



Climate Vision 2050 BCG podcast

Episode 6: Adaptation and Resilience in Southeast Asia

Act I: Introduction

[00:00:00] **Nick Howard:** What you are about to listen to is a work of imagination, but not fantasy, set in the year 2050.

(Sound of the kayak paddles going in, environmental sounds of the mangrove forest, birds, etc.)

[00:00:13] **Mutinta Banda:** At a National Park in Sarawak [sar-rah-wak], Malaysia, environmental scientist Danilo Manalo [Dah-knee-low Man-nahl-low] rides a small boat, equipped with a roof of solar panels through a mangrove forest. He's alongside 8 colleagues and 5 local authorities and guides.

(Sound of the e-boat moving through the water.)

[00:00:23] **Danilo Manalo:** I'm surrounded by a dense web of tangled roots rising above either side of this narrow waterway. Tall thin trees weave up toward the sky into a canopy of green leaves.

[00:00:36] **Danilo Manalo:** This area was saved from a coastal development project that could have obliterated this entire ecosystem.

[00:00:42] **Danilo Manalo:** But the area is still under threat. We're investigating illegal logging in the area.

(Soundscape fades out.)

[00:00:48] **Mutinta Banda:** In this episode, we'll be exploring the importance of adaptation and resilience to combat climate change in Southeast Asia. The region is a leader in protecting biodiversity and using nature to help heal the damage caused by climate change. We'll look at what it's like to live in this incredibly diverse region today and how people work, live and eat in harmony with the natural environment.

[00:01:15] **Mutinta Banda:** I'm your host, Mutinta Banda and you're listening to Climate Vision 2050.

(Theme music)

[00:01:19] **News Clips:** A new early warning system for flooding events was introduced in 2028 in Thailand.

[00:01:26] **News Clips:** In 2036 new overfishing regulations were introduced to protect endangered species in Indonesia.

[00:01:31] **News Clips:** Southeast Asia's first floating community that rises and falls with the tides opened in 2046.

Act II: How the World Works

(Environmental sounds, nature sounds of the mangrove forest.)

[00:01:37] **Mutinta Banda:** Danilo arrives at an area of dense mangroves with a small beach.

[00:01:42] **Danilo Manalo:** [Scared sigh]. Our guide says we're in the clear of crocodiles... but you never know.

(Sound of getting out of the boat, trudging through water, moving it onshore.)

[00:01:48] **Danilo Manalo:** Phew.

[00:01:48] **Danilo Manalo:** These here are red mangroves. They get their name from their bright red bark...

(Sound of knocking on the tree trunk.)

[00:01:54] **Danilo Manalo:** The roots look like spider legs. They're known for their ability to tolerate harsh conditions such as changes in water levels and salinity.

(Beeping of the device, feet trudging on the ground.)

[00:02:03] **Danilo Manalo:** This device measures the diameter, height, and wood density to assess how these were impacted in the recent storms.

(The next line is somewhat under her breath as he's speaking.)

[00:02:11] **Danilo Manalo:** ...3mm growth in this root... less canopy cover here... sustained damage on this one...

[00:02:16] **Danilo Manalo:** There used to be a large mangrove forest just like this one near where I grew up in the Philippines. I used to play hide and seek among the tangled roots. One day mangroves were cut down to put in a shrimp farm. Over the years as the sea rose, floods and storms increased - our community eventually lost our homes and we had to move further inland. Today I research, restore and protect mangrove ecosystems alongside this team from all over Southeast Asia.

(Sounds of a chainsaw nearby.)

[00:02:57] **Danilo Manalo:** [Gasp] The loggers. They're close by! We'll try to sneak up and apprehend them.

[00:03:03] **Mutinta Banda:** Today in 2050, Southeast Asia is considered a world leader in the ways that the region has prioritized environmental preservation. There are a wealth of natural resources here, thanks to conservation efforts.

[00:03:16] **Mutinta Banda:** Lavanya Rama Iyer [Lah-vin-yah Rah-mah Eye-Er] is a development planner at WWF Malaysia. Her job entails thinking carefully about how to ensure that any development that takes place in Malaysia protects rather than harms the natural environment.

