ASEAN Strategies for Carbon Neutrality in Agriculture and Land Use

Enhanced Regional EU-ASEAN Dialogue Instrument

E-READI

About E-READI

The Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI), funded by the EU, is a demand-driven cooperation programme that facilitates dialogue forums between the EU and ASEAN on joint priority policy areas across all three ASEAN Community pillars (political and security, economic, and socio-cultural). E-READI started on 1st September 2017, with a budget of EUR 20 million and the foreseen implementation period lasts until December 2023.

What kind of support does E-READI provide?

E-READI can offer organisational and logistical support to EU-ASEAN meetings, workshops or study visits, related to jointly identified policy dialogue areas.

E-READI can also fund expert studies and analyses in support of the sectoral dialogue areas or provide other short-term technical assistance support.

Enhanced Regional EU-ASEAN Dialogue Instrument
E-READI

Funded by the European Union

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Decarbonisation in agriculture in ASEAN

Decarbonisation: Reduction of carbon dioxide emissions or achieving a lower output of greenhouse gasses into the atmosphere

- Agriculture energy use and practices generate 1% of CO2 emissions and 38% of methane emissions
- ASEAN region is expected to be greatly affected by climate change because majority of its economic activities is heavily reliant on agriculture and coastal activities
- Emissions can be reduced through more sustainable farming practices, such as regenerative agriculture that enhances soil carbon storage and protects biodiversity

Initial recommendations towards decarbonisation efforts

- Reduce use of chemical-intensive farms, enhance efficient utilisation of resources (e.g., water, land, and fertiliser), promote sustainable land management techniques (e.g. agroforestry), improve agriculture systems' resilience by minimising unsustainable practices and by promoting sustainable and circular agriculture which include nature-based solutions, ecosystem-based approaches to farming, and climate-smart agriculture practices

Net-zero GHG emissions

Emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals (IPCC)

Getting to net zero means we can still produce some emissions, as long as they are offset by processes that reduce greenhouse gases already in the atmosphere.

Deep Dive into the Pathway**S** to achieve
Net-zero GHG emissions in the
Agri-food and Land Use Systems

Outline of the ASEAN Strategies for Carbon Neutrality in Agrifood and Land Use Systems:

I. A NDC Background Review and the Contribution of agriculture

1.B Emerging and **Technical Discussion on NET ZERO GHG Emissions** targets rather than "decarbonisation" and "carbon neutrality" for the agriculture sector. Reduction and Removals options

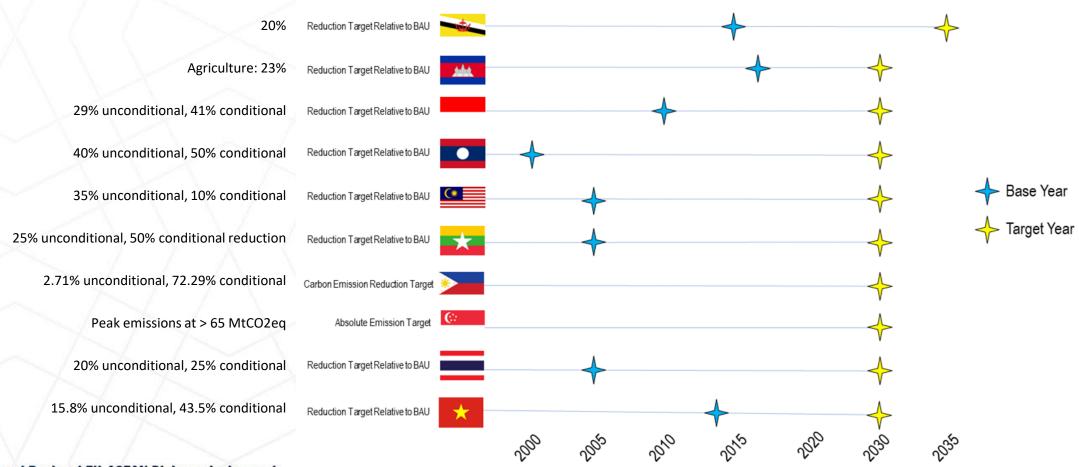**II. <u>How to create climate scenarios to arrive in vision setting.</u>**

III. (once vision and a climate scenario is done) *What are the tools to achieve decarbonization or net zero GHG emissions?*

