ADAPTATION SCIENCE AND POLICY STUDY
BOOK 2 : ANNEXES

JULY, 2010

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Table of Contents

Codes and References

NO.	CODE	DOCUMENT
1	CC-F	SEAMEO BIOTROP, 2008, *Relationship of Climate Change and Strategic Food Production.*
2	CCPI	Santoso, H. & Forner, 2006, Climate Change Projections for Indonesia, *Center for International Forestry Research: Tropical Forests and Climate Change Adaptation.*
3	CSI	Ministry of Marine and Fisheries (DKP), 2008, *Strategies of Disaster Adaptation and Mitigation for Coastal and Small Islands Due to Climate Change.*
4	ICCSR-AS	National Development Planning Agency (Bappenas), 2010*, Indonesia Climate Change Sectoral Roadmap: Agriculture Sector.*
5	ICCSR-HS	National Development Planning Agency (Bappenas), 2010*, Indonesia Climate Change Sectoral Roadmap: Health Sector.*
6	ICCSR-MFS	National Development Planning Agency (Bappenas), 2010, *Indonesia Climate Change Sectoral Roadmap: Marine and Fisheries Sector*.
7	ICCSR-SB	National Development Planning Agency (Bappenas), 2010, *Indonesia Climate Change Sectoral Roadmap: Science Basis-1 & Science Basis-2*.
8	ICCSR-WS	National Development Planning Agency (Bappenas), 2010, *Indonesia Climate Change Sectoral Roadmap: Water Sector*.
9	ICR	Ministry of Environment (KLH) & Ministry of Public Works (PU), 2007, *Indonesia Country Report: Climate Variability and Climate Change, and Their Implication.*
10	IPCC AR4 (Science Basis)	IPCC, *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller, Eds., Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
11	IPCC AR4 (Sectoral Aspects)	IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,* M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK.
12	IPCC AR5	IPCC, 2010, *Potential Regional Participation in the IPCC's Fifth Assessment: Information-Sharing Workshop, Background Information* (Rev. 16/1/2010)
13	Jakstra	Ministry of Public Works (PU), 2008, *Policies and Strategies of Spatial Planning for Climate Change Mitigation and Adaptation.*

NO.	CODE	DOCUMENT
14	PIT-PI	Ministry of Environment (KLH) & National Council on Climate Change (DNPI), 2009, *Preparation of Thematic Information to Anticipate Climate Change Impact to National Priority Issues on Food, Health, and Extreme Climate Phenomena Sectors.*
15	PNAS	Naylor, et. al., 2006, Assessing Risks of Climate Variability and Climate Change for Indonesian Rice Agriculture, *Proceedings of the National Academy of Sciences of the United States of America.*
16	RAN-MAPI	Ministry of Public Works (PU), 2007, *National Action Plan of Climate Change Mitigation and Adaptation.*
17	RAN-PI	Ministry of Environment (KLH), 2007, *National Action Plan in Facing Climate Change.*
18	SLRJ	Hadi, S. for Ministry of Environment (KLH), 2007, *Impact of Sea Level Rise in Northern Coast of Jakarta and Kepulauan Seribu.*
19	SNC	Ministry of Environment (KLH), 2010, *Second National Communication.*
20	STI-CC	Assessment and Application of Technology Agency (BPPT), 2009, *Science and Technology Identification upon the Impacts of Climate Changes in Marine Sector: Observation, Identification, and Model Simulation for Predicting Temperature and Sea Level Rises in Indonesia.*
21	STRAPI	Ministry of Health (Depkes), 2010, *Adaptation Strategy for Climate Change in Health Sector.*
22	VA Lombok-CMS	Ministry of Environment (KLH) & GTZ , 2010, *Study of Vulnerability and Risk to Climate Change for Lombok Island: Coastal and Marine Sector.*
23	VA Lombok-WS	Ministry of Environment (KLH) & GTZ , 2010, *Study of Vulnerability and Risk to Climate Change for Lombok Island: Water Sector.*

Aspect-1: Science Basis

Aspect-1 : **Science Basis**
Document-1 : ICCSR-SB
Assessors : Dr. Ibnu Sofian & M. S. Fitriyanto, M. Sc.

LEGEND
- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	No. of Book	Comment	Rating
1	Introduction							
2	Observation: atmosphere and surface	Changes in surface climate: temperature	Land temperature		NA			x
			Air temperature		A	SB-1: chap. 4	GHCN data	●
			Ocean temperature		A	SB-2: Fig. 2.1	NOAA-OI data	●
		Changes in surface climate: precipitation, drought and surface hydrology	Precipitation		A	SB-1: chap. 4, SB-2: Fig. 2.2	Data from GHCN, GPCC, TRMM	●
			Evapotranspiration		NA			x
			Changes in soil moisture, drought, runoff, and river discharge		A	SB-1: chap. 4	Only for drought	o
		Changes in the free atmosphere	Temperature of the upper air: troposphere and stratosphere		NA			x
			Water vapor		NA			x
			Clouds		NA			x
			Radiation		NA			x
		Changes in atmospheric circulation	Surface or sea level pressure		NA			x
			Geopotential height, winds, and the jet stream		NA			x
			Storm tracks		NA			x
			Blocking		NA			x
			The stratosphere		NA			x
			Winds, waves, and surface fluxes		A	SB-2: Fig. 2.1, 2.6	Winds (Quick Scat) and waves (altimeter SWH)	o
		Patterns of atmospheric circulation	Teleconnections		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	No. of Book	Comment	Rating
		variability	El Niño-Southern Oscillation and tropical/extratropical interactions		A	SB-1: chap. 4	Only for ENSO	o
			Pacific decadal variability		NA			x
			Other oscillations and modes		A	SB-1: chap. 4	Indian Ocean Dipole Mode	o
		Changes in the tropics and subtropics, and in the monsoons	Changes in the tropics		NA			x
			Changes in the monsoons		A	SB-1: chap. 4		●
		Changes in extreme events	Evidence for changes in variability or extremes		NA			x
			Evidence for changes in tropical storms		NA			x
			Evidence for changes in extratropical storms and extreme event		NA			x
3	Observation: ocean	Changes in global-scale temperature and salinity	Sea surface temperature (SST)		A	SB-2: Fig. 2.1	NOAA-OI data	●
			Surface heat flux		NA			x
			Salinity		NA			x
		Regional changes in ocean circulation and water masses	Ocean surface current		A	SB-2: Fig. 2.3, 2.4	HYCOM Model	o
			Ocean circulation		A	SB-2: Fig. 2.3, 2.4	HYCOM Model	o
			Extreme events		A	SB-2: sub chap. 5.2.2	ENSO and extreme waves	●
		Changes in ocean biochemical	Ocean acidification		NA			x
			Oxygen concentration		NA			x
			Nutrient		A	SB-2: Fig 2.7, sub chap. 5.3	Only for Chlor-a (MODIS and Seawifs data)	o
			Disolved inorganic carbon		NA			x
4	Observation: cryosphere	The cover changes of snow, river and lake ice, sea ice, glaciers and ice caps, ice shelves and ice sheets, and frozen	Changes in snow cover		NA			-
			Changes in river and lake ice		NA			-

No.	Component	Theme	Indicator	Appraisal	Availability	No. of Book	Comment	Rating
		ground	Changes in sea ice		NA			-
			Changes in glaciers and ice caps		A	SB-2: sub chap. 4.2.2	Only at Jaya-wijaya mountain, implicit in the post IPCC-AR4 scenario for SLR	o
			Changes and stability of ice sheets and ice shelves		A	SB-2: sub chap. 4.2.2	Based on USGS (2009)	●
			Changes in frozen ground		NA			-
5	Information from paleoclimate archives	"Climate system changes over interannual to millennial time scales: 1. Pre-Quaternary Climates 2. Glacial-Interglacial Variability and Dynamics 3. Current Interglacial 4. Last 2,000 Years"	CO2 concentration		NA			x
			Air temperature		NA			x
			Sea surface temperature (SST)		A	SB-2: Fig. 4.1	From: Hansen, 2006	o
			Ice-snow cover		NA			x
			Solar radiative forcing		NA			x
			Sea level change		NA			x
			Abrupt climate change		NA			x
6	Carbon and other biogeochemical cycle	Carbon cycle	Terrestrial carbon flux		NA			x
			Ocean carbon flux		NA			x
		Chemically and Radiatively Important Gases	Atmospheric Carbon Dioxide		NA			x
			Atmospheric Methane		NA			x
			Ozone		NA			x
			Stratospheric Water Vapor		NA			x
		Reactive Gases and the Climate System	Methane		NA			x
			Nitrogen Compound		NA			x
			Molecular Hydrogen		NA			x
			Global Tropospheric Ozone		NA			x
			Hydroxil Radical		NA			x
			Stratospheric Ozone		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	No. of Book	Comment	Rating
7	Clouds and aerosols	Aerosol Estimates	Developments related to Aerosol Observations		NA			x
			Modeling the Aerosol Direct Effect		NA			x
			Estimates of Aerosol Direct Radiative Forcing		NA			x
			Aerosol Influence on Clouds		NA			x
		Aerosol Particles and the Climatic System	Aerosol emission and burdens affected by climatic factors		NA			x
			Indirect effects of Aerosol on Clouds and Precipitation		NA			x
			Effects of Aerosol and Clouds on Solar Radiation at the Earth's Surface		NA			x
			Effects of Aerosols on Circulation Patterns		NA			x
8	Anthropogenic and natural radiative forcing	Anthropogenic changes in surface albedo and the surface energy budget	Radiative forcing by anthropogenic surface albedo change: land use		NA			x
			Radiative forcing by anthropogenic surface albedo change: black carbon in snow and ice		NA			x
			Other Effects of Anthropogenic Changes in Land Cover		NA			x
			Tropospheric water vapor from anthropogenic sources		NA			x
			Anthropogenic heat release		NA			x
			Effects of carbon dioxide changes on climate via plant physiology: 'physiological forcing'		NA			x
		Natural forcing	Solar variability		NA			x
			Explosive volcanic activity		NA			x
9	Evaluation of climate models	Use of models	Climate		A	SB-1: chap. 4	Only for air temperature and precipitation	o
			Monsoon variability		A	SB-2: Chap. 5	Based on MRI model	•
			Decadal variability		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	No. of Book	Comment	Rating
			Multi decadal variability		NA			x
			Madden Julian Oscillation		NA			x
			Interannual variability (ENSO)		A	SB-2: Fig 3.6	Based on NOAA-OI SST in NINO3	●
10	Detection and attribution of climate change: from global to regional				NA			x
11	Near-term climate change: projections and predictability				A	SB-1: chap. 4, SB-2: chap. 4	Hindcasting from rainfall and sea-level data	o
12	Long-term climate change: projections, commitments, and Irreversibility				A	SB-1: chap. 4, SB-2: Fig. 4.4, Chap 5	Rainfall change, SST rise, ENSO till 2100 based on IPCC SRES a1b	o
13	Sea level changes	Changes in sea level	Observation: Tide gauge		A	SB-2: Fig 3.1	UHSLC data	●
			Observation: Altimeter		A	SB-2: Fig 2.3, 2.4	AVISO data	●
			Model-estimated sea level rise		A	SB-2: Chap. 4	From several model with IPCC SRES a1b	●
			Ocean Density Changes		NA			x
			Regional Variations in the Rate of Sea Level Change		NA			x
			Ocean Mass Changes		NA			x

Aspect-1 : **Science Basis**
Document-2 : SNC
Assessors : Dr. Ibnu Sofian & M. S. Fitriyanto, M. Sc.

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
1	Introduction							
2	Observation: atmosphere and surface	Changes in surface climate: temperature	Land temperature		NA			x
			Air temperature		A			o
			Ocean temperature		A			●
		Changes in surface climate: precipitation, drought and surface hydrology	Precipitation		A			●
			Evapotranspiration		NA			x
			Changes in soil moisture, drought, runoff, and river discharge		NA			x
		Changes in the free atmosphere	Temperature of the upper air: troposphere and stratosphere		NA			x
			Water vapor		NA			x
			Clouds		NA			x
			Radiation		NA			x
		Changes in atmospheric circulation	Surface or sea level pressure		NA			x
			Geopotential height, winds, and the jet stream		NA			x
			Storm tracks		NA			x
			Blocking		NA			x
			The stratosphere		NA			x
			Winds, waves, and surface fluxes		NA			x
		Patterns of atmospheric circulation variability	Teleconnections		NA			x
			El Niño-Southern Oscillation and tropical/extratropical interactions		A	Page 9-11	Only for ENSO	o
			Pacific decadal variability		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Other oscillations and modes		NA			x
		Changes in the tropics and subtropics, and in the monsoons	Changes in the tropics		NA			x
			Changes in the monsoons		NA			x
		Changes in extreme events	Evidence for changes in variability or extremes		NA			x
			Evidence for changes in tropical storms		NA			x
			Evidence for changes in extratropical storms and extreme event		NA			x
3	Observation: ocean	Changes in global-scale temperature and salinity	Sea surface temperature (SST)		NA			x
			Surface heat flux		NA			x
			Salinity		NA			x
		Regional changes in ocean circulation and water masses	Ocean surface current		NA			x
			Ocean circulation		NA			x
			Extreme events		NA			x
		Changes in ocean biochemical	Ocean acidification		NA			x
			Oxygen concentration		NA			x
			Nutrient		NA			x
			Disolved inorganic carbon		NA			x
4	Observation: cryosphere	The cover changes of snow, river and lake ice, sea ice, glaciers and ice caps, ice shelves and ice sheets, and frozen ground	Changes in snow cover		NA			-
			Changes in river and lake ice		NA			-
			Changes in sea ice		NA			-
			Changes in glaciers and ice caps		NA			-
			Changes and stability of ice sheets and ice shelves		NA			-
			Changes in frozen ground		NA			-
5	Information from	"Climate system changes over	CO2 concentration		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
	paleoclimate archives	interannual to millennial time scales: 1. Pre-Quaternary Climates 2. Glacial-Interglacial Variability and Dynamics 3. Current Interglacial 4. Last 2,000 Years"	Air temperature		NA			x
			Sea surface temperature (SST)		NA			x
			Ice-snow cover		NA			x
			Solar radiative forcing		NA			x
			Sea level change		NA			x
			Abrupt climate change		NA			x
6	Carbon and other biogeochemical cycle	Carbon cycle	Terrestrial carbon flux		NA			x
			Ocean carbon flux		NA			x
		Chemically and Radiatively Important Gases	Atmospheric Carbon Dioxide		A	Page 4-7		•
			Atmospheric Methane		NA			x
			Ozone		NA			x
			Stratospheric Water Vapor		NA			x
		Reactive Gases and the Climate System	Methane		NA			x
			Nitrogen Compound		NA			x
			Molecular Hydrogen		NA			x
			Global Tropospheric Ozone		NA			x
			Hydroxil Radical		NA			x
			Stratospheric Ozone		NA			x
7	Clouds and aerosols	Aerosol Estimates	Developments related to Aerosol Observations		NA			x
			Modeling the Aerosol Direct Effect		NA			x
			Estimates of Aerosol Direct Radiative Forcing		NA			x
			Aerosol Influence on Clouds		NA			x
		Aerosol Particles and the Climatic System	Aerosol emission and burdens affected by climatic factors		NA			x
			Indirect effects of Aerosol on Clouds and Precipitation		NA			x
			Effects of Aerosol and Clouds on Solar Radiation at the Earth's Surface		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Effects of Aerosols on Circulation Patterns		NA			x
8	Anthropogenic and natural radiative forcing	Anthropogenic changes in surface albedo and the surface energy budget	Radiative forcing by anthropogenic surface albedo change: land use		NA			x
			Radiative forcing by anthropogenic surface albedo change: black carbon in snow and ice		NA			-
			Other Effects of Anthropogenic Changes in Land Cover		NA			x
			Tropospheric water vapour from anthropogenic sources		NA			x
			Anthropogenic heat release		NA			x
			Effects of carbon dioxide changes on climate via plant physiology: 'physiological forcing'		NA			x
		Natural forcing	Solar variability		NA			x
			Explosive vulcanic activity		NA			x
9	Evaluation of climate models	Use of models	Climate		A	Page 13-15	Only for precipitation	o
			Monsoon variability		A	Page 9-11	Only shows the impact	o
			Decadal variability		NA			x
			Multi decadal variability		NA			x
			Madden Julian Oscilation		NA			x
			Interannual variability (ENSO)		A	Page 9-11	Only shows the impact	o
10	Detection and attribution of climate change: from global to regional				NA			x
11	Near-term climate change: projections and predictability				NA			x
12	Long-term climate change: projections, commitments, and Irreversibility				NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
13	Sea level changes	Changes in sea level	Observation: Tide gauge		A			•
			Observation: Altimeter		NA			x
			Model-estimated sea level rise		A		From several models	•
			Ocean Density Changes		NA			x
			Regional Variations in the Rate of Sea Level Change		NA			x
			Ocean Mass Changes		NA			x

Aspect-1 : **Science Basis**
Document-3 : PNAS
Assessor : M. S. Fitriyanto, M. Sc.

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
1	Introduction							
2	Observation: atmosphere and surface	Changes in surface climate: temperature	Land temperature		NA			x
			Air temperature		A		From global models	o
			Ocean temperature		NA			-
		Changes in surface climate: precipitation, drought and surface hydrology	Precipitation		A			●
			Evapotranspiration		NA			x
			Changes in soil moisture, drought, runoff, and river discharge		NA			x
		Changes in the free atmosphere	Temperature of the upper air: troposphere and stratosphere		NA			x
			Water vapor		A			●
			Clouds		NA			x
			Radiation		NA			x
		Changes in atmospheric circulation	Surface or sea level pressure		NA			x
			Geopotential height, winds, and the jet stream		NA			x
			Storm tracks		NA			x
			Blocking		NA			x
			The stratosphere		NA			x
			Winds, waves, and surface fluxes		NA			x
		Patterns of atmospheric circulation variability	Teleconnections		NA			x
			El Niño-Southern Oscillation and tropical/extratropical interactions		A			●
			Pacific decadal variability		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Other oscillations and modes		NA			x
		Changes in the tropics and subtropics, and in the monsoons	Changes in the tropics		NA			x
			Changes in the monsoons		NA			x
		Changes in extreme events	Evidence for changes in variability or extremes		NA			x
			Evidence for changes in tropical storms		NA			x
			Evidence for changes in extratropical storms and extreme event		NA			x
3	Observation: ocean	Changes in global-scale temperature and salinity	Sea surface temperature (SST)		NA			x
			Surface heat flux		NA			x
			Salinity		NA			x
		Regional changes in ocean circulation and water masses	Ocean surface current		NA			x
			Ocean circulation		NA			x
			Extreme events		NA			x
		Changes in ocean biochemical	Ocean acidification		NA			x
			Oxygen concentration		NA			x
			Nutrient		NA			x
			Disolved inorganic carbon		NA			x
4	Observation: cryosphere	The cover changes of snow, river and lake ice, sea ice, glaciers and ice caps, ice shelves and ice sheets, and frozen ground	Changes in snow cover		NA			-
			Changes in river and lake ice		NA			-
			Changes in sea ice		NA			-
			Changes in glaciers and ice caps		NA			-
			Changes and stability of ice sheets and ice shelves		NA			-
			Changes in frozen ground		NA			-
5	Information from	"Climate system changes over	CO2 concentration		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
	paleoclimate archives	interannual to millennial time scales: 1. Pre-Quaternary Climates 2. Glacial-Interglacial Variability and Dynamics 3. Current Interglacial 4. Last 2,000 Years"	Air temperature		NA			x
			Sea surface temperature (SST)		NA			x
			Ice-snow cover		NA			x
			Solar radiative forcing		NA			x
			Sea level change		NA			x
			Abrupt climate change		NA			x
6	Carbon and other biogeochemical cycle	Carbon cycle	Terrestrial carbon flux		NA			x
			Ocean carbon flux		NA			x
		Chemically and Radiatively Important Gases	Atmospheric Carbon Dioxide		NA			x
			Atmospheric Methane		NA			x
			Ozone		NA			x
			Stratospheric Water Vapor		NA			x
		Reactive Gases and the Climate System	Methane		NA			x
			Nitrogen Compound		NA			x
			Molecular Hydrogen		NA			x
			Global Tropospheric Ozone		NA			x
			Hydroxil Radical		NA			x
			Stratospheric Ozone		NA			x
7	Clouds and aerosols	Aerosol Estimates	Developments related to Aerosol Observations		NA			x
			Modeling the Aerosol Direct Effect		NA			x
			Estimates of Aerosol Direct Radiative Forcing		NA			x
			Aerosol Influence on Clouds		NA			x
		Aerosol Particles and the Climatic System	Aerosol emission and burdens affected by climatic factors		NA			x
			Indirect effects of Aerosol on Clouds and Precipitation		NA			x
			Effects of Aerosol and Clouds on Solar Radiation at the Earth's Surface		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Effects of Aerosols on Circulation Patterns		NA			x
8	Anthropogenic and natural radiative forcing	Anthropogenic changes in surface albedo and the surface energy budget	Radiative forcing by anthropogenic surface albedo change: land use		NA			x
			Radiative forcing by anthropogenic surface albedo change: black carbon in snow and ice		NA			-
			Other Effects of Anthropogenic Changes in Land Cover		NA			x
			Tropospheric water vapour from anthropogenic sources		NA			x
			Anthropogenic heat release		NA			x
			Effects of carbon dioxide changes on climate via plant physiology: 'physiological forcing'		NA			x
		Natural forcing	Solar variability		NA			x
			Explosive vulcanic activity		NA			x
9	Evaluation of climate models	Use of models	Climate		A		Bottom-up: Empirical Downscaling Models from observations, 20 GCMs, SRES A2B1	●
			Monsoon variability		NA			x
			Decadal variability		NA			x
			Multi decadal variability		NA			x
			Madden Julian Oscilation		NA			x
			Interannual variability (ENSO)		A			●
10	Detection and attribution of climate change: from global to regional				A			●
11	Near-term climate change: projections and predictability				NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
12	Long-term climate change: projections, commitments, and Irreversibility				A		Year 2000 to 2050	•
13	Sea level changes	Changes in sea level	Observation: Tide gauge		NA			x
			Observation: Altimeter		NA			x
			Model-estimated sea level rise		NA			x
			Ocean Density Changes		NA			x
			Regional Variations in the Rate of Sea Level Change		NA			x
			Ocean Mass Changes		NA			x

Aspect-1 : **Science Basis**
Document-4 : CCPI
Assessor : M. S. Fitriyanto, M. Sc.

