

Mainstreaming Climate Change Adaptation and Mitigation into Sub-National's Medium & Long-Term Development Plan



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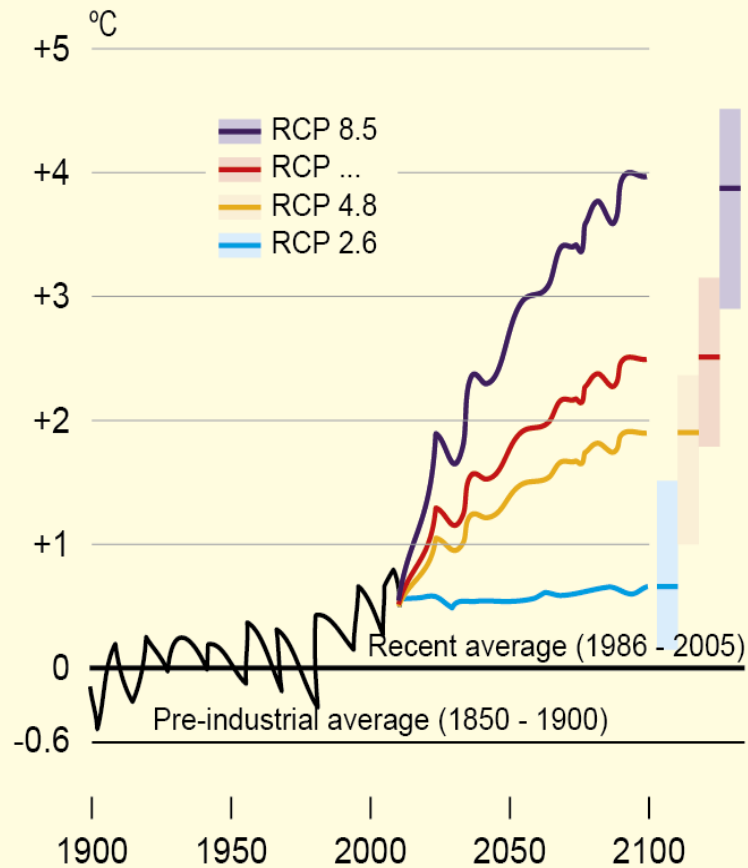
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Pan Pacific Hotel, Hanoi , 23-24 January 2019

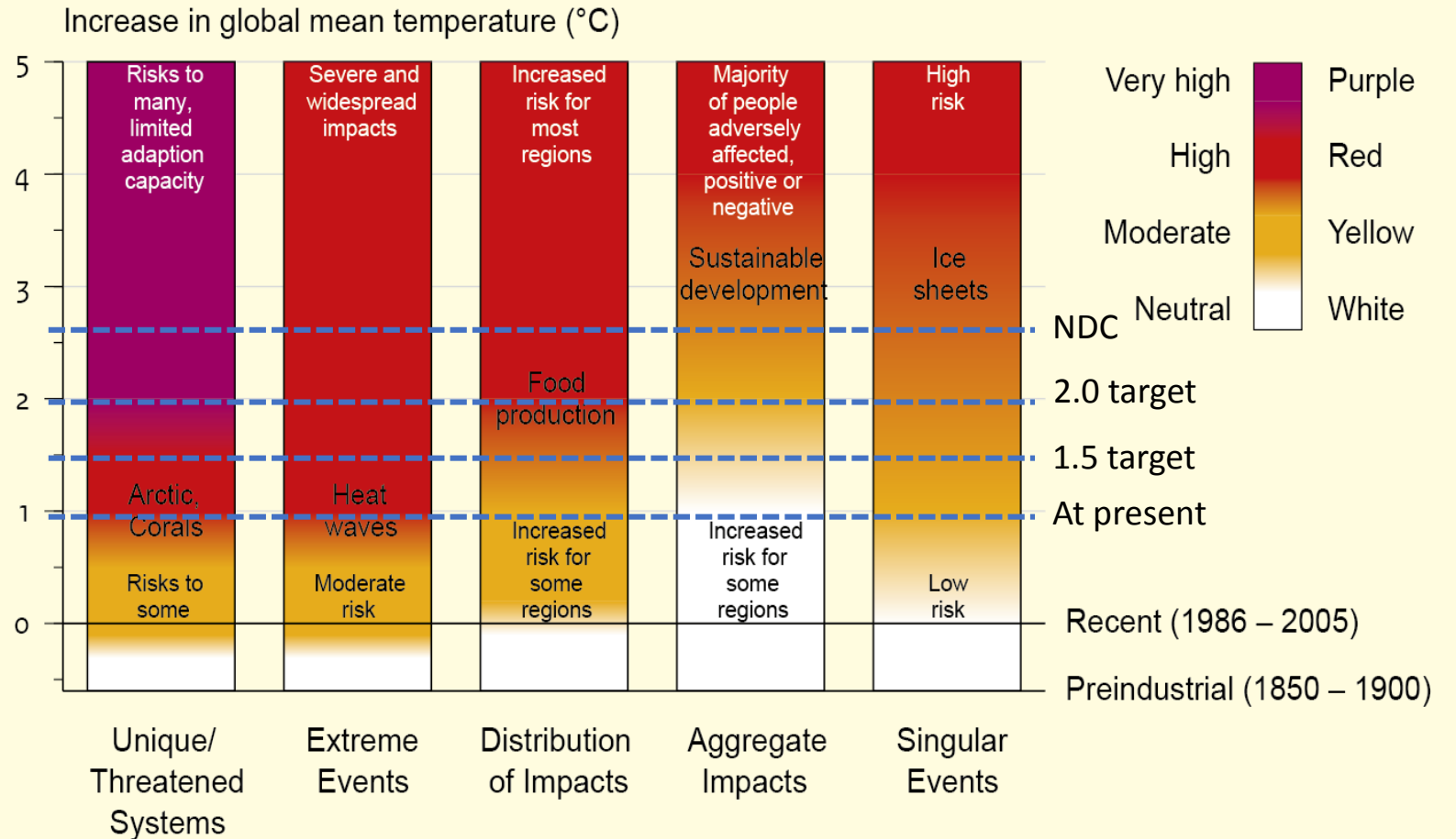
INTRODUCTION: Summary of WG 1 and WG 2

Temperature change and risks

Temperature



Impacts



Risks from Climate Change And The Potential For Risk Reduction Through Mitigation And Adaptation In Asia (Adapted from IPCC, 2014)

Type of Risk	Adaptation	At present	2030-2040	2080-2100 (2°C)	2080-2100 (4°C)
Crop failures and lower crop production	CA	M	M	H	H
	HA	L	L	M	H
Water shortage	CA	H	VH	VH	VH
	HA	M	H	H	H
Flooding in coastal, riverine, urban widespread and damage infrastructure	CA	M	M	H	VH
	HA	L	L	M	H
Flood-related death, injures, infectious diseases and mentak disorder	CA	L	M	M	H
	HA	L	L	L	M
Increase heat related mortality	CA	M	H	VH	VH
	HA	L	M	H	VH
Drought and food shortage leading to malnutrition	CA	L	M	M	H
	HA	L	L	L	M
Water and vector borne diseases	CA	L	M	M	H
	HA	L	L	L	M
Increase poverty, inequalities and new vulnerabilities	CA	H	H	H	VH
	HA	M	L	M	H
Coral reef beaching/decline	CA	M	H	VH	VH
	HA	M	M	H	VH
Mountain tip extinction	CA	L	M	M	H
	HA	L	M	M	M

