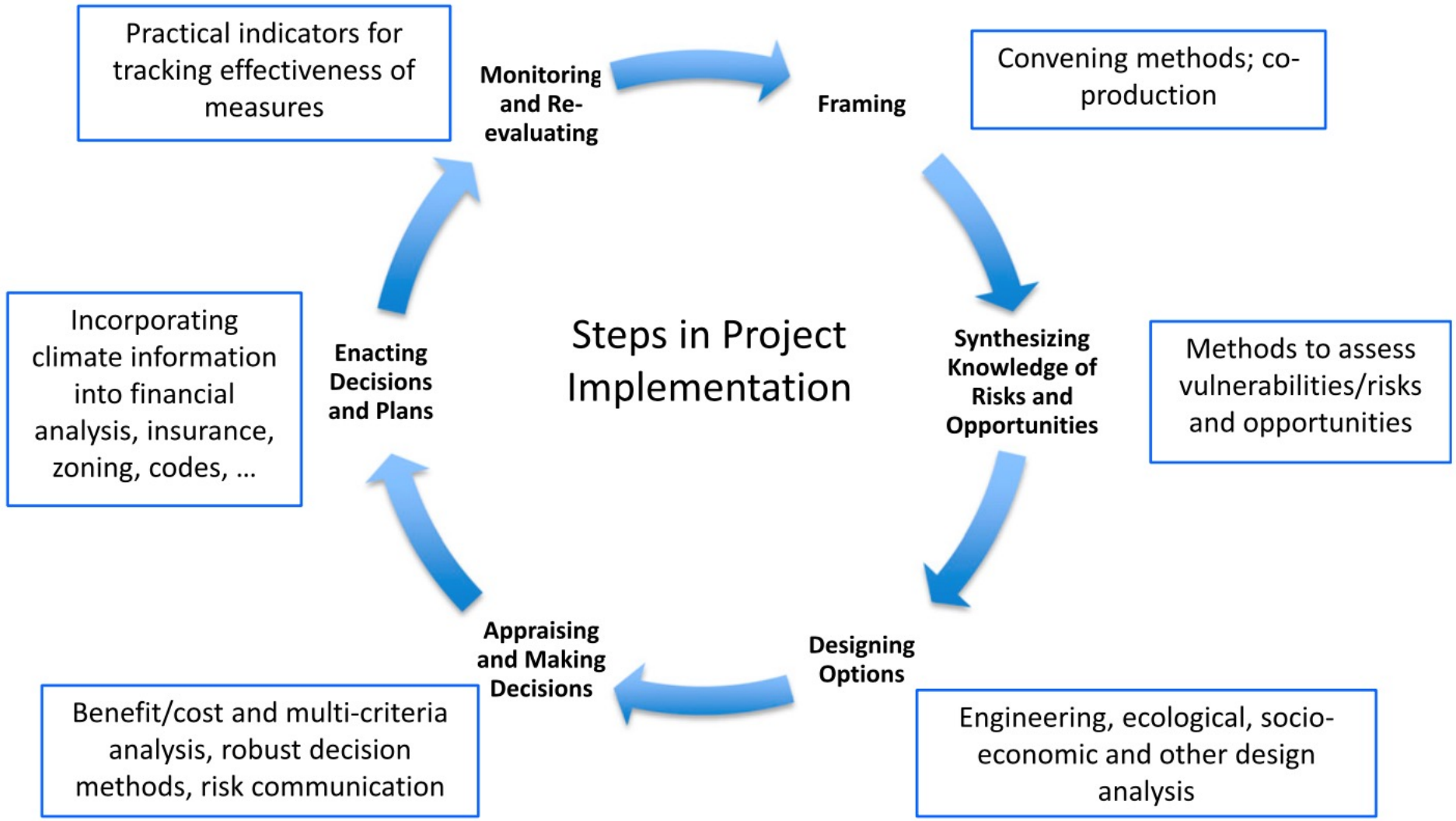
Evaluating Knowledge to Support Climate Action, Moss et al., 2019



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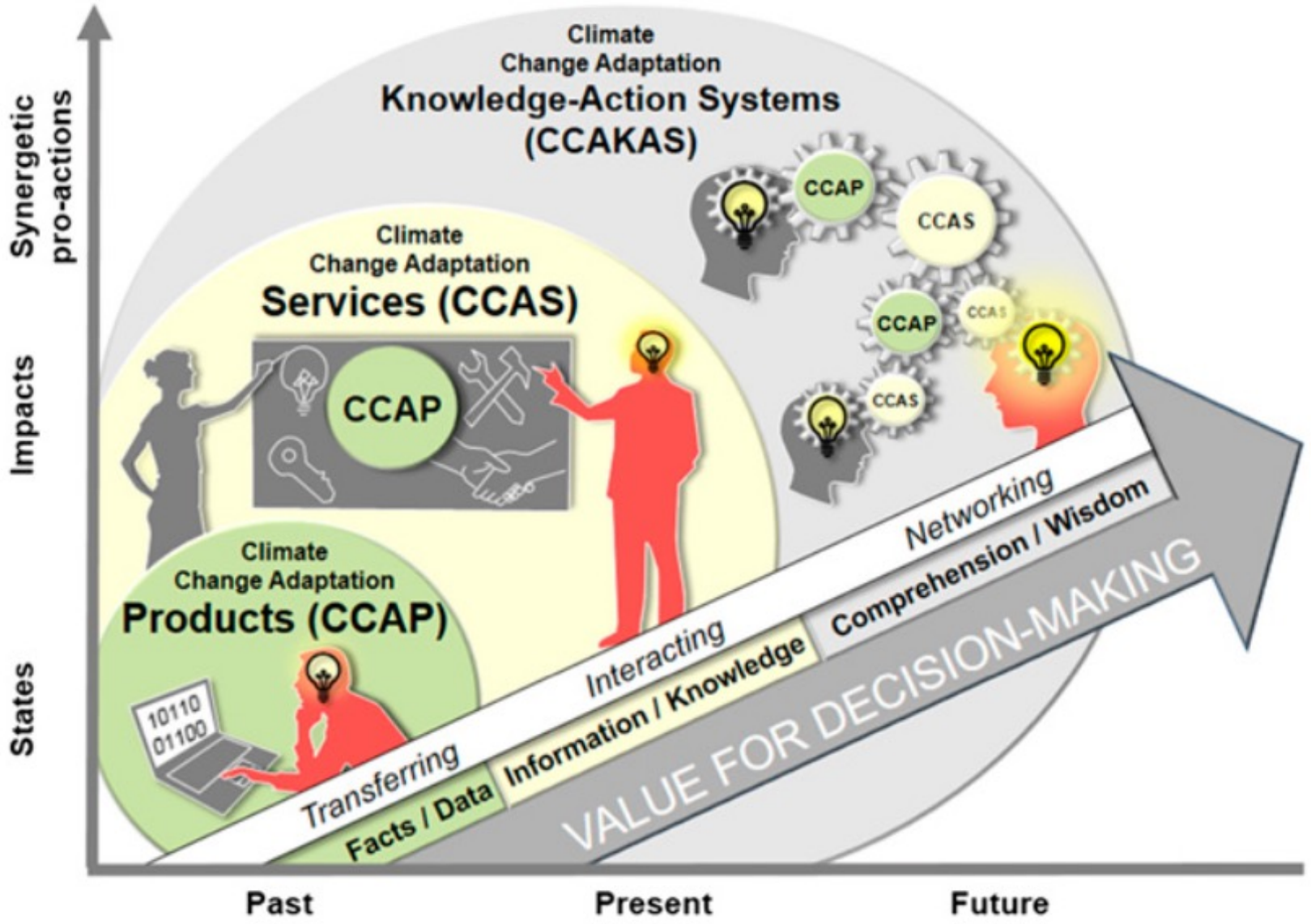
Evolving Climate Services into Knowledge–Action Systems

(Weichselgartner and Arheimer, 2019)