[00:03:30] **Lavanya Rama Iyer:** Restoring nature's functionality has enabled us to better cope locally with the impacts of climate change. And even as the world over we have faced greater unpredictability with temperatures, water access, food security due to climate change. Malaysia's investment in keeping at least 50% of our land mass under forest cover and also designating 30% of our land and marine areas as protected areas, really all these actions have really borne immense dividends.

[00:04:09] **Mutinta Banda:** Today, Malaysia is known for its natural assets. They are a key strength that has been harnessed in the fight against climate change.

[00:04:18] **Lavanya Rama Iyer:** We started looking at a different relationship of the economy with the environment. The thinking previously was, if you wanna grow the economy, something has to give and that would be the environment. If you wanna protect the environment, then something has to give, and that would be the economy. So we evolved from that kind of thinking, to something that was more holistic in understanding that actually nature, the environment really provides the fundamental basis of everything we rely on as a society to thrive.

[00:04:53] **Mutinta Banda:** With more than 25,000 islands and a billion people, the path for Southeast Asia to reach their climate and sustainability goals for 2050 was not easy.

[00:05:12] **Mutinta Banda:** Dave Sivaprasad [Siv-ah-prah-sahd link to pronunciation] is a managing director and partner at BCG who leads the company's climate and sustainability work in Southeast Asia. He's part of the global adaptation and resilience team.

[00:05:24] **Dave Sivaprasad:** So sitting in 2050 and, looking back over the last 30 years, the region had two big challenges to manage. One was to rapidly decarbonize their economies. The second big challenge was, the region already in the 2020s was feeling the physical impacts of climate change, such as increasing sea levels, rising storms, extreme heat, issues that were impacting lives, livelihoods, food systems, water, healthcare, and so on. So the region had to build resilience against these physical impacts.

[00:05:59] **Mutinta Banda:** Southeast Asia leaned heavily into what's known as nature-based solutions. These are solutions to climate challenges that embrace the sustainable use and management of natural features, such as mangroves.

Dave Sivaprasad: There are cities and settlements that are spread across the coast that face sea level rise impacts they face increasing storms and storm surges, increased flooding. And mangroves are a natural defense to some of these physical impacts.

Mutinta Banda: The mangroves act as an interface between the land and sea, where freshwater and saline waters mix. The trees have deep roots that help to secure the soil and prevent erosion. The nutrient-rich soils provide habitats to fish and other wildlife.

[00:06:52] **Dave Sivaprasad:** So they act as a natural barrier to erosion. These mangrove ecosystems act as a natural buffer to provide protection to these regions.

[00:12:48] **Mutinta Banda:** Climate change has severely impacted water systems in Southeast Asia, and the effects have been felt deeply by people who live here.

[00:12:56] **Lavanya Rama Iyer:** So floods have become increasingly frequent, increasingly unpredictable, increasingly intense. We saw rainfall patterns change. At certain times we had lots of water and at other times there was no water at all. So it was, the impacts that we were facing were very much related to managing water. So there were times when businesses and individuals had to go for not just days, but sometimes weeks and months without water in their taps.

(Soundscape of the black mangrove forest.)

[00:07:16] **Mutinta Banda:** Back at the national park, Danilo and his team arrive by boat at an area where approximately 20 mangrove trees have been cut down.

[00:07:26] **Danilo Manalo:** [Sigh] We were too late.

[00:07:28] **Danilo Manalo:** I'll need to pick up the debris and clear the area to assess the extent of the damage.

(Picking up pieces of sticks off the ground, using a research apparatus, beeping.)

[00:07:35] **Danilo Manalo:** These trees may have been cut down for firewood or charcoal, or perhaps to be used as timber for construction.

[00:07:43] **Danilo Manalo:** We brought a variety of seedlings - called propagules - with us in case we needed to do any restoration work.

(A papery sound of taking out the seed.)

[00:07:51] **Danilo Manalo:** These seedlings contain a small root structure and a few budding leaves. It will likely take about 2 years for them to grow - if we're lucky. Sometimes these areas have been too badly damaged and can't recover, or they wash away before they can take hold.

(Sound of digging for the planting of the mangrove seed.)

[00:08:05] **Danilo Manalo:** Those loggers will pay for what they've done. We might still be able to catch them before they leave the park.