Failure in mitigation will cause difficulties to manage risk event with high adaptation

Level of Risk

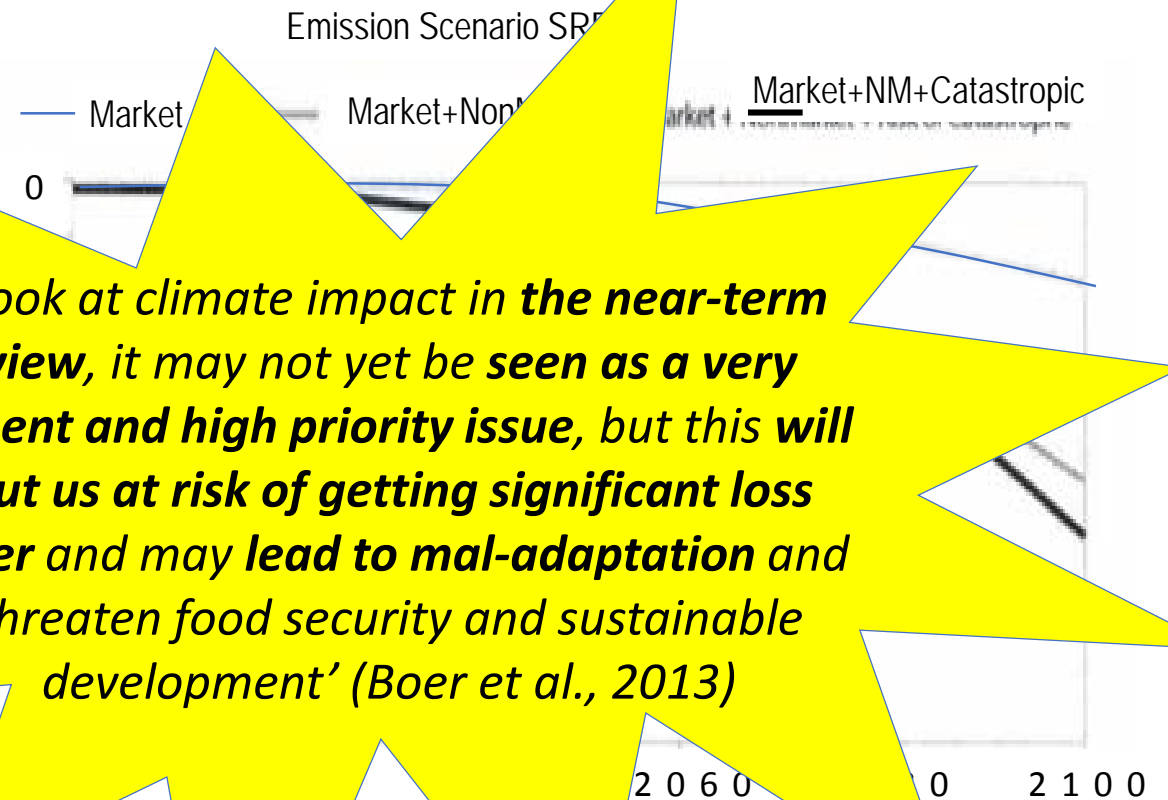
- Very high
- High
- Medium
- Low
- Very Low

CA Current Adaptation
HA High Adaptation

Economic Implication of Climate Change in Indonesia (no mitigation and adaptation efforts)

- Two types of impact are considered:
 - Market impact (on the agriculture sector and coastal zones); and
 - Non-market impact (on health and ecosystems)
 - Risk of catastrophic (only ice melting, excluding flash flood and others extreme events)
- Mean loss of 1.8% of gross domestic product (GDP) by 2100 on an annual basis, if market impact only, it is well above the world's 0.6%
- With non-market impact, the loss increased to 6% and with inclusion of catastrophic it increased to 7%, well above the world 2.2 and 2.6% respectively
- Early investment for adaptation about 0.2% of GDP could avoid damage amounting to 1.9% of the GDP by 2100 on annual basis

'Look at climate impact in the near-term view, it may not yet be seen as a very urgent and high priority issue, but this will put us at risk of getting significant loss later and may lead to mal-adaptation and threaten food security and sustainable development' (Boer et al., 2013)



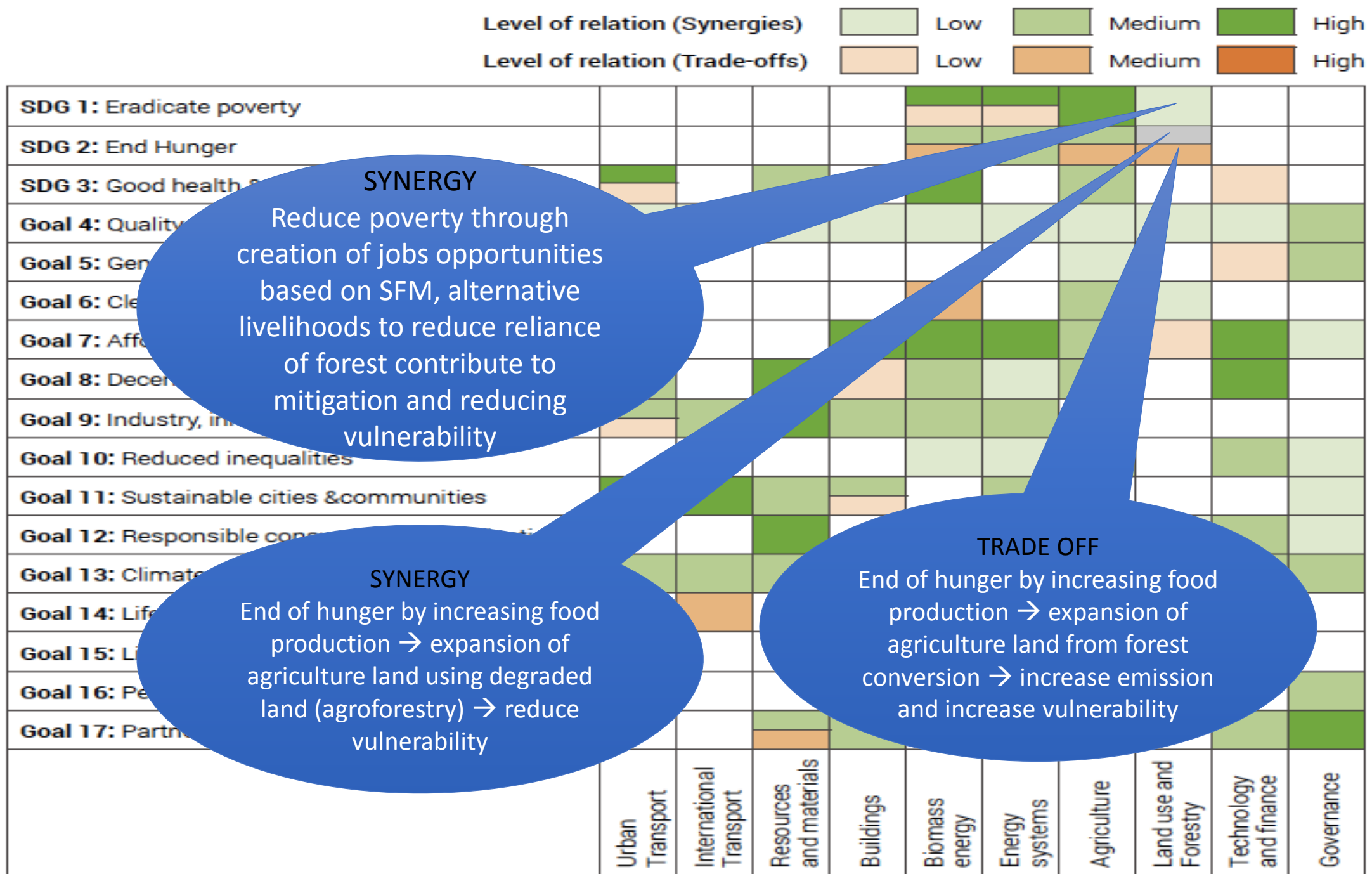
Using FCM model
(source: Suplachalasai et al. 2009)