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DISASTERS

Floods submerge Pampanga towns after Ulysses causes river to swell

NOV 15, 2020 3:23 PM PHT

SOFIA TOMACRUZ

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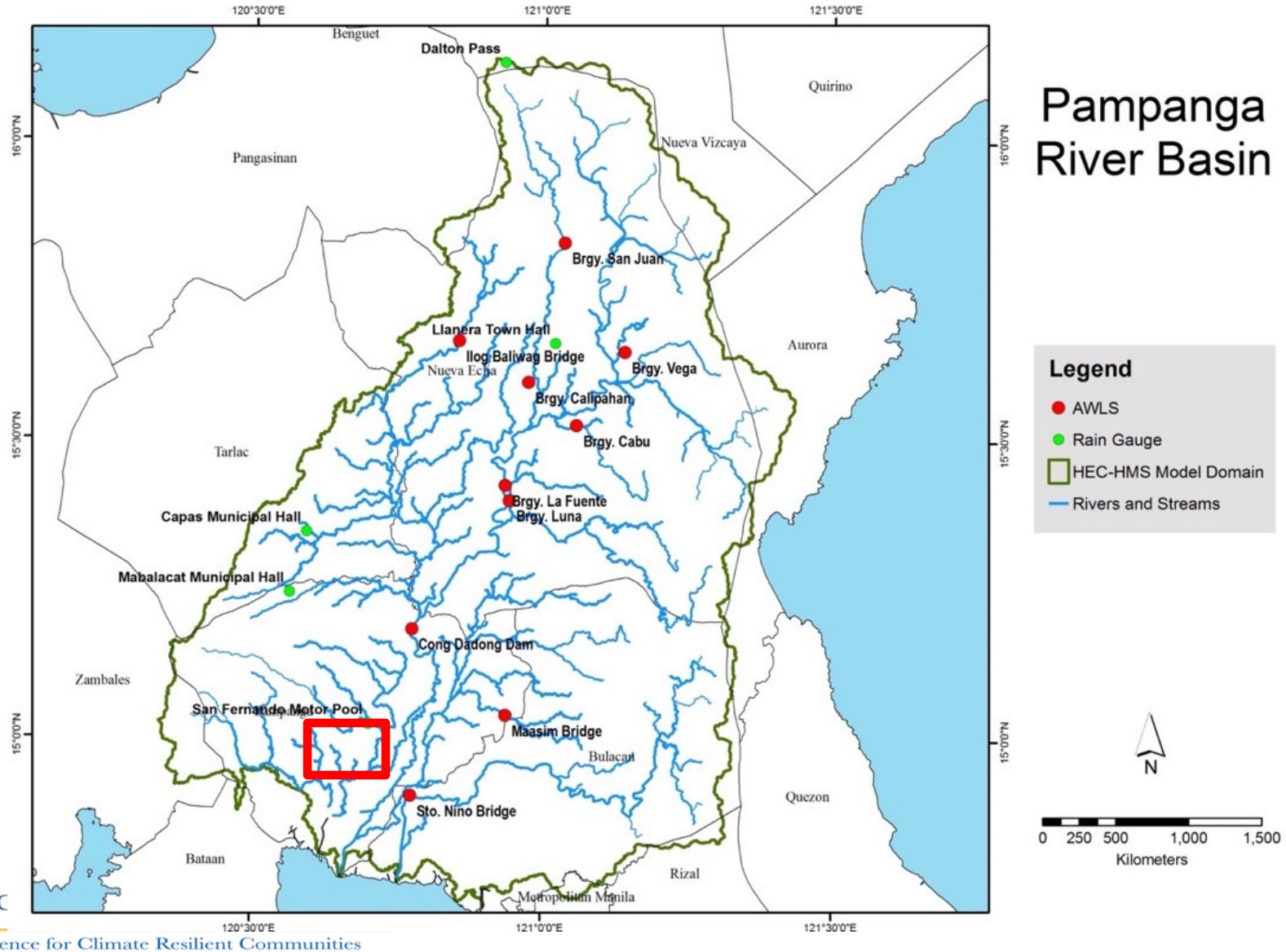
Flooded areas meets “submarine rice”



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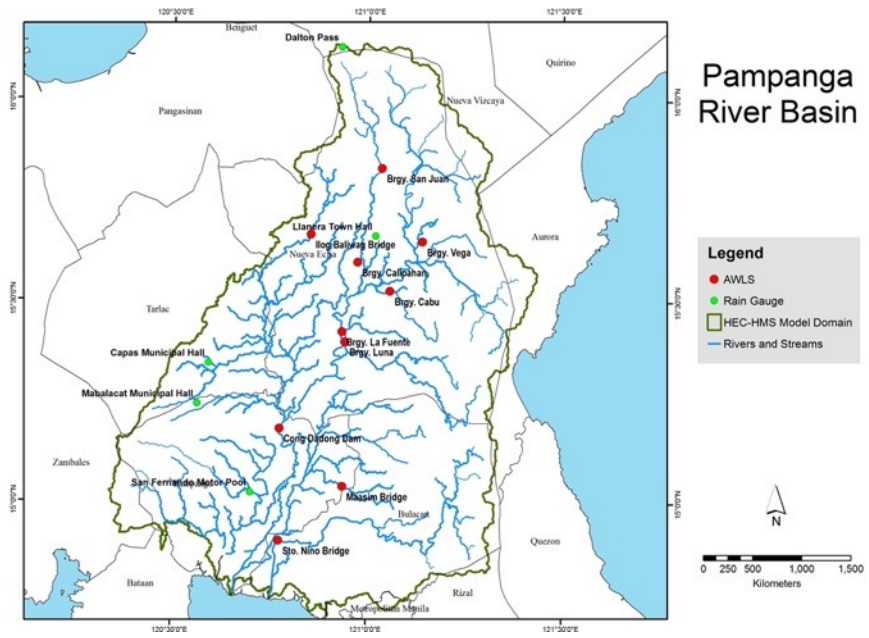
The Pampanga River Basin

- Source of water for irrigation, hydropower, domestic water use, and industry.
- Supplies 97% of Metro Manila water
- Major products: rice, corn, sugarcane, and tilapia.



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Breeding for flood tolerant rice (Wassman et al., 2009)

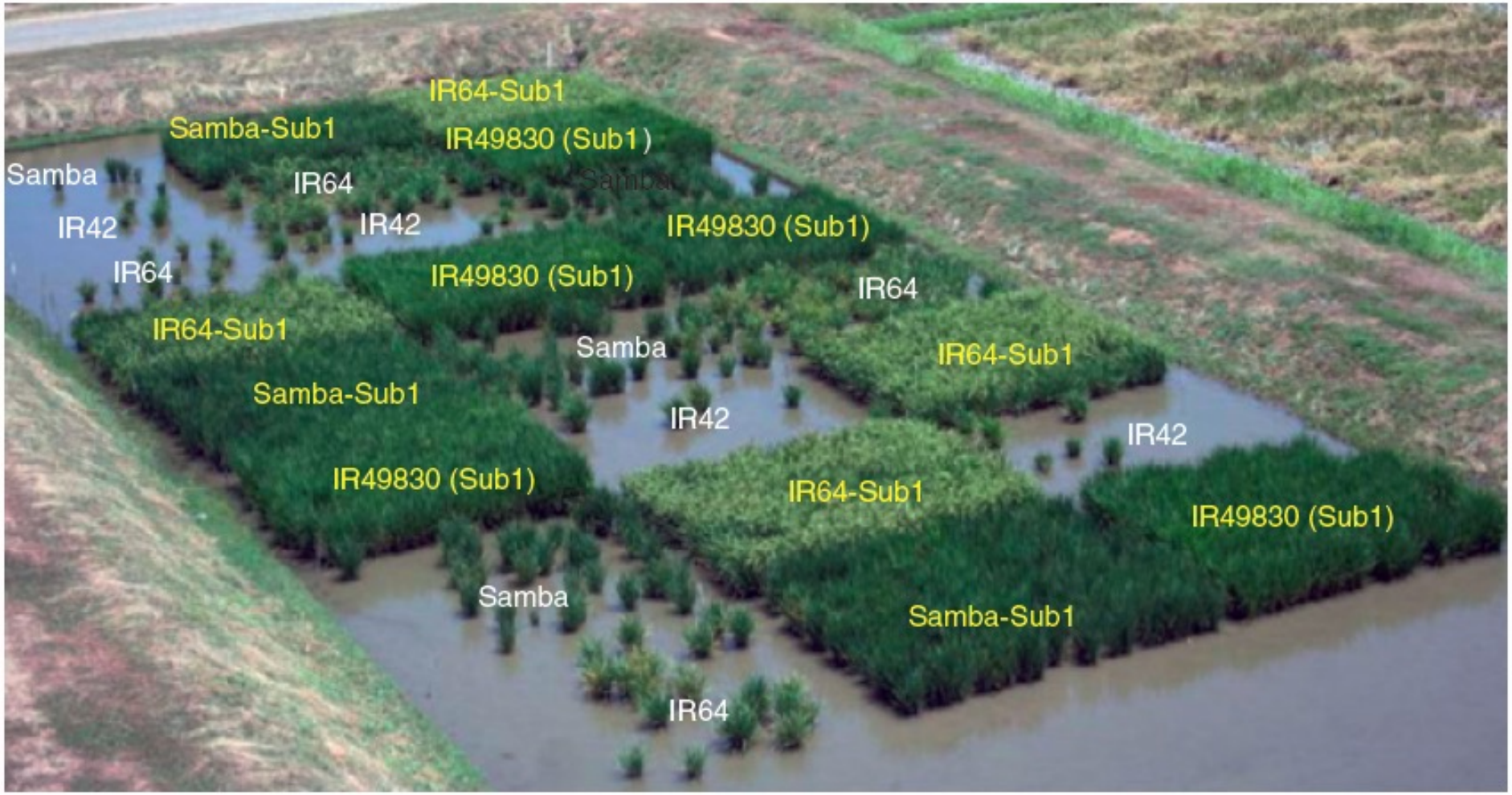
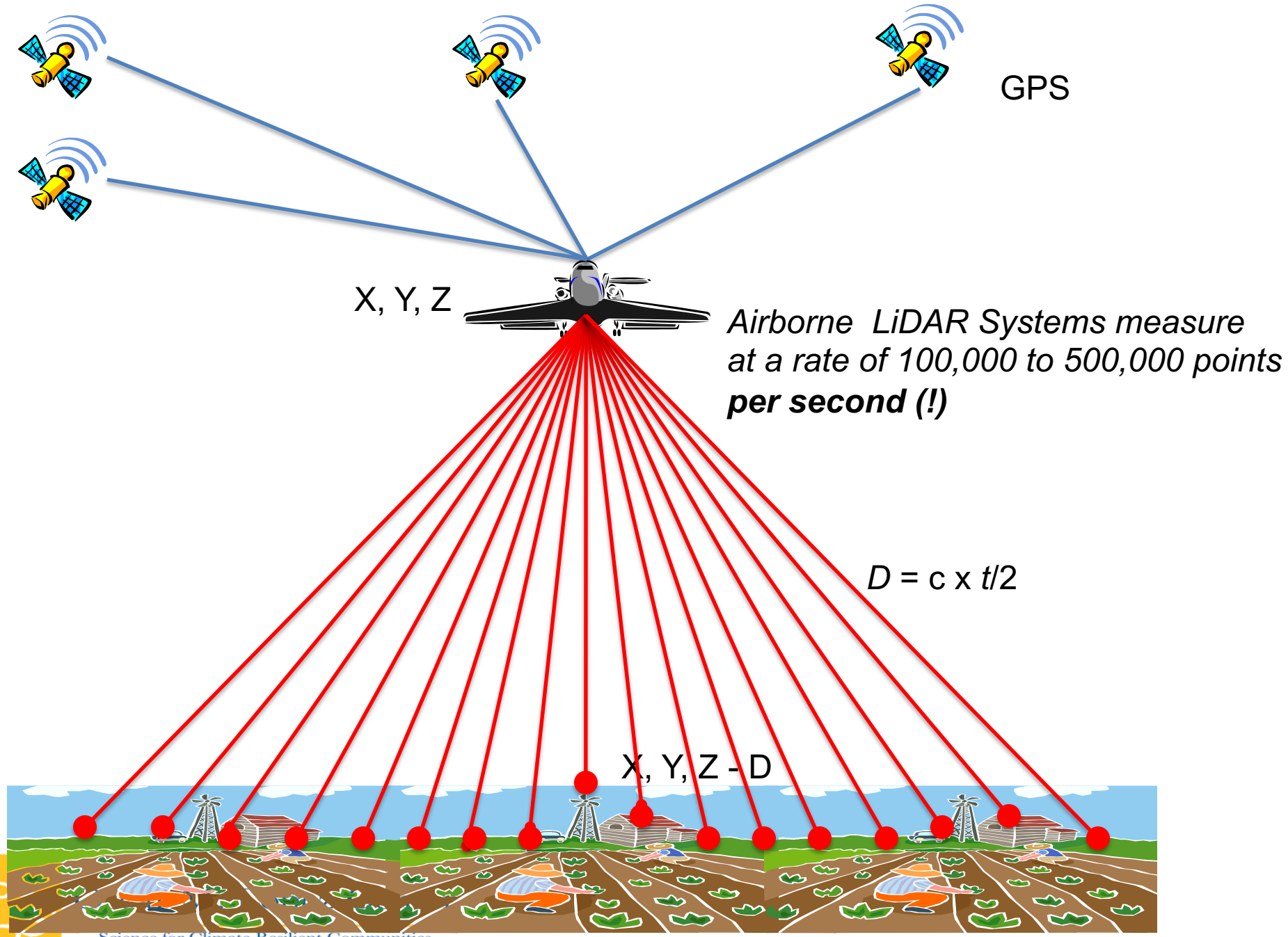


