

THE FUTURE
IS NOW
SCIENCE FOR ACHIEVING
SUSTAINABLE DEVELOPMENT



GLOBAL SUSTAINABLE
DEVELOPMENT REPORT 2019



1. A decisive decade ahead

*Sounding the alarm bell:
The need to scale-up and
accelerate implementation*

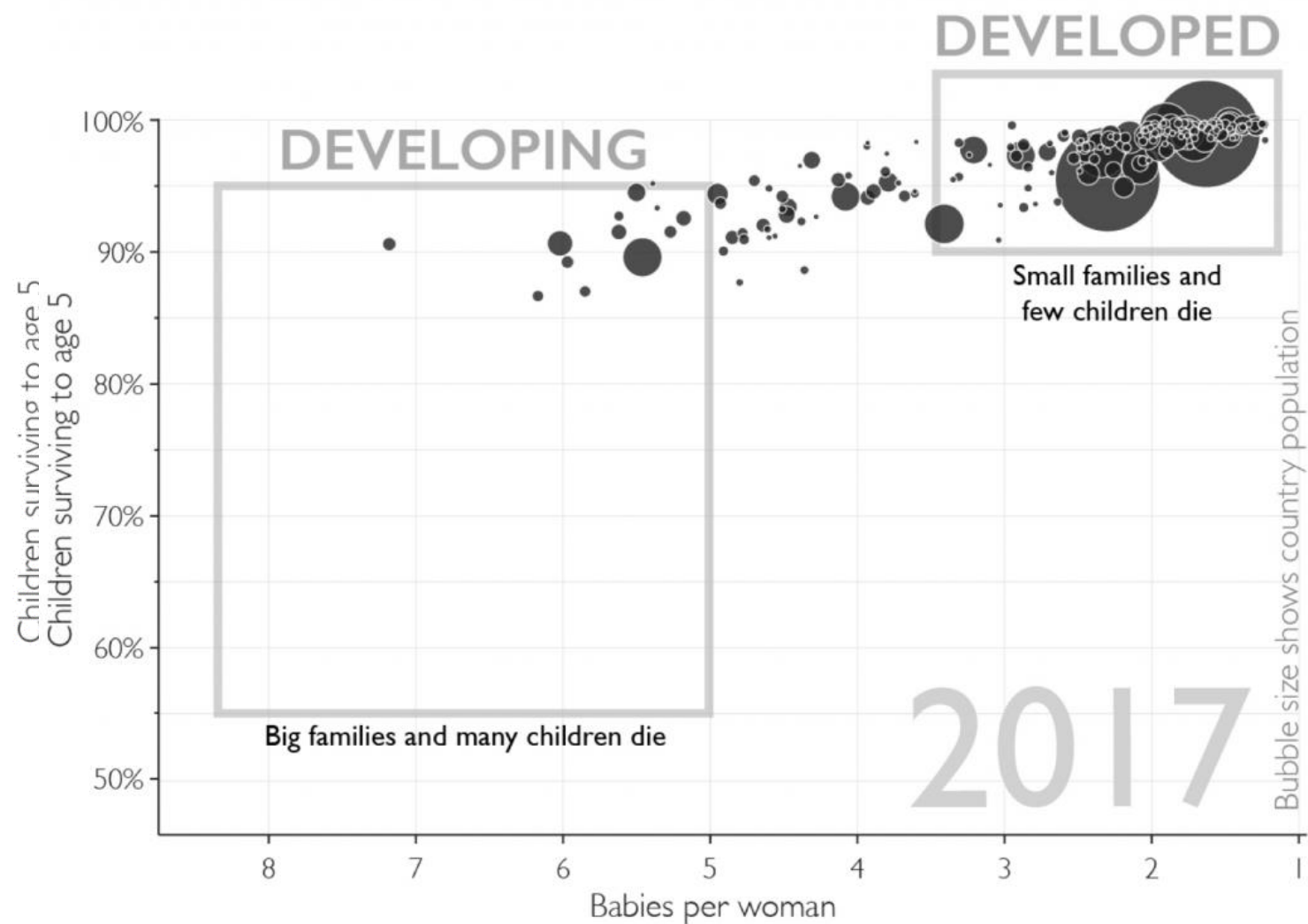
Business-as-usual approaches

GOAL	WITHIN 5%	5-10%	>10%	NEGATIVE LONG-TERM TREND
 Goal 1		1.1. Eradicating extreme poverty	1.3. Social protection for all	
 Goal 2		2.1. Ending hunger (undernourishment)	2.2. Ending malnutrition (stunting) 2.5. Maintaining genetic diversity 2.a. Investment in agriculture*	2.2. Ending malnutrition (overweight)
 Goal 3	3.2. Under 5 mortality 3.2. Neonatal mortality		3.1. Maternal mortality 3.4. Premature deaths from non-communicable diseases	
 Goal 4	4.1 Enrolment in primary education	4.6 Literacy among youth and adults	4.2. Early childhood development 4.1 Enrolment in secondary education 4.3 Enrolment in tertiary education	
 Goal 5			5.5. Women political participation	