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
1	Introduction							
2	Observation: atmosphere and surface	Changes in surface climate: temperature	Land temperature		NA			x
			Air temperature		A		From global models	o
			Ocean temperature		NA			x
		Changes in surface climate: precipitation, drought and surface hydrology	Precipitation		A		From global models	o
			Evapotranspiration		NA			x
			Changes in soil moisture, drought, runoff, and river discharge		NA			x
		Changes in the free atmosphere	Temperature of the upper air: troposphere and stratosphere		NA			x
			Water vapor		A		From global models	o
			Clouds		NA			x
			Radiation		NA			x
		Changes in atmospheric circulation	Surface or sea level pressure		NA			x
			Geopotential height, winds, and the jet stream		NA			x
			Storm tracks		NA			x
			Blocking		NA			x
			The stratosphere		NA			x
			Winds, waves, and surface fluxes		NA			x
		Patterns of atmospheric circulation variability	Teleconnections		NA			x
			El Niño-Southern Oscillation and tropical/extratropical interactions		A			o

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Pacific decadal variability		NA			x
			Other oscillations and modes		NA			x
		Changes in the tropics and subtropics, and in the monsoons	Changes in the tropics		NA			x
			Changes in the monsoons		NA			x
		Changes in extreme events	Evidence for changes in variability or extremes		NA			x
			Evidence for changes in tropical storms		NA			x
			Evidence for changes in extratropical storms and extreme event		NA			x
3	Observation: ocean	Changes in global-scale temperature and salinity	Sea surface temperature (SST)		NA			x
			Surface heat flux		NA			x
			Salinity		NA			x
		Regional changes in ocean circulation and water masses	Ocean surface current		NA			x
			Ocean circulation		NA			x
			Extreme events		NA			x
		Changes in ocean biochemical	Ocean acidification		NA			x
			Oxygen concentration		NA			x
			Nutrient		NA			x
			Disolved inorganic carbon		NA			x
4	Observation: cryosphere	The cover changes of snow, river and lake ice, sea ice, glaciers and ice caps, ice shelves and ice sheets, and frozen ground	Changes in snow cover		NA			-
			Changes in river and lake ice		NA			-
			Changes in sea ice		NA			-
			Changes in glaciers and ice caps		NA			-
			Changes and stability of ice sheets and ice shelves		NA			-
			Changes in frozen ground		NA			-

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
5	Information from paleoclimate archives	"Climate system changes over interannual to millennial time scales: 1. Pre-Quaternary Climates 2. Glacial-Interglacial Variability and Dynamics 3. Current Interglacial 4. Last 2,000 Years"	CO2 concentration		NA			x
			Air temperature		NA			x
			Sea surface temperature (SST)		NA			x
			Ice-snow cover		NA			x
			Solar radiative forcing		NA			x
			Sea level change		NA			x
			Abrupt climate change		NA			x
6	Carbon and other biogeochemical cycle	Carbon cycle	Terrestrial carbon flux		NA			x
			Ocean carbon flux		NA			x
		Chemically and Radiatively Important Gases	Atmospheric Carbon Dioxide		NA			x
			Atmospheric Methane		NA			x
			Ozone		NA			x
			Stratospheric Water Vapor		NA			x
		Reactive Gases and the Climate System	Methane		NA			x
			Nitrogen Compound		NA			x
			Molecular Hydrogen		NA			x
			Global Tropospheric Ozone		NA			x
			Hydroxil Radical		NA			x
			Stratospheric Ozone		NA			x
7	Clouds and aerosols	Aerosol Estimates	Developments related to Aerosol Observations		NA			x
			Modeling the Aerosol Direct Effect		NA			x
			Estimates of Aerosol Direct Radiative Forcing		NA			x
			Aerosol Influence on Clouds		NA			x
		Aerosol Particles and the Climatic System	Aerosol emission and burdens affected by climatic factors		NA			x
			Indirect effects of Aerosol on Clouds and Precipitation		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Effects of Aerosol and Clouds on Solar Radiation at the Earth's Surface		NA			x
			Effects of Aerosols on Circulation Patterns		NA			x
8	Anthropogenic and natural radiative forcing	Anthropogenic changes in surface albedo and the surface energy budget	Radiative forcing by anthropogenic surface albedo change: land use		NA			x
			Radiative forcing by anthropogenic surface albedo change: black carbon in snow and ice		NA			-
			Other Effects of Anthropogenic Changes in Land Cover		NA			x
			Tropospheric water vapour from anthropogenic sources		NA			x
			Anthropogenic heat release		NA			x
			Effects of carbon dioxide changes on climate via plant physiology: 'physiological forcing'		NA			x
		Natural forcing	Solar variability		NA			x
			Explosive vulcanic activity		NA			x
9	Evaluation of climate models	Use of models	Climate		A		4 GCMs, SRES A1, A2, B1, B2	•
			Monsoon variability		NA			x
			Decadal variability		NA			x
			Multi decadal variability		NA			x
			Madden Julian Oscilation		NA			x
			Interannual variability (ENSO)		NA			x
10	Detection and attribution of climate change: from global to regional				A			•
11	Near-term climate change: projections and predictability				NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
12	Long-term climate change: projections, commitments, and Irreversibility				A		Year 2000 to 2099	•
13	Sea level changes	Changes in sea level	Observation: Tide gauge		NA			x
			Observation: Altimeter		NA			x
			Model-estimated sea level rise		NA			x
			Ocean Density Changes		NA			x
			Regional Variations in the Rate of Sea Level Change		NA			x
			Ocean Mass Changes		NA			x

Aspect-1 : **Science Basis**
Document-5 : STI-CC
Assessor : Dr. Ibnu Sofian & M. S. Fitriyanto, M. Sc.

LEGEND
- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
1	Introduction							
2	Observation: atmosphere and surface	Changes in surface climate: temperature	Land temperature		NA			x
			Air temperature		NA			x
			Ocean temperature		NA			x
		Changes in surface climate: precipitation, drought and surface hydrology	Precipitation		NA			x
			Evapotranspiration		NA			x
			Changes in soil moisture, drought, runoff, and river discharge		NA			x
		Changes in the free atmosphere	Temperature of the upper air: troposphere and stratosphere		NA			x
			Water vapor		NA			x
			Clouds		NA			x
			Radiation		NA			x
		Changes in atmospheric circulation	Surface or sea level pressure		NA			x
			Geopotential height, winds, and the jet stream		NA			x
			Storm tracks		NA			x
			Blocking		NA			x
			The stratosphere		NA			x
			Winds, waves, and surface fluxes		NA			x
		Patterns of atmospheric circulation variability	Teleconnections		NA			x
			El Niño-Southern Oscillation and tropical/extratropical interactions		NA			x
			Pacific decadal variability		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Other oscillations and modes		NA			x
		Changes in the tropics and subtropics, and in the monsoons	Changes in the tropics		NA			x
			Changes in the monsoons		NA			x
		Changes in extreme events	Evidence for changes in variability or extremes		NA			x
			Evidence for changes in tropical storms		NA			x
			Evidence for changes in extratropical storms and extreme event		NA			x
3	Observation: ocean	Changes in global-scale temperature and salinity	Sea surface temperature (SST)		A			●
			Surface heat flux		NA			x
			Salinity		NA			x
		Regional changes in ocean circulation and water masses	Ocean surface current		NA			x
			Ocean circulation		NA			x
			Extreme events		NA			x
		Changes in ocean biochemical	Ocean acidification		NA			x
			Oxygen concentration		NA			x
			Nutrient		NA			x
			Disolved inorganic carbon		NA			x
4	Observation: cryosphere	The cover changes of snow, river and lake ice, sea ice, glaciers and ice caps, ice shelves and ice sheets, and frozen ground	Changes in snow cover		NA			-
			Changes in river and lake ice		NA			-
			Changes in sea ice		NA			-
			Changes in glaciers and ice caps		NA			-
			Changes and stability of ice sheets and ice shelves		NA			-
			Changes in frozen ground		NA			-
5	Information from paleoclimate	"Climate system changes over interannual	CO2 concentration		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
	archives	to millennial time scales: 1. Pre-Quaternary Climates 2. Glacial-Interglacial Variability and Dynamics 3. Current Interglacial 4. Last 2,000 Years"	Air temperature		NA			x
			Sea surface temperature (SST)		NA			x
			Ice-snow cover		NA			x
			Solar radiative forcing		NA			x
			Sea level change		NA			x
			Abrupt climate change		NA			x
6	Carbon and other biogeochemical cycle	Carbon cycle	Terrestrial carbon flux		NA			x
			Ocean carbon flux		NA			x
		Chemically and Radiatively Important Gases	Atmospheric Carbon Dioxide		NA			x
			Atmospheric Methane		NA			x
			Ozone		NA			x
			Stratospheric Water Vapor		NA			x
		Reactive Gases and the Climate System	Methane		NA			x
			Nitrogen Compound		NA			x
			Molecular Hydrogen		NA			x
			Global Tropospheric Ozone		NA			x
			Hydroxil Radical		NA			x
			Stratospheric Ozone		NA			x
7	Clouds and aerosols	Aerosol Estimates	Developments related to Aerosol Observations		NA			x
			Modeling the Aerosol Direct Effect		NA			x
			Estimates of Aerosol Direct Radiative Forcing		NA			x
			Aerosol Influence on Clouds		NA			x
		Aerosol Particles and the Climatic System	Aerosol emission and burdens affected by climatic factors		NA			x
			Indirect effects of Aerosol on Clouds and Precipitation		NA			x
			Effects of Aerosol and Clouds on Solar Radiation at the Earth's Surface		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Effects of Aerosols on Circulation Patterns		NA			x
8	Anthropogenic and natural radiative forcing	Anthropogenic changes in surface albedo and the surface energy budget	Radiative forcing by anthropogenic surface albedo change: land use		NA			x
			Radiative forcing by anthropogenic surface albedo change: black carbon in snow and ice		NA			-
			Other Effects of Anthropogenic Changes in Land Cover		NA			x
			Tropospheric water vapour from anthropogenic sources		NA			x
			Anthropogenic heat release		NA			x
			Effects of carbon dioxide changes on climate via plant physiology: 'physiological forcing'		NA			x
		Natural forcing	Solar variability		NA			x
			Explosive vulcanic activity		NA			x
9	Evaluation of climate models	Use of models	Climate		NA			x
			Monsoon variability		NA			x
			Decadal variability		NA			x
			Multi decadal variability		NA			x
			Madden Julian Oscilation		NA			x
			Interannual variability (ENSO)		NA			x
10	Detection and attribution of climate change: from global to regional				NA			x
11	Near-term climate change: projections and predictability				NA			x
12	Long-term climate change: projections, commitments, and Irreversibility				NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
13	Sea level changes	Changes in sea level	Observation: Tide gauge		NA			x
			Observation: Altimeter		NA			x
			Model-estimated sea level rise		NA			x
			Ocean Density Changes		NA			x
			Regional Variations in the Rate of Sea Level Change		NA			x
			Ocean Mass Changes		NA			x

Aspect-1 : **Science Basis**
Document-6 : SLRJ
Assessor : Dr. Ibnu Sofian & M. S. Fitriyanto, M. Sc.

LEGEND
- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
1	Introduction							
2	Observation: atmosphere and surface	Changes in surface climate: temperature	Land temperature		NA			x
			Air temperature		NA			x
			Ocean temperature		NA			x
		Changes in surface climate: precipitation, drought and surface hydrology	Precipitation		NA			x
			Evapotranspiration		NA			x
			Changes in soil moisture, drought, runoff, and river discharge		NA			x
		Changes in the free atmosphere	Temperature of the upper air: troposphere and stratosphere		NA			x
			Water vapor		NA			x
			Clouds		NA			x
			Radiation		NA			x
		Changes in atmospheric circulation	Surface or sea level pressure		NA			x
			Geopotential height, winds, and the jet stream		NA			x
			Storm tracks		NA			x
			Blocking		NA			x
			The stratosphere		NA			x
			Winds, waves, and surface fluxes		NA			x
		Patterns of atmospheric circulation variability	Teleconnections		NA			x
			El Niño-Southern Oscillation and tropical/extratropical interactions		NA			x
			Pacific decadal variability		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Other oscillations and modes		NA			x
		Changes in the tropics and subtropics, and in the monsoons	Changes in the tropics		NA			x
			Changes in the monsoons		NA			x
		Changes in extreme events	Evidence for changes in variability or extremes		NA			x
			Evidence for changes in tropical storms		NA			x
			Evidence for changes in extratropical storms and extreme event		NA			x
3	Observation: ocean	Changes in global-scale temperature and salinity	Sea surface temperature (SST)		NA			x
			Surface heat flux		NA			x
			Salinity		NA			x
		Regional changes in ocean circulation and water masses	Ocean surface current		NA			x
			Ocean circulation		NA			x
			Extreme events		NA			x
		Changes in ocean biochemical	Ocean acidification		NA			x
			Oxygen concentration		NA			x
			Nutrient		NA			x
			Dissolved inorganic carbon		NA			x
4	Observation: cryosphere	The cover changes of snow, river and lake ice, sea ice, glaciers and ice caps, ice shelves and ice sheets, and frozen ground	Changes in snow cover		NA			-
			Changes in river and lake ice		NA			-
			Changes in sea ice		NA			-
			Changes in glaciers and ice caps		NA			-
			Changes and stability of ice sheets and ice shelves		NA			-
			Changes in frozen ground		NA			-
5	Information from paleoclimate	"Climate system changes over interannual	CO2 concentration		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
	archives	to millennial time scales: 1. Pre-Quaternary Climates 2. Glacial-Interglacial Variability and Dynamics 3. Current Interglacial 4. Last 2,000 Years"	Air temperature		NA			x
			Sea surface temperature (SST)		NA			x
			Ice-snow cover		NA			x
			Solar radiative forcing		NA			x
			Sea level change		NA			x
			Abrupt climate change		NA			x
6	Carbon and other biogeochemical cycle	Carbon cycle	Terrestrial carbon flux		NA			x
			Ocean carbon flux		NA			x
		Chemically and Radiatively Important Gases	Atmospheric Carbon Dioxide		NA			x
			Atmospheric Methane		NA			x
			Ozone		NA			x
			Stratospheric Water Vapor		NA			x
		Reactive Gases and the Climate System	Methane		NA			x
			Nitrogen Compound		NA			x
			Molecular Hydrogen		NA			x
			Global Tropospheric Ozone		NA			x
			Hydroxil Radical		NA			x
			Stratospheric Ozone		NA			x
7	Clouds and aerosols	Aerosol Estimates	Developments related to Aerosol Observations		NA			x
			Modeling the Aerosol Direct Effect		NA			x
			Estimates of Aerosol Direct Radiative Forcing		NA			x
			Aerosol Influence on Clouds		NA			x
		Aerosol Particles and the Climatic System	Aerosol emission and burdens affected by climatic factors		NA			x
			Indirect effects of Aerosol on Clouds and Precipitation		NA			x
			Effects of Aerosol and Clouds on Solar Radiation at the Earth's Surface		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
			Effects of Aerosols on Circulation Patterns		NA			x
8	Anthropogenic and natural radiative forcing	Anthropogenic changes in surface albedo and the surface energy budget	Radiative forcing by anthropogenic surface albedo change: land use		NA			x
			Radiative forcing by anthropogenic surface albedo change: black carbon in snow and ice		NA			-
			Other Effects of Anthropogenic Changes in Land Cover		NA			x
			Tropospheric water vapour from anthropogenic sources		NA			x
			Anthropogenic heat release		NA			x
			Effects of carbon dioxide changes on climate via plant physiology: 'physiological forcing'		NA			x
		Natural forcing	Solar variability		NA			x
			Explosive vulcanic activity		NA			x
9	Evaluation of climate models	Use of models	Climate		NA			x
			Monsoon variability		NA			x
			Decadal variability		NA			x
			Multi decadal variability		NA			x
			Madden Julian Oscilation		NA			x
			Interannual variability (ENSO)		NA			x
10	Detection and attribution of climate change: from global to regional				NA			x
11	Near-term climate change: projections and predictability				NA			x
12	Long-term climate change: projections, commitments, and Irreversibility				NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Pages	Comment	Rating
13	Sea level changes	Changes in sea level	Observation: Tide gauge		A			•
			Observation: Altimeter		NA			x
			Model-estimated sea level rise		NA			x
			Ocean Density Changes		NA			x
			Regional Variations in the Rate of Sea Level Change		NA			x
			Ocean Mass Changes		NA			x

Aspect-1 : **Science Basis**

Meta-analysis

Assessor : Dr. Ibnu Sofian & M. S. Fitriyanto, M. Sc.

LEGEND
- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	ICCSR-SB	SNC	PNAS	CCPI	STI-CC	SLRJ	Overall
1	Introduction									
2	Observation: atmosphere and surface	Changes in surface climate: temperature	Land temperature	x	x	x	x	x	x	x
			Air temperature	●	o	o	o	x	x	o
			Ocean temperature	●	●	-	x	x	x	o
		Changes in surface climate: precipitation, drought and surface hydrology	Precipitation	●	●	●	o	x	x	o
			Evapotranspiration	x	x	x	x	x	x	x
			Changes in soil moisture, drought, runoff, and river discharge	o	x	x	x	x	x	o
		Changes in the free atmosphere	Temperature of the upper air: troposphere and stratosphere	x	x	x	x	x	x	x
			Water vapor	x	x	●	o	x	x	o
			Clouds	x	x	x	x	x	x	x
			Radiation	x	x	x	x	x	x	x
		Changes in atmospheric circulation	Surface or sea level pressure	x	x	x	x	x	x	x
			Geopotential height, winds, and the jet stream	x	x	x	x	x	x	x
			Storm tracks	x	x	x	x	x	x	x
			Blocking	x	x	x	x	x	x	x
			The stratosphere	x	x	x	x	x	x	x
			Winds, waves, and surface fluxes	o	x	x	x	x	x	o
		Patterns of atmospheric circulation variability	Teleconnections	x	x	x	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-SB	SNC	PNAS	CCPI	STI-CC	SLRJ	Overall
			El Niño-Southern Oscillation and tropical/extratropical interactions	o	o	●	o	x	x	o
			Pacific decadal variability	x	x	x	x	x	x	x
			Other oscillations and modes	o	x	x	x	x	x	o
		Changes in the tropics and subtropics, and in the monsoons	Changes in the tropics	x	x	x	x	x	x	x
			Changes in the monsoons	●	x	x	x	x	x	o
		Changes in extreme events	Evidence for changes in variability or extremes	x	x	x	x	x	x	x
			Evidence for changes in tropical storms	x	x	x	x	x	x	x
			Evidence for changes in extratropical storms and extreme event	x	x	x	x	x	x	x
3	Observation: ocean	Changes in global-scale temperature and salinity	Sea surface temperature (SST)	●	x	x	x	●	x	o
			Surface heat flux	x	x	x	x	x	x	x
			Salinity	x	x	x	x	x	x	x
		Regional changes in ocean circulation and water masses	Ocean surface current	o	x	x	x	x	x	o
			Ocean circulation	o	x	x	x	x	x	o
			Extreme events	●	x	x	x	x	x	o
		Changes in ocean biochemical	Ocean acidification	x	x	x	x	x	x	x
			Oxygen concentration	x	x	x	x	x	x	x
			Nutrient	o	x	x	x	x	x	o
			Disolved inorganic carbon	x	x	x	x	x	x	x
4	Observation: cryosphere	The cover changes of snow, river and lake ice, sea ice, glaciers and ice caps, ice shelves and ice sheets, and frozen ground	Changes in snow cover	-	-	-	-	-	-	-
			Changes in river and lake ice	-	-	-	-	-	-	-
			Changes in sea ice	-	-	-	-	-	-	-
			Changes in glaciers and ice caps	o	-	-	-	-	-	o

No.	Component	Theme	Indicator	ICCSR-SB	SNC	PNAS	CCPI	STI-CC	SLRJ	Overall
			Changes and stability of ice sheets and ice shelves	●	-	-	-	-	-	o
			Changes in frozen ground	-	-	-	-	-	-	-
5	Information from paleoclimate archives	"Climate system changes over interannual to millennial time scales: 1. Pre-Quaternary Climates 2. Glacial-Interglacial Variability and Dynamics 3. Current Interglacial 4. Last 2,000 Years"	CO2 concentration	x	x	x	x	x	x	x
			Air temperature	x	x	x	x	x	x	x
			Sea surface temperature (SST)	o	x	x	x	x	x	o
			Ice-snow cover	x	x	x	x	x	x	x
			Solar radiative forcing	x	x	x	x	x	x	x
			Sea level change	x	x	x	x	x	x	x
			Abrupt climate change	x	x	x	x	x	x	x
6	Carbon and other biogeochemical cycle	Carbon cycle	Terrestrial carbon flux	x	x	x	x	x	x	x
			Ocean carbon flux	x	x	x	x	x	x	x
		Chemically and Radiatively Important Gases	Atmospheric Carbon Dioxide	x	●	x	x	x	x	o
			Atmospheric Methane	x	x	x	x	x	x	x
			Ozone	x	x	x	x	x	x	x
			Stratospheric Water Vapor	x	x	x	x	x	x	x
		Reactive Gases and the Climate System	Methane	x	x	x	x	x	x	x
			Nitrogen Compound	x	x	x	x	x	x	x
			Molecular Hydrogen	x	x	x	x	x	x	x
			Global Tropospheric Ozone	x	x	x	x	x	x	x
			Hydroxil Radical	x	x	x	x	x	x	x
			Stratospheric Ozone	x	x	x	x	x	x	x
7	Clouds and aerosols	Aerosol Estimates	Developments related to Aerosol Observations	x	x	x	x	x	x	x
			Modeling the Aerosol Direct Effect	x	x	x	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-SB	SNC	PNAS	CCPI	STI-CC	SLRJ	Overall
			Estimates of Aerosol Direct Radiative Forcing	x	x	x	x	x	x	x
			Aerosol Influence on Clouds	x	x	x	x	x	x	x
		Aerosol Particles and the Climatic System	Aerosol emission and burdens affected by climatic factors	x	x	x	x	x	x	x
			Indirect effects of Aerosol on Clouds and Precipitation	x	x	x	x	x	x	x
			Effects of Aerosol and Clouds on Solar Radiation at the Earth's Surface	x	x	x	x	x	x	x
			Effects of Aerosols on Circulation Patterns	x	x	x	x	x	x	x
8	Anthropogenic and natural radiative forcing	Anthropogenic changes in surface albedo and the surface energy budget	Radiative forcing by anthropogenic surface albedo change: land use	x	x	x	x	x	x	x
			Radiative forcing by anthropogenic surface albedo change: black carbon in snow and ice	x	-	-	-	-	-	x
			Other Effects of Anthropogenic Changes in Land Cover	x	x	x	x	x	x	x
			Tropospheric water vapour from anthropogenic sources	x	x	x	x	x	x	x
			Anthropogenic heat release	x	x	x	x	x	x	x
			Effects of carbon dioxide changes on climate via plant physiology: 'physiological forcing'	x	x	x	x	x	x	x
		Natural forcing	Solar variability	x	x	x	x	x	x	x
			Explosive vulcanic activity	x	x	x	x	x	x	x
9	Evaluation of climate models	Use of models	Climate	o	o	●	●	x	x	o
			Monsoon variability	●	o	x	x	x	x	o
			Decadal variability	x	x	x	x	x	x	x
			Multi decadal variability	x	x	x	x	x	x	x
			Madden Julian Oscilation	x	x	x	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-SB	SNC	PNAS	CCPI	STI-CC	SLRJ	Overall
			Interannual variability (ENSO)	●	o	●	x	x	x	o
10	Detection and attribution of climate change: from global to regional			x	x	●	●	x	x	o
11	Near-term climate change: projections and predictability			o	x	x	x	o	o	o
12	Long-term climate change: projections, commitments, and Irreversibility			o	x	●	●	x	x	o
13	Sea level changes	Changes in sea level	Observation: Tide gauge	●	●	x	x	x	●	o
			Observation: Altimeter	●	x	x	x	x	x	o
			Model-estimated sea level rise	●	●	x	x	x	x	o
			Ocean Density Changes	x	x	x	x	x	x	x
			Regional Variations in the Rate of Sea Level Change	x	x	x	x	x	x	x
			Ocean Mass Changes	x	x	x	x	x	x	x

Aspect-2: Food Production Systems and Food Security

Aspect-2 : **Food Production Systems and Food Security**
Document-1 : ICCSR-AS
Assessor : Dr. Wilmar Salim