Climate Change and Development

- Focus of sectoral program is to address development issues
- Program/actions implemented sometime is not designed directly to address the climate change issues
- Increase understanding that doing climate change actions (adaptation & mitigation) also address the development issues
- Addressing climate change is addressing development issues
- Many synergies exist between Climate Actions and SDGs.
Without synergy – results in trade offs

Level of relation between Climate

Actions and SDGs (modified from Kainuma et al. 2017)



SYNERGY
 Reduce poverty through creation of jobs opportunities based on SFM, alternative livelihoods to reduce reliance of forest contribute to mitigation and reducing vulnerability

SYNERGY
 End of hunger by increasing food production → expansion of agriculture land using degraded land (agroforestry) → reduce vulnerability

TRADE OFF
 End of hunger by increasing food production → expansion of agriculture land from forest conversion → increase emission and increase vulnerability

Figure 3.1 Level of relation between the 10 climate actions and other SDGs

Level of relation between Climate

Actions and SDGs (modified from Kainuma et al. 2017)

Level of relation (Synergies) Low Medium High

Level of relation (Trade-offs) Low Medium High

SDG / Goal	Urban Transport	International Transport	Resources and materials	Buildings	Biomass energy	Energy systems	Agriculture	Land use and Forestry	Technology and finance	Governance
SDG 1: Eradicate poverty					High Synergy	High Synergy	High Synergy	Low Trade-off		
SDG 2: End Hunger					High Synergy	High Synergy	High Synergy	Low Trade-off		
SDG 3: Good health & well-being							High Synergy		Low Trade-off	
Goal 4: Quality education							High Synergy		Low Trade-off	High Synergy
Goal 5: Gender equality							High Synergy		Low Trade-off	High Synergy
Goal 6: Clean water & sanitation							High Synergy		Low Trade-off	High Synergy
Goal 7: Affordable & clean energy						High Synergy	Low Trade-off	High Synergy	High Synergy	High Synergy
Goal 8: Decent work & economic growth						High Synergy		High Synergy		
Goal 9: Industry, innovation & infrastructure						High Synergy		High Synergy		
Goal 10: Reduced inequalities						High Synergy		High Synergy		
Goal 11: Sustainable cities & communities						High Synergy		High Synergy		
Goal 12: Responsible consumption & production						High Synergy		High Synergy		
Goal 13: Climate action						High Synergy		High Synergy		
Goal 14: Life below water								High Synergy		
Goal 15: Life on land	Low Trade-off	Low Trade-off						High Synergy		
Goal 16: Peace, Justice & strong institutions										High Synergy
Goal 17: Partnerships for the goals			Low Trade-off	High Synergy		High Synergy			High Synergy	High Synergy

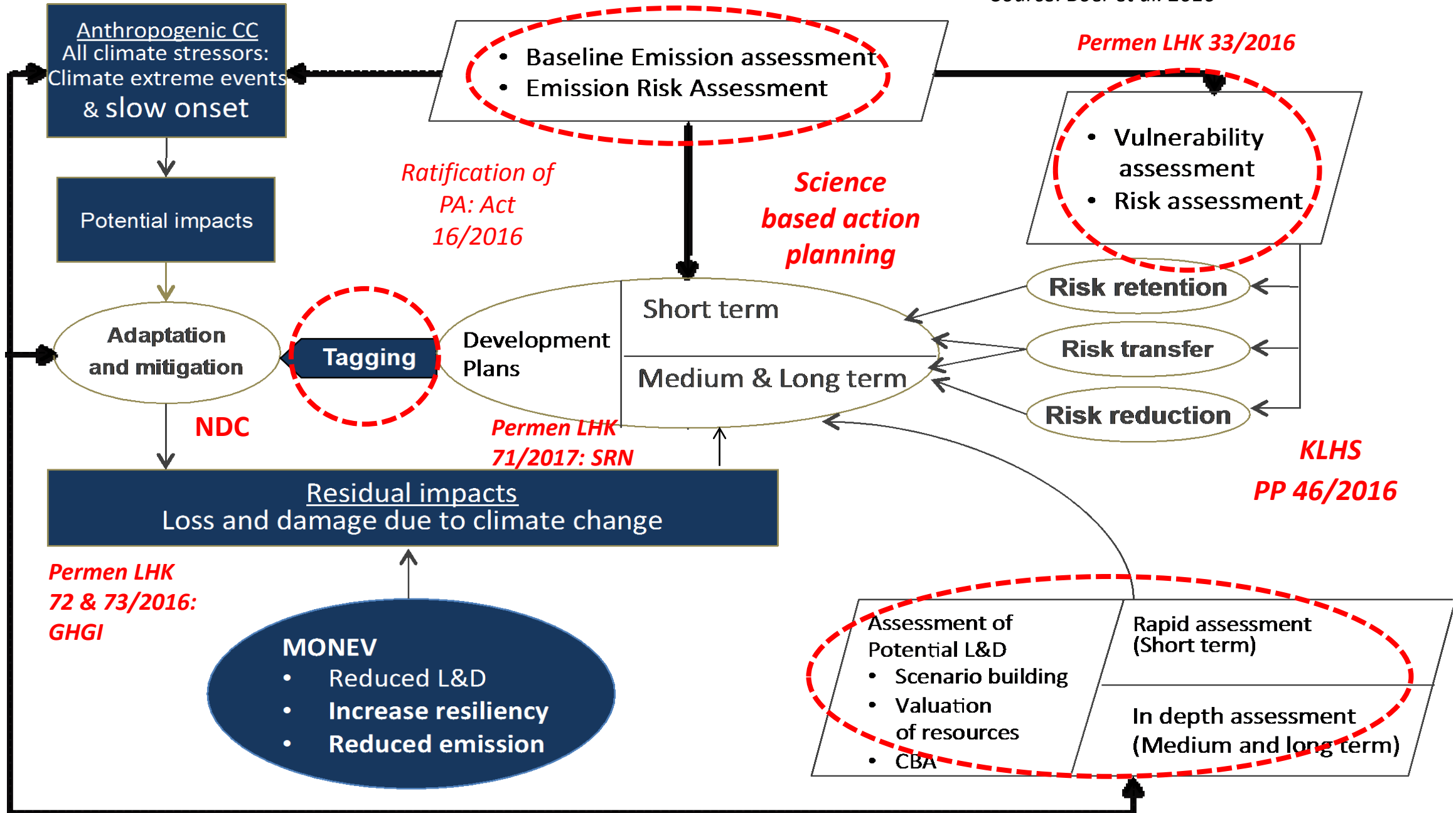
MULTIPLE SYNERGY
 Increasing use of unproductive land for development of agriculture plantation