Figure 9 New Sub1 lines after 17 days submergence in field at IRRI.



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Methods

- LiDAR elevation models were used to generate flood inundation models for Apalit.
- Rice cultivation zones for 5-, 25-, and 100-year rain return periods were classified to identify suitable environment for certain types of variety.

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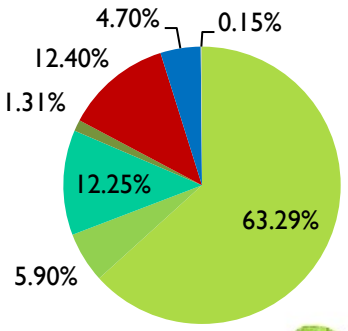
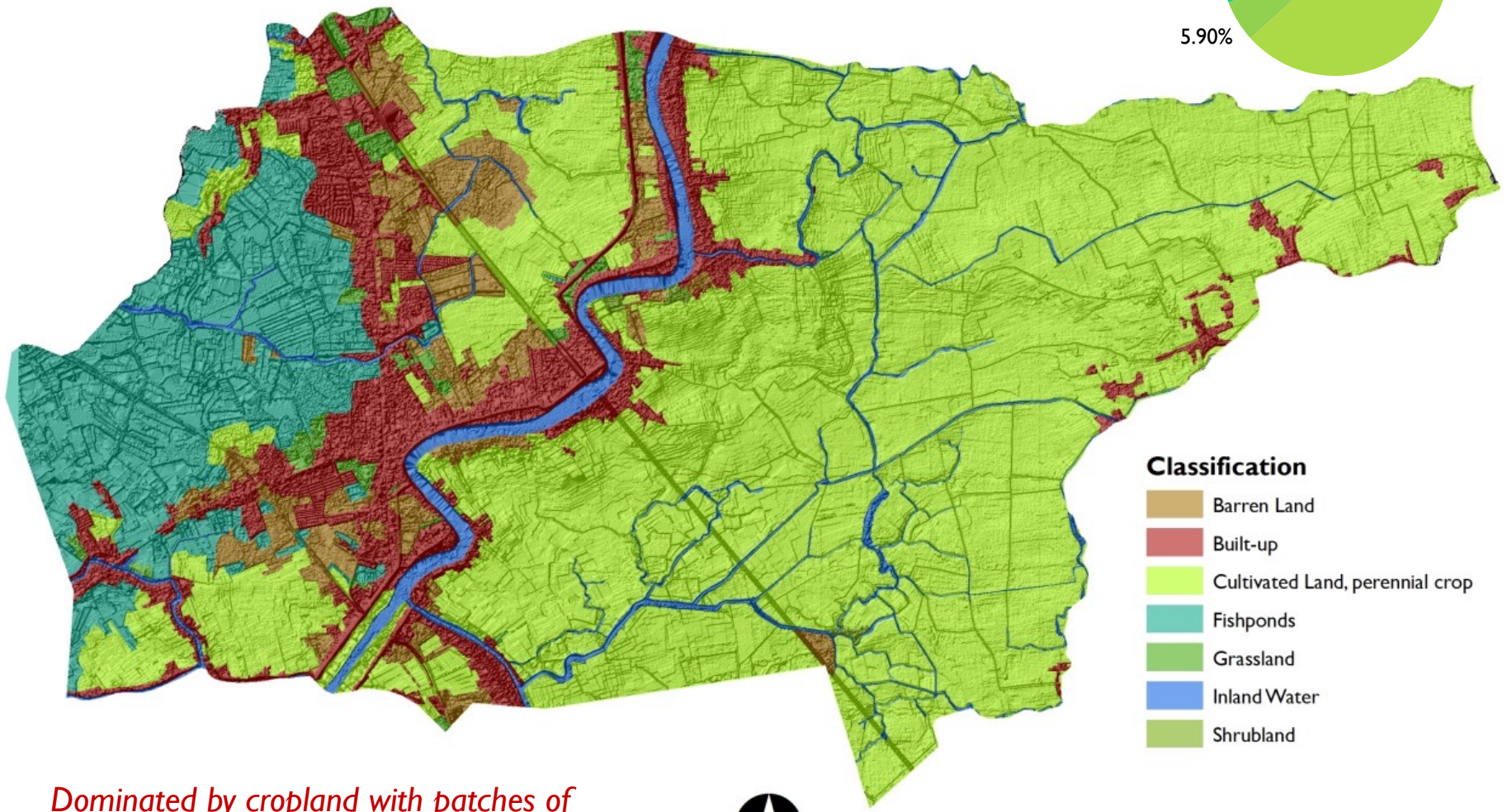
LAND USE

MUNCIPALITY OF APALIT, PAMPANGA





Dominated by cropland with patches of built-up areas

Toda et al., 2017

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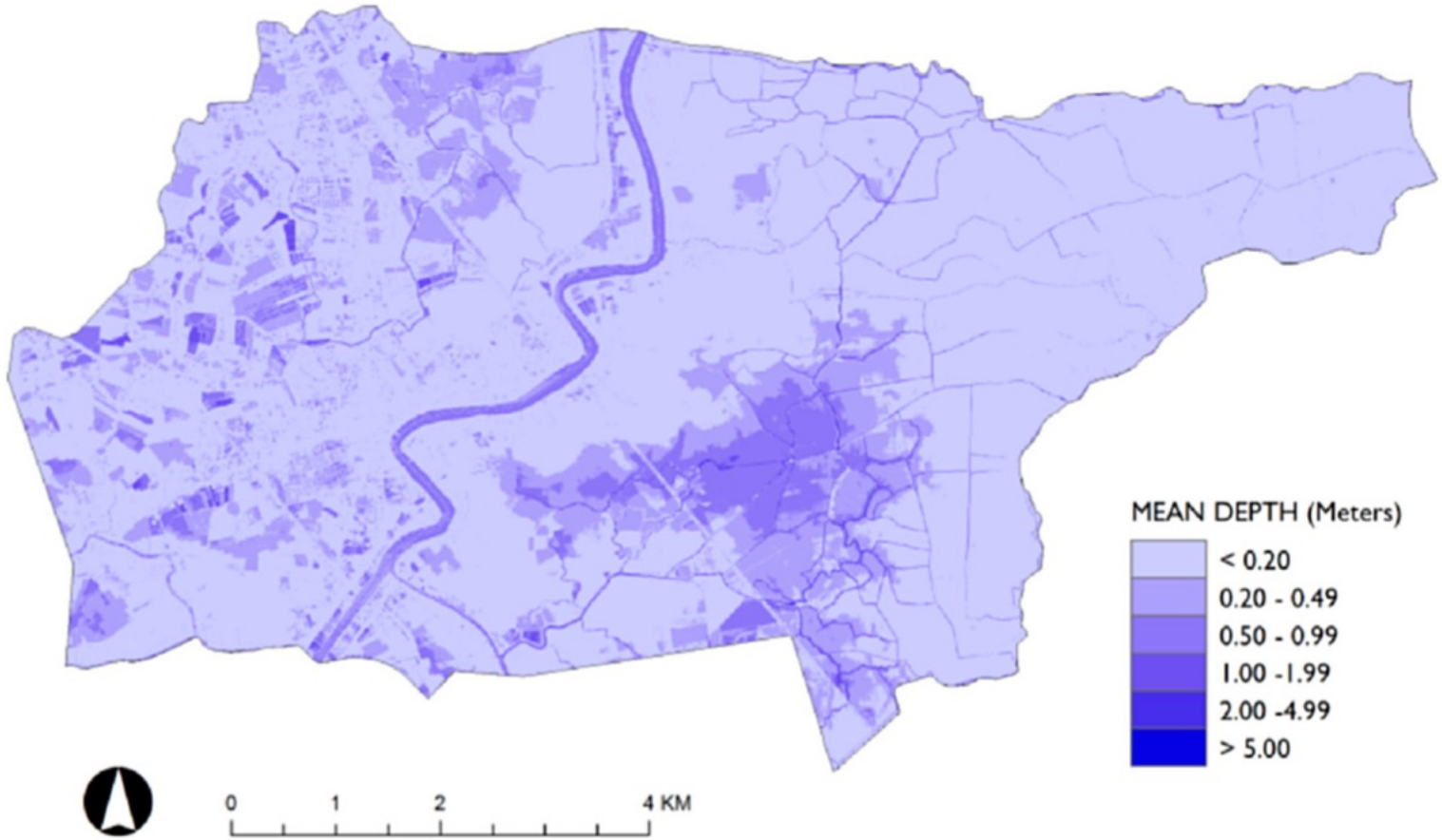
Mean depth for 100-year rain-return periods.