LEGEND
- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Basic climate	Increases in mean temperature		A	3.1, 3.1.3	Change in ENSO-related extreme events	o
					A		Change in rainfall pattern	
		Extreme events	Frequency of extreme events (heat stress, drought, flood)		A	-	Change in ENSO-related extreme events	o
			Severity of extreme events (heat stress, drought, flood)		A	3.1.1, 3.1.2	Severity of drought and flood	●
2	Vulnerability	Vulnerability analysis	Crop yields in different latitude		NA	-		o
3	Risk/impact	Risk analysis	Livestock production		NA			x
			Forest production		NA			x
		Multiple stressor	Water resources availability, biodiversity loss, air pollution		A	Water	Water resources availability in Water Sector Report	o
			Overexploitation of stocks, biodiversity loss, water pollution, and changes in water resources		A	Water	Water resources changes in Water Sector Report	o
			Sea level rise		A	3.2	IPCC-AR4 doesn't have this indicator	●
		Projection	Projection of food production based on temperature increase		A	Table 3.4 Figure 3.11	Projection of corn production due to temperature increase, projection of rice production in Java	o
			Projection of rice production loss due to **sea level rise**			Table 3.5	IPCC-AR4 doesn't have this indicator	●
			Projection undernourished population		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Projection of forest production based on latitude		NA			x
			Projection of food and forestry trade		NA			x
			Projection of food real prices		NA			x
			Crop response to elevated CO2 with FACE model		A	Figure 3.11	Rice crop production using SRES scenario	o
		Impact analysis	Agricultural labor supply		NA			x
			Poor community		NA			x
4	Measures	Adaptation	Changing practices		NA			x
			Changing locations		NA			x
			Changing policies and institutions		A	Ch. 2	Changing policies of Ministry of Agriculture	•

Aspect-2 : **Food Production Systems and Food Security**
Document-2 : Jakstra
Assessor : Dr. Wilmar Salim

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Basic climate	Increases in mean temperature		NA			x
			Rainfall		NA			x
		Extreme events	Frequency of extreme events (heat stress, drought, flood)		NA			x
			Severity of extreme events (heat stress, drought, flood)		A	5.2.1	Crop failure due to drought or flood	o
2	Vulnerability	Vulnerability analysis	Crop yields in different latitude		A	5.2.1	Rice field elevation, size, and slope	o
					A	5.2.1	Rice production and productivity	o
					A	5.2.1	Food balance (rice consumption per capita)	o
3	Risk/impact	Risk	Livestock production		NA			x
			Forest production		NA			x
		Multiple stressor	Water resources availability, biodiversity loss, air pollution		A	5.2.1	Water balance (water availability for irrigation, length of irrigation, condition of irrigation, and size of irrigated ricefield)	o
			Overexploitation of stocks, biodiversity loss, water pollution, and changes in water resources		NA			x
			Crop loss due to land conversion		A	5.2.1	IPCC-AR4 doesn't have this indicator	●
		Projection	Projection of food production based on temperature increase		NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Projection undernourished population		NA			x
			Projection of forest production based on latitude		NA			x
			Projection of food and forestry trade		NA			x
			Projection of food real prices		NA			x
			Crop response to elevated CO2 with FACE model		NA			x
		Impact analysis	Agricultural labor supply		NA			x
			Poor community		NA			x
4	Measures	Adaptation	Changing practices		A	5.2.1	Local wisdom in planting pattern	o
					A	5.2.1	Use of food technology	o
					A	5.2.1	Non-rice cultivation	o
			Changing locations		NA			x
			Changing policies and institutions		A	5.2.1	Compensation for farmers to maintain rice cultivation	o

Aspect-2 : **Food Production Systems and Food Security**
Document-3 : CC-F
Assessor : Dr. Wilmar Salim

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Basic climate	Increases in mean temperature		A	3.3.1, 3.3.2. 4.1.2, 5.2.1, 5.3.1	Increase in temperature is used throughout the report	●
			Rainfall		A	3.3.1, 3.3.2, 4.1.1, 4.2.1, 5.2.2, 5.3.2	Change in rainfall is used throughout the report	●
		Extreme events	Frequency of extreme events (heat stress, drought, flood)		A	Table 2.2 (p. 26)	Impact of drought on rice production area 1972-1997 by major islands	o
			Severity of extreme events (heat stress, drought, flood)		A	Table 2.3 (p. 26)	Change in rice production due to drought compared to previous years	o
2	Vulnerability	Vulnerability analysis	Crop yields in different latitude		NA	-		x
3	Risk/impact	Risk analysis	Livestock production		NA			x
			Forest production		NA			x
		Multiple stressor	Water resources availability, biodiversity loss, air pollution		A	3.3.1, 5.2.1	Impact of temperature increase on irrigation water is projected	o
			Overexploitation of stocks, biodiversity loss, water pollution, and changes in water resources		NA			x
			Sea level rise		A	3.4, 4.3	Sea level rise is used throughout the report	●
		Projection	Projection of food production based on temperature increase		A	Table 5.2 (p. 93), Table 5.4 (p. 98), Table 5.5 (p. 101)	Projection of several food production loss in 2050 due to early maturity and respiration rate as impacts of temperature increase by major islands	●
			Projection of rice production loss due to **sea level rise**		NA		What is available is the potential loss of ricefields in Java and 3 provinces outside Java	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Projection undernourished population		NA			x
			Projection of forest production based on latitute		NA			x
			Projection of food and forestry trade		A	5.4	Impact on food trade is discussed	o
			Projection of food real prices		A	Table 5.7	Projection of food price index in world market	o
			Crop response to elevated CO2 with FACE model		NA			x
		Impact analysis	Agricultural labor supply		NA		There is a discussion of surveys conducted on farmers, but no specific discussions on labor supply	x
			Poor community		NA		Taken into consideration, but no specific section on it	x
4	Measures	Adaptation	Changing practices		A	7.2	Food diversification, time and plant pattern, land intensification	o
			Changing locations		A	7.2	Increasing production area	o
			Changing policies and institutions		A	7.3	Policy to open new ricefield	o

Aspect-2 : **Food Production Systems and Food Security**

Meta-analysis

Assessor : Dr. Wilmar Salim

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o incomplete ● complete

No.	Component	Theme	Indicator	ICCSR-AS	Jakstra	CC-F	Overall
1	Stimuli	Basic climate	Increases in mean temperature	o	x	●	o
			Rainfall		x	●	o
		Extreme events	Frequency of extreme events (heat stress, drought, flood)	o	x	o	o
			Severity of extreme events (heat stress, drought, flood)	●	o	o	o
2	Vulnerability	Vulnerability analysis	Crop yields in different latitude	o	o	x	o
3	Risk/impact	Risk analysis	Livestock production	x	x	x	x
			Forest production	x	x	x	x
		Multiple stressor	Water resources availability, biodiversity loss, air pollution	o	o	o	o
			Overexploitation of stocks, biodiversity loss, water pollution, and changes in water resources	o	x	x	o
			Sea level rise	●	●	●	●
		Projection	Projection of food production based on temperature increase	o	x	●	o
			Projection of rice production loss due to **sea level rise**	●	x	x	o
			Projection undernourished population	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-AS	Jakstra	CC-F	Overall
			Projection of forest production based on latitude	x	x	x	x
			Projection of food and forestry trade	x	x	o	o
			Projection of food real prices	x	x	o	o
			Crop response to elevated CO2 with FACE model	o	x	x	o
		Impact analysis	Agricultural labor supply	x	x	x	x
			Poor community	x	x	x	x
4	Measures	Adaptation	Changing practices	x	o	o	o
			Changing locations	x	x	o	o
			Changing policies and institutions	●	o	o	o

Aspect-3: Human Health

Aspect-3 : **Human Health**
Document-1 : ICCSR-HS
Assessor : Dr. Asep Sofyan

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	**Factors that affect human health**						
		Direct	Temperature	Hot days and hot nights become more frequent; very low temperature can be reached in a few hours and extend over long periods in northern latitude	A	Fig 2.2 (p.6), Table 2.1 (p.8), Fig.2.15(p.22), p.21-23	Temporal temperature variability	●
			Precipitation pattern	Change in precipitation pattern and intensity	A	Fig 2.2 (p.6), Table 2.1 (p.8), Fig.2.15(p.22), p.21-23, Fig.2.16(p24), Fig.2.17(p.24), Fig.2.19(p.26), Fig.2.20(p.26), Fig.2.21(p.27), Fig.2.22(p.29)	Hazards resulted from changes in rainfall and its impact to human health, maps of distribution and standard deviation of rainfall in Indonesia	●
			Sea-level rise	Sea level rise, especially near the Pacific	A	Fig 2.2 (p.6), Table 2.1 (p.8)	Hazards resulted from sea level rise and its impact to human health, but no actual sample of cases	o
			Extreme weathers	More intense and frequent extreme climate or weather events	A	Fig 2.2 (p.6), Table 2.1 (p.8)	No data of extreme events in Indonesia	o
		Indirect	Water, air, and food quality	Alternate the distribution of borne disease	A	Fig 2.1 (p.5),Fig 2.2 (p.6)	In the water and agriculture sector	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Ecosystems, agriculture, industry, settlements, and economy	Alternate the impacts of hazards to human health	A	Fig 2.1 (p.5),Fig 2.2 (p.6), Fig 2.3 (p.7)	In the settlement, Industry and agriculture sector	o
2	Vulnerability	Population vulnerability	Burden of pre-existing diseases in the area	Burden of diseases in the area affect the vulnerability	NA			x
			Population density	Populated area is exposed heavier than empty area	A	Fig.3.1(P.19)	Map of population density	●
			Socio-economic condition	Socio-economic condition affect both sensitivity and adaptive capacity of vulnerability	A	Fig. 3.2(P.21)	Population Welfare Status	●
			Age structure of population	Age structure of population as sensitivity indicator of vulnerability	A	Fig.3.3 (P.22)	Vulnerability to infants	●
			Local environmental conditions	Local environmental conditions influence the vulnerability	A	Fig.3.12-13 (P.31-32)	Illustration of community Access to Safe Water Supply, Sanitation Coverage, no complete data	o
			Quality and availability of public health care and infrastructure	Quality and availability of public health care and infrastructure as Component of adaptive capacity	A	Fig. 3.4-3.11 (P.23-30)	Health care and facilities in Indonesia	●
3	Risk/Impact	The current state of knowledge of the associations between	Temperature-related mortality and morbidity	Short term increase in mortality due to heatwaves, heat stroke and heat stress can lead to death or chronic illnes	A	Fig 2.2 (p.6), Table 2.1 (p.8)	Heat waves is explained as one of the hazard resulting from climate change stimuli, but no data of cases and its impact to mortality	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		climate factors and health outcome	Winds, storms, and floods	More intense and frequent floods and storms, increase the number of people suffering from death, injury,and disease	A	Fig 2.2 (p.6), Table 2.1 (p.8)	Explained as the hazards resulting from climate change stimuli and its impact to climate change, method to analyze the impacts to human health, but no data of cases	o
			Drought, nutrition, and food security	Drought effects on health include deaths, malnutrition, infectious disease, and respiratory disease	A	Table 2.2 (p.9), p.10	Impacts of disaster (drought and flood) to the factors causing malnutrition	o
			Food safety	A linier increase in the reported food poisoning cases with each degree increase in weekly or monthly temperature	NA			x
			Water and disease	Temperature, rainfall, water availability, and quality can affect the water-related disease, both water-borne (ingested) and water-washed diseases (caused by lack of hygiene)	A	Table 2.1, Table 2.2 (p.9), p.10. Diarrhae: p.18-21, Fig.2.11-2.14(p.19-21) ; Fig.4.4(p.42), Table 4.1(p43), Table 4.2(p.44), p.29-30	Cases of diarrhea in Indonesia (Insidens and number of patients), maps of diarrhea distribution in Indonesia, maps of potential of floods, droughts, and decrease in water availability which are the factors that can affect the water availability and sanitation, resulting in water-borne disease note: no other example of water-borne disease	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Air quality and disease	Exposure to elevated concentration of ground level ozone is associated with increased patients suffering from pneumonia, asthma, etc., and even premature mortality; forest fires cause burns, damage from smoke inhalation, and other injuries, and accute and chronic illness of the respiratory system	NA			x
			Aeroallergens and disease	Change in seasonality of allergenic diseases caused by pollen, mould spores and bacteria	NA			x
			Vector-borne, rodent-borne, and other infectious diseases	Change in the distribution and spread of malaria, dengue, and other infectious diseases in accordance with rainfall pattern	A	Malaria: p.11-15, Fig.2.4 - 2.8 (p.11-15), Fig.4.2(p.40), Table 4.1(p43), Table 4.2(p.44), Fig.2.15(p.22), p.21-23. Dengue: p.15-17, Fig.2.9 (p.16), Fig.2.10 (p.17), Fig.4.3(p.41), Table 4.1(p43), Table 4.2(p.44), Fig.2.18(p.25), Fig.2.19(p.26), Fig.2.20(p.26), Fig.2.21(p.27)	Illustration, information, data, no other infectious diseases	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Ultraviolet radiation and health	Burden of diseases from UVR-induced cortical cataracts, cutaneous malignan melanoma, and sunburn	NA			x
4	Adaptation/measures	Approaches at different scales	National- and regional-level responses	Climate-based early warning system have been implemented at national and local levels to alert the population and relevan authorities that a disease outbreak can be expected based on climatic and environmental forecasts, coupled with a specific intervention plan and have an ongoing evaluation of the system and its Components	A	National: Table (Page 61-65) Regional: Table (Page 66-100)	Explanation, recomendations for alternative adaptation strategy, program priorities for each phase	•
			International organizations and agencies responses	Improvement in International surveillance systems facilitate national and regional preparedness and reduce future vulnerability to epidemic-prone diseases	NA			x
			Individual-level responses	The effectiveness of warning systems for extreme events depends on individuals taking appropriate actions	A	Table 4.3 (P.47)	Individual measures in reducing health risk related to climate change	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Adaptation in health systems	Public-health intervention, funding health programmes, strengthening public institutions; building health systems that works well, treating people fairly and providing universal primary health care; providing adequate education, generating demand for better and more accessible services, ensuring that there is enough staff to do the work, Health service infrastructure needs to be resilient to extreme events, efforts to train health professionals	A	P.22-30, P.53-60	Explanation public health care and program phase,	•
			Impact-specific adaptation	Adaptation measures in health sector need to be impact specific	NA			x
		Integration of responses across scales	Integrated responses to address specific health risk due to climate change that could include other benefits	Adaptation responses to specific health risks could cut across scale, interventions designed to increase adaptive capacity could also facilitate the achievement greenhouse gas mitigation targets	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Limits to adaptation	Constraints to adaptation	Awareness to the existence of climate change; a sense that climate change matters; an understanding of what causes the climate change; the capability to influence; and a political will to influence the climate change	NA			x
		Health implications of adaptation strategies, policies, measures	Evaluation of potential risks before implementation of adaptation strategies, policies, and measures	Adaptation strategies, polices, and measures can have inadvertent short- and long-term negative health consequences, so the potential risks should be evaluated before implementation	A	Fig 5.1 (P.52)	Illustration only	o

Aspect-3 : **Human Health**
Document-2 : Jakstra
Assessor : Dr. Asep Sofyan

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	**Factors that affect human health**						
		Direct	Temperature	Hot days and hot nights become more frequent; very low temperature can be reached in a few hours and extend over long periods in northern latitude	A	Fig.3.1(P.3-2), P.3-4, Fig.3.6(P.3.10), Fig.3.8(3-31), Fig.4.2(P.4-3), Fig.4.4-4.5(P.4-7)	Illustration and explanation	●
			Precipitation pattern	Change in precipitation pattern and intensity	A	P.3-8, Fig.3.6(P.3.10), Fig.3.8(3-31), Fig.4.2(P.4-3), Fig.4.3(P.4-4), (P.(4-14)-(4-16)), Fig.4.9-4.10(P.4-15)	Explanation	●
			Sea-level rise	Sea level rise, especially near the Pacific	A	Fig.3.3(P.3-5), Fig. 3.4(P.3-6), Fig.3.6(P.3.10), Fig.3.8(3-31), Fig.4.2(P.4-3), Fig.4.3(P.4-4), Fig.4.5(P.4-9), Fig.4.6-4.7(P.4-10), Fig.5.5 (modeling of SLR in Jakarta)	Illustration and explanation	●
			Extreme weathers	More intense and frequent extreme climate or weather events	A	(P.(3-6)-(3.7)), Fig.3.6(P.3.10), Fig.4.2(P.4-3), Fig.4.8(P.4-11),	Explanation	●

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
						(P.(4-11)-(4.13))		
		Indirect	Water, air, and food quality	Alternate the distribution of borne disease	A	Fig.3.5(P.3-9), P.3-18(brief; water only), Fig.4.2(P.4-3)	Illustration only about impact to food, water, ecosystems, extreme events	o
			Ecosystems, agriculture, industry, settlements, and economy	Alternate the impacts of hazards to human health	A	Fig.3.5 (P.3-9), P.3-13 (industry only), P.3-14 (agriculture only), Fig.3.8(3-31), Fig.4.2(P.4-3)	Illustration only about impact to food, water, ecosystems, extreme events	o
2	Vulnerability	Population vulnerability	Burden of pre-existing diseases in the area	Burden of diseases in the area affect the vulnerability	NA			x
			Population density	Populated area is exposured heavier than empty area	A	Fig.4.2(P.4-3), Fig.4.11(P.4-18). P.5-13, P.5-26 (NTB)	Illustration only, no complete data	o
			Socio-economic condition	Socio-economic condition affect both sensitivity and adaptive capacity of vulnerability	A	P.4-19	Brief	o
			Age structure of population	Age structure of population as sensitivity indicator of vulnerability	A	P.5-13	Brief	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Local environmental conditions	Local environmental conditions influence the vulnerability	A	**NTB**: (P.(5-19)-(5-25)), **Maluku**: (P.(5-27)-(P-29)), **Sulawesi Selatan**: (P.(5-30)-(P.5-33)), **Kalimantan Timur:** (P.(5-34)-(5-43)), **Jakarta** : (P.(5-44)-(P.5-52)), **NAD**: (P.(5-53)-(5-56)), **Resume:** (P.(5-63)-(5-65))	Explanation of local environment condition in some provinces of Indonesia	o
			Quality and availability of public health care and infrastructure	Quality and availability of public health care and infrastructure as Component of adaptive capacity	NA			x
3	Risk/Impact	The current state of knowledge of the associations between climate factors and health outcome	Temperature-related mortality and morbidity	Short term increase in mortality due to heatwaves, heat stroke and heat stress can lead to death or chronic illnes	NA			x
			Winds, storms, and floods	More intense and frequent floods and storms, increase the number of people suffering from death, injury,and disease	A	Fig.4.1 (P.4-2), Fig.5.6 (Floods Map of Jakarta)	Illustration only, no complete data	o
			Drought, nutrition, and food security	Drought effects on health include deaths, malnutrition, infectious disease, and respiratory disease	A	Fig.4.2 (P.4-3), P.4-5, (P.(7-5)-(7-6))	Illustration only, no complete data	o
			Food safety	A linier increase in the reported food poisoning cases with each degree increase in weekly or monthly temperature	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Water and disease	Temperature, rainfall, water availability and quality can affect the water-related disease, both water-borne (ingested) and water-washed diseases (caused by lack of hygiene)	A	P.(3-17)-(3-18)	Brief	o
			Air quality and disease	Exposure to elevated concentration of ground level ozone is associated with increased patients suffering from pneumonia, asthma, etc., and even premature mortality; forest fires cause burns, damage from smoke inhalation, and other injuries, and accute and chronic illness of the respiratory system	NA			x
			Aeroallergens and disease	Change in seasonality of allergenic diseases caused by pollen, mould spores and bacteria	NA			x
			Vector-borne, rodent-borne, and other infectious diseases	Change in the distribution and spread of malaria, dengue, and other infectious diseases in accordance with rainfall pattern	A	Fig.3.8(P.3-31)	Illustration only, no complete data	o
			Ultraviolet radiation and health	Burden of diseases from UVR-induced cortical cataracts, cutaneous malignant melanoma, and sunburn	NA			x
4	Adaptation/measures	Approaches at different scales	National- and regional-level responses	Climate-based early warning system have been implemented at national and local levels to alert the population and relevan authorities that a disease outbreak can be expected based on climatic and environmental forecasts, coupled with a specific intervention plan and have an ongoing evaluation of the system and its Components	NA			x
			International organizations and agencies responses	Improvement in International surveillance systems facilitate national and regional preparedness and reduce future vulnerability to epidemic-prone diseases	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Individual-level responses	The effectiveness of warning systems for extreme events depends on individuals taking appropriate actions	NA			x
			Adaptation in health systems	Public-health intervention, funding health programmes, strengthening public institutions; building health systems that works well, treating people fairly and providing universal primary health care; providing adequate education, generating demand for better and more accessible services, ensuring that there is enough staff to do the work, Health service infrastructure needs to be resilient to extreme events, efforts to train health professionals	NA			x
			Impact-specific adaptation	Adaptation measures in health sector need to be impact specific	NA			x
		Integration of responses across scales	Integrated responses to address specific health risk due to climate change that could include other benefits	Adaptation responses to specific health risks could cut across scale, interventions designed to increase adaptive capacity could also facilitate the achievement greenhouse gas mitigation targets	NA			x
		Limits to adaptation	Constraints to adaptation	Awareness to the existence of climate change; a sense that climate change matters; an understanding of what causes the climate change; the capability to influence; and a political will to influence the climate change	NA			x
		Health implications of adaptation strategies, policies,	Evaluation of potential risks before implementation of adaptation strategies, policies, and measures	Adaptation strategies, polices, and measures can have inadvertent short- and long-term negative health consequences, so the potential risks should be evaluated before implementation	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		measures						

Aspect-3 : **Human Health**
Document-3 : STRAPI
Assessor : Dr. Asep Sofyan

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	**Factors that affect human health**						
		Direct	Temperature	Hot days and hot nights become more frequent; very low temperature can be reached in a few hours and extend over long periods in northern latitude	NA			x
			Precipitation pattern	Change in precipitation pattern and intensity	A	P.2	Climate change is marked by increase in precipitation 2-3% per year, but no information in about the change in Indonesia	o
			Sea-level rise	Sea level rise especially near Pacific	NA			x
			Extreme weathers	More intense and frequent extreme climate or weather events	NA			x
		Indirect	Water, air, and food quality	Alternate the distribution of borne disease	A	P.2	General description: Increase in precipitation will have an impact on water supply	o
			Ecosystems, agriculture, industry, settlements, and economy	Alternate the impacts of hazards to human health	A	P.2	General description: Climate change will be followed by changes in ecosystem	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
2	Vulnerability	Population vulnerability	Burden of pre-existing diseases in the area	Burden of diseases in the area affect the vulnerability	NA			x
			Population density	Populated area is exposured heavier than empty area	NA			x
			Socio-economic condition	Socio-economic condition affect both sensitivity and adaptive capacity of vulnerability	NA			x
			Age structure of population	Age structure of population as sensitivity indicator of vulnerability	NA			x
			Local environmental conditions	Local environmental conditions influence the vulnerability	NA			x
			Quality and availability of public health care and infrastructure	Quality and availability of public health care and infrastructure as Component of adaptive capacity	NA			x
3	Risk/Impact	The current state of knowledge of the associations between climate factors and health outcome	Temperature-related mortality and morbidity	Short term increase in mortality due to heatwaves, heat stroke and heat stress can lead to death or chronic illnes	A	P.2-3	General description: heatwaves can force the heart to work harder to cool the body (heat exhaustion), no cases or study in Indonesia	o
			Winds, storms, and floods	More intense and frequent floods and storms, increase the number of people suffering from death, injury,and disease	NA			x
			Drought, nutrition, and food security	Drought effects on health include deaths, malnutrition, infectious disease, and respiratory disease	NA			x
			Food safety	A linier increase in the reported food poisoning cases with each degree increase in weekly or monthly temperature	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Water and disease	Temperature, rainfall, water availability and quality can affect the water-related disease, both water-borne (ingested) and water-washed diseases (caused by lack of hygiene)	NA			x
			Air quality and disease	Exposure to elevated concentration of ground level ozone is associated with increased patients suffering from pneumonia, asthma, etc., and even premature mortality; forest fires cause burns, damage from smoke inhalation, and other injuries, and accute and chronic illness of the respiratory system	A	P.3	General description: Increased cases of asthma due to increased temperature, no study in Indonesia	o
			Aeroallergens and disease	Change in seasonality of allergenic diseases caused by pollen, mould spores and bacteria	NA			x
			Vector-borne, rodent-borne and other infectious diseases	Change in the distribution and spread of malaria, dengue, and other infectious diseases in accordance with rainfall pattern	A		General description: Climate change trigger the increase and distribution of diseases outbreak, such as dengue, malaria, encephalitis, hantavirus, etc. No study in Indonesia	o
			Occupational health	Heat stress can lead to death or chronic illness both for indoor or outdoor workers	NA			x
			Ultraviolet radiation and health	Burden of diseases from UVR-induced cortical cataracts, cutaneous malignant melanoma, and sunburn	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
4	Adaptation/measures	Approaches at different scales	National- and regional-level responses	Climate-based early warning system have been implemented at national and local levels to alert the population and relevan authorities that a disease outbreak can be expected based on climatic and environmental forecasts, coupled with a specific intervention plan and have an ongoing evaluation of the system and its Components	A	P.6-7	Policies and adaptation strategies, the organization in health departement	•
			International organizations and agencies responses	Improvement in International surveillance systems facilitate national and regional preparedness and reduce future vulnerability to epidemic-prone diseases	NA			x
			Individual-level responses	The effectiveness of warning systems for extreme events depends on individuals taking appropriate actions	NA			x
			Adaptation in health systems	Public-health intervention, funding health programmes, strengthening public institutions; building health systems that works well, treating people fairly and providing universal primary health care; providing adequate education, generating demand for better and more accessible services, ensuring that there is enough staff to do the work, Health service infrastructure needs to be resilient to extreme events, efforts to train health professionals	A	P.14-16	Establisment of work programmes: socialization, dissemination, and advocation of assessment result, increase the cooperation between government and private sector etc.	•
			Impact-specific adaptation	Adaptation measures in health sector need to be impact specific	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Integration of responses across scales	Integrated responses to address specific health risk due to climate change that could include other benefits	Adaptation responses to specific health risks could cut across scale, interventions designed to increase adaptive capacity could also facilitate the achievement greenhouse gas mitigation targets	NA			x
		Limits to adaptation	Constraints to adaptation	Awareness to the existence of climate change; a sense that climate change matters; an understanding of what causes the climate change; the capability to influence; and a political will to influence the climate change	NA			x
		Health implications of adaptation strategies, policies, measures	Evaluation of potential risks before implementation of adaptation strategies, policies, and measures	Adaptation strategies, polices, and measures can have inadvertent short- and long-term negative health consequences, so the potential risks should be evaluated before implementation	NA			x