- Reduce emission
- Improve ES
- Increase income
- End of hunger
- Improve biodiversity
- Overall, they will reduce vulnerability

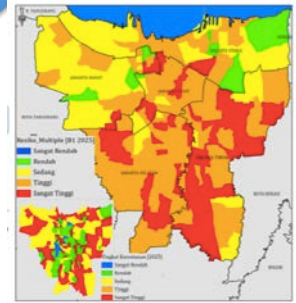
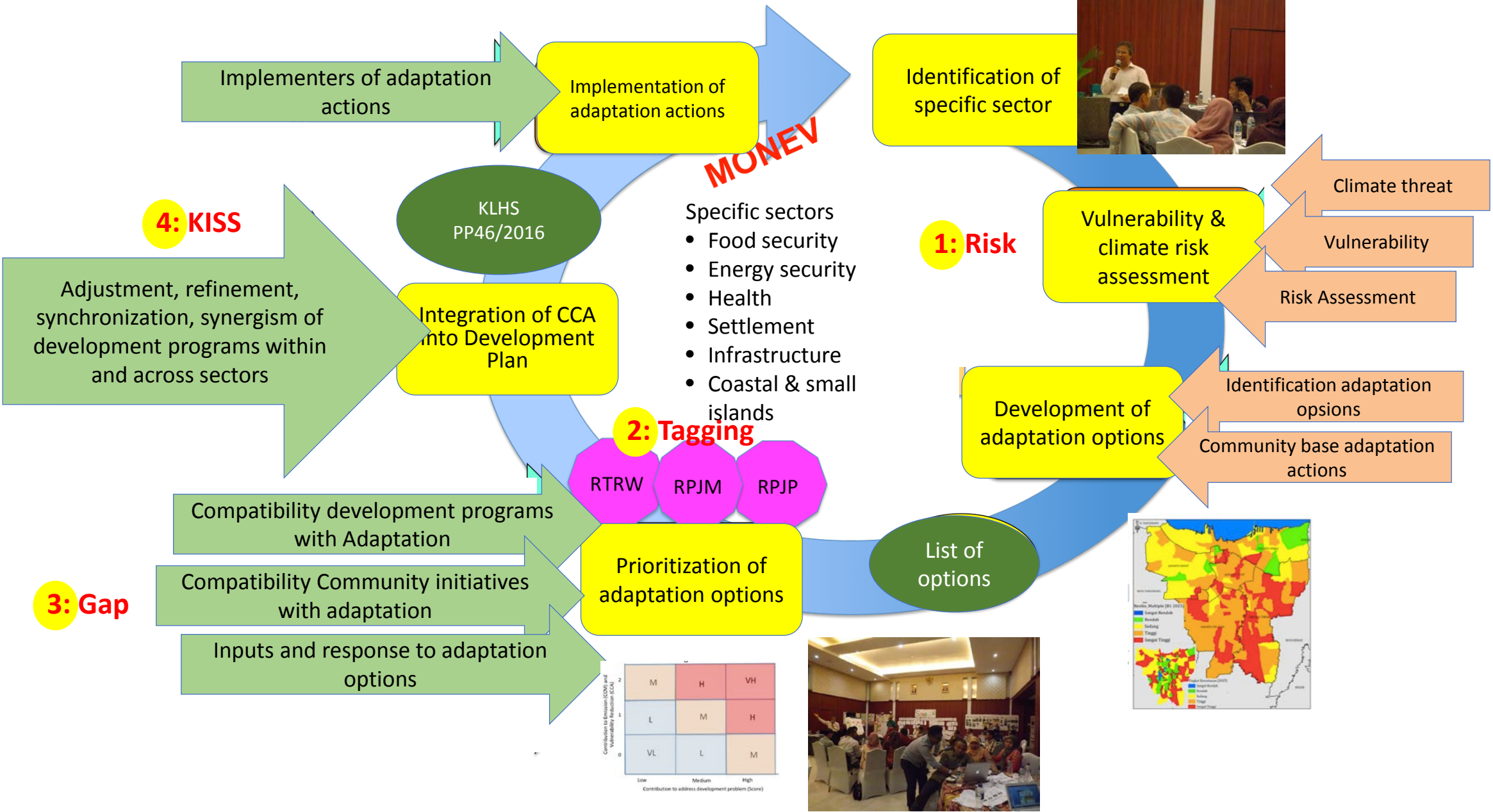
Figure 3.1 Level of relation between the 10 climate actions and other SDGs

FRAMEWORK FOR LOW CARBON AND CLIMATE RESILIENCE DEVELOPMENT

Source: Boer et al. 2016



Integration Process of CCA Plans into Regional Medium-Long Term Development Plan (RPJMD): Permen LHK No.33/2016



Process Integration CCA and SDGs in Development Plan

Source: Boer et al. 2016

1. Analysis of emission risk and cc vulnerability/impact – Mapping driving factors for emission and vulnerability & priority locations
2. Identification of Development Programs (*Tagging*) and its linkage with CC and SDGs
3. Gap Analysis for Program Enhancement, and establish synchronization & Synergy of Programs within and across sectors
4. Setting mechanisms for coordination on programs synergy, synchronization and integration and MRV



1: Analysis of emission risk and climate risk – Mapping driving factors for emission and vulnerability & priority locations

