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How the research outcomes contribute to promoting SDGs in an integrated manner?

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and a Sustainable Future in Asia

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The role of integrated assessment models

- Climate change policies (SDG13) have synergies and trade-offs with many other SDGs, such as air pollution and ecosystems. It is necessary to clarify these synergies and trade-offs and take appropriate actions.
- Integrated assessment models (IAMs) can quantitatively assess how climate change policies impact climate change and other environmental problems, such as air pollution and ecosystems degradation and provide climate mitigation scenarios that take into account synergies and trade-offs with other SDGs.
- IAM also can help to promote dialogues among stakeholders by providing scenarios.
- We still do not fully understand the interaction between climate change and ecosystems. Part B Project try to find out solutions by comparing the scenario results of globally well-known models (AIM, GLOBIOM and GAINS).

How can we tackle the problems?

Government

- Implement soft policies to improve environment such as laws, regulations and carbon pricing
- Implement to provide climate-friendly infrastructures
- Provide information and education

IAM can help to understand the way how to solve the problem by providing several scenarios that could achieve a better world.

Citizens

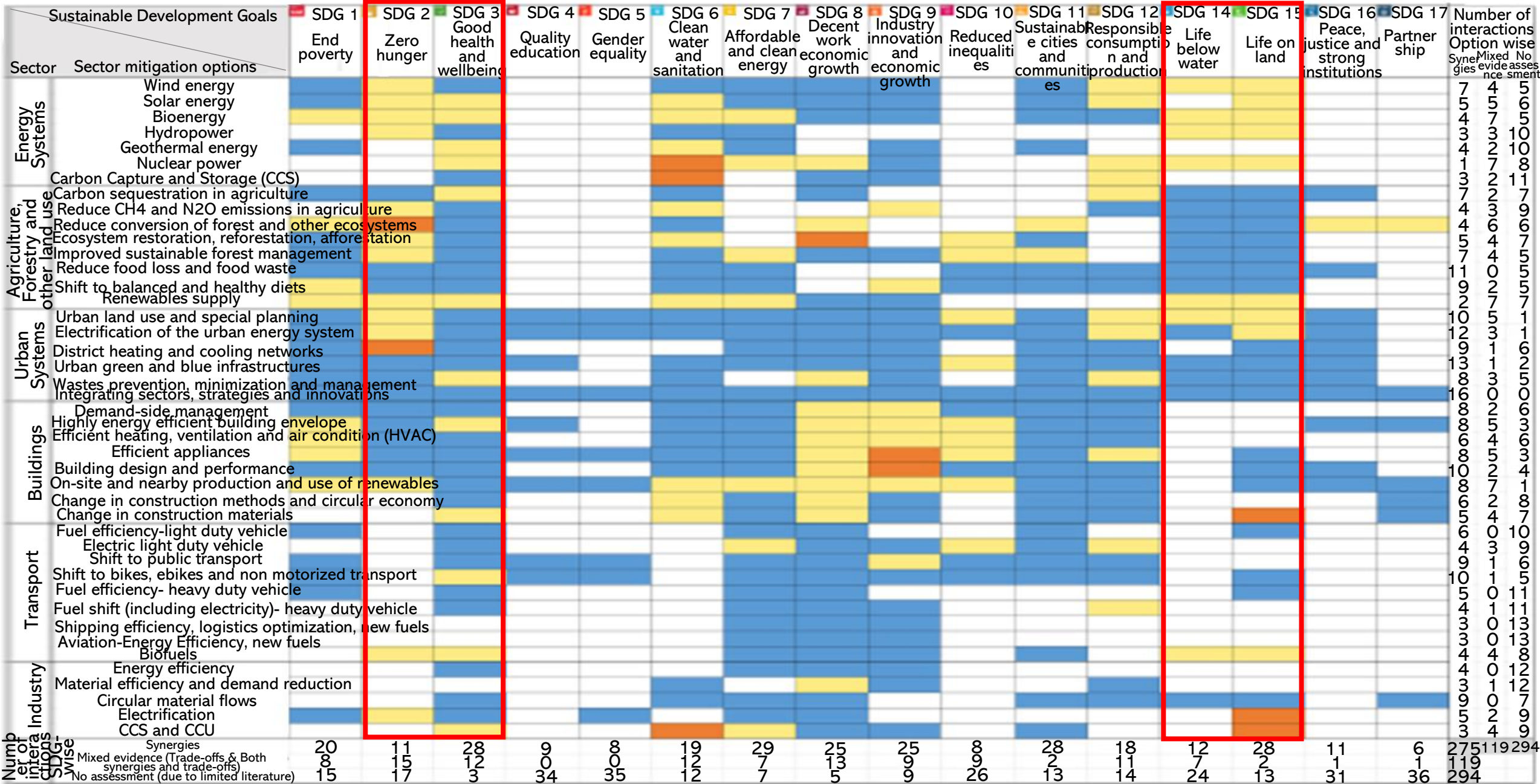
Affected by climate change and pollution