Aspect-3 : **Human Health**
Document-4 : PIT-PI
Assessor : Dr. Asep Sofyan

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	**Factors that affect human health**						
		Direct	Temperature	Hot days and hot nights become more frequent; very low temperature can be reached in a few hours and extend over long periods in northern latitude	A	Fig. 5.6 (P. V-6) ; Fig. 7.1-7.12 (P. VII-4 - VII-20) ; Tab. 7.3 - 7.13 (P. VII-5 - VII-18)	Map of temperature trend in 1961 - 2008; temporal data of temperature in 7 provinces	●
			Precipitation pattern	Change in precipitation pattern and intensity	A	P.I-4, II-6, II-8, Fig.2.2(P.II-9), Fig.3.14, Fig 3.15, P.Iv-27, Fig.4.14(P.IV-37), Fig.4.16(P.IV-40), Fig.5.1-5.3, Fig.5.10-5.17	Precipitation anomaly in 1971 - 2003 at 6 provinces; temporal data of rainfall in 7 provinces	●
			Sea-level rise	Sea level rise especially near Pacific	A	P.I-(2-3), P.II-8, Fig.4.9 (P.IV-25)	Illustration, brief information, no complete data	o
			Extreme weathers	More intense and frequent extreme climate or weather events	A	P.II-(20-21), P.III-(22-23), P.III-(25-26)	El nino and La-nina	●
		Indirect	Water, air, and food quality	Alternate the distribution of borne disease	A	Fig.3.6 (P.III-8)	percentage of households by source of drinking water, Illustration only, no complete data	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Ecosystems, agriculture, industry, settlements, and economy	Alternate the impacts of hazards to human health	NA			x
2	Vulnerability	Population vulnerability	Burden of pre-existing diseases in the area	Burden of diseases in the area affect the vulnerability	A	P.I-4, Table 3.3 (P.III-11), P.VII-(18-19), Fig.7.12 (P.VII-20)	10 pattern of most diseases, Illustration, brief information, no complete data	o
			Population density	Populated area is exposed heavier than empty area	A	Fig.4.11 (P.IV-32)	Illustration only, no complete data	o
			Socio-economic condition	Socio-economic condition affect both sensitivity and adaptive capacity of vulnerability	A	Fig.2.3 (P.II-12), Fig.2.4 (P.II-13), Fig.4.11 (P.IV-32)	Illustration only, no complete data	o
			Age structure of population	Age structure of population as sensitivity indicator of vulnerability	A	Fig.2.3 (P.II-12), Table 3.2 (P.III-10)	pattern of causes of death/morbidity, Illustration only, no complete data	o
			Local environmental conditions	Local environmental conditions influence the vulnerability	A	Fig.2.4 (P.II-13), Fig.4.11 (P.IV-32)	Illustration only, no complete data	o
			Quality and availability of public health care and infrastructure	Quality and availability of public health care and infrastructure as Component of adaptive capacity	A	P.III-(20-21)	Brief information of facilities, health personnel, finance, no complete data	o
3	Risk/Impact	The current state of knowledge of the associations between climate factors and health outcome	Temperature-related mortality and morbidity	Short term increase in mortality due to heatwaves, heat stroke and heat stress can lead to death or chronic illness	NA			x
			Winds, storms, and floods	More intense and frequent floods and storms, increase the number of people suffering from death, injury, and disease	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Drought, nutrition, and food security	Drought effects on health include deaths, malnutrition, infectious disease, and respiratory disease	A	P.II-(2-5) , Table.2.1	Explanation of food insecurity and food vulnerability, decreased food production	o
			Food safety	A linier increase in the reported food poisoning cases with each degree increase in weekly or monthly temperature	NA			x
			Water and disease	Temperature, rainfall, water availability and quality can affect the water-related disease, both water-borne (ingested) and water-washed diseases (caused by lack of hygiene)	NA			x
			Air quality and disease	Exposure to elevated concentration of ground level ozone is associated with increased patients suffering from pneumonia, asthma, etc., and even premature mortality; forest fires cause burns, damage from smoke inhalation, and other injuries, and accute and chronic illness of the respiratory system	NA			x
			Aeroallergens and disease	Change in seasonality of allergenic diseases caused by pollen, mould spores and bacteria	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Vector-borne, rodent-borne, and other infectious diseases	Change in the distribution and spread of malaria, dengue, and other infectious diseases in accordance with rainfall pattern	A	Malaria: Fig.2.5 (P.II-14), P.II-(14-17) (comprehension about malaria),Fig.3.7-3.9(P.12-14), P.III-18-19(controlling malaria), Fig.3.11 (P.III-20), Table 7.10-13 (P.VII-(13-18)), Fig.7.8-7.11 (P.VII-(14-18), DHF: P.II-17, Fig.2.7 (P.II-18) (Incidence rate), Fig.3.10 (P.III-15) (IR and CFR),P.III-18 (problem in controlling DHF), Fig.7.1-7.7 (P.VII-(4-12)), Table 7.3-7.9 (P.VII-(5-12))	Relationship between temporal data of rainfall, temperature and humidity	•
			Ultraviolet radiation and health	Burden of diseases from UVR-induced cortical cataracts, cutaneous malignant melanoma, and sunburn	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
4	Adaptation/measures	Approaches at different scales	National- and regional-level responses	Climate-based early warning system have been implemented at national and local levels to alert the population and relevan authorities that a disease outbreak can be expected based on climatic and environmental forecasts, coupled with a specific intervention plan and have an ongoing evaluation of the system and its Components	NA			x
			International organizations and agencies responses	Improvement in International surveillance systems facilitate national and regional preparedness and reduce future vulnerability to epidemic-prone diseases	NA			x
			Individual-level responses	The effectiveness of warning systems for extreme events depends on individuals taking appropriate actions	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Adaptation in health systems	Public-health intervention, funding health programmes, strengthening public institutions; building health systems that works well, treating people fairly and providing universal primary health care; providing adequate education, generating demand for better and more accessible services, ensuring that there is enough staff to do the work, Health service infrastructure needs to be resilient to extreme events, efforts to train health professionals	NA			x
			Impact-specific adaptation	Adaptation measures in health sector need to be impact specific	NA			x
		Integration of responses across scales	Integrated responses to address specific health risk due to climate change that could include other benefits	Adaptation responses to specific health risks could cut across scale, interventions designed to increase adaptive capacity could also facilitate the achievement greenhouse gas mitigation targets	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Limits to adaptation	Constraints to adaptation	Awareness to the existence of climate change; a sense that climate change matters; an understanding of what causes the climate change; the capability to influence; and a political will to influence the climate change	NA			x
		Health implications of adaptation strategies, policies, measures	Evaluation of potential risks before implementation of adaptation strategies, policies, and measures	Adaptation strategies, polices, and measures can have inadvertent short- and long-term negative health consequences, so the potential risks should be evaluated before implementation	NA			x

Aspect-3 : **Human Health**
Document-5 : ICR
Assessor : Dr. Asep Sofyan

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Factors that affect human health						
1	Stimuli	Direct	Temperature	Hot days and hot nights become more frequent; very low temperature can be reached in a few hours and extend over long periods in northern latitude	A	p.19, fig.20(p.21)	Most of the wet season rainfall of stations located in the southern part of Indonesia tended to increase while that of dry season rainfall tended to decrease, Whereas in the stations located in the northern part of Indonesia, rainfall in both seasons showed a slight increase	●
			Precipitation pattern	Change in precipitation pattern and intensity	A	p.17	On average the rate of changes in minimum and maximum temperature over the 33 stations was 0.047^{o}C and 0.017^{o}C per year respectively	●
			Sea-level rise	Sea level rise especially near Pacific	A	p.26-27, table 3(p.27)	In Indonesia, sea level rise vary in some areas	●

			Extreme weathers	More intense and frequent extreme climate or weather events	A	p.3, fig.2(p.4)	Over recent years, it is quite clear that the El Niño events have become more frequent as the global temperature anomalies associated with each El Niño continue to increase (Hansen et al., 2006)	•
		Indirect	Water, air, and food quality	Alternate the distribution of borne disease	A	p. 20	Change in hidrology	o
			Ecosystems, agriculture, industry, settlements, and economy	Alternate the impacts of hazards to human health	NA			x
2	Vulnerability	Population vulnerability	Burden of pre-existing diseases in the area	Burden of diseases in the area affect the vulnerability	NA			x
			Population density	Populated area is exposed heavier than empty area	NA			x
			Socio-economic condition	Socio-economic condition affect both sensitivity and adaptive capacity of vulnerability	NA			x
			Age structure of population	Age structure of population as sensitivity indicator of vulnerability	NA			x
			Local environmental conditions	Local environmental conditions influence the vulnerability	NA			x
			Quality and availability of public health care and infrastructure	Quality and availability of public health care and infrastructure as Component of adaptive capacity	NA			x

3	Risk/Impact	The current state of knowledge of the associations between climate factors and health outcome	Temperature-related mortality and morbidity	Short term increase in mortality due to heatwaves, heat stroke and heat stress can lead to death or chronic illness	NA			x
			Winds, storms, and floods	More intense and frequent floods and storms, increase the number of people suffering from death, injury, and disease	A	P. 3 - 4 , Fig. 2 - 3	The most common types of climate related hazards in Indonesia are Floods, droughts, landslides and forest fires. There are number of incidence but no data of health outcomes	o
			Drought, nutrition, and food security	Drought effects on health include deaths, malnutrition, infectious disease, and respiratory disease	A	P. 7	Drought and Impact on food supply has been explained, but no link to malnutrition	o
			Food safety	A linier increase in the reported food poisoning cases with each degree increase in weekly or monthly temperature	NA			x
			Water and disease	Temperature, rainfall, water availability and quality can affect the water-related disease, both water-borne (ingested) and water-washed diseases (cause by lack of hygiene)	A	P. 16	Only brief about ENSO impact to the outbreak of disease, such as diarrhea and cholera	o

			Air quality and disease	Exposure to elevated concentration of ground level ozone is associated with increased patients suffering from pneumonia, asthma, etc., and even premature mortality; forest fires cause burns, damage from smoke inhalation, and other injuries, and accute and chronic illness of the respiratory system	NA			x
			Aeroallergens and disease	Change in seasonality of allergenic diseases caused by pollen, mould spores and bacteria	NA			x
			Vector-borne, rodent-borne and other infectious diseases	Change in the distribution and spread of malaria, dengue, and other infectious diseases in accordance with rainfall pattern	A	P. 16, Fig. 13-14	Only brief about ENSO impact to the outbreak of disease, such as malaria and dengue, dengue cases peaking in La-Nina years	o
			Ultraviolet radiation and health	Burden of diseases from UVR-induced cortical cataracts, cutaneous malignant melanoma, and sunburn	NA			x

4	Adaptation/measures	Approaches at different scales	National- and regional-level responses	Climate-based early warning system have been implemented at national and local levels to alert the population and relevan authorities that a disease outbreak can be expected based on climatic and environmental forecasts, coupled with a specific intervention plan and have an ongoing evaluation of the system and its Components	NA			x
			International organizations and agencies responses	Improvement in International surveillance systems facilitate national and regional preparedness and reduce future vulnerability to epidemic-prone diseases	NA			x
			Individual-level responses	The effectiveness of warning systems for extreme events depends on individuals taking appropriate actions	NA			x

			Adaptation in health systems	Public-health intervention, funding health programmes, strengthening public institutions; building health systems that works well, treating people fairly and providing universal primary health care; providing adequate education, generating demand for better and more accessible services, ensuring that there is enough staff to do the work, Health service infrastructure needs to be resilient to extreme events, efforts to train health professionals	A	P. 64 , appendix table	Some of adaptation measures in health systems are mention in the appendix table	o
			Impact-specific adaptation	Adaptation measures in health sector need to be impact specific	A	P. 64 , appendix table	Adaptation measures for vector-borne diseases, water-borne diseases, and malnutrition	o
		Integration of responses across scales	Integrated responses to address specific health risk due to climate change that could include other benefits	Adaptation responses to specific health risks could cut across scale, interventions designed to increase adaptive capacity could also facilitate the achievement greenhouse gas mitigation targets	NA			x

		Limits to adaptation	Constraints to adaptation	Awareness to the existence of climate change; a sense that climate change matters; an understanding of what causes the climate change; the capability to influence; and a political will to influence the climate change	NA			x
		Health implications of adaptation strategies, policies, measures	Evaluation of potential risks before implementation of adaptation strategies, policies, and measures	Adaptation strategies, polices, and measures can have inadvertent short- and long-term negative health consequences, so the potential risks should be evaluated before implementation	NA			x

Aspect-3 : **Human Health**

Meta-analysis

Assessor : Dr. Asep Sofyan

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No.	Component	Indicator	ICCSR-HS	Jakstra	STRAPI	PIT-PI	ICR	Overall
1	**Stimuli**							
	Direct	Temperature	●	●	x	●	●	●
		Precipitation pattern	●	●	o	●	●	●
		Sea-level rise	●	●	x	o	●	●
		Extreme weathers	●	●	x	●	●	●
	Indirect	Water, air, and food quality	o	o	o	o	o	o
		Ecosystems, agriculture, industry, settlements, and economy	o	o	o	x	x	o
2	**Vulnerability**							
	Vulnerability factors	Burden of pre-existing diseases in the area	o	x	x	o	x	x
		Population density	●	o	x	o	x	o
		Socio-economic condition	●	o	x	o	x	o
		Age structure of population	●	o	x	o	x	o
		Local environmental conditions	o	o	x	o	x	o
		Quality and availability of public health care and infrastructure	●	x	x	o	x	o
3	**Risk/Impact**							

No.	Component	Indicator	ICCSR-HS	Jakstra	STRAPI	PIT-PI	ICR	Overall
	The current state of knowledge of the associations between climate factors and health outcome	Temperature-related mortality and morbidity	o	x	o	x	x	x
		Winds, storms, and floods	o	o	x	x	o	o
		Drought, nutrition, and food security	o	o	x	o	o	o
		Food safety	x	x	x	x	x	x
		Water and disease	●	o	x	x	o	o
		Air quality and disease	x	x	o	x	x	x
		Aeroallergens and disease	x	x	x	x	x	x
		Vector-borne, rodent-borne, and other infectious diseases	●	o	o	o	o	o
		Ultraviolet radiation and health	x	x	x	x	x	x
4	**Measures**							
	Approaches at different scales	National- and regional-level responses	●	x	●	x	o	o
		International organizations and agencies responses	x	x	x	x	x	x
		Individual-level responses	●	x	x	x	x	o
		Adaptation in health systems	●	x	●	x	o	o
		Impact-specific adaptation	x	x	x	x	o	x

No.	Component	Indicator	ICCSR-HS	Jakstra	STRAPI	PIT-PI	ICR	Overall
	Integration of responses across scales	Integrated responses to address specific health risk due to climate change that could include other benefits	x	x	x	x	x	x
	Limits to adaptation	Constraints to adaptation	x	x	x	x	x	x
	Health implications of adaptation strategies, policies, measures	Evaluation of potential risks before implementation of adaptation strategies, policies, and measures	o	x	x	x	x	x

Aspect-4: Human Settlement Systems

Aspect-4 : **Human Settlement Systems**
Document : Jakstra
Assessor : Dr. Wilmar Salim

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Temperature	Increases in mean temperature		NA			-
	Bsic data	Extreme events	Intensity of extreme events		NA			-
			Frequency of extreme events		NA			-
		Other source	Interaction with other non-climate sources of change		NA			-
2	Vulnerability	Vulnerability analysis	Specific geographic context	Area elevation	A	5.2.6 Exposure	Urban area <1 meter is vulnerable to sea level rise	●
				Area size	A	5.2.6 Exposure	The bigger the area the higher the exposure, the more vulnerable	●
			Specific sectoral context	Concentration of infrastructures	A	5.2.6 Exposure	The more concentrated the more vulnerable	●
			Specific social context	Population, density, migration	A	5.2.6 Exposure	The higher those indicators the more vulnerable	●
3	Risk/impact	Risk analysis	High-risk locations (coast, river)	Elevation	A	5.2.6 Exposure	Coastal/riverside urban areas are more vulnerable	●
			Climate-sensitive resource economy: agriculture and forest industries, water demands and tourism		NA			x
		Impact analysis	Social economic costs: GDP, percapita income	Part of urban poor indicator	NA	5.2.6 Sensitivity		x
			Poor community	Urban poor	A	5.2.6 Sensitivity	% of urban poor to total population	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
4	Measures (adaptation)	Competence and capacity	Competence of individuals, communities, enterprises, LGs	Spontaneous adaptation through local wisdom	A	5.2.6 Adaptive Capacity	Local wisdom in building design, settlement pattern, and daily life	●
			Capacity of individuals, communities, enterprises, LGs	Protection	A	5.2.6 Adaptive Capacity	Construction of dam, break, canal	●
				Relocation	A	5.2.6 Adaptive Capacity	Settlement relocation from coast and river banks	●
				Urban design	A	5.2.6 Adaptive Capacity	Inclusion of compact city, public transport, pedestrian, green building, etc. into spatial plan	●
				By-laws regarding climate change impact	A	5.2.6 Adaptive Capacity		o
		Accessibility and linkage	Access to financial resources		NA	5.2.6 Adaptive Capacity	*Missing data*	x
			Access to other resources	Existence of disaster mitigation agency	A	5.2.6 Adaptive Capacity	Increase adaptive capacity	●
			Linkages to national and global systems		NA			x

Aspect-5: Water Resources and Systems

Aspect-5 : **Water Resources and Systems**
Document-1 : ICCSR-WS
Assessors : Oman Abdurahman, M. T. & Dr. Budhi Setiawan

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
1	Stimuli	Hazards From Atmosphere	Precipitation variability	increasing over land north of 30°N and decreasing over land between 10°S and 30°N	A	Table 1.1(p.4)	rise of surface water, Rise of temperature: surface water flow decline, Rise of soil humidity	●
			Temperature rise	the flooded area in Bangladesh is projected to increase at least by 23-29% with global temperature rise of 2°C	A	p.5	in 2100 the global surface temperature will rise 1-4º C relative to the average temperature in 1980-1999	●
			Increase of intensity and frequency of extreme climate change events (ENSO & IPO)	extreme and catastrophic flood, intense and multiannual drought	A	Table 1.1(p.4)	rainfall above normal: rise of surface water flow and soil humidity, Rainfall below normal: decline of surface water flow	o
		Hazards From Ocean	Sea level rise	in the coast of India sea level rise 0.1 m	A	p.1	globally, sea level rise (SLR) is about 3.1mm/year today, while the average sea level rise in the 20th century is only 1.7 mm/year	●
2	Vulnerability	Current Sensitivity/Vulnerability	Surface water	changes in temperature, radiaton, atmospheric humidity, and wind speed affect potential evapotranspiration, and this can affect the decreased of precipitation on surface water	A	p.8	the supply of surface water and ground water across Indonesia varies widely across islands in both quantity and quality	●

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Groundwater	correlate more strongly with precipitation than temperature, but temperature becomes important for shallow aquifers and in warm periods	A	p.11	the decline in groundwater occurs in many large cities such as Jakarta, Semarang, Surabaya and Bandung from excessive groundwater pumping for both domestic and industrial uses	•
			Floods and Droughts	climate change might already have had an impact on floods and droughts	A	p.10-11	almost all parts of Indonesia are vulnerable to flood hazard and eastern part of Indonesia is vulnerable to meteorological drought	•
			Water quality	intense rainfall result in more nutrients, pathogens, and toxins being washed into water bodies	A	p.10	water quality has not been given enough attention and comprehensive study	o
			Erosion and sediment transport	climate change impacts on water erosion and affect many geomorphologic process, slope stability, channel change, and sediment transport	NA			x
		Assumption About Future Trends	Climatic Drivers	the most dominant climatic drivers for water availability are precipitation, temperature, and evaporative demand (determined by net radiation at ground level, atmospheric humidity, wind speed, and temperature). In the near term climate model uncertainties play the most important role	A	p.4, table 1.1(p.4)	the climatic drivers are increasing evapotranspiration, change of rainfall pattern, rise of surface water, rise of temperature, rise of soil humidity, groundwater withdrawal, freshwater-seawater interface-groundwater pressured up, and rainfall pattern	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Non-Climatic Drivers	water resources, both in quantity and quality, are influenced by land-use change, the construction and management of reservoirs, pollutant emissions, and water and wastewater treatment	A	p.28-29	the seven primary components of vulnerability (based on quantitative data) are river basin and land use, population density, land-use planning, water demand, confined aquifer and aquifers potential, land elevation, and soil properties	•
3	Risk/Impact	Key Future Impacts and Vulnerabilities	Surface water	flow seasonality increase, with higher flows in the peak flow season and either lower flows during the low flow season or extended dry periods, climate change scenarios from different climate models may result in very different projections of future runoff change	A	p.51, Fig. 4.2(p.51)	critical water balance condition especially in urban areas	•
			Groundwater	saltwater intrusion of neighbouring saline aquifers and salinisation of shallow aquifer, affect groundwater recharge rates, the renewable groundwater resources, and groundwater levels	A	p.55	in coastal area groundwater intake level causing seawater intrusion	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Floods and droughts	impacts of extremes on human welfare in countries with low adaptation capacity, increase the risk of both floods and droughts	A	p.51-53, Fig. 4.3(P.52), Fig. 4.4(P.53)	loss of lives, material wealth and livelihood, increase reparation and rebuilding of infrastructure damaged by floods, decrease of clean water supply, harvest failure, and disease water supply shortage exist, both in intensity and areal affected	•
			Water quality	biological quality of water is poor due to lack of sanitation and proper potabilisation methods and poor health conditions, vulnerabilities are related to a lack of relevant information, institutional weakness responding to a changing environment, and the need to mobile resources	A	p.10	highly polluted, in particular in cities, town and their surrounding in Java	•
			Erosion and sediment transport	change from snowfall to rainfall, greater rates of erosion, unless protection measures are taken	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
4	Adaptation	Adaptation Measures	Context for Adaptation	Integrated Water Resources Management (IWRM) should be an instrument to explore adaptation measure to climate change. Successful integrated water management strategies include, among others: capturing society's view, reshaping planning process, coordinating land and water resources management, recognizing water quantity and quality linkages, conjunctive use of surface water and groundwater, protecting and restoring natural system, and including consideration of climate change.	A	p.65	balance between conservation and utilization, upstream and downstream, between the utilization of surface water and groundwater, between demand and supply management, and the fulfillment of long-term and short-term interests	•
			Adaptation options in principle	drew a distinction between 'supply side' and 'demand side' adaptation options, which are applicable to a range systems	A	p.67	a development policy for the water resources sector should aim at an efficient use of water resources to meet demands of households, urban areas and the industry	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Adaptation options in practice	the physical feasibility and effectiveness of specific adaptation options in specific circumstances	A	p.65	efficiency in the use of water for irrigation will be achieved through optimizing irrigation techniques and improved irrigation management, rehabilitation and improvement of operation and management, especially outside Java	•
			Limits to adaptation and adaptive capacity	four different types of limits on adaptation to change in water quantity and quality, namely : a physical limit, economic constraints, political or social limits, capacity of water management	A	p.67	creating a momentum as a follow-up to the Law No 7 at 2004 in term of its implementing regulations as the technical guidance for the management of water resources	o
			Uncertainty and risk: decision-making under uncertainty	it is no longer appropriate to assume that past hydrological conditions will continue into the future (the traditional assumption) and, due to climate change uncertainty, managers can no longer have confidence in single projections of the future	NA			x