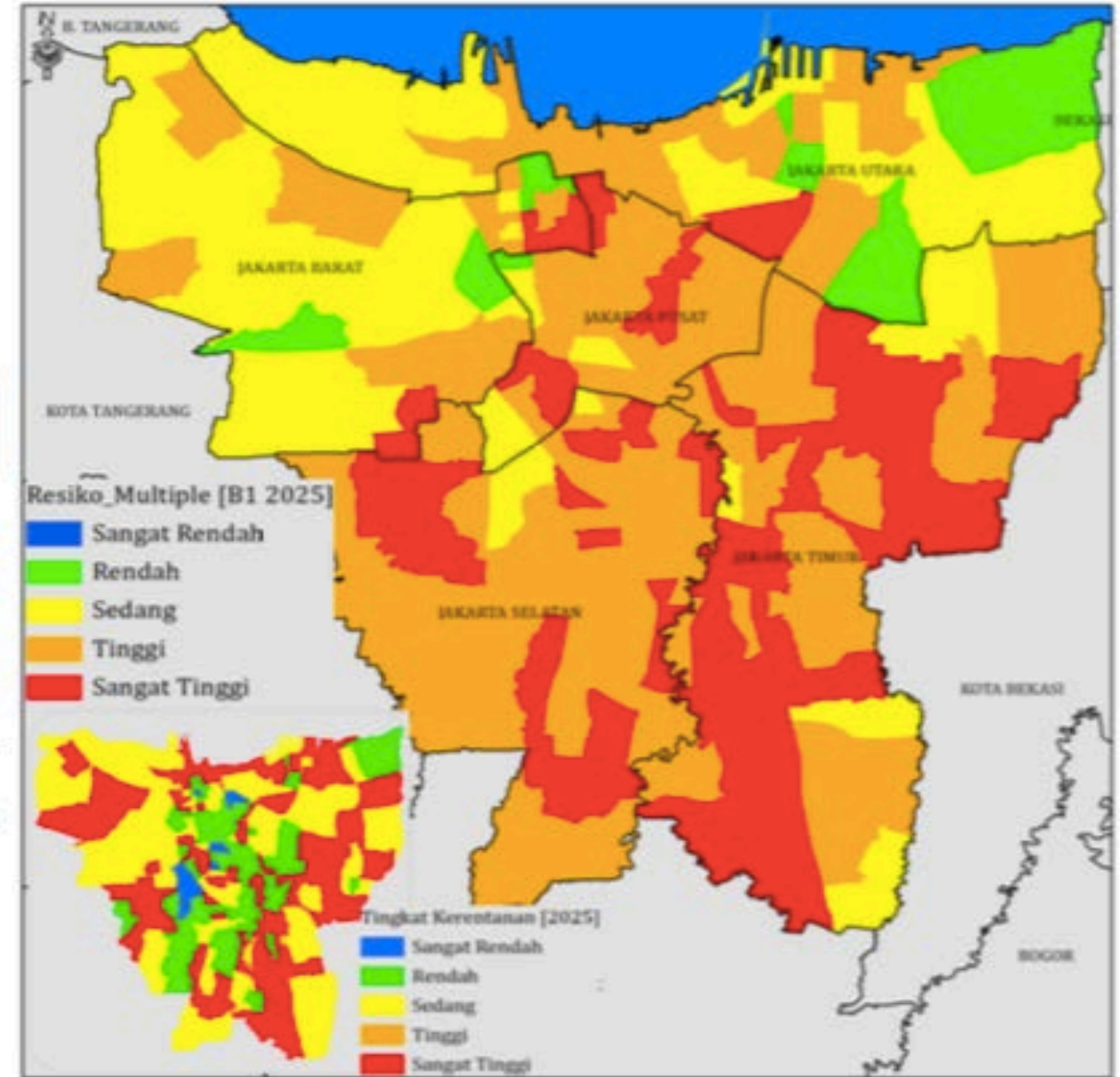
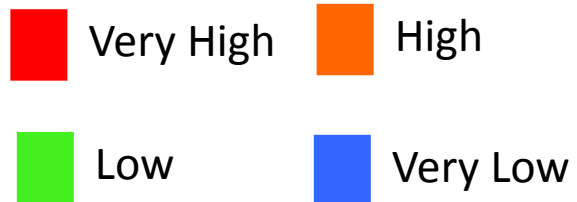
- Facilitating local governments to analyze historical and future emission trend and to understand drivers of emissions using tool (SIGN SMART: http://signsmart.menlhk.go.id/signsmart_new/web/home/) and vulnerability (SIDIK: <http://182.253.238.238/administrator/dashboard>)
- This process produces information on main driving factor & hot spot (*high risk*) area
- Two steps of analysis include
 - Assessing historical risks
 - Identifying drivers and hot spot areas (prioritizing locations for CCA&CCM) by evaluating future emission and climate risks



Climate risk assessment at village level (SIDIK), function of vulnerability and change of probability of extreme climate events

Prob. of ECE	Increase	Constant	Decrease
Vulnerability			
V. High	Very High	Very High	High
High	Very High	High	Medium
Medium	High	Medium	Low
Low	Medium	Low	Very Low
V. Low	Low	Very Low	Very Low

Level of Priority



SIDIK: <http://182.253.238.238/administrator/dashboard>

Sistem Informasi Data Indeks Kerentanan (2011) Server User Tamu

DASHBOARD Perhitungan Kerentanan

MASTER DATA TANGGAL: 28/06/2018

INDIKATOR WILAYAH: Prov. Sumatera Selatan

PERHITUNGAN UNIT PERHITUNGAN: Desa

Hasil Kerentanan 5 Kelas INDIKATOR: Indikator Nasional

Skenario: rcp45
Perhitungan #917

KERENTANAN **RINGKASAN** **PETA KERENTANAN** **PETA RISIKO**

Pilih Kategori: Kerentanan

Indeks Kapasitas Adaptif

Kategori	Nilai
Listrik	1.0
Pendidikan	0.4
Infrastruktur Jal	0.2
Fasilitas Kesehatan	0.2

IKA: 0.44

Indeks Keterpaparan dan Sensitivitas

Kategori	Nilai
KK Bantaran Sungai	1.0
Sumber Air Minum	0.4
Sumber Penghasilan Kemiskinan	0.2

IKS: 0.44

0 30 60km **Show/Hide Legend** POWERED BY Map data © OpenStreetMap contributors, CC-BY-SA



SIGN SMART
Direktorat Inventarisasi Gas Rumah Kaca dan
Monitoring, Pelaporan, dan Verifikasi

Beranda Emisi CRF EFDB Berita Download Tentang Kami

Selamat datang di website

Login SIGN SMART

Ketikkan username

Password



EMISI GAS RUMAH KACA INDONESIA 2013

KEMENTERIAN LINGKUNGAN HIDUP DAN KEHUTANAN REPUBLIK INDONESIA

SEKTOR KEHUTANAN



TOTAL EMISI
630.376,46
Gg CO₂eq

- DEKONPOSISI BAMBUT 360.189,21 Gg CO₂eq
- KEDAKARAN BAMBUT 205.175,38 Gg CO₂eq
- PERUBAHAN TUTUPAN LUKAH 65.111,85 Gg CO₂eq

SEKTOR ENERGI



TOTAL EMISI
548.204,71
Gg CO₂eq

- INDUSTRI PEMBAHAKIT 184.871,83 Gg CO₂eq
- INDUSTRI MANUFAKTUR & KONSTRUKSI 151.793,02 Gg CO₂eq
- TRANSPORTASI 138.327,21 Gg CO₂eq
- SEKTOR LAIN 43.823,46 Gg CO₂eq
- TAMBANG MINAS 17.468,02 Gg CO₂eq
- TAMBANG BATUBARA 1.823,87 Gg CO₂eq

SEKTOR LIMBAH



TOTAL EMISI
116.895,81
Gg CO₂eq

- LIMBAH CAKUP RUMAH TANGGA 28.387,19 Gg CO₂eq
- SAMPAH PADAT 21.886,22 Gg CO₂eq
- PEMBUKARAN SAMPAH 4.897,48 Gg CO₂eq
- PENDELAHAN BIOLOGIS/LIMBAH PADAT 236,53 Gg CO₂eq

SEKTOR PERTANIAN



TOTAL EMISI
95.715,44
Gg CO₂eq

- PENANJARAN PADI 38.889,38 Gg CO₂eq
- PETERNAKAN 26.118,23 Gg CO₂eq
- EMISI N2O 21.123,09 Gg CO₂eq
- POPUK ORGANIK 5.088,77 Gg CO₂eq
- PEMBUKARAN BIO MASSA 2.155,38 Gg CO₂eq
- PEMBUKARAN 1.818,87 Gg CO₂eq