Modeling + Database + MRV System = Decarbonisation pathways

I. A ASEAN Member States' latest NDCs

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20%	Reduction Target Relative to BAU				
Agriculture: 23%	Reduction Target Relative to BAU				
29% unconditional, 41% conditional	Reduction Target Relative to BAU				
40% unconditional, 50% conditional					
35% unconditional, 10% conditional					
25% unconditional, 50% conditional reduction					
2.71% unconditional, 72.29% conditional	Carbon Emission Reduction Target				
Peak emissions at > 65 MtCO2eq	Absolute Emission Target				
20% unconditional, 25% conditional	Reduction Target Relative to BAU				
15.8% unconditional, 43.5% conditional	Reduction Target Relative to BAU				

Base Year
Target Year

Despite these pledges, most ASEAN countries have not yet developed firm measures to help them achieve the targets

2000 2005 2010 2015 2020 2030 2035
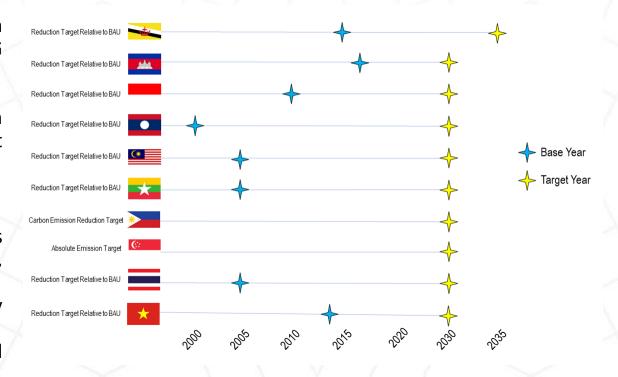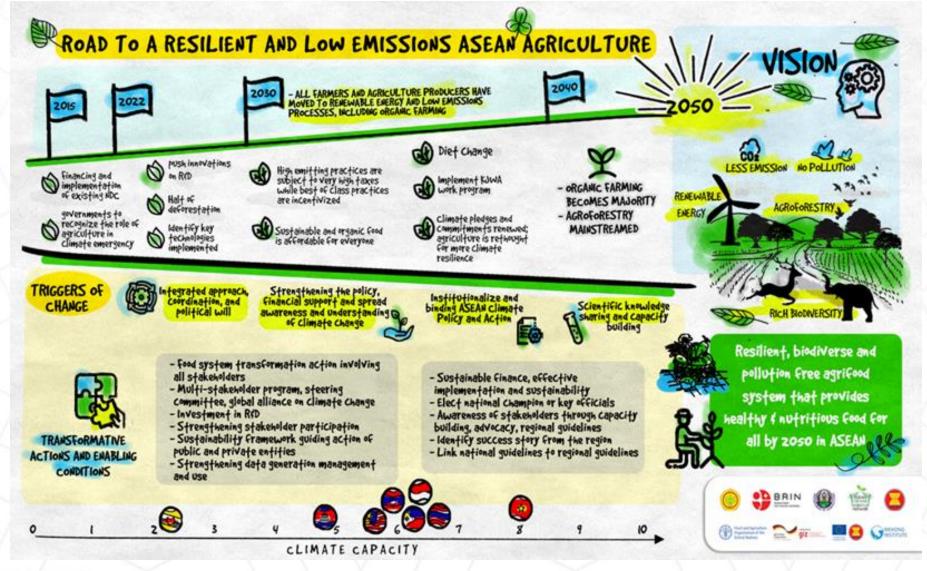
Building baselines

Baseline scenario

- A reference case that illustrates future GHG emission levels most likely to occur in the absence of GHG mitigation activities
- Usually described as the BAU (Business As Usual) scenario
- Determining the baseline scenario involves consideration of many alternative scenarios and choosing the most likely one

