Appendix 1

Table A1.1. Complete summary of the results of the literature review

CES class	CES categories	Socio-ecological integration	Co-production	Power relations	Institutions and governance	Uncertainty	Temporal scale	Spatial scale§	Value Pluralism|
Provisioning	Food provision	Focus on benefit and capacity of fisheries and increasingly also aquaculture. Some papers also study flow through fishing catches and landings	Emphasis on: link between ecological conditions and productivity of fisheries; anthropogenic drivers and impacts on fisheries. Few papers describe institutions and regulations	Not common. Some papers identify trade-offs (provisioning vs. regulating) and conflicts (traditional fishing vs. aquaculture). Very few study link between power relations and control of ES	Not common. Few papers identify actors and conflicts. Some papers describe policy and policy bodies. Policy recommend ations.	T. Few M and E	MT	L, R. Few MS, No CS	Mon. and Env. Very few SC
	Water storage provision	Focus on capacity and benefit of coastal and marine water for consumption and irrigation	Not considered	Not considered	Not considered.	T	MT	L, R. No MS, No CS	Mon. and Env.
	Biotic materials and biofuels	Focus on benefits of mangroves for wood production	Emphasis on link between land use change and capacity (mangroves)	Not common. Few papers identify conflicts (aquaculture vs. traditional uses mangroves) and trade-offs (biotic materials vs. coastal protection).	Not considered.	T	MT	L,R. very few N and SR. No MS, No CS	Mon. and Env. Very few SC
Regulation and	Air quality regulation	Focus on capacity and benefit of sea water and coastal vegetation (mangroves) for air regulation	Emphasis on link between land use change and capacity (mangroves)	Not considered	Not considered	T and M		L and R, Very few SR. No MS, No CS	Mon. and Env.

	Water purification	Focus on capacity of concentration of nutrients or pollutants in wetlands, salt marshes, benthic invertebrate species and mangroves. Some papers study flow through retention of excessive nutrients and pollutants. Few papers assess benefits of water purification (e.g. treatment costs)	Emphasis on: link between ecological conditions (eutrophication) and capacity. Link between land use change (agriculture and urban) and capacity (wetlands and salt marshes)	Not common. Few papers identify trade-offs (water purification vs. Food provision and vs. coastal recreation).	Not common. Few papers identify actors and conflicts. Some papers describe policy and policy bodies. Policy recommend ations.	T	MT. Few LT, ST and MS	L and R. Few N and SR. No MS, No CS	Mon. and Env.
	Weather regulation	Focus on capacity of coastal vegetation for local weather regulation	Not considered	Not considered	Not considered	No data	No data	L. No MS, No CS	No data
	Ocean nourishment	Focus on capacity of nutrient cycle (soil formation and nutrients)	Not considered	Not considered	Not considered	T, M and E	No data	L and R. No MS, No CS	Env.
	Coastal protection	Focus on benefit and capacity of biotic structures such as mangroves, wetlands, coral reefs. Few papers also asses flow through coastal exposure (e.g. wave attenuation)	Emphasis on: link between ecological conditions of biotic structures (wetlands, mangroves, coral reef) and capacity; link land use change (agriculture and urban) and capacity (mangroves)	Not common. Few papers identify trade-offs (coastal protection vs. food provision, vs. biotic materials and vs. recreation)	Not common. Few papers identify actors and conflicts.	T and M	MT	L and R. Very few MS, No CS	Mon. and Env. Very few SC.
	Climate regulation	Focus on capacity and benefit of mangroves for CO2 sequestration and concentration. No other climate active gases are assessed.	Emphasis on link between land use change and capacity (mangroves)	Not common. Few identify conflicts and power relations in PES markets	Few papers identify institutional arrangemen ts, policies, actor and conflicts Policy recommend ations.	T, E	MT. Few LT and MS	L and R. Very few, N and G. Very few MS, No CS	Env. and Mon.

	Lifecycle maintenance	Focus on capacity and benefit of nursery habitat on mangroves, seagrass and Few papers assess flow through fish production and biodiversity in nursery habitat	Emphasis on link between ecological conditions of habitats and capacity. Few papers describe institutions and regulations	Not common. Few identify trade-offs/conflicts (lifecycle maintenance vs. aquaculture, vs. fisheries and vs. tourism)	Not common.	T, E	MT. Few ST	L and R. Very few, N and G. No MS, No CS	Env. and Mon.
	Biological regulation	Focus on flow of invasive species and pathogens	Not considered	Not considered	Not considered	T	No data	L and R. very few G. No MS, No CS	Env.
Cultural	Symbolic and aesthetic values	Focus on benefit of aesthetic values such as sea views, coastal landscape and heritage	Emphasis on link between human pressures and impacts on aesthetic values (degradation of landscape wildness)	Not considered	Not considered	M, E and O	MT	L and R. very few SR, N and G. No MS, No CS	Mon. and SC
	Recreation and tourism	Focus on benefits of tourism and tourist value preferences. Some papers assess flow of natural resources (mangroves, biodiversity) for tourism and recreational activities. Few papers assess capacity of ecosystem for bathing, biodiversity and naturalness	Emphasis on: socio-economic context; link between human pressures and impacts on ecological conditions or wildness	Not common. Few papers study value diversity conflicts among actors (e.g. tourist vs. residents)	Not common. Few papers identify actors and conflicts.	T and M	MT	L and R. No MS, No CS	Mon. and SC
	Cognitive effects	Focus on benefit of research and education (institutions and public policy)	Not considered	Not considered	Not considered	M and E	MT	L and R. No MS, No CS	Mon. and SC

Table 1. The majority of the reviewed manuscripts contain significant gaps regarding socio-ecological components. They fail to integrate some of the cascade components, especially flow. The papers do not completely embrace coproduction and power relations, and neither do they assess uncertainty, value pluralism and spatial and temporal scales interactions. † T= Technical; M=Methodological; E=Epistemological; O=Ontological ‡ MT= Medium-term; ST= Short-term; MS=Multiscale; CS=Cross-scale § L=Local; R=Regional; LT= Long-term. ⎮Mon.= Monetary; Env.= Environmental; SC.= Sociocultural.