(c)

Toda et al., 2017

Fig. 8. Mean depth for (a) 5-, (b) 25- and (c) 100-year rain-return periods.

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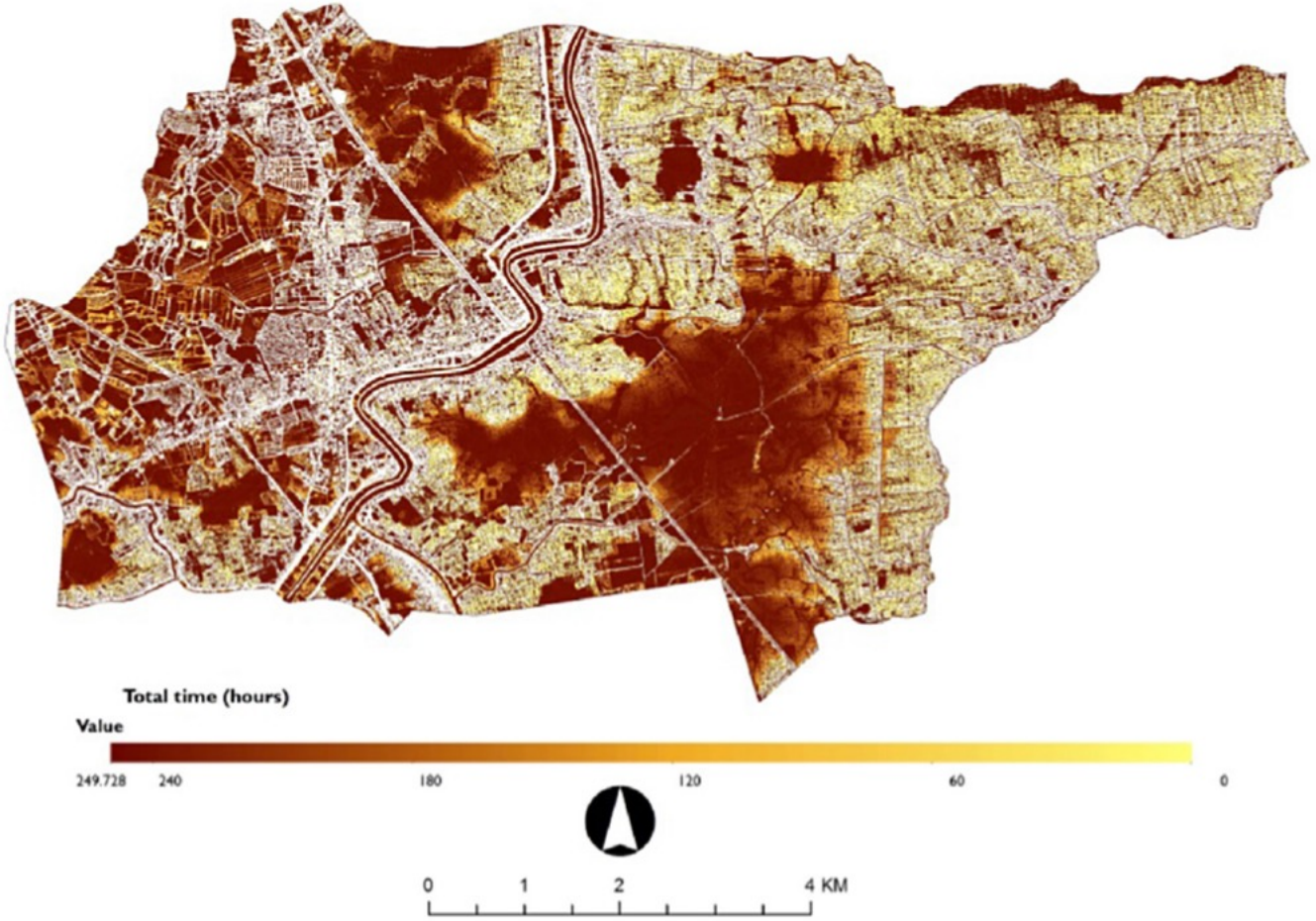
Total inundation time for 100-year rain-return periods



(c)

Fig. 9. Total inundation time for (a) 5-, (b) 25- and (c) 100-year rain-return periods.

Toda et al., 2017

Recommended varietal types and characteristics per cultivation zone.

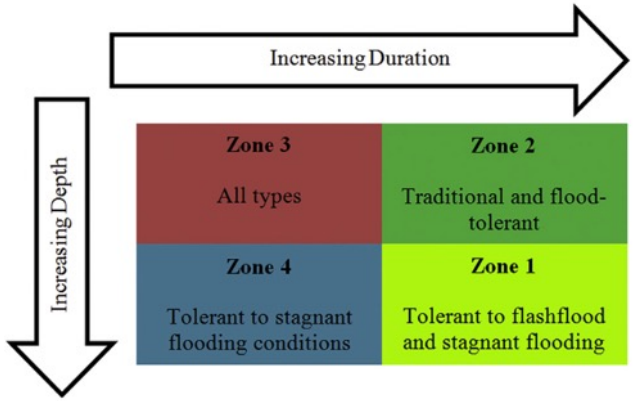
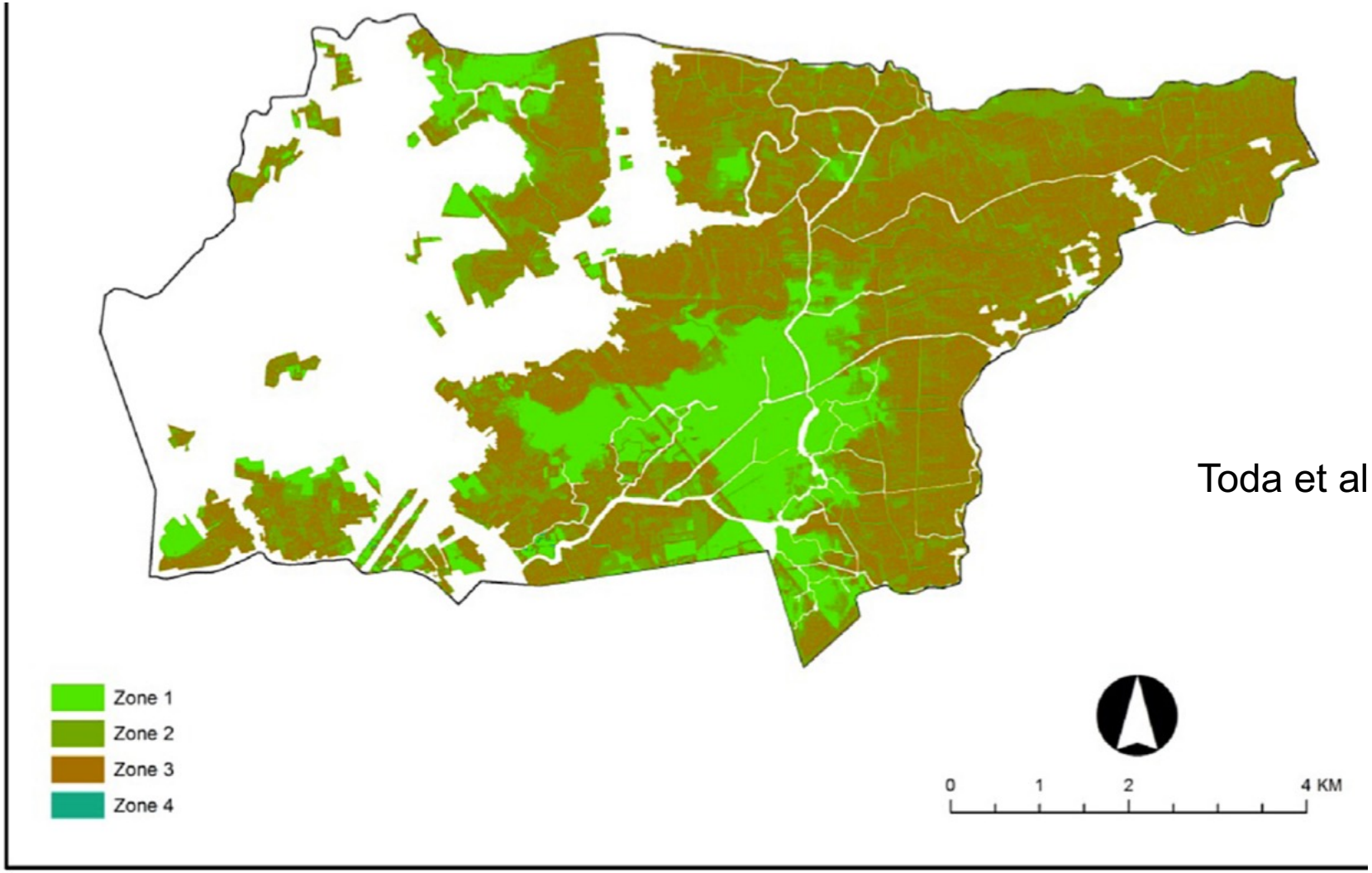