(Soundscape fades out.)

News Clips: Protests from conservationists halted a 2026 development near a protected mangrove forest.

News Clips: Builders are using more renewable resources in 2035 in Southeast Asia.

News Clips: Malayan tiger populations have increased in 2040 thanks to conservation efforts.

[00:08:13] **Mutinta Banda:** Today in 2050, coastal ecosystems in Southeast Asia are monitored closely and strict laws protect the various species and their habitats.

[00:08:22] **Mutinta Banda:** Despite this, problems arise as increased carbon dioxide concentrations in the air are absorbed by water systems.

[00:08:30] **Dave Sivaprasad:** This impacts marine ecosystems in multiple ways. One of the impacts is increasing acidity in oceans and seas. Increasing acidity impacts marine environments and ecosystems that are very sensitive to the pH value of the environment. So this can impact various species, and this can have knock-on effects to food chains and the broader ecosystem that if left unchecked can be catastrophic.

Mutinta Banda: Rising acidity levels in the ocean are especially damaging to coral reefs, which are important habitats for many species.

Dave Sivaprasad: And it's not just acidification it's also rising temperatures in the oceans and seas that damage coral reefs and cause coral reef bleaching. And these can have irreversible impacts if they're not managed.

Mutinta Banda: Coral reefs also blunt the destructive powers of floods and storm surges.

[00:09:46] **Mutinta Banda:** Southeast Asia has also worked hard to protect biodiversity inland, far away from the ocean. One important project for the region is the Heart of Borneo [born-ee-oh] initiative, which protects a forested area the size of Utah on the island of Borneo for perpetuity.

[00:10:06] **Mutinta Banda:** The forests there serve as an amazing source of carbon capture, as well as providing a protected habitat for many species such as proboscis [prow-baa-skiss [pronunciation here](#)] monkeys, bears, leopards, elephants and tigers..

Lavanya Rama Iyer: And just 30 years ago, these very same tigers were on the brink of extinction with fewer than about 150 in the wild. So effort was really taken to seriously protect the tigers and their habitats. And from that, we ourselves have also benefited hugely when it comes to adapting and living with the climatic changes that we are facing.

[00:10:52] **Mutinta Banda:** The protection of biodiversity has had a knock-on effect for the economy, as today in 2050, Southeast Asia has a thriving eco-tourism industry.

Dave Sivaprasad: Southeast Asia is home to some of the most diverse natural environments in the world. And pretty early on through this journey of transition the region recognized the value of these natural assets, and that there were multiple benefits to preserving these ecosystems. This also benefited the local economy in terms of ecotourism where people from all around the world came to Southeast Asia to experience and see some of these remarkably rich and unique ecosystems that the region had to offer. There were new jobs that were created in the tourism industry and there were new jobs created to protect, preserve and help manage these protected environments.

[00:11:48] **Mutinta Banda:** Fishing has long been a source of livelihoods and food in Southeast Asia. Today in 2050, new measures are being taken to ensure that fishing is sustainable.

[00:12:05] **Lavanya Rama Iyer:** So today we see our communities living harmoniously and in sync with nature. For example, fishermen have relearned the ways of their ancestors and manage the fish resources and fish stocks sustainably, allowing for no fish times where nobody goes out to fish as a community. They respect each other's agreement to not do that. At that time, the fish stock can actually replenish.

[00:12:33] **Mutinta Banda:** This is all part of what is known as a blue economy strategy for Malaysia; making sure that the waters and coastlines are protected while creating sustainable jobs for the communities that live there.

(Soundscapes of the mangrove forest.)

[00:13:28] **Mutinta Banda:** Back at the National park in Malaysia, Danilo prepares a drone in his boat.

(The sound of going into her backpack to grab a drone. He's in the water now.)

[00:13:34] **Danilo Manalo:** I'm going to send this drone up to see if I can get an eye on where the loggers made off to.

(Sound of the drone buzzing overhead.)

[00:13:43] **Danilo Manalo:** Hmm... I can see a few boats off the coast. Looks like there is a small cruise ship with some tourists. This park offers a variety of activities for visitors, including nature walks, bird-watching tours, river cruises.... etc.