Aspect-5 : **Water Resources and Systems**
Document-2 : VA Lombok-WS
Assessors : Oman Abdurahman, M. T. & Dr. Budhi Setiawan

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
1	Stimuli	Hazards From Atmosphere	Precipitation variability	increasing over land north of 30°N and decreasing over land between 10°S and 30°N	A	p.7, fig 2.2(p.8), p.22	climate variability can be both intra-seasonal (period shorter than three months) and inter-annual (periods of two years or more), changes in rainfall patterns especially in January	●
			Temperature rise	the flooded area in Bangladesh is projected to increase at least by 23-29% with global temperature rise of 2°C	A	p.23, fig 3.8(p.23)	an increase in average temperatures in almost every month except August and September with changes in temperature maximum about 0.5°C	●
			Increase of intensity and frequency of extreme climate change events (ENSO & IPO)	extreme and catastrophic flood, intense and multiannual drought	A	p.26	global warming will increase the frequency of occurrence of extreme weather will lead to higher frequency of occurrence of storm surges	●
		Hazards From Ocean	Sea level rise	in the coast of India sea level rise 0.1 m	A	p.10, fig 2.5(p.10)	In the event of El Niño, sea level will decrease by 20 cm below normal, and the La Niña periods will rise ranging from 10 cm to 20	●

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
							cm above normal	
2	Vulnerability	Current Sensitivity/Vulnerability	Surface water	changes in temperature, radiaton, atmospheric humidity, and wind speed affect potential evapotranspiration, and this can affect the decreased of precipitation on surface water	A	p.14, fig 2.3(p.14)	potential surface water will be largely determined by three conditions, namely climate, topography, and land cover	•
			Groundwater	correlate more strongly with precipitation than temperature, but temperature becomes important for shallow aquifers and in warm periods	A	p.16-17, fig 2.4(p.16), fig 2.5(p.17), table 2.3(p.17)	groundwater in the Lombok island spread out in two groundwater basins, namely Tanjung-Sambedia and Mataram-Selong	•
			Floods and Droughts	climate change might already have had an impact on floods and droughts	A	p.20-21	there are two categories of floods, namely intense floods and flash floods, the frequency and intensity of drought is predicted to increase	•
			Water quality	intense rainfall result in more nutrients, pathogens, and toxins being washed into water bodies	A	p.17	occur either chemical or biological contamination	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Erosion and sediment transport	climate change impacts on water erosion and affect many geomorphologic process, slope stability, channel change, and sediment transport	NA			x
		Assumption About Future Trends	Climatic Drivers	The most dominant climatic drivers for water availability are precipitation, temperature, and evaporative demand (determined by net radiation at ground level, atmospheric humidity, wind speed, and temperature). In the near term climate model uncertainties play the most important role	NA			x
			Non-Climatic Drivers	Water resources, both in quantity and quality, are influenced by land-use change, the construction and management of reservoirs, pollutant emissions, and water and wastewater treatment	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
3	Risk/Impact	Key Future Impacts and Vulnerabilities	Surface water	flow seasonality increase, with higher flows in the peak flow season and either lower flows during the low flow season or extended dry periods, climate change scenarios from different climate models may result in very different projections of future runoff change	A	p.40-44, table 4.3(p.43)	decreasing water availability in the next decade	o
			Groundwater	saltwater intrusion of neighbouring saline aquifers and salinisation of shallow aquifer, affect groundwater recharge rates, the renewable groundwater resources, and groundwater levels	NA			x
			Floods and droughts	impacts of extremes on human welfare in countries with low adaptation capacity, increase the risk of both floods and droughts	A	p.80-81	flash floods can cause loss of life, property and livelihoods, increase the cost of repairing or rebuilding damaged infrastructure, reduced fresh water supplies, crop failure, and diseases such as dengue fever	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Water quality	biological quality of water is poor due to lack of sanitation and proper potabilisation methods and poor health conditions, vulnerabilities are related to a lack of relevant information, institutional weakness responding to a changing environment, and the need to mobile resources	NA			x
			Erosion and sediment transport	change from snowfall to rainfall, greater rates of erosion, unless protection measures are taken	NA			x
4	Adaptation	Adaptation Measures	Context for Adaptation	Integrated Water Resources Management (IWRM) should be an instrument to explore adaptation measure to climate change. Successful integrated water management strategies include, among others: capturing society's view, reshaping planning process, coordinating land and water resources management, recognizing water quantity and quality linkages, conjunctive use of surface water and groundwater, protecting and restoring natural system, and including consideration of climate change.	A	p.95	make integrated water resources management as main success paremater	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Adaptation options in principle	drew a distinction between 'supply side' and 'demand side' adaptation options, which are applicable to a range systems	A	p.109	took care of water balance both ini urban and rural area with even access distribution of clean water	•
			Adaptation options in practise	the physical feasibility and effectiveness of specific adaptation options in specific circumstances	A	p.111	develop technology to provide water supply based on clean energy	•
			Limits to adaptation and adaptive capacity	four different types of limits on adaptation to change in water quantity and quality, namely : a physical limit, economic constraints, political or social limits, capacity of water management	NA			x
			Uncertainty and risk: decision-making under uncertainty	it is no longer appropriate to assume that past hydrological conditions will continue into the future (the traditional assumption) and, due to climate change uncertainty, managers can no longer have confidence in single projections of the future	NA			x

Aspect-5 : **Water Resources and Systems**
Document-3 : RAN-PI
Assessors : Oman Abdurahman, M. T. & Dr. Budhi Setiawan

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
1	Stimuli	Hazards From Atmosphere	Precipitation variability	increasing over land north of 30°N and decreasing over land between 10°S and 30°N	A	p.4	rainfall increase in rainy season and decrease in dry season	o
			Temperature rise	the flooded area in Bangladesh is projected to increase at least by 23-29% with global temperature rise of 2°C	A	p.3	the rate of temperature change is 0.76°C since 1850-1899 until 2001-2005	o
			Increase of intensity and frequency of extreme climate change events (ENSO & IPO)	extreme and catastrophic flood, intense and multiannual drought	A	p.4	increase extreme rainfall, extreme flood and drought, and tropical cyclone	●
		Hazards From Ocean	Sea level rise	in the coast of India sea level rise 0.1 m	A	p.3	global sea-level rise has reached 1.8mm per year	o
2	Vulnerability	Current Sensitivity/Vulnerability	Surface water	changes in temperature, radiation, atmospheric humidity, and wind speed affect potential evapotranspiration, and this can affect the decreased of precipitation on surface water	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Groundwater	correlate more strongly with precipitation than temperature, but temperature becomes important for shallow aquifers and in warm periods	NA			x
			Floods and Droughts	climate change might already have had an impact on floods and droughts	NA			x
			Water quality	intense rainfall result in more nutrients, pathogens, and toxins being washed into water bodies	NA			x
			Erosion and sediment transport	climate change impacts on water erosion and affect many geomorphologic process, slope stability, channel change, and sediment transport	NA			x
		Assumption About Future Trends	Climatic Drivers	The most dominant climatic drivers for water availability are precipitation, temperature, and evaporative demand (determined by net radiation at ground level, atmospheric humidity, wind speed, and temperature). In the near term climate model uncertainties play the most important role	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Non-Climatic Drivers	Water resources, both in quantity and quality, are influenced by land-use change, the construction and management of reservoirs, pollutant emissions, and water and wastewater treatment	NA			x
3	Risk/Impact	Key Future Impacts and Vulnerabilities	Surface water	flow seasonality increase, with higher flows in the peak flow season and either lower flows during the low flow season or extended dry periods, climate change scenarios from different climate models may result in very different projections of future runoff change	NA			x
			Groundwater	saltwater intrusion of neighbouring saline aquifers and salinisation of shallow aquifer, affect groundwater recharge rates, the renewable groundwater resources, and groundwater levels	NA			x
			Floods and droughts	impacts of extremes on human welfare in countries with low adaptation capacity, increase the risk of both floods and droughts	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Water quality	biological quality of water is poor due to lack of sanitation and proper potabilisation methods and poor health conditions, vulnerabilities are related to a lack of relevant information, institutional weakness responding to a changing environment, and the need to mobile resources	NA			x
			Erosion and sediment transport	change from snowfall to rainfall, greater rates of erosion, unless protection measures are taken	NA			x
4	Adaptation	Adaptation Measures	Context for Adaptation	Integrated Water Resources Management (IWRM) should be an instrument to explore adaptation measure to climate change. Successful integrated water management strategies include, among others: capturing society's view, reshaping planning process, coordinating land and water resources management, recognizing water quantity and quality linkages, conjunctive use of surface water and groundwater, protecting and restoring natural system, and including consideration of climate change.	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Adaptation options in principle	drew a distinction between 'supply side' and 'demand side' adaptation options, which are applicable to a range systems	NA			x
			Adaptation options in practice	the physical feasibility and effectiveness of specific adaptation options in specific circumstances	A	p.13	development of new irrigation technologies for agricultural intensification (such as spray and drip irrigation for water savings)	•
			Limits to adaptation and adaptive capacity	four different types of limits on adaptation to change in water quantity and quality, namely : a physical limit, economic constraints, political or social limits, capacity of water management	NA			x
			Uncertainty and risk: decision-making under uncertainty	it is no longer appropriate to assume that past hydrological conditions will continue into the future (the traditional assumption) and, due to climate change uncertainty, managers can no longer have confidence in single projections of the future	NA			x

Aspect-5 : **Water Resources and Systems**
Document-4 : RAN-MAPI
Assessors : Oman Abdurahman, M. T. & Dr. Budhi Setiawan

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
1	Stimuli	Hazards From Atmosphere	Precipitation variability	increasing over land north of 30°N and decreasing over land between 10°S and 30°N	A	p.4	in the southern equator the rainfall will decrease in dry season and increase in northern equator	●
			Temperature rise	the flooded area in Bangladesh is projected to increase at least by 23-29% with global temperature rise of 2°C	A	p.4	the rate of temperature change in Jakarta is 1.42°C/100year for July and 1.04°C for January	●
			Increase of intensity and frequency of extreme climate change events (ENSO & IPO)	extreme and catastrophic flood, intense and multiannual drought	A	p.4-5	global warming will cause droughts and extreme rainfall including La Nina and El Nino	●
		Hazards From Ocean	Sea level rise	in the coast of India sea level rise 0.1 m	A	p.4	Indonesian sea-level rise has reached 8mm per year	●
2	Vulnerability	Current Sensitivity/Vulnerability	Surface water	changes in temperature, radiaton, atmospheric humidity, and wind speed affect potential evapotranspiration, and this can affect the decreased of precipitation on surface water	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Groundwater	correlate more strongly with precipitation than temperature, but temperature becomes important for shallow aquifers and in warm periods	NA			x
			Floods and Droughts	climate change might already have had an impact on floods and droughts	NA			x
			Water quality	intense rainfall result in more nutrients, pathogens, and toxins being washed into water bodies	NA			x
			Erosion and sediment transport	climate change impacts on water erosion and affect many geomorphologic process, slope stability, channel change, and sediment transport	NA			x
		Assumption About Future Trends	Climatic Drivers	The most dominant climatic drivers for water availability are precipitation, temperature, and evaporative demand (determined by net radiation at ground level, atmospheric humidity, wind speed, and temperature). In the near term climate model uncertainties play the most important role	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Non-Climatic Drivers	Water resources, both in quantity and quality, are influenced by land-use change, the construction and management of reservoirs, pollutant emissions, and water and wastewater treatment	NA			x
3	Risk/Impact	Key Future Impacts and Vulnerabilities	Surface water	flow seasonality increase, with higher flows in the peak flow season and either lower flows during the low flow season or extended dry periods, climate change scenarios from different climate models may result in very different projections of future runoff change	A	p.9	lack of access to drinking water and sanitation	o
			Groundwater	saltwater intrusion of neighbouring saline aquifers and salinisation of shallow aquifer, affect groundwater recharge rates, the renewable groundwater resources, and groundwater levels	A	p.7	excessive groundwater withdrawal cause land subsidence, which caused widespread flood-prone areas and seawater intrusion	•
			Floods and droughts	impacts of extremes on human welfare in countries with low adaptation capacity, increase the risk of both floods and droughts	A	p.8	increase intensity both floods and droughts	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Water quality	biological quality of water is poor due to lack of sanitation and proper potabilisation methods and poor health conditions, vulnerabilities are related to a lack of relevant information, institutional weakness responding to a changing environment, and the need to mobile resources	A	p.9	decreasing water quality especially in dry season	o
			Erosion and sediment transport	change from snowfall to rainfall, greater rates of erosion, unless protection measures are taken	NA			x
4	Adaptation	Adaptation Measures	Context for Adaptation	Integrated Water Resources Management (IWRM) should be an instrument to explore adaptation measure to climate change. Successful integrated water management strategies include, among others: capturing society's view, reshaping planning process, coordinating land and water resources management, recognizing water quantity and quality linkages, conjunctive use of surface water and groundwater, protecting and restoring natural system, and including consideration of climate change.	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Adaptation options in principle	drew a distinction between 'supply side' and 'demand side' adaptation options, which are applicable to a range systems	NA			x
			Adaptation options in practice	the physical feasibility and effectiveness of specific adaptation options in specific circumstances	A	p.51	research to produce technologies that can make use of sea water into drinking water and recycled water, developing technology trenches dams in order to increase the river capacity	•
			Limits to adaptation and adaptive capacity	four different types of limits on adaptation to change in water quantity and quality, namely : a physical limit, economic constraints, political or social limits, capacity of water management	NA			x
			Uncertainty and risk: decision-making under uncertainty	it is no longer appropriate to assume that past hydrological conditions will continue into the future (the traditional assumption) and, due to climate change uncertainty, managers can no longer have confidence in single projections of the future	NA			x

Aspect-5 : **Water Resources and Systems**
Document-5 : ICR
Assessors : Oman Abdurahman, M. T. & Dr. Budhi Setiawan

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
1	Stimuli	Hazards From Atmosphere	Precipitation variability	increasing over land north of 30°N and decreasing over land between 10°S and 30°N	A	p.19, fig.20(p.21)	most of the wet season rainfall of stations located in the southern part of Indonesia tended to increase while that of dry season rainfall tended to decrease. Whereas in the stations located in the northern part of Indonesia, rainfall in both seasons showed a slight increase	●
			Temperature rise	the flooded area in Bangladesh is projected to increase at least by 23-29% with global temperature rise of 2°C	A	p.17	on average the rate of changes in minimum and maximum temperature over the 33 stations was 0.047°C and 0.017°C per year respectively.	●
			Increase of intensity and frequency of extreme climate change events (ENSO & IPO)	extreme and catastrophic flood, intense and multiannual drought	A	p.3, fig.2(p.4)	over recent years, it is quite clear that the El Niño events have become more frequent as the global temperature anomalies associated with each El Niño continue to increase (Hansen et al.,	●

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
							2006).	
		Hazards From Ocean	Sea level rise	in the coast of India sea level rise 0.1 m	A	p.26-27, table 3(p.27)	in Indonesia, sea level rise vary in some areas	•
2	Vulnerability	Current Sensitivity/Vulnerability	Surface water	changes in temperature, radiation, atmospheric humidity, and wind speed affect potential evapotranspiration, and this can affect the decreased of precipitation on surface water	NA			x
			Groundwater	correlate more strongly with precipitation than temperature, but temperature becomes important for shallow aquifers and in warm periods	NA			x
			Floods and Droughts	climate change might already have had an impact on floods and droughts	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Water quality	intense rainfall result in more nutrients, pathogens, and toxins being washed into water bodies	NA			x
			Erosion and sediment transport	climate change impacts on water erosion and affect many geomorphologic process, slope stability, channel change, and sediment transport	NA			x
		Assumption About Future Trends	Climatic Drivers	The most dominant climatic drivers for water availability are precipitation, temperature, and evaporative demand (determined by net radiation at ground level, atmospheric humidity, wind speed, and temperature). In the near term climate model uncertainties play the most important role	NA			x
			Non-Climatic Drivers	Water resources, both in quantity and quality, are influenced by land-use change, the construction and management of reservoirs, pollutant emissions, and water and wastewater treatment	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
3	Risk/Impact	Key Future Impacts and Vulnerabilities	Surface water	flow seasonality increase, with higher flows in the peak flow season and either lower flows during the low flow season or extended dry periods, climate change scenarios from different climate models may result in very different projections of future runoff change	A	p.36, fig.37(p.37)	many districts in Indonesia may face problems of clean water shortage	•
			Groundwater	saltwater intrusion of neighbouring saline aquifers and salinisation of shallow aquifer, affect groundwater recharge rates, the renewable groundwater resources, and groundwater levels	A	p.41	coastal waters will become more saline and soil salinity will increase, even the ground water aquifers will also bear the brunt of salinity intrusion.	•
			Floods and droughts	impacts of extremes on human welfare in countries with low adaptation capacity, increase the risk of both floods and droughts	A	p.6-7	during extreme dry years will also influence the availability of drinking water, especially in urban/metro areas. the flood will damage the processing plant and contaminate the water.	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Water quality	biological quality of water is poor due to lack of sanitation and proper potabilisation methods and poor health conditions, vulnerabilities are related to a lack of relevant information, institutional weakness responding to a changing environment, and the need to mobile resources	A	p.24	the quality of water in the Citarum watershed also decreased significantly	o
			Erosion and sediment transport	change from snowfall to rainfall, greater rates of erosion, unless protection measures are taken	NA			x
4	Adaptation	Adaptation Measures	Context for Adaptation	Integrated Water Resources Management (IWRM) should be an instrument to explore adaptation measure to climate change. Successful integrated water management strategies include, among others: capturing society's view, reshaping planning process, coordinating land and water resources management, recognizing water quantity and quality linkages, conjunctive use of surface water and groundwater, protecting and restoring natural system, and including consideration of climate change.	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Adaptation options in principle	drew a distinction between 'supply side' and 'demand side' adaptation options, which are applicable to a range systems	NA			x
			Adaptation options in practice	the physical feasibility and effectiveness of specific adaptation options in specific circumstances	A	p.36	creation of storages and inter-basin transfer of water from surplus to deficit regions could therefore be an option for achieving more equitable distribution of our water wealth and its optimal utilization	●
			Limits to adaptation and adaptive capacity	four different types of limits on adaptation to change in water quantity and quality, namely : a physical limit, economic constraints, political or social limits, capacity of water management	NA			x
			Uncertainty and risk: decision-making under uncertainty	it is no longer appropriate to assume that past hydrological conditions will continue into the future (the traditional assumption) and, due to climate change uncertainty, managers can no longer have confidence in single projections of the future	NA			x

Aspect-5 : **Water Resources and Systems**
Document-6 : Jakstra
Assessors : Oman Abdurahman, M. T. & Dr. Budhi Setiawan

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
1	Stimuli	Hazards From Atmosphere	Precipitation variability	increasing over land north of 30°N and decreasing over land between 10°S and 30°N	A	p.4-14, fig.4.9, 4.10(p.15)	in Java and Bali, the total rainfall from April to June (the season of transition) is expected to rise 10% from an average of the current rainy season, but for the rainy season from July to September (peak season) will be reduced between 10-25%.	●
			Temperature rise	the flooded area in Bangladesh is projected to increase at least by 23-29% with global temperature rise of 2°C	A	p.4-7. fig.4.5(p.7)	Over 150 years has been an increase in temperature of about 1.5°C	●
			Increase of intensity and frequency of extreme climate change events (ENSO & IPO)	extreme and catastrophic flood, intense and multiannual drought	A	p.4-(11-12), fig.4.8(p.11)	extreme climate such as drought and floods have become more frequent that is often associated with ENSO (El-Nino and Southern Oscillation) and La-Nina	●
		Hazards From Ocean	Sea level rise	in the coast of India sea level rise 0.1 m	A	p.4-8, fig.4.6(p.10)	in Indonesia, sea level rise is between 1 and 9 mm per year (Boer et al., 2007)	●

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
2	Vulnerability	Current Sensitivity/Vulnerability	Surface water	changes in temperature, radiation, atmospheric humidity, and wind speed affect potential evapotranspiration, and this can affect the decreased of precipitation on surface water	A	p.5-60	decrease in river water in the dry season	o
			Groundwater	correlate more strongly with precipitation than temperature, but temperature becomes important for shallow aquifers and in warm periods	A	p.5-61	Growth industries that utilize large amounts of ground water	o
			Floods and Droughts	climate change might already have had an impact on floods and droughts	A			x
			Water quality	intense rainfall result in more nutrients, pathogens, and toxins being washed into water bodies	A	p.5-61	declining water quality in urban areas	o
			Erosion and sediment transport	climate change impacts on water erosion and affect many geomorphologic process, slope stability, channel change, and sediment transport	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
		Assumption About Future Trends	Climatic Drivers	The most dominant climatic drivers for water availability are precipitation, temperature, and evaporative demand (determined by net radiation at ground level, atmospheric humidity, wind speed, and temperature). In the near term climate model uncertainties play the most important role	NA			x
			Non-Climatic Drivers	Water resources, both in quantity and quality, are influenced by land-use change, the construction and management of reservoirs, pollutant emissions, and water and wastewater treatment	NA			x
3	Risk/Impact	Key Future Impacts and Vulnerabilities	Surface water	flow seasonality increase, with higher flows in the peak flow season and either lower flows during the low flow season or extended dry periods, climate change scenarios from different climate models may result in very different projections of future runoff change	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Groundwater	saltwater intrusion of neighbouring saline aquifers and salinisation of shallow aquifer, affect groundwater recharge rates, the renewable groundwater resources, and groundwater levels	NA			x
			Floods and droughts	impacts of extremes on human welfare in countries with low adaptation capacity, increase the risk of both floods and droughts	NA			x
			Water quality	biological quality of water is poor due to lack of sanitation and proper potabilisation methods and poor health conditions, vulnerabilities are related to a lack of relevant information, institutional weakness responding to a changing environment, and the need to mobile resources	NA			x
			Erosion and sediment transport	change from snowfall to rainfall, greater rates of erosion, unless protection measures are taken	NA			x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
4	Adaptation	Adaptation Measures	Context for Adaptation	Integrated Water Resources Management (IWRM) should be an instrument to explore adaptation measure to climate change. Successful integrated water management strategies include, among others: capturing society's view, reshaping planning process, coordinating land and water resources management, recognizing water quantity and quality linkages, conjunctive use of surface water and groundwater, protecting and restoring natural system, and including consideration of climate change.	NA			x
			Adaptation options in principle	drew a distinction between 'supply side' and 'demand side' adaptation options, which are applicable to a range systems	NA			x
			Adaptation options in practice	the physical feasibility and effectiveness of specific adaptation options in specific circumstances	A	p.7-26, table 7.5(p.7-25/26)	application of water-saving irrigation technology in areas expected to experience drought	•