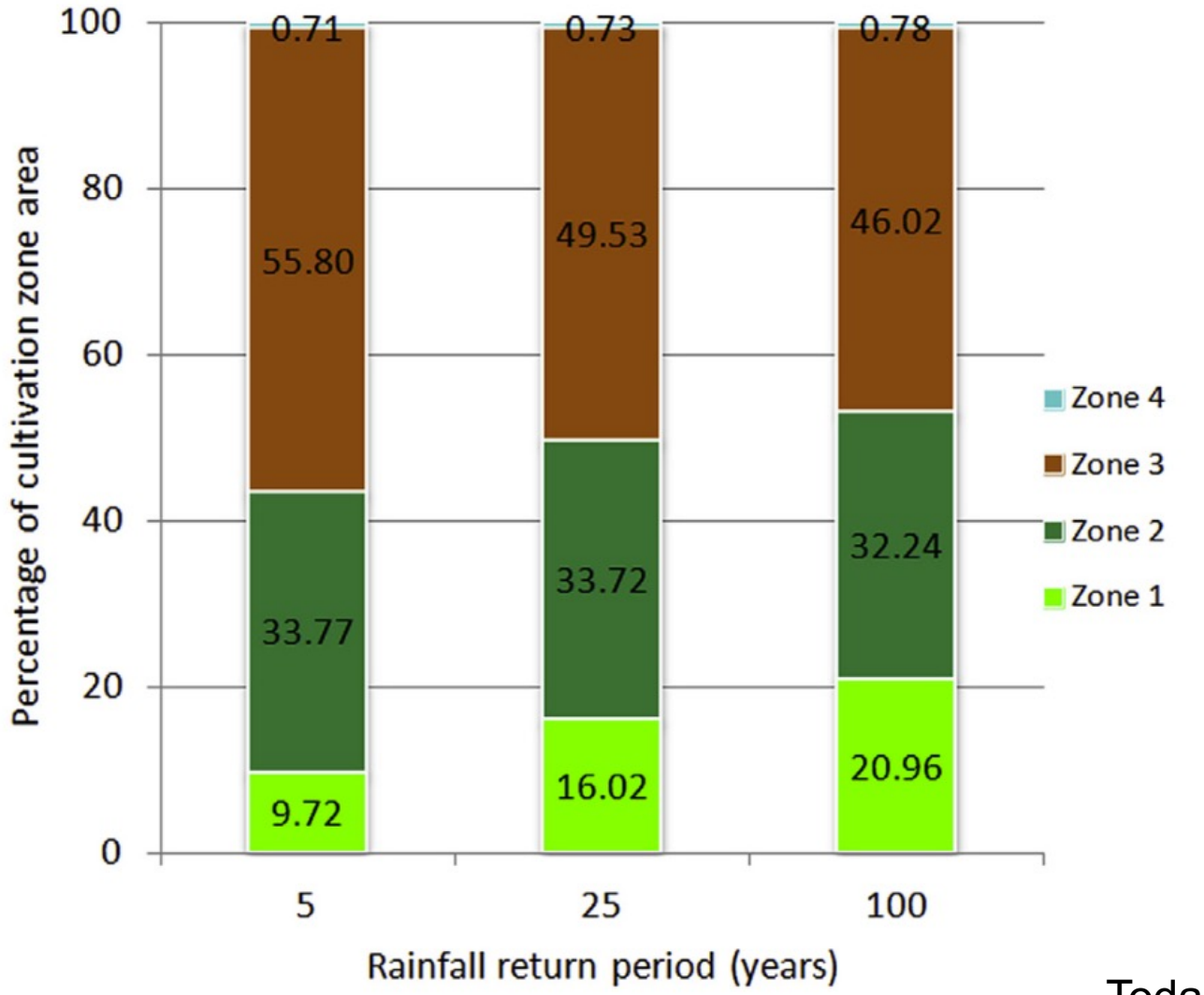
Fig. 12. Rice cultivation zone map for 5, 25 and 100-year rain-return periods.



Toda et al., 2017

Fig. 11. Recommended varietal types and characteristics per cultivation zone.

Area percentages of zones per rainfall return period



Toda et al., 2017

Fig. 13. Area percentages of zones per rainfall return period.

Conclusion

- Without adaptation, rice yield will decline
- Matching submergence tolerant varieties with flood profile is promising solution

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Saved by mangroves?

Standing brave to save the living: The Resilient Mangroves of Samar

Survey team led by Dr. JH Primavera (in white top) inspecting mangroves in Hernani, Eastern Samar. Photo by Belinda de la Paz.

by Beechie de la Paz
May 2014

It was my first time to go to Samar. I had always wanted to go because of its unique biodiversity. The island alone hosts a variety of wildlife and flora that can be found nowhere else in the world. Considered an Important Biodiversity Area (IBA), more than 200 bird species can be found in the island of which half are endemic. Similarly, endemic plant species account for more than half of at least 1000 plant species this island hosts'.

Thus, an opportunity to map the impacts of Yolanda on the mangroves in Tacloban and Samar was timely and provided a perfect excuse to visit the island. Mangroves or mangal ecosystems are found along coasts with plants that can tolerate brackish water. They are dominated by plants or trees with broad leaves and stilt roots or pencil-like projections called pneumatophores and live-born seedlings. This ability to produce live young (technically known as vivipary) has "prevented the extinction of mangroves in the past 50 million years and enabled them to occupy tidal areas around the world."

'Yolanda'-stricken mangroves in Leyte need long-term protection

April 20, 2014 12:07 am
by Haribon foundation

Share Tweet

Since Super Typhoon Yolanda devastated the mangroves in central Visayas, the government has allocated P347 million, and has then increased to P1 billion recently, intended to rehabilitate mangroves in coastal areas.

A map showing Leyte-Eastern Samar sites assessed in January and March, the mangrove areas highlighted

As the deaths of thousands and loss of livelihood were extensively documented by the local and international media, the extent of destruction in mangrove ecosystems was underrated. Surprisingly, the government has allocated such an amount.

A town saved by mangroves

Palompon could've been any other devastated town after Super Typhoon Haiyan ravaged the area, but the town was spared; all thanks to their mangroves

BY THE SEA. Leticia Sumili and her family's main source of income is fishing. They live by the shore to make their source of livelihood more accessible. Photo by David Lozada/ Rappler

DENR to restore mangrove forests in Yolanda-hit areas

Mangrove forests can make coastal communities less vulnerable to storms and storm surges

GREEN WALLS. Mangrove forests can serve as a buffer against typhoons, storm surge and sea level rise

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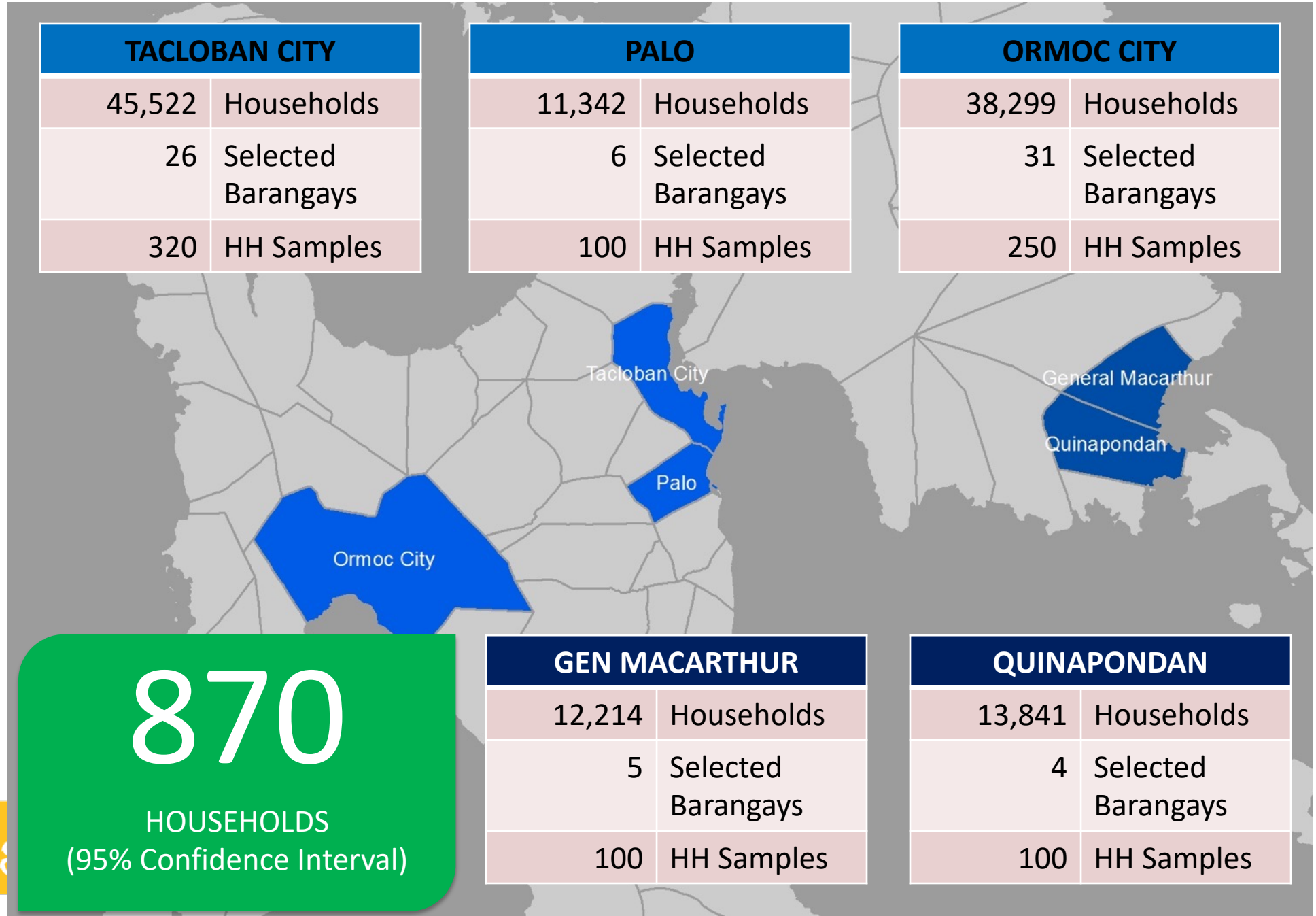
Delfino et al., 2015