[00:13:58] **Danilo Manalo:** It also looks like there are a few fishing boats.

[00:14:02] Danilo Manalo: I can't see any mangroves on these boats... hmm... maybe here... no...there... no...

(Sound of a proboscis monkey.)

[00:14:07] **Danilo Manalo:** Ah! Oh hi there. These are proboscis monkeys, 3 of them.

[00:14:11] **Danilo Manalo:** Pretty weird-looking monkeys - I've always thought their noses look like a giant dangling tongue.

[00:14:17] **Danilo Manalo:** They were endangered 30 years ago, but today they're all over the park.

[00:14:23] **Danilo Manalo:** Back to the screen... no... maybe they've left already?... no...

[00:14:27] **Danilo Manalo:** [Gasp!] Bingo.

(Over radio below.)

[00:14:27] **Danilo Manalo:** I can see mangroves in the back of a small blue boat.

[00:14:32] **Danilo Manalo:** They're moving towards a park entrance. We'll have to hurry to catch them if we want to stop them before they leave the park.

(Sound of electric boat motor gearing up.)

(Soundscape fades out.)

[00:14:45] **Mutinta Banda:** Alongside coastal adaptation and resilience and protecting biodiversity, day to day life in Southeast Asia has changed dramatically in recent decades. Agricultural production depends on a steady supply of water.

Lavanya Rama Iyer: We also started seeing changes in our ability to cultivate rice for example or other agricultural crops. Because rice is very dependent on water and it's timed in a way for the planting cycles to match when the rains come. So we started facing food security issues as well. Going back to adopting traditional practices, in terms of mixed cropping so that we didn't rely on just one thing, that was the insurance that we took to protect ourselves in terms of food security, going back to that kind of approach farming, with different crops that support each other.

[00:15:36] **Mutinta Banda:** The agricultural sector was disproportionately hit by job losses, as many in the region whose livelihoods had depended on the stability of the growing seasons were unable to continue to produce food. Many of those who left the agricultural sector have found work as part of the green growth in the region in areas such as eco-tourism.

[00:15:59] **Mutinta Banda:** Climate change has also forced changes in the housing stock in Southeast Asia.

Lavanya Rama Iyer: In terms of looking at our homes, you'll see that the homes we build today are very resilient to the impacts - to floods and storm surges. Because what we did was, previously we used to build these huge concrete blocks, but we found that those were not very resilient. So we went back to traditional approaches of building homes on stilts, and which also provided natural sunlight and ventilation as part of the design.

Mutinta Banda: Building homes on stilts allows for waters from coastal tides, floods and storm surges to be swept underneath accommodations. Another interesting innovation has also been the use of different materials.

Dave Sivaprasad: So cement and concrete is a large contributor to greenhouse gasses. It's a hard-to-abate sector, the cement sector. What we've seen in Southeast Asia is the increased application of different building materials that don't use cement and concrete, that have been successful in various parts. Including the innovative use of timber and natural materials in building.

[00:17:11] **Mutinta Banda:** Some experiments have even been happening with floating communities off the coasts in Southeast Asia.

Dave Sivaprasad: Some of the most interesting coastal living environments that have come up over the last 30 years have probably been these coastal, these floating, communities where, literally they're all connected up, almost like pontoons to houses, and they're floating on the sea. So with rising sea level and rising tides, they go up and down, and they're almost accommodating to these changes. And this has taken great innovation in terms of not just the engineering behind how it's done but also people's ability to adapt and live in these new environments which didn't exist 30 years ago.

[00:17:54] **Mutinta Banda:** Every area in Southeast Asia requires a different type of solution as part of their adaptation and resilience to climate change. No two communities were exactly the same in the way they approached these challenges.

[00:18:08] **Mutinta Banda:** This meant sometimes when all other options were no longer possible, sea walls had to be built.

Dave Sivaprasad: On the specific response of building sea walls, they are certainly a form of protection. But, where you can avoid building more infrastructure that is costly, requires concrete, contributes to more emissions versus where you can, build resilience with nature-based solutions. you would want to gravitate towards the nature-based solution because of the multiple benefits that they have. But what we've seen in Southeast Asia, we're in 2050 looking back, nature-based solutions can't work in every coastal region. Some coastal regions have had to have sea walls built, to protect the communities and others found that relocating or moving has been a better option for them.