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comments	Rating
			Limits to adaptation and adaptive capacity	four different types of limits on adaptation to change in water quantity and quality, namely : a physical limit, economic constraints, political or social limits, capacity of water management	NA			x
			Uncertainty and risk: decision-making under uncertainty	it is no longer appropriate to assume that past hydrological conditions will continue into the future (the traditional assumption) and, due to climate change uncertainty, managers can no longer have confidence in single projections of the future	NA			x

Aspect-5 : **Water Resources and Systems**

Meta-analysis

Assessors : Oman Abdurahman, M. T. & Dr. Budhi Setiawan

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o incomplete ● complete

No.	Component	Theme	Indicator	ICCSR-WS	VA Lombok-WS	RAN-PI	RAN-MAPI	ICR	Jakstra	Overall
1	Stimuli	Hazards From Atmosphere	Precipitation variability	●	●	o	●	●	●	●
			Temperature rise	●	●	o	●	●	●	●
			Increase of intensity and frequency of extreme climate change events (ENSO & IPO)	o	●	●	●	●	●	●
		Hazards From Ocean	Sea level rise	●	●	o	●	●	●	●
2	Vulnerability	Current Sensitivity/Vulnerability	Surface water	●	●	x	x	x	o	o
			Groundwater	●	●	x	x	x	o	o
			Floods and Droughts	●	●	x	x	x	x	o
			Water quality	o	o	x	x	x	o	x
			Erosion and sediment transport	x	x	x	x	x	x	x
		Assumption About Future Trends	Climatic Drivers	●	x	x	x	x	x	x
			Non-Climatic Drivers	●	x	x	x	x	x	x
3	Risk/Impact	Key Future Impacts and Vulnerabilities	Surface water	●	o	x	o	●	x	o

No.	Component	Theme	Indicator	ICCSR-WS	VA Lombok-WS	RAN-PI	RAN-MAPI	ICR	Jakstra	Overall
			Groundwater	o	x	x	●	●	x	o
			Floods and droughts	●	●	x	●	●	x	o
			Water quality	●	x	x	o	o	x	o
			Erosion and sediment transport	x	x	x	x	x	x	x
4	Adaptation	Adaptation Measures	Context for Adaptation	●	o	x	x	x	x	x
			Adaptation options in principle	●	●	x	x	x	x	o
			Adaptation options in practice	●	●	●	●	●	●	●
			Limits to adaptation and adaptive capacity	o	x	x	x	x	x	x
			Uncertainty and risk: decision-making under uncertainty	x	x	x	x	x	x	x

Aspect-6: Coastal Areas, Oceans, and Small Islands

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-1 : **Coastal Systems and Low-lying Areas**
Document-1 : ICCSR-MFS
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.II.7, 22, 24,25, 26,27,28,29,30	Data record, altimeter, and projection	●
			Temperature rise		A	F.II.8, 9, 10,11	Data record and modeling	●
			CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		A		Cyclone in South East of Indian Ocean	o
			- extreme waves		A	F.II.15	Satellite altimeter	●
			- storm surges		A	F.II, 12,13,14	Only in Indian Ocean	o
			- altered precipitation/run-off		A	F.II.17	Only for Lombok island	o
			- ocean acidification		NA	x	x	x
			- ENSO		A	T.II.2	Projection up to 2030 (model)	●
		Human-induced pressures	Growing population and distribution		A	F.III.3		●
			Land-use changes: coastward migration		A	-	Only land cover	o
			Land-use changes: aquaculture growth		NA	x	x	o
			Land-use changes: infrastructure growth		A	F.III.6	National scale	o
			Land-use changes: industries		NA	x	x	x
			Hydrological, sedimentation changes in catchments		A	x	See in water sector	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Human and natural induced subsidence		A	F.II.31,32	Only natural due to EQ at Sumatera	o
2	Vulnerability	Natural coastal system	Morphodynamic		NA	x	x	x
			Coastal landform:					
			- beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- deltas		NA	x	x	x
			- estuary and lagoon		NA	x	x	x
			- mangroves, saltmarshes, and sea grass		NA	x	x	x
			- coral reef		A			o
		Sociatel coastal system	Freshwater resources		A	-	See in water sector	o
			Agriculture		NA	x	x	x
			Forestry		NA	x	x	x
			Fisheries		A	F.III.8	x	o
			Human settlement		NA	x	x	x
			Infrastructure		A	F.III.6	National scale	o
			Migration		NA	x	x	x
			Biodiversity		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation		A	F.II.36-45	National scale	●
			Coastal erosion		NA	x	x	x
			Coral bleaching		A	F.III.9	National scale	o
			Constraint on landward margin of coastal wetland ecosystems		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Degradation of ecosystems (wetlands, coral reefs)		NA	x	x	x
			Natural resources and environments		NA	x	x	x
		Impact to sociatel coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human health		NA	x	See in health sector	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim, empoldering, estuary closure)		NA	x	x	x
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Sustainable adaptation (wetland restoration)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		NA	x	x	x
		Adaptation practices	Integrated coastal zone management:		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			- coastal zone management regulations		NA	x	x	x
			- habitat conservation		NA	x	x	x
			- long-term coastal spatial planning		NA	x	x	x
			- long-term community planning		A	ICCSR Report	x	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-1 **: Coastal Systems and Low-lying Areas**
Document-2 : ICR
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.16, T.4	Observed data (1969-1990), IPCC, 2007 (T4) literature study	●
			Temperature rise		A	F.15, F.17, F.30	Global data, Indonesian annual rate, model projection from IPCC 2007	o
			CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		A		General description	o
			- extreme waves		A		General description	o
			- storm surges		A		General description	o
			- altered precipitation/run-off		A	T.1, F 19, F36	Data record on 1997 and 1982, (F19) decreasing rainfall	o
			- ocean acidification		NA	x	x	x
			- ENSO		A		Only considered the ENSO effect	o
		Human-induced pressures	Growing population and distribution		NA	x	x	x
			Land-use changes: coastward migration		NA	x	x	x
			Land-use changes: aquaculture growth		NA	x	x	x
			Land-use changes: infrastructure growth		NA	x	x	x
			Land-use changes: industries		NA	x	x	x
			Hydrological, sedimentation changes in catchments		A	F.16, F.17	Decreasing base flow and inflow from local river	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Human-and natural induced subsidence		NA	x	x	x
2	Vulnerability	Natural coastal system	Morphodynamic		NA	x	x	x
			Coastal landform:					
			- beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- deltas		NA	x	x	x
			- estuary and lagoon		NA	x	x	x
			- mangroves, saltmarshes, and sea grass		NA	x	x	x
			- Coral reef		A	c.3.5	Short description	o
		Societal coastal system	Freshwater resources		A	C.3.2, F.4	Water resources on Jatiluhur and Kedung Ombo	o
			Agriculture		A	F.6, 7, 8		●
			Forestry		A	C.3.4		o
			Fisheries		NA	x	x	x
			Human settlement		NA	x	x	x
			Infrastructure		NA	x	x	x
			Migration		NA	x	x	x
			Biodiversity		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation		A	F.40	Case study: Jakarta	●
			Coastal erosion		NA	x	x	x
			Coral bleaching		NA	x	x	x
			Constraint on landward margin of coastal wetland ecosystems		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Degradation of ecosystems (wetlands, coral reefs)		NA	x	x	x
			Natural resources and environments		NA	x	x	x
		Impact to societel coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human health		A	c.3.6		o
			Human activities		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim, empoldering, estuary closure)		A	Ch.6		o
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realigment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Sustainable adaptation (wetland restoration)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		NA	x	x	x
		Adaptation practices	Integrated coastal zone management:		A	Ch.6.2		-
			- coastal zone management regulations		NA	x	x	x
			- habitat conservation		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			- long-term coastal spatial planning		NA	x	x	x
			- long-term community planning		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-1 **: Coastal Systems and Low-lying Areas**
Document-3 : RAN-PI
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	c1.2	General description	o
			Temperature rise		A	c1.2	General description	o
			CO2 concentration		A	p.41-43	General description	o
			Extreme events:				General description	
			- cyclones		A	c1.2	General description	o
			- extreme waves		A	c1.2	General description	o
			- storm surges		A	c1.2	General description	o
			- altered precipitation/run-off		A	c1.2	General description	o
			- ocean acidification					
			- ENSO		A	c1.3.4	General description	o
		Human-induced pressures	Growing population and distribution		A		General description	o
			Land-use changes: coastward migration		NA	-	-	-
			Land-use changes: aquaculture growth		A	c1.3.4	General description	o
			Land-use changes: infrastructure growth		A	c1.3.4	General description	o
			Land-use changes: industries		A	c1.3.4	General description	o
			Hydrological, sedimentation changes in catchments		NA	-	General description	o
			Human-and natural induced subsidence		NA	x	x	x
2	Vulnerability	Natural coastal system	Morphodynamic		NA	x	x	x
			Coastal landform:		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			- beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- deltas		NA	x	x	x
			- estuary and lagoon		NA	x	x	x
			- mangroves, saltmarshes and sea grass		NA	x	x	x
			- coral reef		A		General description	o
		Societal coastal system	Freshwater resources		A	c1.3.1	General description	o
			Agriculture		A		General description	o
			Forestry		A	c1.3.4	General description	o
			Fisheries		NA	x	x	x
			Human settlement		A	c1.3.2	General description	o
			Infrastructure		A	-	General description	o
			Migration		A	-	General description	o
			Biodiversity		A	-	General description	o
			Recreation and tourism		A	-	General description	o
			Transportation		A	c1.2	General description	o
3	Risk/Impact	Impact to natural coastal system	Coastal inundation		A	c1.2	General description	o
			Coastal erosion		A	C.1.2	Short description (submerges of small islands)	o
			Coral bleaching		NA	x	x	x
			Constraint on landward margin of coastal wetland ecosystems		NA	x	x	x
			Degradation of ecosystems (wetlands, coral reefs)		NA	x	x	x
			Natural resources and environments		NA	x	x	x
		Impact to sociatel coastal	Human deaths		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		system	Property losses		A	-	General description	o
			Business activities		A	-	General description	o
			Human settlements		A	-	General description	o
			Human health		A	-	General description	o
			Human activities		A	-	General description	o
4	Measures as adaptation response	Protect	Advance the shoreline (land claim, empoldering, estuary closure)		NA	x	x	x
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Sustainable adaptation (wetland restoration)		A	-	General description	o
			Community-focused adaptation (hazard mapping, warning system)		A	-	General description	o
		Adaptation practices	Integrated coastal zone management:		A	-	General description	o
			- coastal zone management regulations		A	-	General description	o
			- habitat conservation		A	-	General description	o
			- long-term coastal spatial planning		A	-	General description	o
			- long-term community planning		A	RAN-MAPI Doc.	General description	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		A	RAN-MAPI Doc.	General description	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Capacity-strengthening strategies		A	RAN-MAPI Doc.	General description	o
		The links between adaptation and mitigation			A	RAN-MAPI Doc.	General description	o
		Research needs	Uncertainties, gaps, and priorities		A	p.45-49	General description	o

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-1 **: Coastal Systems and Low-lying Areas**
Document-4 : SLRJ
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.2.4, T.2.1. T.2.2, F.3.4	Global data IPCC, 1999, IPCC, 1990, sea-level projection	●
			Temperature rise		A		Literature study at Jakarta	o
			CO2 concentration		NA	x	x	x
			Extreme events:		NA	x	x	x
			- cyclones		NA	x	x	x
			- extreme waves		NA	x	x	x
			- storm surges		NA	x	x	x
			- altered precipitation/run-off		NA	x	x	x
			- ocean acidification		NA	x	x	x
			- ENSO		NA	x	x	x
		Human-induced pressures	Growing population and distribution		NA	x	x	x
			Land-use changes: coastward migration		NA	x	x	x
			Land-use changes: aquaculture growth		NA	x	x	x
			Land-use changes: infrastructure growth		NA	x	x	x
			Land-use changes: industries		NA	x	x	x
			Hydrological, sedimentation changes in catchments		NA	x	x	x
			Human-and natural induced subsidence		A		Land subsidence in Jakarta	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
2	Vulnerability	Natural coastal system	Morphodynamic		A		Topography data (DEM) detail	●
			Coastal landform:		NA	x	x	x
			- beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- deltas		NA	x	x	x
			- estuary and lagoon		NA	x	x	x
			- mangroves, saltmarshes, and sea grass		NA	x	x	x
			- coral reef		NA	x	x	x
		Societal coastal system	Freshwater resources		A	C.2.2.3	Case study: Jakarta	o
			Agriculture		NA	x	x	x
			Forestry		NA	x	x	x
			Fisheries		NA	x	x	x
			Human settlement		NA	x	x	x
			Infrastructure		A	C.2.2.3	Case study: Jakarta	o
			Migration		NA	x	x	x
			Biodiversity		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation		A	C.4	Result and analysis of flooding in Jakarta and Kep. Seribu	●
			Coastal erosion		NA	x	x	x
			Coral bleaching		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Constraint on landward margin of coastal wetland ecosystems		NA	x	x	x
			Degradation of ecosystems (wetlands, coral reefs)		NA	x	x	x
			Natural resources and environments		NA	x	x	x
		Impact to sociatel coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human health		NA	x	x	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim, empoldering, estuary closure)		NA	x	x	x
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Sustainable adaptation (wetland restoration)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Adaptation practices	Integrated coastal zone management:		NA	x	x	x
			- coastal zone management regulations		NA	x	x	x
			- habitat conservation		NA	x	x	x
			- long-term coastal spatial planning		NA	x	x	x
			- long-term community planning		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-1 **: Coastal Systems and Low-lying Areas**
Document-5 : VA Lombok-CMS
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.2.10, 2.11, 4.1. 4.3, 4.4, 4.5, 4.7, T.4.1, 4.2	Observed data in Indonesia, altimetry, and model projection up to 2100	●
			Temperature rise		A	F.2.7, 2.8, 2.9, 4.7, T.4.5-4.12	Observed data in Lombok and downscaling of global model projection up to 2100	●
			CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		A	F.2.17, 2.18	Cyclone in South East of Indian Ocean	o
			- extreme waves		A	F.2.15	Satellite altimeter	●
			- storm surges		A	F.2.19	Only in Indian Ocean (Java, Bali, and Lombok)	●
			- altered precipitation/run-off		A	F.2.5, 2.6	Only Lombok island	●
			- ocean acidification		NA	x	x	x
			- ENSO		A		Projection up to 2030 (model)	●
		Human-induced pressures	Growing population and distribution		A	F.2.3, T 2.1	Population and density	●
			Land-use changes: coastward migration		A		Only land cover	o
			Land-use changes: aquaculture growth		A		See MCRMP_NTB	o
			Land-use changes: infrastructure growth		A		All of Lombok Island, detailed in Mataram city	o
			Land-use changes: industries		NA	x	x	x
			Hydrological, sedimentation changes in catchments		A		See in water sector (same project)	●
			Human-and natural induced subsidence		A	F.3.4, 3.5	Only in Sumatera	-

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
2	Vulnerability	Natural coastal system	Morphodynamic		A		Topography map and coastal slope	o
			Coastal landform:					
			- beaches, rocky shorelines, and cliffed coasts		A	C.2.2, F.2.2	Regional geological study	o
			- deltas		NA	x	x	x
			- estuary and lagoon		NA	x	x	x
			- mangroves, saltmarshes, and sea grass		NA	x	x	x
			- coral reef		A			o
		Societal coastal system	Freshwater resources		A		See in water sector	o
			Agriculture		A		Detailed information in agriculture sector (same project)	o
			Forestry		NA	x	x	x
			Fisheries		NA	x	x	x
			Human settlement		A		-	-
			Infrastructure		A		National scale	o
			Migration		NA	x	x	x
			Biodiversity		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation		A	F.4.9-4.18	Coastal inundation of Lombok Island and detailed at Mataram City (many scenarios with projections of 2020,2050, 2080)	●
			Coastal erosion		NA	x	x	x
			Coral bleaching		A		National scale	o
			Constraint on landward margin of coastal wetland ecosystems		NA	x	x	x
			Degradation of ecosystems		A	-	Degradation of coral (see MCRMP)	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			(wetlands, coral reefs)					
			Natural resources and environments		NA	x	x	x
		Impact to societal coastal system	Human deaths		NA	x	x	x
			Property losses		A		Only in Mataram City	o
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human health		NA		See in health sector	o
			Human activities		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim, empoldering, estuary closure)		A		Coastal protection in Mataram City	o
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Sustainable adaptation (wetland restoration)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		A		Includes hazard map for storm surges and tsunami, only in Mataram City	o
		Adaptation practices	Integrated coastal zone management:		A	-	See: MCRMP-NTB	o
			- coastal zone management regulations		A	-	See: MCRMP-NTB	o
			- habitat conservation		A	-	See: MCRMP-NTB	o
			- long-term coastal spatial planning		A	-	See: MCRMP-NTB	o
			- long-term community planning		A	-	See: MCRMP-NTB	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		A	-	See: MCRMP-NTB	o
			Capacity-strengthening strategies		A	-	See: MCRMP-NTB	o
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-1 **: Coastal Systems and Low-lying Areas**
Document-6 : CSI
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	p.4-21	Observed tidal data analysis at Semarang and Jakarta	●
			Temperature rise		A	p2-1, 2-5	Air temp observation data in Java Island for 1977-2008, SST at Karimun Java for 2000-2008	●
			CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		NA	x	x	x
			- extreme waves		A	p.2-9	Only wind waves	●
			- storm surges		A	p.4-13	Increase of storm surges frequency, literature study	o
			- altered precipitation/run-off		A	p.2-8	Only in Java Island	o
			- ocean acidification		NA	x	x	x
			- ENSO		NA	x	x	x
		Human-induced pressures	Growing population and distribution		A	p.2-195	BPS data in Java Island	●
			Land-use changes: coastward migration		NA	x	x	x
			Land-use changes: aquaculture growth		NA	x	x	x
			Land-use changes: infrastructure growth		A	p.2-188	Building condition in Java	o
			Land-use changes: industries		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Hydrological, sedimentation changes in catchments		NA	x	x	x
			Human-and natural induced subsidence		A	p.2-96	Subsidence in Semarang	●
2	Vulnerability	Natural coastal system	Morphodynamic		A	p.2-70	Shoreline changes from satellite (recent) and topography map in 1963, North Java	●
			Coastal landform:					
			- beaches, rocky shorelines, and cliffed coasts		A	p.2-57	Beach profile (several locations of case study), measured data	●
			- deltas		NA	x	x	x
			- estuary and lagoon		NA	x	x	x
			- mangroves, saltmarshes, and sea grass		A	p.2-145, 3-45	Observed data	●
			- coral reef		A	p.2-121, 3-47	Observation and distribution	●
		Societal coastal system	Freshwater resources		NA	x	x	x
			Agriculture		NA	x	x	x
			Forestry		NA	x	x	x
			Fisheries		NA	x	x	x
			Human settlement		NA	x	x	x
			Infrastructure		A	p.2-188	Building condition	o
			Migration		NA	x	x	x
			Biodiversity		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation		A	p.2-103	Local scale of the case study	●
			Coastal erosion		A	p.3-69	Shoreline changes analysis	o
			Coral bleaching					

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Constraint on landward margin of coastal wetland ecosystems		NA	x	x	x
			Degradation of ecosystems (wetlands, coral reefs)		A	p.3-45, 3-47	Analysis of mangrove and coral reef	o
			Natural resources and environments		NA	x	x	x
		Impact to societal coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x
			Human settlements		A	p.4-92	Economic valuation	o
			Human health		NA	x	x	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim, empoldering, estuary closure)		A	p.5-10,-11,-12	Adaptation strategy	o
			Hold shoreline (dyke, beach nourishment)		A	p.5-10,-11,-12	Adaptation strategy	o
		Accommodate	Increase flexibility (flood building, floating agriculture system)		A	p.5-10,-11,-12	Adaptation strategy	o
		Retreat	Retreat the shoreline (managed realignment)		A	p.5-10,-11,-12	Adaptation strategy	o
			Limited intervention (adhoc sea wall)		A	p.5-10,-11,-12	Adaptation strategy	o
			No intervention (monitoring only)		A	p.5-10,-11,-12	Adaptation strategy	o
			Sustainable adaptation (wetland restoration)		A	p.5-10,-11,-12	Adaptation strategy	o
			Community-focused adaptation (hazard mapping, warning system)		A	p.5-10,-11,-12	Adaptation strategy	o
		Adaptation practices	Integrated coastal zone management:		A	p.5-10,-11,-12	Adaptation strategy	o
			- coastal zone management regulations		A	p.5-10,-11,-12	Adaptation strategy	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			- habitat conservation		A	p.5-10,-11,-12	Adaptation strategy	o
			- long-term coastal spatial planning		A	p.5-10,-11,-12	Adaptation strategy	o
			- long-term community planning		A	p.5-10,-11,-12	Adaptation strategy	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		A	p.5-10	Adaptation strategy	o

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-1 **: Coastal Systems and Low-lying Areas**
Meta-analysis
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise	●	●	o	●	●	●	●
			Temperature rise	●	o	o	o	●	●	●
			CO2 concentration	x	x	o	x	x	x	o
			Extreme events:							
			- cyclones	o	o	o	x	o	x	o
			- extreme waves	●	o	o	x	●	●	●
			- storm surges	o	o	o	x	●	o	●
			- altered precipitation/run-off	o	o	o	x	●	o	●
			- ocean acidification	x	x		x	x	x	
			- ENSO	●	o	o	x	●	x	●
		Human-induced pressures	Growing population and distribution	●	x	o	x	●	●	●
			Land-use changes: coastward migration	o	x	-	x	o	x	x
			Land-use changes: aquaculture growth	o	x	o	x	o	x	o
			Land-use changes: infrastructure growth	o	x	o	x	o	o	o