TACLOBAN CITY	
45,522	Households
26	Selected Barangays
320	HH Samples

PALO	
11,342	Households
6	Selected Barangays
100	HH Samples

ORMOC CITY	
38,299	Households
31	Selected Barangays
250	HH Samples



870

HOUSEHOLDS
(95% Confidence Interval)

GEN MACARTHUR	
12,214	Households
5	Selected Barangays
100	HH Samples

QUINAPONDAN	
13,841	Households
4	Selected Barangays
100	HH Samples

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Did mangroves make a difference?

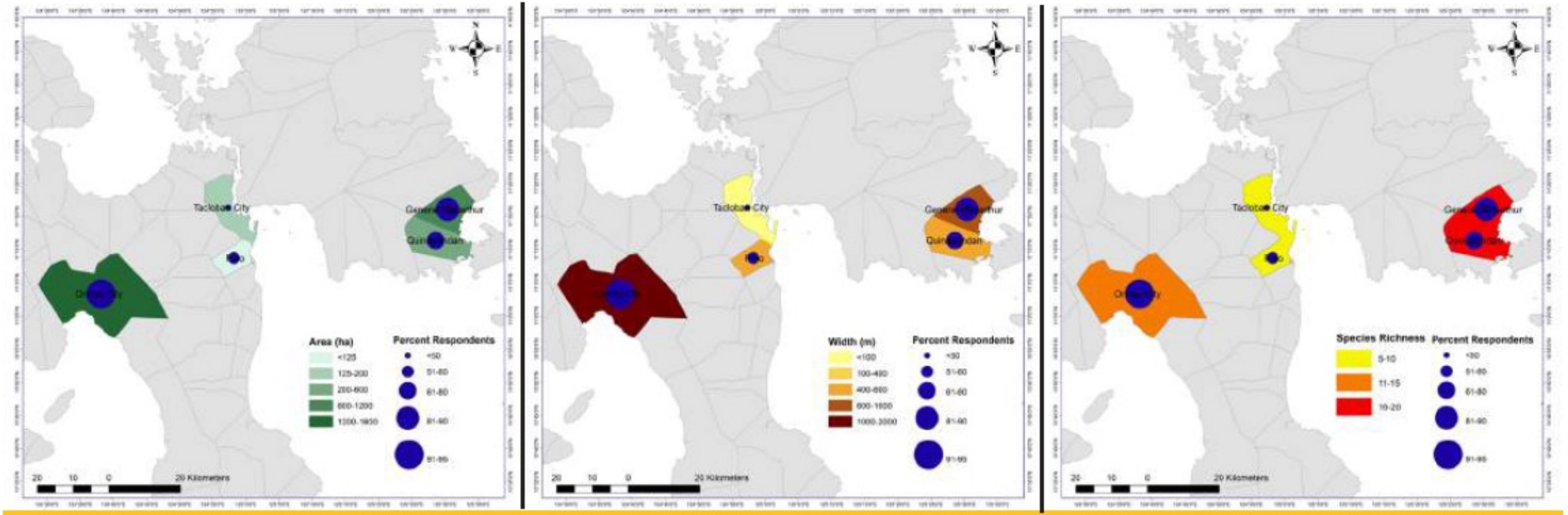

Figure 6. Percentage of surveyed residents that perceived mangroves provided coastal protection compared with the estimated mangrove area in hectares (left), estimated (average) width of mangroves in meters (middle) and species richness (right) in the study sites.

Delfino et al., 2015

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PhilCCA: IPCC-style assessment

- How will science products reach various users?

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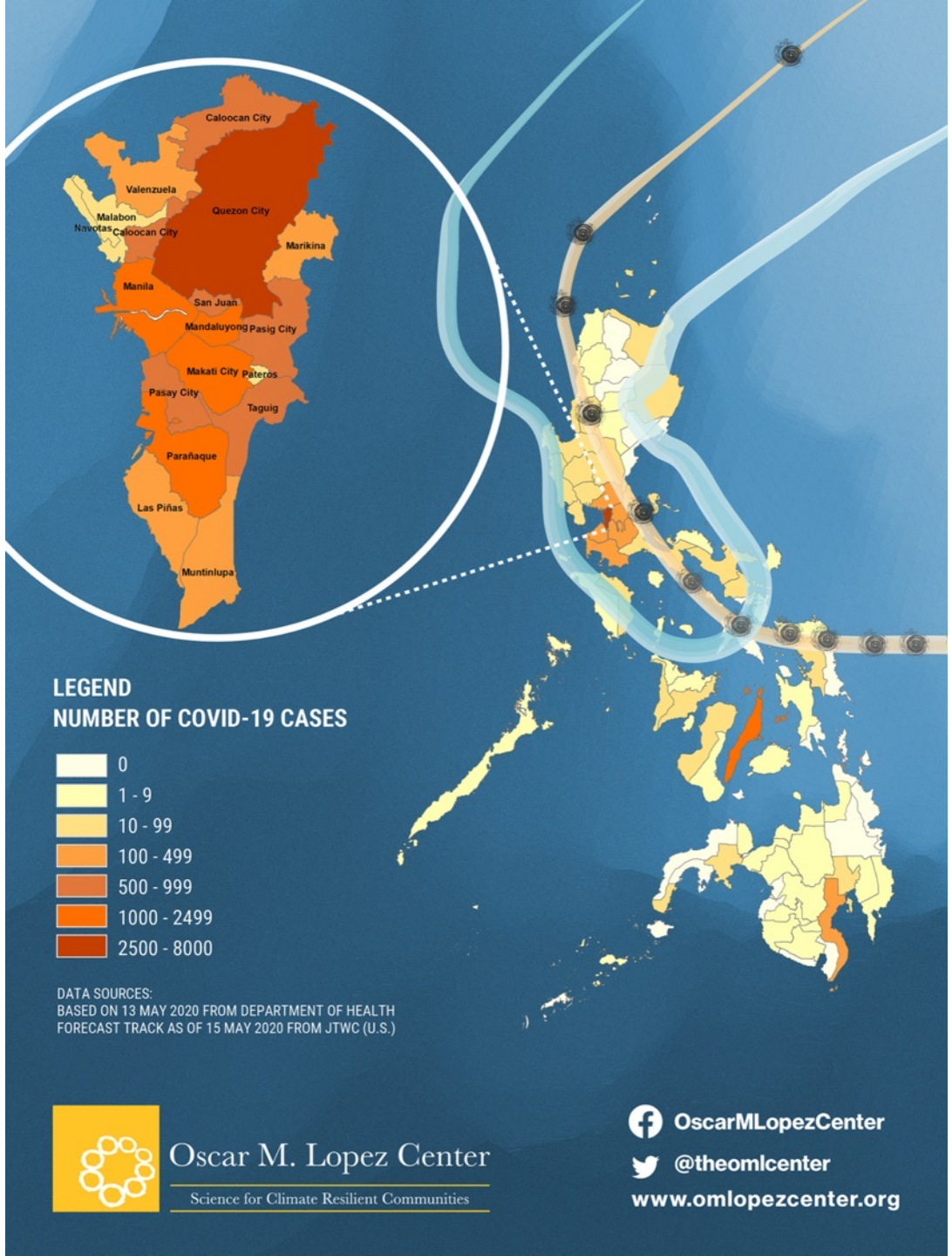
COVID-19 & Climate Change

Analyzed the link between the COVID-19 pandemic and climate resilience



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SOURCE: OML Center, 2019

Reaching the private sector: OML Legacy Lectures

Annual event that focuses on climate resilience from the perspective of the private sector

A documentary on climate change as a Filipino experience.

Oscar M. Lopez Center
Science for Climate Resilient Communities

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Klima Film Festival

Reached youth from
12 regions in the country

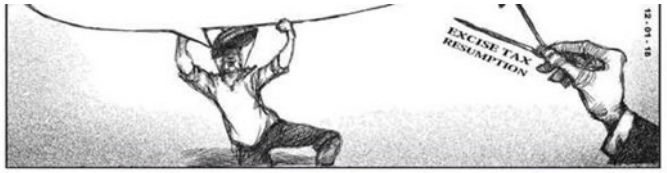
Partnered with
18 youth organizations

Book project

Activity book development project with ADARNA HOUSE for junior high school students on climate change adaptation and disaster risk management

Supplementary to DepEd curriculum

Engaging the media



When the President tells a lie

PUBLIC LIVES
RANDY DAVID

Outside of religious circles, Caloocan Bishop Pablo Virgilio David used to be introduced as my brother. Now it's the other way around, especially after he became the latest target of President Duterte's rants against the Catholic Church and its leaders. I take deep pride in this affinity. We take similar positions on most social issues, although, in his case, it is the faith perspective that consistently informs his convictions and actions.