- Stop using products that emit CO2 and pollutants
- Change life-style (ex. Food)
- Use renewables

Industry

- Develop environmentally friendly products
- Promote the environmentally friendly product, including the distribution process
- Maintain/ Improve the working environment

Synergies and trade-offs between mitigation options and the SDGs



(Note) Blue cells indicate synergies, orange cells indicate trade-offs, yellow cells imply both synergies and trade-offs and white represent "no assessment"; (Source) Halsnæs et al. (2023) Beyond synergies: understanding SDG trade-offs, equity and implementation challenges of sectoral climate change mitigation options.

Additional slides

Policy type classifications and criteria

Policy Type	Code	Criteria/ Examples
Law/Regulation	LR	1. Policy Type Code Criteria/Examples Law, order, legislation, act, decree, code, control program, regulation, agreement, reform, standards, guidelines
National Policy	NP	Policy, package
Strategy/Action Plan	SA	Strategy, action plan, plan, master plan, scheme, framework, roadmap, mission, a program that is broad or acts as an action plan for the entire issue (for example, a national program)
Enforcement	EN	Additional efforts or measures to enforce existing laws, regulations, etc.
Tax/Spending	TS	2. Money-related Policies Taxes, government spending, investments, pensions, subsidies, insurance coverage (assumed government contributions), cash transfers, allowances, benefits, grants, aid
Pricing	PR	Price regulation
Financing	FN	Fund, loan, scholarship, deposits, bonds
Infrastructure	IN	3. Physical Infrastructure, Land Management Physical infrastructure, equipment, buildings, roads, transportation infrastructure, digital infrastructure such as broadband networks, development of physical infrastructure
Protected Area/Park	PA	Physical area. May be created by a law, program, etc.
Forest/Conservation	FR	Planting trees, forest conservation
Project/Initiative	PJ	4. Projects, Programs Project, initiative (combined this as they are both focused actions to address something)
Program	PG	Smaller-type programs, more focused, less broad—not national programs
Monitoring	MO	5. Information-related Policies Monitoring, evaluation, observation, surveillance
Awareness Raising	AR	Public information, promoting public awareness, etc.
Training/Education	TR	Training, education, capacity building, for example to improve practices a workplace/organization/etc.
Information/Data	ID	Information systems, directory, data collection, providing information to the public, index, catalogue, providing guidelines
Certification/Labeling	CR	Certification, labeling, awards
Registration	RJ	Registry
Agency/Department	AG	6. Other Creation of a new agency or department
Research	RS	Research, development of technology
Other	OT	Committees, hotlines, white papers, encouragement, general promotion, vague, or difficult to classify

(Source) Table 2 in Elder, M. and Newman, W. (2023) Monitoring G20 Countries' SDG Implementation Policies and Budgets Reported in Their Voluntary National Reviews (VNRs). Sustainability. 15, 15733. <https://doi.org/10.3390/su152215733>