[00:18:56] **Mutinta Banda:** Back at the National Park, Danilo and his team stalk an entranceway with a small road behind some bushes.

(Whispering)

[00:19:03] **Danilo Manalo:** I can see them now in the distance.

(Some of the team members talking quietly in the distance.)

[00:19:07] **Danilo Manalo:** Shhhhhhh!!

[00:19:07] **Danilo Manalo:** They're moving onshore, getting out of the boat.

[00:19:10] **Danilo Manalo:** They're removing the mangroves. Okay... it's time... now... 3... 2... 1... hey!! hey you!! Freeze!! Stop!! What are you doing? He's getting away!!

[00:19:16] **Mutinta Banda:** The authorities rush towards the loggers and apprehend them.

(Sirens start wailing, police blowing whistles, running into the water, the criminals yelling, chaos from the crowd, etc.)

[00:19:19] **Danilo Manalo:** [Sigh]. Yes!! We did it!! We did it!!! Woooooooooot!

News Clips: New building code regulations were rolled out in 2028 in the Philippines to help protect against climatic events.

News Clips: Some communities in Southeast Asia have been moving farther inland in 2037 away from flooded coastal areas.

News Clips: Eco-Tourism is booming in Southeast Asia in 2045 as people flock to see the rich biodiversity the region is known for preserving.

[00:19:23] **Mutinta Banda:** Today in 2050, Southeast Asia is a leader in climate adaptation and resilience.

Dave Sivaprasad: Now we're in 2050, the region has been extremely successful in protecting its natural ecosystems, its forests, its marine environments, and its coastal wetlands. It has been successful in transforming local economies from high carbon economies to low carbon green economies. Countries across Southeast Asia are very diverse, both physically diverse, economically, and socially diverse and we've seen fantastic innovation from the ground up in almost every part of Southeast Asia. And we have certainly seen a lot of collaborative action between countries in the region to adapt and build resilience against the impacts of climate change.

[00:20:18] **Mutinta Banda:** Mangroves, lush forests, birds, fish, mammals and other wildlife all help to make Southeast Asia an incredible place to live and visit in 2050.

[00:20:27] **Mutinta Banda:** The preservation of these areas all started with thinking differently about how we develop sustainably, embrace green growth and enhance the blue economy of the region.

[00:20:38] **Mutinta Banda:** But our work isn't over. There is still more that needs to be done to safeguard Southeast Asia for generations to come, and we don't have all of the answers yet.

Lavanya Rama Iyer: That learning continues to happen today still. And it's still important because yes, we have now peaked in 2050, but we still haven't stabilized, right? The climate. So we are still in that trajectory of still facing impacts. We still need to continuously look at a variety of approaches, to address some of these, multiple challenges that we continue to face and these multiple challenges coming together, right?

Mutinta Banda: Southeast Asia needs to continuously keep watch on the way they are approaching challenges and key decision-making to safeguard the future.

[00:21:31] **Lavanya Rama Iyer:** And the best way that we can do that is to make sure that we approach it as a community and we approach it with all stakeholders coming together and bringing the wisdom from different perspectives together so that we can really build something that can address these problems. No one person, no one approach, can tackle this. We continuously need to continue to build that strong stakeholder engagement as one of the key components of moving forward.

Nick Howard: You've been listening to Climate Vision 2050, a podcast from BCG that explores how the world radically reduced carbon emissions and saved itself from climate catastrophe. Our narrator, Mutinta Banda [Moo-tin-tah Bahn-dah] is played by Atibo Onen [Ah-tee-bow Oh-nen]. Environmental scientist Danilo Manolo [Dah-knee-low Man-nahl-low] is played by RJ Navarra Balde [Ar-jay Na-var-uh Bahl-day the second]. You heard from Dave Sivaprasad [Siv-ah-prah-sahd], BCG managing director and partner who leads BCG's climate and sustainability work in Southeast Asia as well as Lavanya Rama Iyer [Lah-vin-yah Rah-mah Eye-Er], head of policy and climate change at WWF Malaysia, imagining herself as a development planner at WWF Malaysia in 2050.

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