SEKTOR INDUSTRI



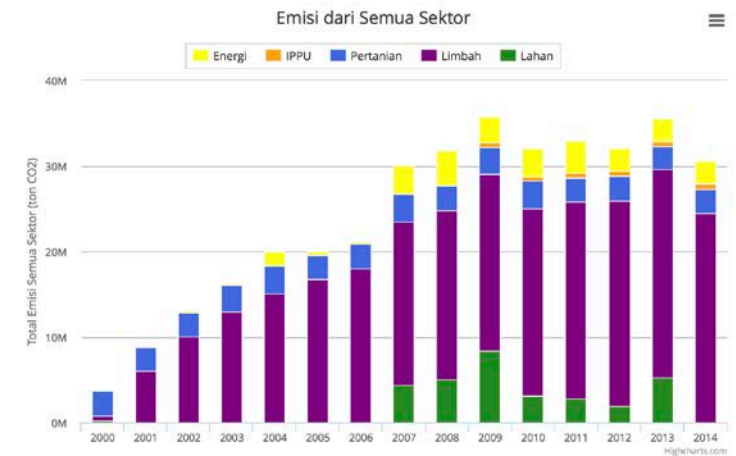
TOTAL EMISI
44.161,54
Gg CO₂eq

- INDUSTRI MINERAL 27.877,48 Gg CO₂eq
- INDUSTRI KIMIA 13.207,59 Gg CO₂eq
- INDUSTRI LEBAM 2.336,17 Gg CO₂eq
- BAHAN BAKAR NON-ENERGI 2.818,84 Gg CO₂eq
- SEKTOR LAIN 138 Gg CO₂eq

Total Emisi - Sektor Energi - Sektor IPPU - Sektor Pertanian - Sektor Kehutanan - Sektor Limbah

Grifik Total Emisi

Tampilkan Grifik: Aceh Semua Kota



Mapping Emission Risk: Land Base

Matrix of emission risks (historical emission)-Step 1

Rate	Trend		
	Increasing	Constant	Decreasing
High	VH (5)	H (4)	M (3)
Medium	H (4)	M (3)	L (2)
Low	M (3)	L (2)	VL (1)

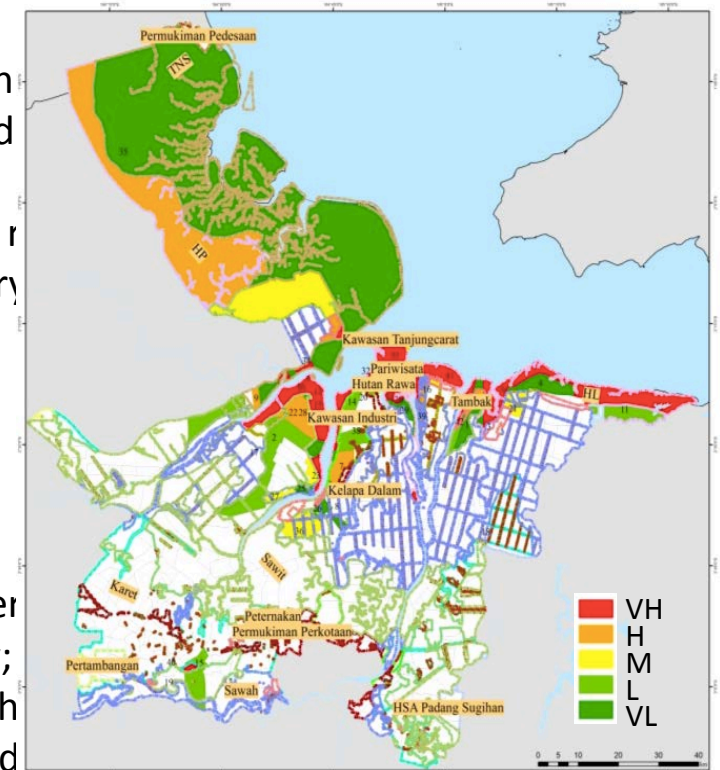


Location prioritization-Step 2

Level of risks (Historical)	Projection of emission		
	High	Medium	Low
Very high (5)	VH	VH	H
High (4)	VH	H	M
Medium (3)	H	M	L
Low (2)	M	L	VL
Very low (1)	L	VL	VL

Note:

- VH – Very High risks;
- H – High risk;
- M – Medium risk;
- L – Low risk;
- VL – Very low risk



Note:

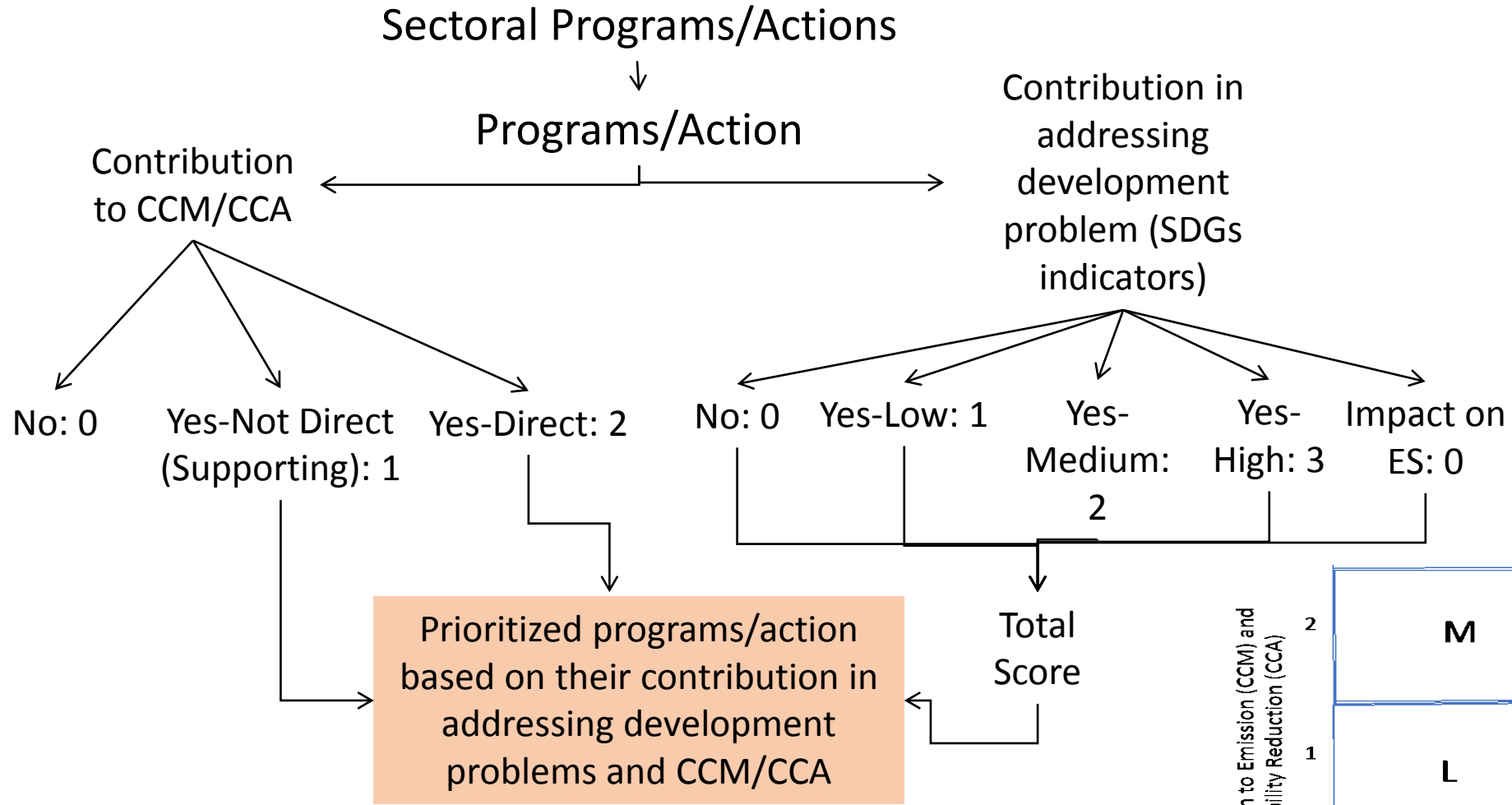
- VH – Very high priority;
- H – High priority;
- M – Medium priority;
- L – Low priority;
- VL – Very Low priority