"Ambo," as we call him, is the 10th of 13 children (seven boys and six girls), all still living, of whom I happen to be the eldest. Our parents have long passed on. It thus falls on me, as head of the family the President has accused of benefiting from Church offerings that my brother allegedly steals, to counter this outrageous lie. The truth is that Ambo regularly turns to the family for contributions to his projects and charities, well before he accepts offerings from others. To accuse him of taking Church offerings to give to his family is ludicrous.

There is a quote widely attributed to Adolf Hitler that goes like this: "[T]he broad masses of a nation are always more easily corrupted in the deeper strata of their emotional nature than consciously or voluntarily; and thus in the primitive simplicity of their minds they more readily fall victims to the big lie than the small lie, since they themselves often tell small lies in little matters but would be ashamed to resort to large-scale falsehoods. It would never come into their heads to fabricate colossal untruths, and they would not believe that others could have the impudence to distort the truth so infamously."

I thought that nothing more clearly explains Mr. Duterte's penchant for inventing colossal lies about people he dislikes than this. Because he is President, the lies he tells are not only magnified a thousand times; a lot of people also tend to believe them without proof, and worse, to take their cues from them. That the President appears indifferent to their effect on the stature and credibility of the office he occupies only compounds the problem. It has become more and more difficult to interpret what he is saying when, after reading a few lines from a prepared script, he shifts to loose slanderous language such as that he has used against Bishop Ambo.

I had two minds about writing a column on this topic. My first instinct was to stay silent, to let others speak in defense of my brother, and to treat Mr. Duterte's attack against him as yet another instance of his habit of speaking recklessly against other people just to generate controversy and to remain in the news. Moreover, I didn't want to appear as though I'm using this platform to defend a beleaguered sibling. Everyone who knows Bishop Ambo knows that he can speak for himself. But that doesn't change the fact that he is unarmed and defenseless against the myriad forces under the President's command.

I thought President Duterte went too far when, in a recent speech, he said, from out of the blue, that he suspected that "this Bishop David" could be into drugs because he had supposedly been monitored roaming the streets of Caloocan at night. He then threatened to chop off his head if he catches him red-handed.

If my late mother had heard the President speak these words against her son—the gentlest of her children—she would have choked to death from sheer unspeakable anguish. She would have begged me to protect him from harm even to the point of gagging him.

This is exactly how some of my relatives are reacting to Mr. Duterte's Mafia-like threats against Bishop Ambo. They fear for his life. They have seen what happens to people the President singles out, for any reason, as objects of his ire. They end up dead, or in prison on fabricated charges, or stripped of their properties, and subjected to unceasing humiliation.

My brother has no wealth and perhaps would not mind going to jail for what is right. But, our relatives fear that the young bishop, the guiding star of the clan, has just been sentenced to death. They want him to stop responding to the President's attacks, to desist from talking about the drug war and its victims, or from attending to the urgent needs of the widows and the orphans of this war that God has put in his care—until the President's anger subsides. They want him to go away, far beyond the reach of rogue policemen, contractual killers and fanatical death squads—until the President stops threatening him.

I must admit that the thought of asking him to go on a sabbatical leave did cross my mind. He is a pastor of great commitment, but also a gifted biblical scholar. I had mulled the idea of advising him to rest from his current pastoral work and resume his biblical studies. I thought it was easy enough to represent this as merely retreating from a futile word war that—as some observers depict it—distracts the public from the more important problems confronting the nation.

But, the more I thought about it, the more I was convinced that it would be wrong for him to go on a prolonged retreat at this time. It would mean abandoning his flock when they need him most. It would mean failing to speak God's truth to power when it is needed most.

The lofty perch that some commentators prefer would make us see crime, corruption, armed conflict, terrorism, inflation, unemployment, and, indeed, the drug menace, as the paramount issues of our time. Everything else is a distraction.

But, isn't fear the greatest problem we face in a despotic regime? So complex is fear as an emotion that people find a thousand and one ways to redescribe and rationalize it even as they meekly succumb to it. Yet, to overcome it, they often only need to witness the power of one example.

public.lives@gmail.com

A tale of 2 cities: Manila and Venice

COMMENTARY
RODEL D. LASCO

Venice, Italy—Imagine a city with no cars, no roads, and that almost floats on water. A city connected by canals and waterways and navigated only by boats. Imagine further that it is considered by many as the most beautiful city in the world. That city can only be Venice, the land of Marco Polo and Antonio Vivaldi.

As a climate scientist, I am fascinated by the fact that Venice is also the poster city for climate change and rising sea levels. Built practically in the Adriatic Sea, the city is experiencing more frequent flooding, especially during winter. St Mark's Square, the most iconic place in the islands, is among the most vulnerable during *acqua alta* (high water). In fact, a flood warning siren has been installed throughout the city to alert residents and tourists alike when waters are rising. The future is even bleaker, as studies suggest that the city could be totally submerged in water by the year 2100 if current warming trends persist.

Which reminds me of its similarities to Metro Manila. While they are worlds apart literally and figuratively, they both face the threat of a warming climate. Rising flood waters afflict both cities with recurring frequency. Like Venice, future climate scenarios threaten to submerge large portions of metropolitan Manila. Of course, the case of flooding in Manila is multifaceted and more than just because of sea level.

At the same time, Venice is a testament to the ingenuity of humankind to adapt to even the most hostile living conditions. Underneath the city is a virtual forest of timber which forms the foundation of houses and buildings that cram the city. Buried for centuries, the wooden piles do not rot because of lack of oxygen in their watery grave. This ability to innovate gives me hope that as climate changes, humans will be resilient enough to find novel ways of adapting to the "new normal."

But adaptation has its limits. While the Venetians have proven that humans can survive and even flourish in a "water world," this does not mean that we should neglect mitigating global greenhouse gas emissions, the culprit behind rising temperatures and sea level rise. For one thing, it is naive and reckless to extrapolate the experience of one city to the entire planet.

The Philippines observed climate consciousness week in the third week of November. Led by the Climate Change Commission, a number of activities were held, designed to enhance the level of awareness of our people on the dangers posed by climate change. As one of the most climatically vulnerable nations of the planet, we must support local and international efforts to address global warming.

While Venice has survived hundreds of years of wars and political turmoil, it may eventually succumb to two unlikely forces—one local (tourism), the other global (climate change). In the year 2100, its epitaph could very well be: Venice—a victim of its own success, and the failure of nations to act as one.

Quo vadis, Manila?

Rodel D. Lasco, PhD, is a lead author of several Intergovernmental Panel on Climate Change reports, including the fifth assessment report and the forthcoming sixth assessment report. He is the executive director of The OML Center, a foundation devoted to discovering climate change adaptation solutions (http://www.omlopezcenter.org/).

Why is 1.5 degrees so important?

COMMENTARY
RODEL D. LASCO

Ondoy, Yolanda, Pablo, and Ompong. The names are seared in the collective memory of our nation because of the chaos and misery these typhoons heaped upon us. They are some of the most destructive natural forces ever experienced by our people. Climate change is creeping up on us with devastating consequences.

The Paris Agreement aims to limit "global average temperature to well below 2 degrees Celsius above preindustrial levels." At the urging of vulnerable countries like the Philippines, the Paris Agreement further aims to limit the temperature increase to 1.5 C above preindustrial levels. But will it really make a difference to reduce global warming from 2 C degrees to 1.5 C?

This is what the Intergovernmental Panel on Climate Change (IPCC) attempts to answer in the special report on Global Warming of 1.5 C released on Oct. 8, 2018. Among its significant findings is that humans have already caused 1 C of warming since the industrial revolution. That means, we are a mere 0.5 C away from breaching 1.5 C.

The IPCC anticipates that the risks, impacts and exposure will be significantly lower with 0.5 C less warming, enabling greater opportunities for adaptation. For example, tropical cyclones will likely have heavier rainfall at 2 C global warming, which means greater risk of flooding, landslides and storm surges.

While there is no specific study yet on what a 1.5 C world means for the Philippines, previous studies show that a warming planet will result in a reduction in yield of rice and corn. Future increases in sea level could affect coastal communities, which make up about 60 percent of the Philippine population.

The IPCC report highlights the need to take drastic cuts in global greenhouse gas (GHG) emissions so that the planet will not warm beyond 1.5 C. This means reducing emissions primarily from fossil fuels, such as the use of gasoline and coal for energy generation, industries and transport. The conservation of existing forests and expansion of tree cover are also needed.

Sadly, most projections show that, at the current rate at which the world is emitting GHGs, there is little chance to attain the 1.5 C target.

The Philippines, though a low-emitting GHG country, is already one of the most climatically vulnerable countries in the world. In one year alone (2016), tropical cyclones affected around 5.8 million Filipinos and inflicted about P33 billion worth of damage.

With global temperatures likely going above 1.5 C as early as the 2030s, we need to prepare by increasing the adaptive capacity of our people. Enhancing our resilience to climate-related risks is even more urgent now. Our government can review its current laws and policies on energy, disaster risk reduction and climate change in light of the special report.

The private sector must also invest in climate resilience and sustainable business models. The scientific community should innovate to equip our people and decision-makers on how to cope with climate change.