- ★ Baselines are highly specific to national contexts such as the start of intervention policies, monitoring, reporting, evaluation and data availability
- ★ Base years and target years vary for each and every country
- ★ Baseline scenarios of each country are uniquely defined and cannot broadly be compared
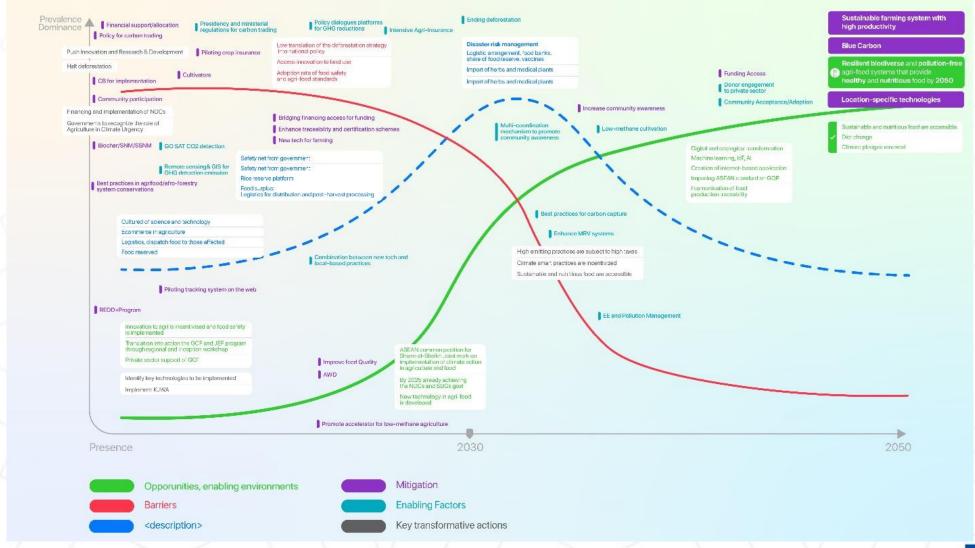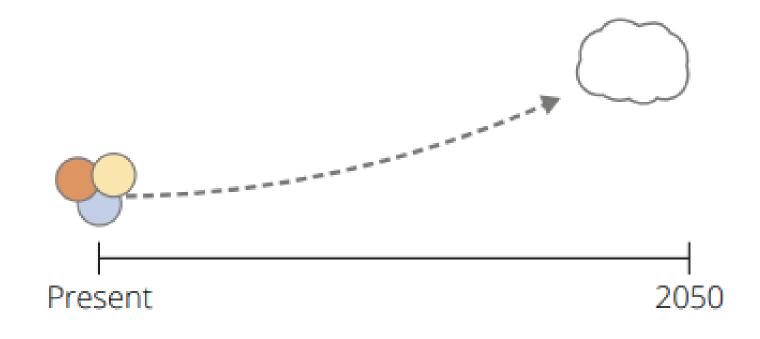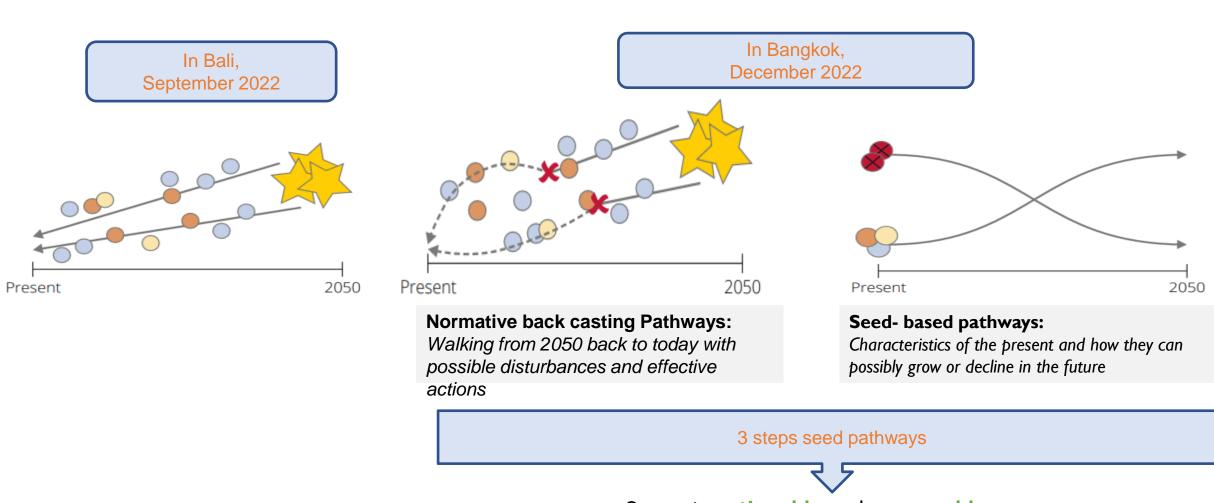
What are PATHWAYS?

- Normative pathways connect the future to the present through a sequence of concrete local actions.

- **Pathways as scenarios are not forecast**

- Pathways depict plausible path towards this transition to a resilient, biodiverse and pollution free agri- food systems

Present   2050

What type of pathways development ?