2: Identification of Programs (*Tagging*)

- Assisting local governments
 - To better understand programs that will contribute to address not only development problems but also climate change mitigation and adaptation (CCM/CCA)
 - To evaluate their programs in term of their contribution in addressing development issues (poverty alleviation, livelihood, education, governance, infrastructure, health, etc) and climate change mitigation and adaptation (CCM/CCA) & co-benefit (ES)



2: Identification of Programs (*Tagging*)



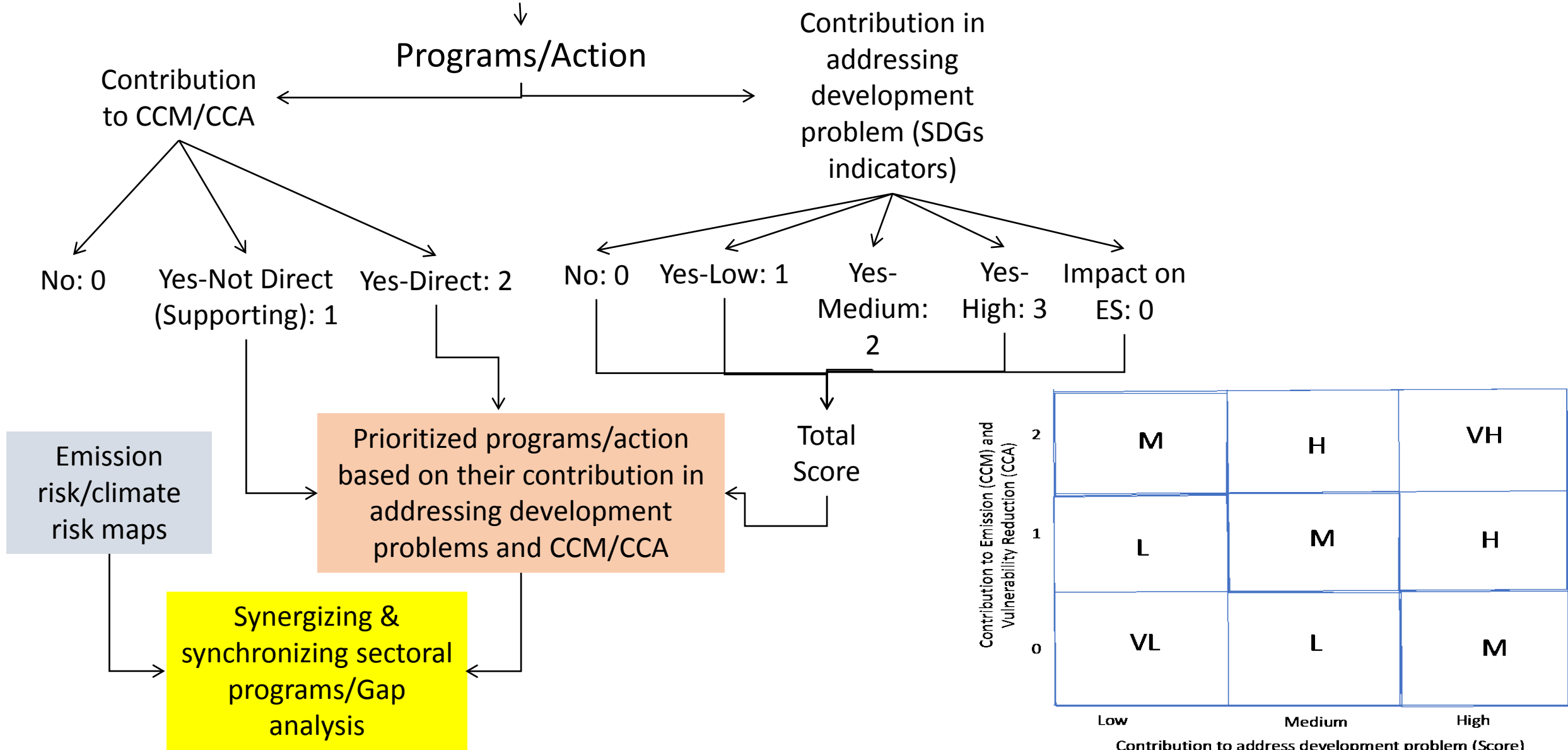
Contribution to Emission (CCM) and Vulnerability Reduction (CCA)

	2	M	H	VH
	1	L	M	H
	0	VL	L	M
		Low	Medium	High

Contribution to address development problem (Score)

3: Gap Analysis for Program Enhancement, and establish synchronization & Synergy of Programs within and across sectors