Implications of afforestation and biomass production on SDGs, costs, equity and implementation challenges

Aspects	Afforestation	Biomass production
Equity	Host communities may not get any social and economic benefits (Peprah 2017)	If local food prices increase, it can lead to food insecurity for the marginalised, esp. women (Beuchelt 2016) Commercial biomass activities are often male centric, so income increase may not benefit women (Beuchelt 2016)
Implementation	Farmers do not always prefer investing in afforestation (Żróbek-Róžańska et al. 2014) Need involvement of forest communities (including fund transfer schemes), creating a knowledge pool from existing projects (Dasgupta and Srikanth 2021) Need international/national financing	Farmers perspectives: lack of profitability and lack of assurance of buyers, no organised biomass transport system to buyers (Roszkowska and Szubska-Włodarczyk 2022) Complementary measures—forest and water protection schemes, agricultural intensification and improved fertilisation efficiency helps in reducing trade-offs (Humpenöder et al. 2018) Creating new energy policies to support biomass investment (Kevser et al. 2022)
Costs	Depends on context, varies with scale, period and location	Increase in land prices leading to increased investment cost of crop establishment and biomass transportation cost (Choi et al. 2019) Cost of transportation is too high for poor farmers (Singh et al. 2020 ; Kumar et al. 2015)
SDGs (trade-offs are indicated)	SDG 2: large-scale/massive afforestation will increase competition with agricultural land, leading to increased food prices affecting food security (Kreidenweis et al. 2016)	SDGs 1, 2 and 15: massive scale implementation, and without considering local circumstances, can lead to competition with land resources and can have an adverse impact on food security (increasing food prices), biodiversity and livelihoods (Humpenöder et al. 2018 ; IPCC 2022a, b)

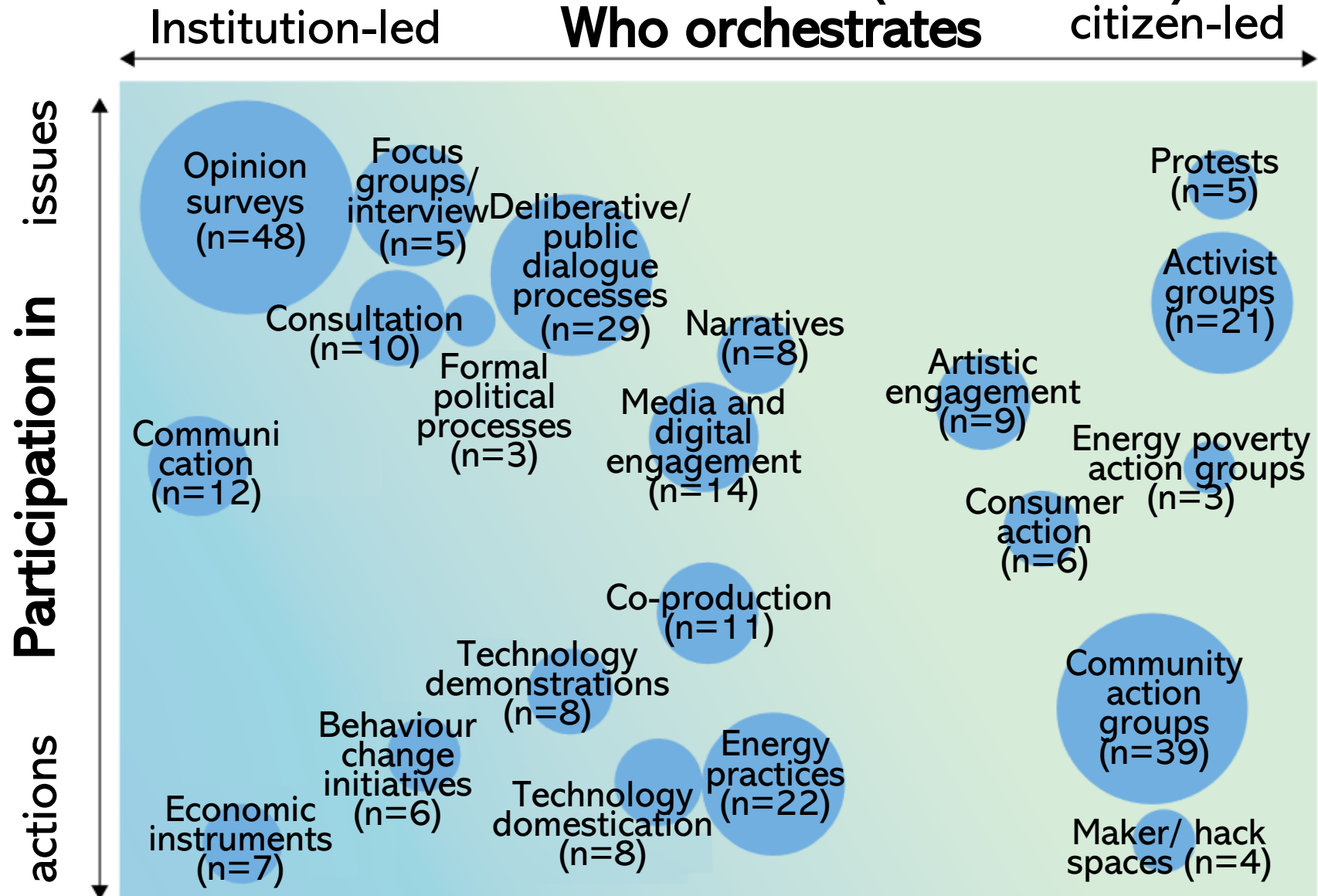
(Source) Table 1 in Halsnæs et al. (2023) Beyond synergies: understanding SDG trade-offs, equity and implementation challenges of sectoral climate change mitigation options.