 Goal 6		6.2. Access to safe sanitation (open defecation practices)	6.1. Access to safely managed drinking water 6.2. Access to safely managed sanitation services	
 Goal 7		7.1. Access to electricity	7.2. Share of renewable energy* 7.3. Energy intensity	
 Goal 8			8.7. Use of child labour	
 Goal 9		9.5. Enhancing scientific research (R&D expenditure)	9.5. Enhancing scientific research (number of researchers)	
 Goal 10			10.c. Remittance costs	Inequality in income**
 Goal 11			11.1. Urban population living in slums*	
 Goal 12				12.2. Absolute material footprint, and DMC*
 Goal 13				Global GHG emissions relative to Paris targets**
 Goal 14				14.1. Continued deterioration of coastal waters* 14.4. Overfishing*
 Goal 15				15.5. Biodiversity loss* 15.7. Wildlife poaching and trafficking*
 Goal 16			16.9 universal birth registration *	

* target not specified ** based on most recently available data



A Success Story?



Sources: UN-IGME, UN-Pop[1,3] & Gapminder[6]

Understanding the systemic challenges

Biodiversity loss

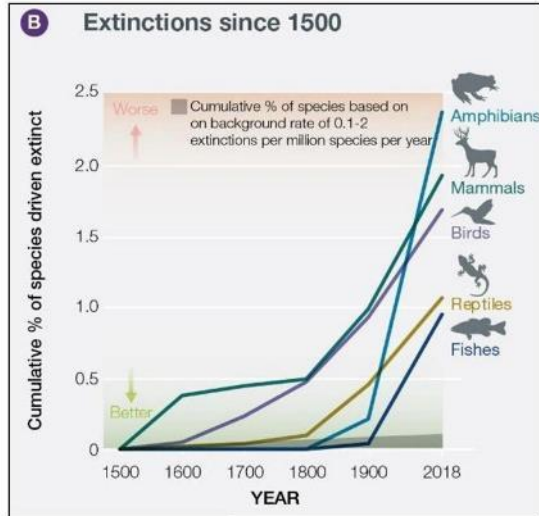
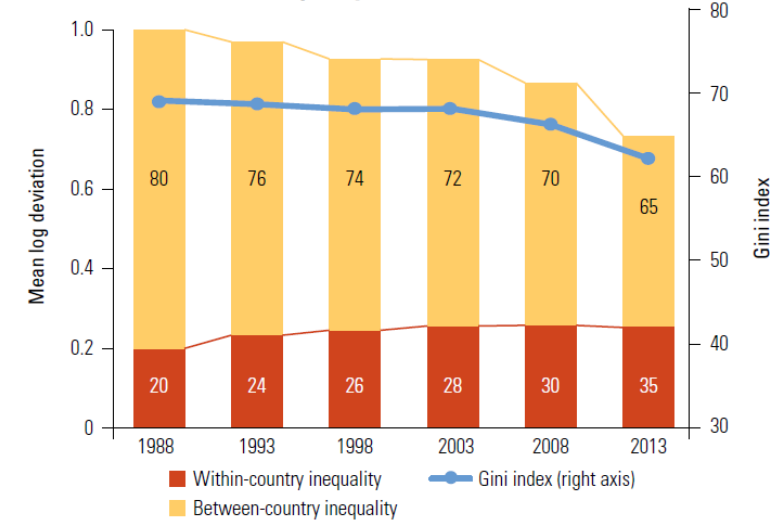