Sectoral Programs/Actions

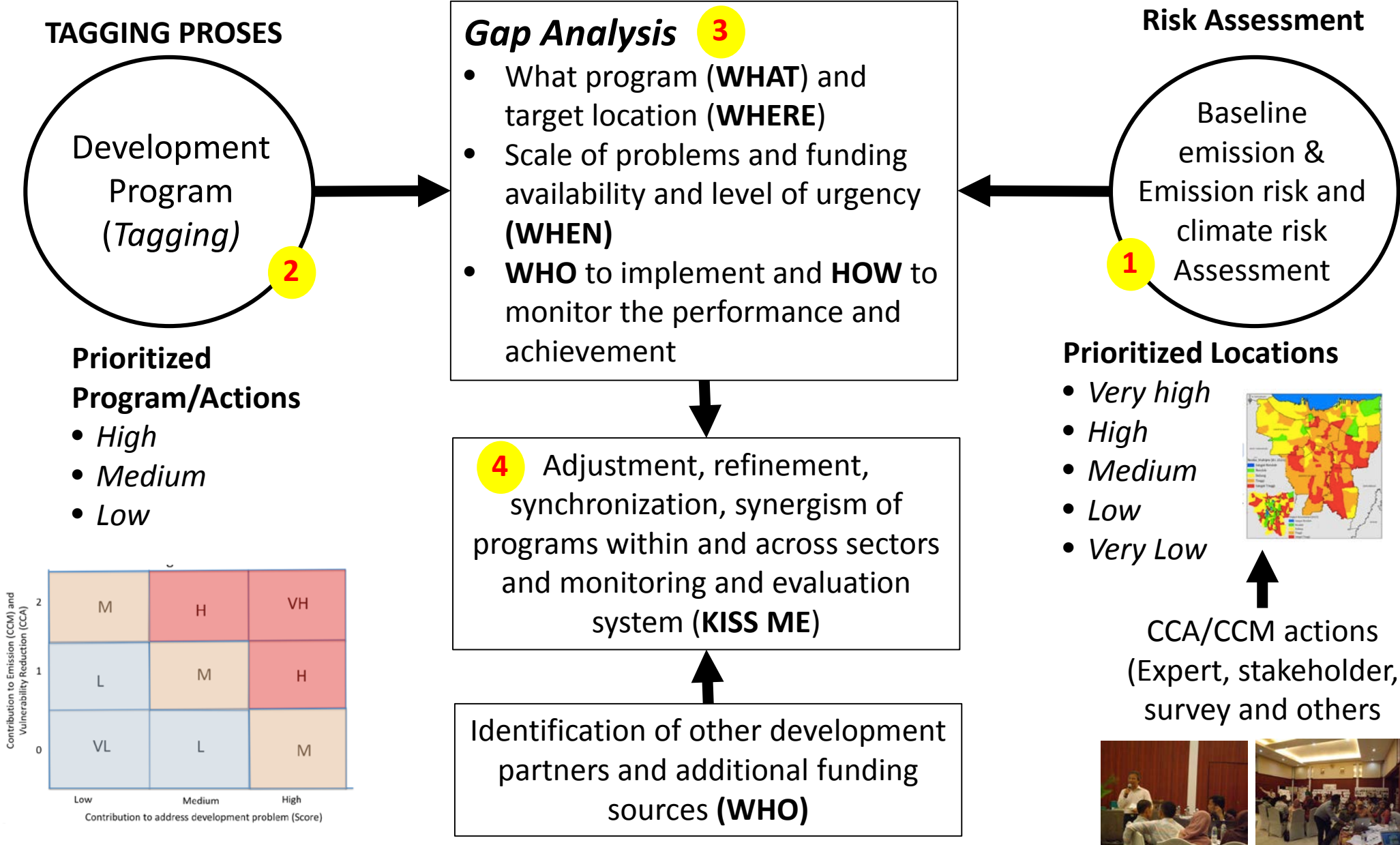


4: Setting mechanisms for coordination on programs synergy, synchronization and integration and MRV

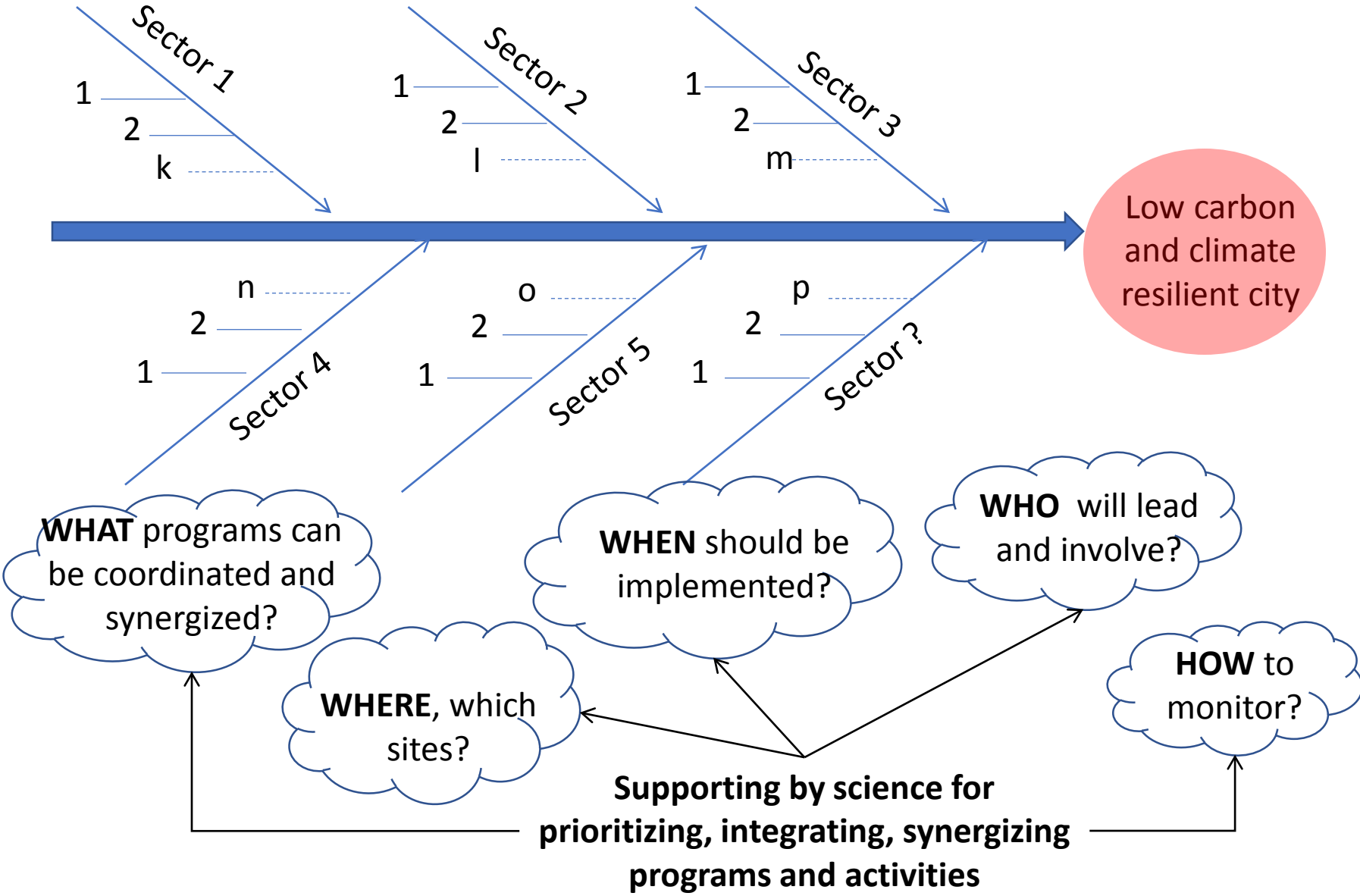
Planning Unit	Priority Locations	Main Program (PU)	Supporting Program (PP)	Beneficiaries	Main Agency and Supporting Agencies
Conservation zone	ST (1)	PU1	PP1, PP2, PP3 etc	Communities surrounding forest etc.	Agency A/Agencies B, C, D
Development zone	T (2)	PU2	PP1, PP2,	Masyarakat sekitar hutan	Agency B/Agencies A, D, F
Etc	Etc	Etc	Etc	Etc	Agency C/Private-y
...



Four Steps: Integration Process of CCA and CCM Action Plans into Regional Medium-Long Term Development Plan (RPJMD): Permen LHK No.33/Menlhk/Setjen/Kum.1/3/2016



Coordinating, Synergizing, integrating Programs and activities across sector and partners that contribute toward low carbon and climate resilience development



Epilogue

- Availability of tool is very useful for assisting the local government in the process of synchronizing climate actions and SDGs
 - Increasing understanding on linkage between climate actions and SDGs
 - Designing short-medium and long-term strategy for addressing development issue but also GHG emission and climate risk under multi-stakeholder setting
 - Facilitating process of synergizing, synchronizing and integrating sectoral programs
 - Facilitating coordinated actions in addressing the development problems and implementing low carbon and climate resilience development
 - Assisting in defining funding needs toward low carbon development and climate resilience development