Implications of industry actions on SDGs, costs, equity and implementation

Aspect	Electrification in industry with renewable energy
Equity	Access to finance can be limited in both high- and low-income countries, which can exclude some industries from electrification (Wei et al. 2019; Pal and Hall 2021)
Implementation	Significant barriers are faced for electrification of industry including costs and risk aversion of the industry towards new technologies. Other key barriers are heterogeneity of sectors and missing regulatory policies. The barriers exist in both high- and low-income countries (Wei et al. 2019; Pal and Hall 2021; Bataille 2020)
Costs	High costs associated with transformation from other energy systems to electrification based on study for EU and US (Wei et al. 2019) Electrification with renewable energy is costly compared with fossil fuel-based systems in some countries, e.g. India (Pal and Hall 2021) Electrification requires investments in several parts of the production system and can, therefore, be expensive (Wei et al. 2019; Pal and Hall 2021)
SDGs (trade-offs are indicated)	Many synergies are associated with renewable-based electricity, but costs are a major trade-off (Wei et al. 2019)

(Source) Table 4 in Halsnæs et al. (2023) Beyond synergies: understanding SDG trade-offs, equity and implementation challenges of sectoral climate change mitigation options.

A mapping of cases of public engagement with energy and climate change occurring between 2015 – 2022 (n= 284 cases).



(Note) Figure 4 in The size of the bubbles relates to the number of cases associated with each form of public engagement identified

(Source) : [Chilvers J, Stephanides P, Pallett H, Tom Hargreaves T \(2023\) Mapping Public Engagement with Energy, Climate Change and Net Zero. UKERC Public Engagement Observatory. https://d2e1qxpsswcpgz.cloudfront.net/uploads/2023/07/UKERC_BN_Mapping-Public-Engagement-with-Energy.pdf](https://d2e1qxpsswcpgz.cloudfront.net/uploads/2023/07/UKERC_BN_Mapping-Public-Engagement-with-Energy.pdf)

Challenges toward leveraging climate neutral societies (LCS) in