In Bali,
September 2022

In Bangkok,
December 2022

Present   2050

Present   2050

Present   2050

Normative back casting Pathways:
Walking from 2050 back to today with possible disturbances and effective actions

Seed- based pathways:
Characteristics of the present and how they can possibly grow or decline in the future

3 steps seed pathways

Concrete **actionable** and **measurable** interventions that form back casting pathway**S** from the future to the present
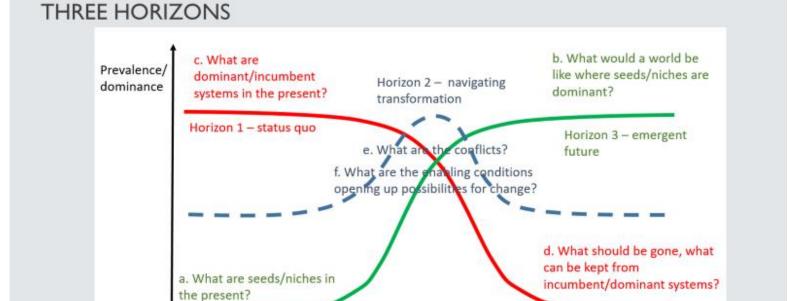
STEP 2

❑ What kind of enabling conditions exist that make is possible or easier to reach the future we WANT? (push factors)

    ❑ *Who is changing? Who are the influencers? Those that benefits the most?*

    ❑ *What kind of technologies need to become available and accessible ?*

    ❑ *What kind of institutional changes are required?*

    ❑ *What kind of cultural or social changes are required?*

❑ How can we reach the future we want by overcoming obstacles and making use of enabling conditions? What need to be done differently ?

Resilient biodiverse and pollution free agri-food systems that provide healthy and nutritious food by 2050

STEP 3

Review and complete the three horizons seeds pathways

- ❑ Add **actionable** and **measurable** actions that address the identified barriers of Step 1 in red

- ❑ Add **actionable** and **measurable** actions that address the emerging opportunity in Step 2 in green

- ❑ Discuss how you will monitor that those actions are implemented

- ❑ What is the current baseline?

THREE HORIZONS

Prevalence/dominance

c. What are dominant/incumbent systems in the present?

Horizon 1 – status quo

Horizon 2 – navigating transformation

b. What would a world be like where seeds/niches are dominant?

Horizon 3 – emergent future

e. What are the conflicts?

f. What are the enabling conditions opening up possibilities for change?

a. What are seeds/niches in the present?

d. What should be gone, what can be kept from incumbent/dominant systems?

Time

Prevalence/dominance

Urgency

Value chain

-Push Innovation and Research & Development

-Halt Deforestation

-Financing and implementation of NDCs
-Governments to recognize the role of Agriculture in Climate

- Low translation of the deforestation strategy into national policy
- Access innovation to land use
- Adoption rate of food safety and agri-food standards

Disaster risk management
- Logistic arrangement, food banks, share of food reserve, vaccines
- Important of herbs and medical plants
- Ecological balance

Resilient biodiverse and pollution free agri-food systems that provide healthy and nutritious food by 2050

Safety net from government
Establish model of collaboration
- Rice reserve platform
Food surplus: logistics for distribution and post-harvest processing
- Cultured of science and technology
- Ecommerce in agriculture
- Logistics, dispatch food to those affected
- Food reserved

- Digital and ecological transformation
- Machine learning, IoT, AI
- Creation of internet-based application
- Imposing ASEAN standard on GOP
- Harmonisation of food production traceability

✓ - Sustainable and nutritious food are accessible
✓ - Diet Change
✓ - Climate Pledges renewed

Barriers

Opportunities, enabling environment

- Innovation to agri is incentivised and food safety is implemented
- Translation into action the GCF and JEF program through regional and inception workshop
- Private sector support of GCF

-High emitting practices are subject to high taxes
-Climate smart practices are incentivized
-Sustainable and nutritious food are accessible

-Identify key technologies to be implemented
-Implement KJWA

- ASEAN common position for Sharm el-Sheikh
Joint work on implementation of climate action in agriculture and food
- By 2025 already achieving the NDCs and SDGs goal
- New technology in agri-food is developed

Present

2030

2050

Time

Modelling tools + **Key databases** + **Measurement, Reporting & Verification (MRV)**