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
			Land-use changes: industries	x	x	o	x	x	x	x
			Hydrological, sedimentation changes in catchments	o	o	o	x	●	x	●
			Human-and natural induced subsidence	o	x	x	o	-	●	o
2	Vulnerability	Natural coastal system	Morphodynamic	x	x	x	●	o	●	o
			Coastal landform:							
			- beaches, rocky shorelines, and cliffed coasts	x	x	x	x	o	●	●
			- deltas	x	x	x	x	x	x	x
			- estuary and lagoon	x	x	x	x	x	x	x
			- mangroves, saltmarshes, and sea grass	x	x	x	x	x	●	●
			- coral reef	o	o	o	x	o	●	●
		Societal coastal system	Freshwater resources	o	o	o	o	o	x	o
			Agriculture	x	●	o	x	o	x	o
			Forestry	x	o	o	x	x	x	x
			Fisheries	o	x	x	x	x	x	x
			Human settlement	x	x	o	x	-	x	x
			Infrastructure	o	x	o	o	o	o	o
			Migration	x	x	o	x	x	x	x
			Biodiversity	x	x	o	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
			Recreation and tourism	x	x	o	x	x	x	x
			Transportation	x	x	o	x	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation	●	●	o	●	●	●	●
			Coastal erosion	x	x	o	x	x	o	x
			Coral bleaching	o	x	x	x	o		o
			Constraint on landward margin of coastal wetland ecosystems	x	x	x	x	x	x	x
			Degradation of ecosystems (wetlands, coral reefs)	x	x	x	x	o	o	o
			Natural resources and environments	x	x	x	x	x	x	x
		Impact to sociatel coastal system	Human deaths	x	x	x	x	x	x	x
			Property losses	x	x	o	x	o	x	o
			Business activities	x	x	o	x	x	x	x
			Human settlements	x	x	o	x	x	o	x
			Human health	x	o	o	x	o	x	o
			Human activities	x	x	o	x	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim, empoldering, estuary closure)	x	o	x	x	o	o	o
			Hold shoreline (dyke, beach nourishment)	x	x	x	x	x	o	o

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
		Accommodate	Increase flexibility (flood building, floating agriculture system)	x	x	x	x	x	o	o
		Retreat	Retreat the shoreline (managed realignment)	x	x	x	x	x	o	o
			Limited intervention (adhoc sea wall)	x	x	x	x	x	o	o
			No intervention (monitoring only)	x	x	x	x	x	o	o
			Sustainable adaptation (wetland restoration)	x	x	o	x	x	o	o
			Community-focused adaptation (hazard mapping, warning system)	x	x	o	x	o	o	o
		Adaptation practices	Integrated coastal zone management:	x	-	o	x	o	o	o
			- coastal zone management regulations	x	x	o	x	o	o	o
			- habitat conservation	x	x	o	x	o	o	o
			- long-term coastal spatial planning	x	x	o	x	o	o	o
			- long-term community planning	o	x	o	x	o	o	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures	x	x	x	x	x	x	x
		Adaptive capacity	Constrain and limitation	x	x	o	x	o	x	o
			Capacity-strengthening strategies	x	x	o	x	o	x	o

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
		The links between adaptation and mitigation		x	x	o	x	x	x	x
		Research needs	Uncertainties, gaps, and priorities	x	x	o	x	x	o	o

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-2 : **Ocean and Shallow Seas**
Document-1 : ICCSR- MFS
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.II.7, 22, 24,25, 26,27,28,29,30	Data record, altimeter, and projection	●
			Temperature rise (ocean warming)		A	F.II.8, 9, 10,11	Data record and modeling	●
			CO2 concentration		NA	x	x	x
			Extreme events (increased intensity and frequencies):		A	F.II, 12,13,14	Only in Indian Ocean	o
			- cyclones		NA	-	Irrelevant	-
			- extreme waves		A	F.II.15	satellite altimeter	●
			- storm surges		A	F.II, 12,13,14	Only in Indian Ocean	o
			- altered precipitation/run-off		A	F.II.17	Only Lombok island	o
			- ocean acidification		NA	x	x	x
			- ENSO		A	T.II.2	Projection up to 2030 (model)	●
		Human-induced pressures	Over-fishing and destructive-fishing		A	Ch II.3	Condition and problems in marine and fisheries	o
			Off shore industries and pollution		A	Ch II.3	Condition and problems in marine and fisheries	o
			Nutrient and sediment load		A	Ch II.3	Condition and problems in marine and fisheries	o
			Marine-use changes: marine culture		A	Ch II.3	Condition and problems in marine and fisheries	o
			Coral mining and tourism activities		A	Ch II.3	Condition and problems in marine and fisheries	o
2	Vulnerability	Natural ocean system	CO2 uptake by ocean		NA	x	x	x
			Climate regulation		NA	x	x	x
			Decomposition of organic matter		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Regeneration of nutrient		NA	x	x	x
			Coral reef		A	x	x	x
			Marginal sea ecosystems		NA	x	x	x
		Sociatel ocean system	Fisheries		A	Ch. II.2.2	Potential ocean and marine services	o
			Energy and mining		A	Ch. II.2.3	Potential ocean and marine services	o
			Recreation and tourism		A	Ch. II.2.4	Potential ocean and marine services	o
			Transportation		A	Ch. II.2.5	Potential ocean and marine services	o
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural ocean and shallow seas	Marine ecosystems		NA	x	x	x
			Increasing thermal stratification may lead to:		NA	x	x	x
			- oxygen deficiency		NA	x	x	x
			- loss of habitats		NA	x	x	x
			- biodiversity and distribution of species		NA	x	x	x
			- impact on whole ecosystems		NA	x	x	x
			Reducing upwelling		NA	x	x	x
			Expansion of the sub-polar gyre and contraction of the seasonally stratified sub-tropical gyre		NA	x	x	x
			Reduces surface ocean pH and carbonate ion concentrations		NA	x	x	x
			Increased risk of diseases in marine biota		NA	x	x	x
			Coral bleaching and mortality		NA	x	x	x
			Lower marine ecosystem productivity		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Impact to sociatel ocean and shallow seas	Food securities		NA	x	x	x
			Business activities (i.e. industry and transportation)		NA	x	x	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Otonomous adaptation			NA	Ch.5	-	o
		Reactive adaptation	Improve resilience		NA	Ch.5	-	o
			Restoration of habitat		NA	Ch.5	-	o
		Anticipatory adaptation	Reduce and manage the stresses on species and ecosystems (habitat destruction, over-exploitation, eutrophication, acidification)		NA	x	x	x
			Maintain connectivity of diverse population and small and isolated population		NA	x	x	x
		Adaptation practices	Ocean regulations		NA	Ch.5	-	o
			Management of conservation resources		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for ocean adaptation measures		NA	Ch.5	-	o
		Adaptive capacity	Constrain and limitation		NA	Ch.5	-	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-2 **: Ocean and Shallow Seas**
Document-2 : ICR
Assessor : Dr. Hamzah Latief

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.16, T.4	Observed data (1969-1990), IPCC, 2007 (T4) literature study	●
			Temperature rise (ocean warming)		A	F.15, F.17, F.30	Global data, Indonesian annual rate, model projection from IPCC 2007	o
			CO2 concentration		NA	x	x	x
			Extreme events (increase intensity and frequencies):		A		Short description	o
			- cyclones		A		Short description	o
			- extreme waves		A		Short description	o
			- storm surges		A		Short description	o
			- altered precipitation/run-off		A	T.1, F 19, F36	Data record on 1997 and 1982, (F19) decreasing rainfall	o
			- ocean acidification		NA	x	x	x
			- ENSO		A		Only consedering the ENSO effect	o
		Human-induced pressures	Over-fishing and destructive-fishing		NA	x	x	x
			Off shore industries and pollution		NA	x	x	x
			Nutrient and sediment load		NA	x	x	x
			Marine-use changes: marine culture		NA	x	x	x
			Coral mining and tourism activities		NA	x	x	x
2	Vulnerability	Natural ocean system	CO2 uptake by ocean		NA	x	x	x
			Climate regulation		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Decomposition of organic matter		NA	x	x	x
			Regeneration of nutrient		NA	x	x	x
			Coral reef		A	c.3.5	Short description	o
			Marginal sea ecosystems		NA	x	x	x
		Sociatel ocean system	Fisheries		NA	x	x	x
			Energy and mining		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural ocean and shallow seas	Marine ecosystems		NA	x	x	x
			Increasing thermal stratification may lead to:		NA	x	x	x
			- oxygen deficiency		NA	x	x	x
			- loss of habitats		NA	x	x	x
			- biodiversity and distribution of species		NA	x	x	x
			- impact whole ecosystems		NA	x	x	x
			Reducing upwelling		NA	x	x	x
			Expansion of the sub-polar gyre and contraction of the seasonally stratified sub-tropical gyre		NA	x	x	x
			Reduces surface ocean pH and carbonate ion concentrations		NA	x	x	x
			Increased risk of diseases in marine biota		NA	x	x	x
			Coral bleaching and mortality		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Lower marine ecosystem productivity		NA	x	x	x
		Impact to societal ocean and shallow seas	Food securities		NA	x	x	x
			Business activities (i.e. industry and transportation)		NA	x	x	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Autonomous adaptation			NA	x	x	x
		Reactive adaptation	Improve resilience		NA	x	x	x
			Restoration of habitat		NA	x	x	x
		Anticipatory adaptation	Reduce and manage the stresses on species and ecosystems (habitat destruction, over-exploitation, eutrophication, acidification)		NA	x	x	x
			Maintain connectivity of diverse population and small and isolated population		NA	x	x	x
		Adaptation practices	Ocean regulations		NA	x	x	x
			Management of conservation resources		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for ocean adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-2 **: Ocean and Shallow Seas**
Document-3 : RAN-PI
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	c1.2	General description	o
			Temperature rise (ocean warming)		A	c1.2	General description	o
			CO2 concentration		A	p.41-43	General description	o
			Extreme events (increase intensity and frequencies):				General description	
			- cyclones		A	c1.2	General description	o
			- extreme waves		A	c1.2	General description	o
			- storm surges		A	c1.2	General description	o
			- altered precipitation/run-off		A	c1.2	General description	o
			- ocean acidification		NA	x	x	x
			- ENSO		A	c1.3.4	General description	o
		Human-induced pressures	Over-fishing and destructive-fishing		NA	x	x	x
			Off shore industries and pollution		NA	x	x	x
			Nutrient and sediment load		NA	x	x	x
			Marine-use changes: marine culture		NA	x	x	x
			Coral mining and tourism activities		NA	x	x	x
2	Vulnerability	Natural ocean system	CO2 uptake by ocean		NA	x	x	x
			Climate regulation		NA	x	x	x
			Decomposition of organic matter		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Regeneration of nutrient		NA	x	x	x
			Coral reef		A		General description	o
			Marginal sea ecosystems		NA	x	x	x
		Societal ocean system	Fisheries		A	c1.3.2	General description	o
			Energy and mining		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural ocean and shallow seas	Marine ecosystems		NA	x	x	x
			Increasing thermal stratification may lead to:		NA	x	x	x
			- oxygen deficiency		NA	x	x	x
			- loss of habitats		NA	x	x	x
			- biodiversity and distribution of species		A	-	General description	o
			- impact whole ecosystems		NA	x	x	x
			Reducing upwelling		A	-	General description	o
			Expansion of the sub-polar gyre and contraction of the seasonally stratified sub-tropical gyre		NA	x	x	x
			Reduces surface ocean pH and carbonate ion concentrations		NA	x	x	x
			Increased risk of diseases in marine biota		A	-	General description	o
			Coral bleaching and mortality		A	-	General description	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Lower marine ecosystem productivity		NA	x	x	x
		Impact to societel ocean and shallow seas	Food securities		A	-	General description	o
			Business activities (i.e. industry and transportation)		A	-	General description	o
			Human activities		A	-	General description	o
4	Measures as adaptation response	Autonomous adaptation			NA	x	x	x
		Reactive adaptation	Improve resilience		NA	x	x	x
			Restoration of habitat		NA	x	x	x
		Anticipatory adaptation	Reduce and manage the stresses on species and ecosystems (habitat destruction, over-exploitation, eutrophication, acidification)		NA	x	x	x
			Maintain connectivity of diverse population and small and isolated population		NA	x	x	x
		Adaptation practices	Ocean regulations		A	RAN-MAPI Doc.	General description	o
			Management of conservation resources		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for ocean adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		A	RAN-MAPI Doc.	General description	o
			Capacity-strengthening strategies		A	RAN-MAPI Doc.	General description	o
		The links between adaptation and mitigation			A	RAN-MAPI Doc.	General description	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Research needs	Uncertainties, gaps, and priorities		A	p.45-49	General description	o

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-2 **: Ocean and Shallow Seas**
Document-4 : SLRJ
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.2.4, T.2.1. T.2.2, F.3.4	Global data IPCC, 1999, IPCC, 1990, sea-level projection	●
			Temperature rise (ocean warming)		A	-	-	o
			CO2 concentration		NA	x	x	x
			Extreme events (increase intensity and frequencies):		NA	x	x	x
			- cyclones		NA	x	x	x
			- extreme waves		NA	x	x	x
			- storm surges		NA	x	x	x
			- altered precipitation/run-off		NA	x	x	x
			- ocean acidification		NA	x	x	x
			- ENSO		NA	x	x	x
		Human-induced pressures	Over-fishing and destructive-fishing		NA	x	x	x
			Off shore industries and pollution		NA	x	x	x
			Nutrient and sediment load		NA	x	x	x
			Marine-use changes: marine culture		NA	x	x	x
			Coral mining and tourism activities		NA	x	x	x
2	Vulnerability	Natural ocean system	CO2 uptake by ocean		NA	x	x	x
			Climate regulation		NA	x	x	x
			Decomposition of organic matter		NA	x	x	x
			Regeneration of nutrient		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Coral reef		NA	x	x	x
			Marginal sea ecosystems		NA	x	x	x
		Societal ocean system	Fisheries		NA	x	x	x
			Energy and mining		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural ocean and shallow seas	Marine ecosystems		NA	x	x	x
			Increasing thermal stratification may lead to:		NA	x	x	x
			- oxygen deficiency		NA	x	x	x
			- loss of habitats		NA	x	x	x
			- biodiversity and distribution of species		NA	x	x	x
			- impact whole ecosystems		NA	x	x	x
			Reducing upwelling		NA	x	x	x
			Expansion of the sub-polar gyre and contraction of the seasonally stratified sub-tropical gyre		NA	x	x	x
			Reduces surface ocean pH and carbonate ion concentrations		NA	x	x	x
			Increased risk of diseases in marine biota		NA	x	x	x
			Coral bleaching and mortality		NA	x	x	x
			Lower marine ecosystem productivity		NA	x	x	x
		Impact to societal	Food securities		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		ocean and shallow seas	Business activities (i.e. industry and transportation)		NA	x	x	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Autonomous adaptation			NA	x	x	x
		Reactive adaptation	Improve resilience		NA	x	x	x
			Restoration of habitat		NA	x	x	x
		Anticipatory adaptation	Reduce and manage the stresses on species and ecosystems (habitat destruction, over-exploitation, eutrophication, acidification)		NA	x	x	x
			Maintain connectivity of diverse population and small and isolated population		NA	x	x	x
		Adaptation practices	Ocean regulations		NA	x	x	x
			Management of conservation resources		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for ocean adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-2 **: Ocean and Shallow Seas**
Document-5 : VA Lombok-CMS
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.2.10, 2.11, 4.1. 4.3, 4.4, 4.5, 4.7, T.4.1, 4.2	Observed data in Indonesia, altimetry and model projection up to 2100	●
			Temperature rise (ocean warming)		A	F.2.7, 2.8, 2.9, 4.7, T.4.5-4.12	Observed data in Lombok and downscaling of global model projection up to 2100	●
			CO2 concentration		NA	x	x	x
			Extreme events (increase intensity and frequencies):		A			o
			- cyclones		A	F.2.17, 2.18	Cyclone in South East of Indian Ocean	o
			- extreme waves		A	F.2.15	Satellite altimeter	●
			- storm surges		A	F.2.19	Only in Indian Ocean (Java, Bali, and Lombok)	●
			- altered precipitation/run-off		A	F.2.5, 2.6	Only for Lombok island	●
			- ocean acidification		NA		x	x
			- ENSO		A		Projection up to 2030 (model)	●
		Human-induced pressures	Over-fishing and destructive-fishing		NA	x	x	x
			Off shore industries and pollution		NA	x	x	x
			Nutrient and sediment load		NA	x	x	x
			Marine-use changes: marine culture		NA	x	x	x
			Coral mining and tourism activities		NA	x	x	x
2	Vulnerability	Natural ocean	CO2 uptake by ocean		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		system	Climate regulation		NA	x	x	x
			Decomposition of organic matter		NA	x	x	x
			Regeneration of nutrient		NA	x	x	x
			Coral reef		A			o
			Marginal sea ecosystems		NA	x	x	x
		Societal ocean system	Fisheries		NA	x	x	x
			Energy and mining		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural ocean and shallow seas	Marine ecosystems		NA	x	x	x
			Increasing thermal stratification may lead to:		NA	x	x	x
			- oxygen deficiency		NA	x	x	x
			- loss of habitats		NA	x	x	x
			- biodiversity and distribution of species		NA	x	x	x
			- impact whole ecosystems		NA	x	x	x
			Reducing upwelling		NA	x	x	x
			Expansion of the sub-polar gyre and contraction of the seasonally stratified sub-tropical gyre		NA	x	x	x
			Reduces surface ocean pH and carbonate ion concentrations		NA	x	x	x
			Increased risk of diseases in marine biota		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Coral bleaching and mortality		NA	x	x	x
			Lower marine ecosystem productivity		NA	x	x	x
		Impact to societal ocean and shallow seas	Food securities		NA	x	x	x
			Business activities (i.e. industry and transportation)		NA	x	x	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Autonomous adaptation			NA	x	x	x
		Reactive adaptation	Improve resilience		NA	x	x	x
			Restoration of habitat		NA	x	x	x
		Anticipatory adaptation	Reduce and manage the stresses on species and ecosystems (habitat destruction, over-exploitation, eutrophication, acidification)		NA	x	x	x
			Maintain connectivity of diverse population and small and isolated population		NA	x	x	x
		Adaptation practices	Ocean regulations		NA	x	x	x
			Management of conservation resources		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for ocean adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-2 **: Ocean and Shallow Seas**
Document-6 : CSI
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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- out of scope x missing
o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	p.4-21	Observed tidal data analysis, at Semarang and Jakarta	●
			Temperature rise (ocean warming)		A	p2-1, 2-5	Air temp observed data in Java Island 1977-2008, SST at Karimun Java 2000-2008	●
			CO2 concentration		NA	x	x	x
			Extreme events (increase intensity and frequencies):		NA	x	x	x
			- cyclones		NA	x	x	x
			- extreme waves		A	p.2-9	Only wind waves	●
			- storm surges		A	p.4-13	Increased of storm surges frequency, literature study	o
			- altered precipitation/run-off		A	p.2-8	Only in Java Island	o
			- ocean acidification		NA	x	x	x
			- ENSO		NA	x	x	x
		Human-induced pressures	Over-fishing and destructive-fishing		NA	x	x	x
			Off shore industries and pollution		NA	x	x	x
			Nutrient and sediment load		NA	x	x	x
			Marine-use changes: marine culture		NA	x	x	x
			Coral mining and tourism activities		NA	x	x	x
2	Vulnerability	Natural ocean system	CO2 uptake by ocean		NA	x	x	x
			Climate regulation		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Decomposition of organic matter		NA	x	x	x
			Regeneration of nutrient		NA	x	x	x
			Coral reef		NA	x	x	x
			Marginal sea ecosystems		NA	x	x	x
		Societal ocean system	Fisheries		NA	x	x	x
			Energy and mining		NA	x	x	x
			Recreation and tourism		NA	x	x	x
			Transportation		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural ocean and shallow seas	Marine ecosystems		NA	x	x	x
			Increasing thermal stratification may lead to:		NA	x	x	x
			- oxygen deficiency		NA	x	x	x
			- loss of habitats		NA	x	x	x
			- biodiversity and distribution of species		NA	x	x	x
			- impact whole ecosystems		NA	x	x	x
			Reducing upwelling		NA	x	x	x
			Expansion of the sub-polar gyre and contraction of the seasonally stratified sub-tropical gyre		NA	x	x	x
			Reduces surface ocean pH and carbonate ion concentrations		NA	x	x	x
			Increased risk of diseases in marine biota		NA	x	x	x
			Coral bleaching and mortality		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Lower marine ecosystem productivity		NA	x	x	x
		Impact to societal ocean and shallow seas	Food securities		NA	x	x	x
			Business activities (i.e. industry and transportation)		NA	x	x	x
			Human activities		NA	x	x	x
4	Measures as adaptation response	Autonomous adaptation			NA	x	x	x
		Reactive adaptation	Improve resilience		NA	x	x	x
			Restoration of habitat		NA	x	x	x
		Anticipatory adaptation	Reduce and manage the stresses on species and ecosystems (habitat destruction, over-exploitation, eutrophication, acidification)		NA	x	x	x
			Maintain connectivity of diverse population and small and isolated population		NA	x	x	x
		Adaptation practices	Ocean regulations		NA	x	x	x
			Management of conservation resources		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for ocean adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-2 **: Ocean and Shallow Seas**
Meta-analysis
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise	●	●	o	●	●	●	●
			Temperature rise (ocean warming)	●	o	o	o	●	●	●
			CO2 concentration	x	x	o	x	x	x	x
			Extreme events (increase intensity and frequencies):	o	o		x	o	x	o
			- cyclones	o	o	o	x	o	x	o
			- extreme waves	●	o	o	x	●	●	●
			- storm surges	o	o	o	x	●	o	o
			- altered precipitation/run-off	o	o	o	x	●	o	o
			- ocean acidification	x	x	x	x	x	x	x
			- ENSO	●	o	o	x	●	x	●
		Human-induced pressures	Over-fishing and destructive-fishing	o	x	x	x	x	x	o
			Off shore industries and pollution	o	x	x	x	x	x	o
			Nutrient and sediment load	o	x	x	x	x	x	o

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
			Marine-use changes: marine culture	o	x	x	x	x	x	o
			Coral mining and tourism activities	o	x	x	x	x	x	o
2	Vulnerability	Natural ocean system	CO2 uptake by ocean	x	x	x	x	x	x	x
			Climate regulation	x	x	x	x	x	x	x
			Decomposition of organic matter	x	x	x	x	x	x	x
			Regeneration of nutrient	x	x	x	x	x	x	x
			Coral reef	x	o	o	x	o	x	o
			Marginal sea ecosystems	x	x	x	x	x	x	x
		Societal ocean system	Fisheries	o	x	o	x	x	x	o
			Energy and mining	o	x	x	x	x	x	o
			Recreation and tourism	o	x	x	x	x	x	o
			Transportation	o	x	x	x	x	x	o
			Biodiversity	x	x	x	x	x	x	x
3	Risk/Impact	Impact to natural ocean and shallow seas	Marine ecosystems	x	x	x	x	x	x	x
			Increasing thermal stratification may lead:	x	x	x	x	x	x	x
			- oxygen deficiency	x	x	x	x	x	x	x
			- loss of habitats	x	x	x	x	x	x	x
			- biodiversity and distribution of species	x	x	o	x	x	x	x
			- impact whole ecosystems	x	x	x	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
			Reducing upwelling	x	x	o	x	x	x	x
			Expansion of the sub-polar gyre and contraction of the seasonally stratified sub-tropical gyre	x	x	x	x	x	x	x
			Reduces surface ocean pH and carbonate ion concentrations	x	x	x	x	x	x	x
			Increased risk of diseases in marine biota	x	x	o	x	x	x	x
			Coral bleaching and mortality	x	x	o	x	x	x	x
			Lower marine ecosystem productivity	x	x	x	x	x	x	x
		Impact to societal ocean and shallow seas	Food securities	x	x	o	x	x	x	x
			Business activities (i.e. industry and transportation)	x	x	o	x	x	x	x
			Human activities	x	x	o	x	x	x	x
4	Measures as adaptation response	Autonomous adaptation		o	x	x	x	x	x	x
		Reactive adaptation	Improve resilience	o	x	x	x	x	x	x
			Restoration of habitat	o	x	x	x	x	x	x
		Anticipatory adaptation	Reduce and manage the stresses on species and ecosystems (habitat destruction, over-exploitation, eutrophication, acidification)	x	x	x	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
			Maintain connectivity of diverse population and small and isolated population	x	x	x	x	x	x	x
		Adaptation practices	Ocean regulations	o	x	o	x	x	x	x
			Management of conservation resources	x	x	x	x	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for ocean adaptation measures	o	x	x	x	x	x	x
		Adaptive capacity	Constrain and limitation	x	x	x	x	x	x	x
			Capacity-strengthening strategies	x	x	o	x	x	x	x
		The links between adaptation and mitigation		x	x	o	x	x	x	x
		Research needs	Uncertainties, gaps, and priorities	x	x	x	x	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-3 : **Small Island Areas**
Document-1 : ICCSR-MFS
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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o incomplete ● complete