So, to answer the question plainly: 0.5 C does matter a lot. If we fail to act as one global community, 1.5 C will not just be a number. A warmer climate will usher in an even more unprecedented level of catastrophe, beyond Ondoy, Yolanda, Pablo, and Ompong.

Rodel D. Lasco, PhD, is a lead author of several IPCC reports, including the fifth assessment report and the forthcoming sixth assessment report. He is the executive director of the Oscar M. Lopez Center, a foundation devoted to discovering climate change adaptation solutions.

COLUMNISTS 94 SHARES

COMMENTARY

Can the holiday season lead to global warming?

By: Rodel D. Lasco - @inquirerdotnet Philippine Daily Inquirer / 05:16 AM December 25, 2018

The answer to this question is not as straightforward as one might expect it to be. There could be lower greenhouse gas (GHG) emissions, which help slow down global warming, because the holiday season is a time when most people are not working. Scientists have been warning that rising GHGs in the atmosphere leads to heating of the atmosphere. By staying at home, there will be less GHG emissions because workers do not travel to the office and there is lower energy consumption as office buildings hibernate. Data from the Department of Energy confirm that there is less electricity consumption during the month of December. In 2016, the lowest energy

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COLUMNISTS 6 SHARES

COMMENTARY

Science for climate's sake

By: Rodel D. Lasco - @inquirerdotnet Philippine Daily Inquirer / 05:04 AM February 17, 2019

DURBAN, South Africa — What does a closed-door meeting of some of the world's top climate scientists held in this city on Jan. 21-25 have to do with the future of the Philippines, indeed of the entire planet?

More than 250 climate scientists from over 60 countries descended on this coastal city last month to start working on the climate impacts and adaptation aspects of the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6). The IPCC is the United Nations' body tasked to assess the scientific findings related to climate change.

Natural forests store vast amounts of carbon

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Integrated Natural Resources and Environmental Management Project (INREMP)

EVOLUTION OF AGROFORESTRY LEARNING SITE

Brgy. Concepcion, Danao, Bohol | Dagohoy Watershed

Condition of Mr. Agapito Escaso Jr.'s Agroforestry (AF) subproject during the site validation (October 9, 2019)

Enhancement of contour strips (November 7, 2019)

Planted banana followed by fruit (rambutan and lanzonez) and timber (musizi) trees on the contours and farm's boundary (July 2, 2020)

Status of the AF learning site (October 15, 2020)

Annual crops such as sweet potato, upland rice and corn. The annual crops planted in the alleys may change depending on the planting season and preference of the farmer-co-operator, and the availability of shade as the fruit trees are growing.

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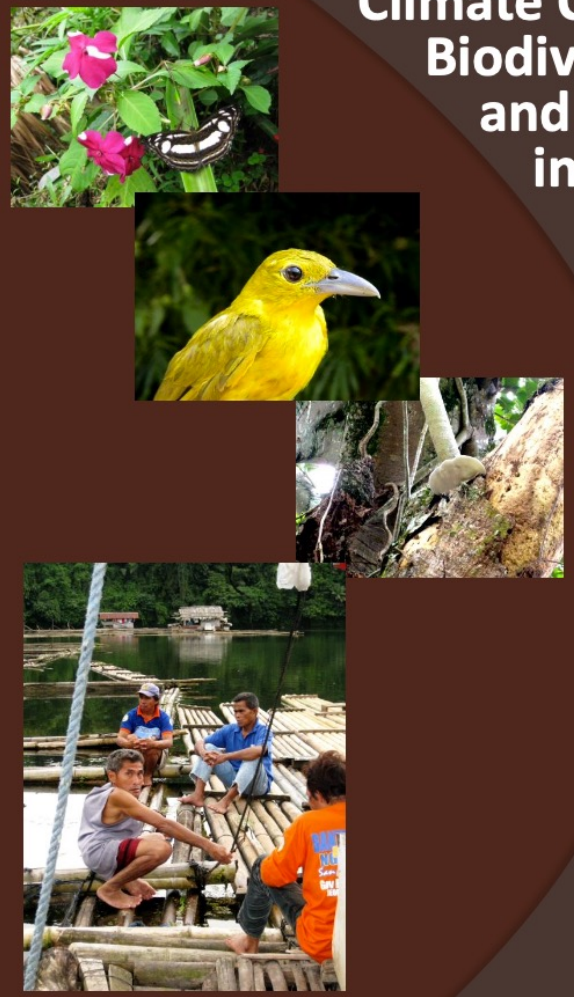
GUIDEBOOK
on Mainstreaming Climate Change in Biodiversity Planning and Management in the Philippines



Rodel Lasco
Florencia Pulhin
Perlyn Pulhin

2013

World Agroforestry Centre

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Science for Climate Res

USAID
FROM THE AMERICAN PEOPLE

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TRANSFORMING LIVES AND LANDSCAPES

STEP 1 **Set context and build project team**	• Define project/program area, themes and indicators • Engage experts, stakeholders and partners
STEP 2 **Assess current vulnerability and apply future scenarios**	• Describe current sensitivity, exposure and adaptive capacity of the system • Develop and apply future climate scenarios
STEP 3 **Assess future vulnerability and risks**	• Identify future impacts and describe the likelihood of vulnerabilities • Determine areas at higher risks
STEP 4 **Formulate and evaluate adaptation options**	• Identify potential adaptation options • Evaluate options based on economic, social, ecological, technical and institutional factors
STEP 5 **Mainstream adaptation**	• Implement highest priority adaptation options • Monitor action and vulnerabilities over time and modify adaptation options as required

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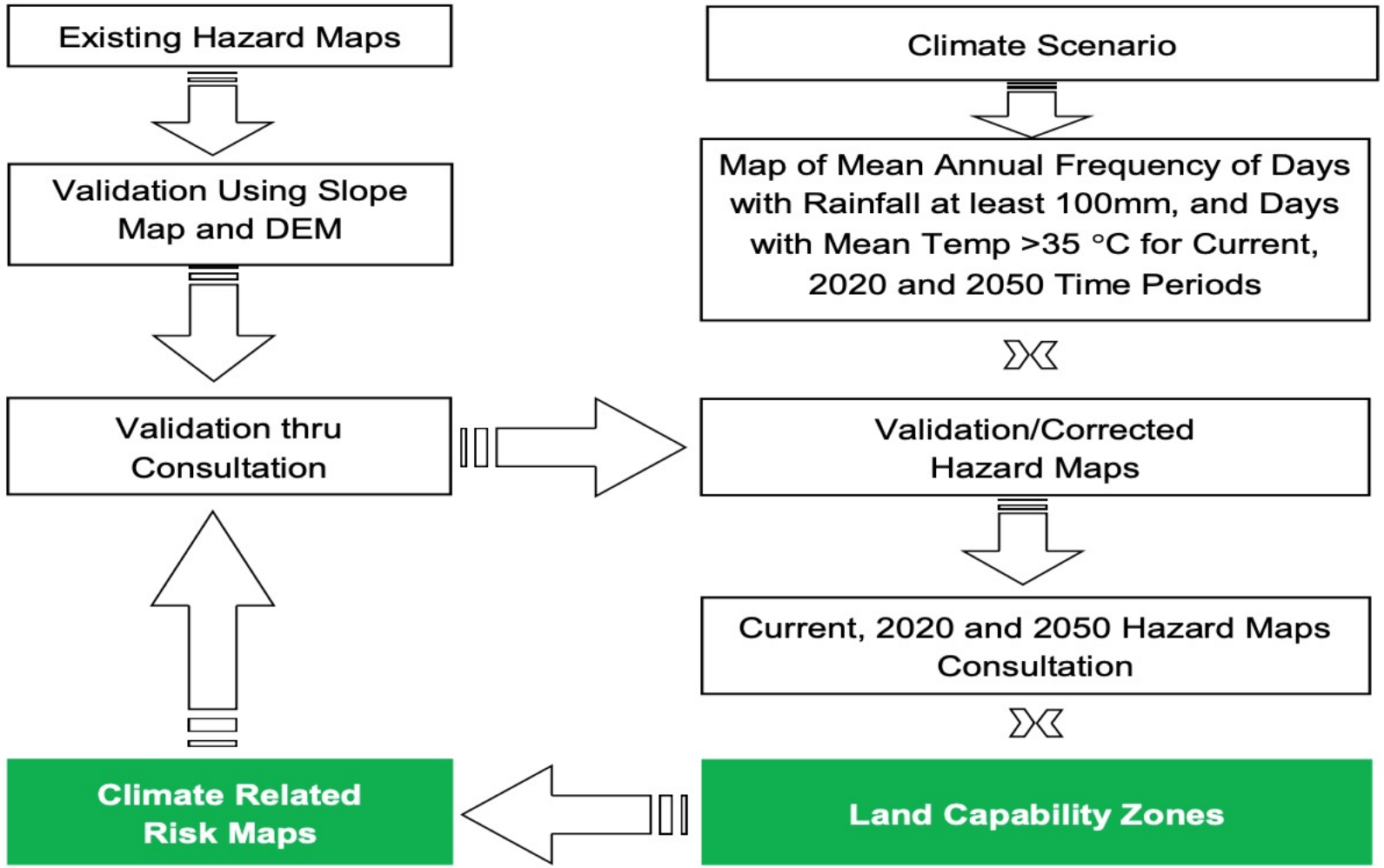

Figure 9. Climate related risk assessment framework using GIS. Source: Combalicer, 2012

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In Closing…

- It is a challenge for climate research findings to reach users
- Co-production and other engagement approaches with partners are helping bridge the gap
- Openness to collaborate is essential

Thank You!!!

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