=

More informed strategies for decarbonisation in agriculture

Modelling tools available: 13 modelling tools to measure transformative actions

Tool	Developers	Users
AFOLU Carbon Calculator	United States Agency for International Development (USAID)	Practitioner
Agriculture and Land Use National GHG Inventory and Mitigation Analysis Software Tool (ALU)	National Renewable Energy Laboratory (NREL)	Practitioner
Ex-Ante Carbon-balance Tool (EX-ACT)	Food and Agriculture Organization of the United Nations (FAO)	
FLINT: The Full Lands Integration Tool	Moja Global	Practitioner
Global Methane Initiative		Generalist, Practitioner, Specialist
Open Foris		Generalist, Practitioner, Specialist
Partnership on Transparency in the Paris Agreement		Generalist, Practitioner, Specialist
The Nationally Determined Contribution Expert Tool (NEXT)	Food and Agriculture Organization of the United Nations (FAO)	Practitioner
Addressing agriculture, forestry and fisheries in National Adaptation Plans – Supplementary guidelines	Food and Agriculture Organization of the United Nations (FAO)	Practitioner, Specialist
Climate Smart Agriculture Sourcebook		Generalist, Practitioner, Specialist
Enhancing NDCs: Opportunities in Agriculture	United Nations Development Programme (UNDP), World Resources Institute (WRI)	Practitioner
Enhancing NDCs: Opportunities in the Forest and Land-Use Sector	United Nations Development Programme (UNDP), World Resources Institute (WRI)	Practitioner
Five Practical Actions Toward Low-Carbon Livestock	Food and Agriculture Organization of the United Nations (FAO)	Practitioner, Specialist
Global Research Alliance on Agricultural Greenhouse Gases: Technical Manuals	Global Research Alliance on Agricultural Greenhouse Gases	Practitioner
Initiative for Climate Action Transparency (ICAT) Guidance for Assessing GHG Impacts of Agriculture Policies	Initiative for Climate Action Transparency (ICAT)	Generalist, Practitioner

Where to find key databases:

Nairobi Work Programme
Compendium on Methods & Tools (now included in the Adaptation Knowledge Portal)
Database on ecosystem-based approaches to Adaptation (now included in the Adaptation Knowledge Portal)
Database on best practices and available tools for the use of indigenous and traditional knowledge and practices for adaptation (now included in the Adaptation Knowledge Portal)
Database on the application of gender-sensitive approaches and tools for understanding and assessing impacts, vulnerability and adaptation to climate change(now included in the Adaptation Knowledge Portal)
NWP Adaptation practices interface (now included in the Adaptation Knowledge Portal)
NWP Partners and Pledges database (now included in the Adaptation Knowledge Portal)
Private Sector Initiative - database of action on adaptation
UNFCCC Local coping strategies database (now included in the Adaptation Knowledge Portal)
NWP partner's resources

National Adaptation Programmes of Action - matters relating to the least developed countries / LDC Expert Group
NAPA Priorities database
LDCF/NAPA Projects
UNFCCC Local coping strategies database (now included in the Adaptation Knowledge Portal)

Loss and Damage
Examples of existing institutional arrangements and measures in addressing loss and damage associated with climate change impacts
Organizations working on slow onset events and the scope of their current efforts

DB: organized collection of structured information/data for assessing net zero GHG emissions pathways

Measurement, Reporting & Verification (MRV)

Three types of MRVs

1. **MRV of GHG emissions**, conducted at national, organizational, and/or facility level to understand an entity's emissions profile and report it in the form of an emissions inventory.

2. **MRV of mitigation actions** (e.g., policies and projects) to assess their GHG effects and sustainable development (non-GHG) effects as well as to monitor their implementation. This type of MRV focuses on estimating the change in GHG emissions or other non-GHG variables.

3. **MRV of support** (e.g., climate finance, technology transfer, and capacity building) to track provision and receipt of climate support

| Determine baseline/ reference level | Collect and interpret data to calculate emission reductions achieved | Compile & represent data into report for submission to third-party | Accredited third-party audits submission | Standard-body certifies emission reduction |

MEASUREMENT   REPORTING   VERIFICATION

Key trends for next 30 years

With agriculture as the backbone of the economies of most ASEAN countries, it is imperative to understand potential threats and opportunities externally such as climate change, and internally with changing diets and economic priorities in production

Rice

- Demand for rice in Asia has been steadily decreasing
- Despite increased consumption from population growth, per-capita consumption has declined due to changes in dietary preferences
- By 2030, the expected 11.9% decline in per-capita consumption in Asia is projected to more than offset population growth and lead to overall 6.2% decline in rice consumption
- The trend in rice price will continue to increase until 2023, then the price is expected to decline to USD 476/tonne
- Effect of climate change: Increased CO_2 concentration rate may lead to higher rice yield but reduces grain protein; temperature rise induces higher protein but lower yields. Effects are highly variable and need to be further investigated

Triggers of transformation

- Changes in dietary preferences + increases in food prices → expansion of land used for crops as a percentage of total land area in most of ASEAN
- Percentage of agricultural land area in ASEAN increased from 20.2% to 29.4% during 1970-2011 while forest areas have declined significantly

Substitution of Cereals for Alternative Food Items

- Pronounced shift in Asian diets towards meat and dairy products is driving animal production in Asia
- This results in higher livestock density per hectare, exerting additional pressure on the environment and resources

Biofuel Production and Livestock Feed

- Arable lands increasingly being converted to other non-food uses that provide higher economic returns than from food production, e.g. biofuel production