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.II.7, 22, 24,25, 26,27,28,29,30	Data record, altimeter and projection	●
			Temperature rise		A	F.II.8, 9, 10,11	Data record and modeling	●
			Increased CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		A		Cyclone in South East of Indian Ocean	o
			- extreme waves		A	F.II.15	Satellite altimeter	●
			- storm surges		A	F.II, 12,13,14	Only in Indian Ocean	o
			- altered precipitation/run-off		A	F.II.17	Only Lombok island	o
			- ocean acidification		NA	x	x	x
			- ENSO		A	T.II.2	Projection up to 2030 (model)	●
			Seawater intrusion into freshwater lenses		NA	x	x	x
			Soil salination		NA	x	x	x
		Human-induced pressures	Growing population		A	F.III.3		●
			Land-use changes: coastward migration		NA	-	Only land cover	o
			Land-use changes: agriculture growth		NA	x	x	x
			Land-use changes: infrastructure growth		A	F.III.6	National scale	o
			Increased turbidity, nutrient loading, and chemical pollution		NA	x	x	x
2	Vulnerability	Natural small	Morphodynamic		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		island system	Coastal landform:					
			- beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- atoll and lagoon		NA	x	x	x
			- sea grass		NA	x	x	x
			- coral reef		NA	x	x	x
			Forests		NA	x	x	x
		Societal small island system	Freshwater resources (decline of water supply)		A	-	See in water sector	o
			Agriculture and fisheries		NA	x	x	x
			Human settlement, infrastructure, and migration		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation (reduction in island size)		A	F.II.36-45	National scale	●
			Coastal erosion		NA	x	x	x
			Coral bleaching		A	F.III.9	National scale	o
			Degradation of ecosystems		NA	x	x	x
			Replacement of some local species		NA	x	x	x
			Decreased fisheries and other marine-based resources		NA	x	x	x
			Decrease in growth rates		NA	x	x	x
		Impact to societal coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human activities		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Human health		NA	-	See in health sector	o
			Loss of cultural heritage		NA	x	x	x
			Reduces the amenity value for coastal users		NA	x	x	x
			Recreation and tourism		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim)		NA	x	x	x
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		NA	x	x	x
		Adaptation practices	Integrated coastal zone management:		NA	x	x	x
			- Coastal zone management regulations		NA	x	x	x
			- Habitat conservation		NA	x	x	x
			- Long-term coastal spatial planning		NA	x	x	x
			- Long-term community planning		NA	x	x	x
			Desalination, water shortages		A	ICCSR Report	-	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-3 **: Small Island Areas**
Document-2 : ICR
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.16, T.4	Observed data (1969-1990), IPCC, 2007 (T4) literature study	●
			Temperature rise		A	F.15, F.17, F.30	Global data, Indonesian annual rate, model projection from IPCC 2007	o
			Increased CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		A			o
			- extreme waves		A			●
			- storm surges		A			o
			- altered precipitation/run-off		A	T.1, F 19, F36	Data record on 1997 and 1982, (F19) decreasing rainfall	o
			- ocean acidification		NA	-	-	-
			- ENSO		A		Only considering the ENSO effect	o
			Seawater intrusion into freshwater lenses		NA	x	x	x
			Soil salination		NA	x	x	x
		Human-induced pressures	Growing population		NA	x	x	x
			Land-use changes: coastward migration		NA	x	x	x
			Land-use changes: agriculture growth		NA	x	x	x
			Land-use changes: infrastructure growth		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Increased turbidity, nutrient loading, and chemical pollution		NA	x	x	x
2	Vulnerability	Natural small island system	Morphodynamic		NA	x	x	x
			Coastal landform:					
			- Beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- atoll and lagoon		NA	x	x	x
			- sea grass		NA	x	x	x
			- coral reef		A	c.3.5	Short description	o
			Forests		NA	x	x	x
		Societal small island system	Freshwater resources (decline of water supply)		NA	x	x	x
			Agriculture and fisheries		NA	x	x	x
			Human settlement, infrastructure, and migration		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation (reduction in island size)		A	F.40	Case study: Jakarta	●
			Coastal erosion		NA	x	x	x
			Coral bleaching		NA	x	x	x
			Degradation of ecosystems		NA	x	x	x
			Replacement of some local species		NA	x	x	x
			Decreased fisheries and other marine-based resources		NA	x	x	x
			Decrease in growth rates		NA	x	x	x
		Impact to sociatel coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human activities		NA	x	x	x
			Human health		NA	x	x	x
			Loss of cultural heritage		NA	x	x	x
			Reduces the amenity value for coastal users		NA	x	x	x
			Recreation and tourism		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim)		A	Ch.6		o
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			no intervention (monitoring only)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		NA	x	x	x
		Adaptation practices	Integrated coastal zone management:		NA	x	x	x
			- coastal zone management regulations		NA	x	x	x
			- habitat conservation		NA	x	x	x
			- long-term coastal spatial planning		NA	x	x	x
			- long-term community planning		NA	x	x	x
			Desalination, water shortages		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-3 **: Small Island Areas**
Document-3 : RAN-PI
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	c1.2	General description	o
			Temperature rise		A	c1.2	General description	o
			Increased CO2 concentration		A	p.41-43	General description	o
			Extreme events:				General description	
			- cyclones		A	c1.2	General description	o
			- extreme waves		A	c1.2	General description	o
			- storm surges		A	c1.2	General description	o
			- altered precipitation/run-off		A	c1.2	General description	o
			- ocean acidification		NA	x	x	x
			- ENSO		A	c1.3.4	General description	o
			Seawater intrusion into freshwater lenses		NA	x	x	x
			Soil salination		NA	x	x	x
		Human-induced pressures	Growing population		A		General description	o
			Land-use changes: coastward migration		NA	x	x	x
			Land-use changes: agriculture growth		A	c1.3.4	General description	o
			Land-use changes: infrastructure growth		A	c1.3.4	General description	o
			Increased turbidity, nutrient loading, and chemical pollution		NA	x	x	x
2	Vulnerability	Natural small island system	Morphodynamic		NA	x	x	x
			Coastal landform:		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			- Beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- atoll and lagoon		NA	x	x	x
			- sea grass		NA	x	x	x
			- coral reef		A		General description	o
			Forests		NA	x	x	x
		Societal small island system	Freshwater resources (decline of water supply)		A	c1.3.1	General description	o
			Agriculture and fisheries		A		General description	o
			Human settlement, infrastructure, and migration		A		General description	o
			Biodiversity		A		General description	o
3	Risk/Impact	Impact to natural coastal system	Coastal inundation (reduction in island size)		A	c1.2	General description	o
			Coastal erosion		A	C.1.2	Short description (submerges of small islands)	o
			Coral bleaching		A	c1.2	General description	o
			Degradation of ecosystems		NA	x	x	x
			Replacement of some local species		NA	x	x	x
			Decreased fisheries and other marine-based resources		NA	x	x	x
			Decrease in growth rates		NA	x	x	x
		Impact to societal coastal system	Human deaths		NA	x	x	x
			Property losses		A	-	General description	o
			Business activities		A	-	General description	o
			Human settlements		A	-	General description	o
			Human activities		A	-	General description	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Human health		A	-	General description	o
			Loss of cultural heritage		NA	x	x	x
			Reduces the amenity value for coastal users		NA	x	x	x
			Recreation and tourism		A	-	General description	o
4	Measures as adaptation response	Protect	Advance the shoreline (land claim)		NA	x	x	x
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		A	-	General description	o
		Adaptation practices	Integrated coastal zone management:		A	-	General description	o
			- coastal zone management regulations		A	-	General description	o
			- habitat conservation		A	-	General description	o
			- long-term coastal spatial planning		A	-	General description	o
			- long-term community planning		A	-	General description	o
			Desalination, water shortages		A	RAN-MAPI Doc.	General description	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures					-
		Adaptive capacity	Constrain and limitation		A	RAN-MAPI Doc.	General description	o
			Capacity-strengthening strategies		A	RAN-MAPI Doc.	General description	o
		The links between adaptation and mitigation			A	RAN-MAPI Doc.	General description	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Research needs	uncertainties, gaps, and priorities		A	p.45-49	General description	o

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-3 **: Small Island Areas**
Document-4 : SLRJ
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.2.4, T.2.1. T.2.2, F.3.4	Global dataIPCC, 1999, IPCC, 1990, sea-level projection	●
			Temperature rise		A	-	-	o
			Increased CO2 concentration		NA	x	x	x
			Extreme events:		NA	x	x	x
			- cyclones		NA	x	x	x
			- extreme waves		NA	x	x	x
			- storm surges		NA	x	x	x
			- altered precipitation/run-off		NA	x	x	x
			- ocean acidification		NA	x	x	x
			- ENSO		NA	x	x	x
			Seawater intrusion into freshwater lenses		NA	x	x	x
			Soil salination		NA	x	x	x
		Human-induced pressures	Growing population		NA	x	x	x
			Land-use changes: coastward migration		NA	x	x	x
			Land-use changes: agriculture growth		NA	x	x	x
			Land-use changes: infrastructure growth		NA	x	x	x
			increased turbidity, nutrient loading, and chemical pollution		NA	x	x	x
2	Vulnerability	Natural small island system	Morphodynamic		NA	x	x	x
			Coastal landform:					

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			- beaches, rocky shorelines, and cliffed coasts		NA	x	x	x
			- atoll and lagoon		NA	x	x	x
			- sea grass		NA	x	x	x
			- coral reef		NA	x	x	x
			Forests		NA	x	x	x
		Societal small island system	Freshwater resources (decline of water supply)		NA	x	x	x
			Agriculture and fisheries		NA	x	x	x
			Human settlement, infrastructure, and migration		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to Natural Coastal System	Coastal inundation (reduction in island size)		A	C.4	Result and analysis of flooding in Jakarta and Kep. Seribu	●
			Coastal erosion		NA	x	x	x
			Coral bleaching		NA	x	x	x
			Degradation of ecosystems		NA	x	x	x
			Replacement of some local species		NA	x	x	x
			Decreased fisheries and other marine-based resources		NA	x	x	x
			Decrease in growth rates		NA	x	x	x
		Impact to sociatel coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human activities		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Human health		NA	x	x	x
			Loss of cultural heritage		NA	x	x	x
			Reduces the amenity value for coastal users		NA	x	x	x
			Recreation and tourism		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim)		NA	x	x	x
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Community-focused adaptation (hazard mapping, warning system)		NA	x	x	x
		Adaptation practices	Integrated coastal zone management:		NA	x	x	x
			- coastal zone management regulations		NA	x	x	x
			- habitat conservation		NA	x	x	x
			- long-term coastal spatial planning		NA	x	x	x
			- long-term community planning		NA	x	x	x
			Desalination, water shortages		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-3 **: Small Island Areas**
Document-5 : VA Lombok-CMS
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	F.2.10, 2.11, 4.1. 4.3, 4.4, 4.5, 4.7, T.4.1, 4.2	Observed data in Indonesia, altimetry and model, projection up to 2100	●
			Temperature rise		A	F.2.7, 2.8, 2.9, 4.7, T.4.5-4.12	Observe data in Lombok and downscaling of global model projection up to 2100	●
			Increased CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		A	F.2.17, 2.18	Cyclone in South East of Indian Ocean	o
			- extreme waves		A	F.2.15	Satellite altimeter	●
			- storm surges		A	F.2.19	Only in Indian Ocean (Java, Bali, and Lombok)	●
			- altered precipitation/run-off		A	F.2.5, 2.6	Only Lombok Island	●
			- ocean acidification		NA	x	x	x
			- ENSO		A		Projection up to 2030 (model)	●
			Seawater intrusion into freshwater lenses		NA	x	x	x
			Soil salination		NA	x	x	x
		Human-induced pressures	Growing population		A	F.2.3, T 2.1	Population and density	●
			Land-use changes: coastward migration		NA		Only land cover	-
			Land-use changes: agriculture growth		A		See MCRMP_NTB	o
			Land-use changes: infrastructure growth		A		All of Lombok Island, detailed in Mataram City	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Increased turbidity, nutrient loading and chemical pollution		NA	x	x	x
2	Vulnerability	Natural small island system	Morphodynamic		A		Topography map and coastal slope	o
			Coastal landform:					
			- beaches, rocky shorelines, and cliffed coasts		A	C.2.2, F.2.2	Regional geological study	o
			- atoll and lagoon		NA	x	x	x
			- sea grass		NA	x	x	x
			- coral reef		A		Short description	o
			Forests		NA	x	x	x
		Societal small island system	Freshwater resources (decline of water supply)		A		See in water sector	o
			Agriculture and fisheries		A		Detailed information in agriculture sector (same project)	o
			Human settlement, infrastructure, and migration		NA	x	x	x
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation (reduction in island size)		A	F.4.9-4.18	Coastal inundation of Lombok Island, and detailed at Mataram City (many scenarios with projections for 2020, 2050, 2080)	●
			Coastal erosion		NA		-	-
			Coral bleaching		A		National scale	o
			Degradation of ecosystems		NA	x	x	x
			Replacement of some local species		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Decreased fisheries and other marine-based resources		NA	x	x	x
			Decreases in growth rates		NA	x	x	x
		Impact to societal coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x
			Human settlements		NA	x	x	x
			Human activities		NA	x	x	x
			Human health		NA	x	x	x
			Loss of cultural heritage		NA	x	x	x
			Reduces the amenity value for coastal users		NA	x	x	x
			Recreation and tourism		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim)		A		Coastal protection in Mataram City	o
			Hold shoreline (dyke, beach nourishment)		NA	x	x	x
		Accommodate	Increase flexibility (flood building, floating agriculture system)		NA	x	x	x
		Retreat	Retreat the shoreline (managed realignment)		NA	x	x	x
			Limited intervention (adhoc sea wall)		NA	x	x	x
			No intervention (monitoring only)		NA	x	x	x
			Community-focused Adaptation (hazard mapping, warning system)		NA	x	x	x
		Adaptation practices	Integrated coastal zone management:		NA	x	x	x
			- coastal zone management regulations		NA	x	x	x
			- habitat conservation		NA	x	x	x
			- long-term coastal spatial planning		A	x	Adaptive strategy	o
			- long-term community planning		A	x	Adaptive strategy	o

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Desalination, water shortages		NA	x	x	x
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		NA	x	x	x

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-3 **: Small Island Areas**
Document-6 : CSI
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise		A	p.4-21	Observed tidal data analysis, at Semarang and Jakarta	●
			Temperature rise		A	p2-1, 2-5	Air temp observed data in Java Island for 1977-2008, SST at Karimun Java for 2000-2008	●
			increased CO2 concentration		NA	x	x	x
			Extreme events:					
			- cyclones		NA	x	x	x
			- extreme waves		A	p.2-9	Only wind waves	●
			- storm surges		A	p.4-13	Increase of storm surges frequency, literature study	o
			- altered precipitation/run-off		A	p.2-8	Only in Java Island	o
			- ocean acidification		NA	x	x	x
			- ENSO		NA	x	x	x
			Seawater intrusion into freshwater lenses		NA	x	x	x
			Soil salination		NA	x	x	x
		Human-induced pressures	Growing population		A	p.2-195	BPS data, in Java Island	●
			Land-use changes: coastward migration		NA	x	x	x
			Land-use changes: agriculture growth		NA	x	x	x
			Land-use changes: infrastructure growth		A	p.2-188	Building condition in Java	o
			Increased turbidity, nutrient loading, and chemical pollution		NA	x	x	

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
2	Vulnerability	Natural small island system	Morphodynamic		A	p.2-70	Shoreline changes from satellite (recent), and topography map 1963, North Java	●
			Coastal landform:					
			- beaches, rocky shorelines, and cliffed coasts		A	p.2-57	Beach profile (several locations of case study), measured data	●
			- atoll and lagoon		NA	x	x	x
			- sea grass		NA	x	x	x
			- coral reef		A	p.2-121, 3-47	Observation and distribution	●
			forests		NA	x	x	x
		Societal small island system	Freshwater resources (decline of water supply)		NA	x	x	x
			Agriculture and fisheries		NA	x	x	x
			Human settlement, infrastructure, and migration		A	p.2-188	Building condition	o
			Biodiversity		NA	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation (reduction in island size)		A	p.2-103	Local scale of the case study	●
			Coastal erosion		A	p.3-69	Shoreline changes analysis	o
			Coral bleaching		NA	x	x	x
			Degradation of ecosystems		A	p.3-45, 3-47	Analysis of mangrove and coral reef	o
			Replacement of some local species		NA	x	x	x
			Decreased fisheries and other marine-based resources		NA	x	x	x
			Decrease in growth rates		NA	x	x	x
		Impact to sociatel coastal system	Human deaths		NA	x	x	x
			Property losses		NA	x	x	x
			Business activities		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
			Human settlements		A	p.4-92	Economic valuation	o
			Human activities		NA	x	x	x
			Human health		NA	x	x	x
			Loss of cultural heritage		NA	x	x	x
			Reduces the amenity value for coastal users		NA	x	x	x
			Recreation and tourism		NA	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim)		A	p.5-10,-11,-12	Adaptation strategy	o
			Hold shoreline (dyke, beach nourishment)		A	p.5-10,-11,-12	Adaptation strategy	o
		Accommodate	Increase flexibility (flood building, floating agriculture system)		A	p.5-10,-11,-12	Adaptation strategy	o
		Retreat	Retreat the shoreline (managed realignment)		A	p.5-10,-11,-12	Adaptation strategy	o
			Limited intervention (adhoc sea wall)		A	p.5-10,-11,-12	Adaptation strategy	o
			No intervention (monitoring only)		A	p.5-10,-11,-12	Adaptation strategy	o
			Community-focused adaptation (hazard mapping, warning system)		A	p.5-10,-11,-12	Adaptation strategy	o
		Adaptation practices	Integrated coastal zone management:		A	p.5-10,-11,-12	Adaptation strategy	o
			- coastal zone management regulations		A	p.5-10,-11,-12	Adaptation strategy	o
			- habitat conservation		A	p.5-10,-11,-12	Adaptation strategy	o
			- long-term coastal spatial planning		A	p.5-10,-11,-12	Adaptation strategy	o
			- long-term community planning		A	p.5-10,-11,-12	Adaptation strategy	o
			Desalination, water shortages		A	p.5-10,-11,-12	Adaptation strategy	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures		NA	x	x	x
		Adaptive capacity	Constrain and limitation		NA	x	x	x
			Capacity-strengthening strategies		NA	x	x	x

No.	Component	Theme	Indicator	Appraisal	Availability	Page, Figure, Table	Comment	Rating
		The links between adaptation and mitigation			NA	x	x	x
		Research needs	Uncertainties, gaps, and priorities		A	p.5-10	Adaptation strategy	o

Aspect-6 : **Coastal Areas, Oceans, and Small Islands**
Sub-aspect-3 **: Small Island Areas**
Meta-analysis
Assessors : Dr. Hamzah Latief & M. S. Fitriyanto, M. Sc.

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No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
1	Stimuli	Hazard related to climate and sea-level rise	Global sea level rise	●	●	o	●	●	●	●
			Temperature rise	●	o	o	o	●	●	●
			Increased CO2 concentration	x	x	o	x	x	x	x
			Extreme events:							
			- cyclones	o	o	o	x	o	x	o
			- extreme waves	●	●	o	x	●	●	●
			- storm surges	o	o	o	x	●	o	●
			- altered precipitation/run-off	o	o	o	x	●	o	●
			- ocean acidification	x	o	x	x	x	x	x
			- ENSO	●	o	o	x	●	x	●
			Seawater intrusion into freshwater lenses	x	x	x	x	x	x	x
			Soil salination	x	x	x	x	x	x	x
		Human-induced pressures	Growing population	●	x	o	x	●	●	●
			Land-use changes: coastward migration	x	x	x	x	x	x	x

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
			Land-use changes: agriculture growth	x	x	o	x	o	x	o
			Land-use changes: infrastructure growth	o	x	o	x	o	o	o
			Increased turbidity, nutrient loading, and chemical pollution	x	x	x	x	x		x
2	Vulnerability	Natural small island system	Morphodynamic	x	x	x	x	o	●	●
			Coastal landform:							
			- beaches, rocky shorelines, and cliffed coasts	x	x	x	x	o	●	●
			- atol and lagoon	x	x	x	x	x	x	x
			- sea grass	x	x	x	x	x	x	x
			- coral reef	x	o	o	x	o	●	●
			Forests	x	x	x	x	x	x	x
		Sociatel small island system	Freshwater resources (decline of water supply)	o	x	o	x	o	x	o
			Agriculture and fisheries	x	x	o	x	o	x	x
			Human settlement, infrastructure and migration	x	x	o	x	x	o	o
			Biodiversity	x	x	o	x	x	x	x
3	Risk/Impact	Impact to natural coastal system	Coastal inundation (reduction in island size)	●	●	o	●	●	●	●
			Coastal erosion	x	x	o	x	x	o	o

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
			Coral bleaching	o	x	o	x	o	x	x
			Degradation of ecosystems	x	x	x	x	x	o	o
			Replacement of some local species	x	x	x	x	x	x	x
			Decreased fisheries and other marine-based resources	x	x	x	x	x	x	x
			Decrease in growth rates	x	x	x	x	x	x	x
		Impact to societal coastal system	Human deaths	x	x	x	x	x	x	x
			Property losses	x	x	o	x	x	x	x
			Business activities	x	x	o	x	x	x	x
			Human settlements	x	x	o	x	x	o	o
			Human activities	x	x	o	x	x	x	x
			Human health	o	x	o	x	x	x	x
			Loss of cultural heritage	x	x	x	x	x	x	x
			Reduces the amenity value for coastal users	x	x	x	x	x	x	x
			Recreation and tourism	x	x	o	x	x	x	x
4	Measures as adaptation response	Protect	Advance the shoreline (land claim)	x	o	x	x	o	o	o
			Hold shoreline (dyke, beachnourishment)	x	x	x	x	x	o	o
		Accommodate	Increase flexibilty (flood building, floating agriculture system)	x	x	x	x	x	o	o

No.	Component	Theme	Indicator	ICCSR-MFS	ICR	RAN-PI	SLRJ	VA Lombok-CMS	CSI	Overall
		Retreat	Retreat the shoreline (managed realigment)	x	x	x	x	x	o	o
			Limited intervension (adhoc sea wall)	x	x	x	x	x	o	o
			No intervension (monitoring only)	x	x	x	x	x	o	o
			Community-focused adaptation (hazard mapping, warning system)	x	x	o	x	x	o	o
		Adaptation practices	Integrated coastal zone management:	x	x	o	x	x	o	o
			- coastal zone management regulations	x	x	o	x	x	o	o
			- habitat conservation	x	x	o	x	x	o	o
			- long-term coastal spatial planning	x	x	o	x	o	o	o
			- long-term community planning	x	x	o	x	o	o	o
			Desalination, water shortages	o	x	o	x	x	o	o
		Cost and benefits of adaptation	Optimal benefit cost for coastal adaptation measures	x	x	-	x	x	x	x
		Adaptive capacity	Constrain and limitation	x	x	o	x	x	x	o
			Capacity-strengthening strategies	x	x	o	x	x	x	o
		The links between adaptation and mitigation		x	x	o	x	x	x	o
		Research needs	Uncertainties, gaps, and priorities	x	x	o	x	x	o	o