Figure 3 (B) - Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

IPBES, 2019

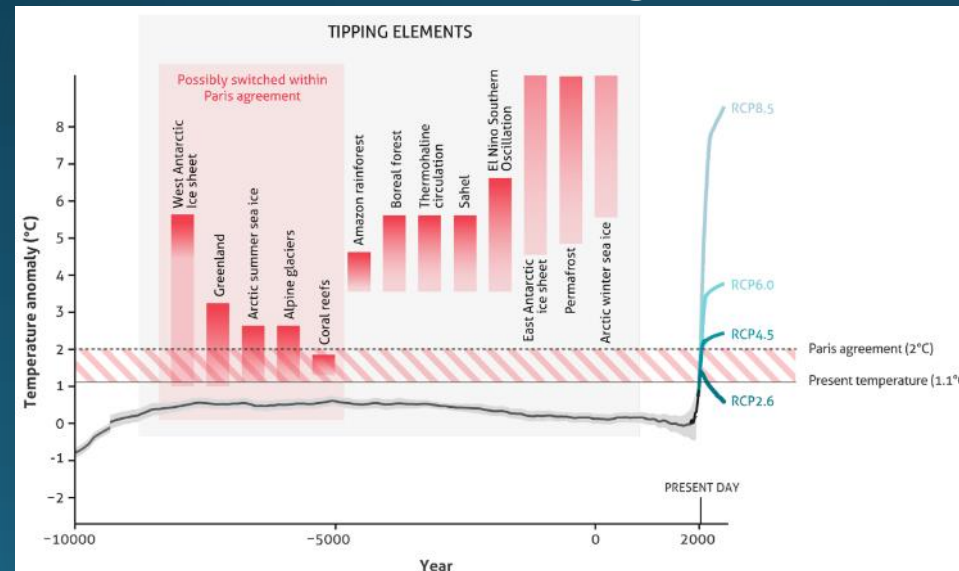
Raising inequalities

FIGURE 0.10 Global Inequality, 1988–2013



World Bank, 2016

Climate change



Future Earth, 2017, based on Schellnhuber et al. 2016



As well as the winners...

Country/Corporation			Revenue (USD bn)	Country/Corporation			Revenue (USD bn)	Country/Corporation			Revenue (USD bn)	Country/Corporation			Revenue (USD bn)
1	United States		3363	26	Mexico		224	51	General Electric (US)		140	76	Walgreens Boots Alliance (US)		104
2	China		2465	27	Switzerland		216	52	CSCEC (CN)		139	77	HP (US)		103
3	Japan		1696	28	Berkshire Hathaway (US)		211	53	AmerisourceBergen (US)		136	78	Assicurazioni Generali (IT)		103
4	Germany		1507	29	India		200	54	Agricultural Bank of China		133	79	Cardinal Health (US)		103
5	France		1288	30	Norway		200	55	Verizon (US)		132	80	BMW (DE)		102
6	United Kingdom		996	31	McKesson (US)		192	56	Chevron (US)		131	81	Express Scripts Holding (US)		102
7	Italy		843	32	Russia		187	57	E.ON (DE)		130	82	Nissan Motor (JP)		102
8	Brazil		632	33	Austria		187	58	AXA (FR)		129	83	China Life Insurance (CN)		101
9	Canada		595	34	Turkey		184	59	Indonesia		129	84	J.P. Morgan Chase (US)		101
10	Walmart (US)		482	35	Samsung Electronics (KR)		177	60	Finland		128	85	Koch Industries (US)		100
11	Spain		461	36	Glencore (CH/JE)		170	61	Allianz (DE)		123	86	Gazprom (RU)		99
12	Australia		421	37	ICBC (CN)		167	62	Bank of China (CN)		122	87	China Railway Eng. (CN)		99
13	State Grid (CN)		330	38	Daimler (DE)		166	63	Honda Motor (JP)		121	88	Petrobras (BR)		97
14	Netherlands		323	39	UnitedHealth Group (US)		157	64	Cargill (US)		120	89	Schwarz Group (DE)		97
15	South Korea		304	40	Denmark		157	65	Japan Post Holdings (JP)		119	90	Trafigura Group (NL/SG)		97
16	China Nat. Petroleum (CN)		299	41	EXOR Group (IT/NL)		154	66	Costco (US)		116	91	Nippon Telegraph and Tel. (JP)		96
17	Sinopec Group (CN)		294	42	CVS Health (US)		153	67	Argentina		116	92	Boeing (US)		96
18	Royal Dutch Shell (NL/GB)		272	43	General Motors (US)		152	68	BNP Paribas (FR)		112	93	Venezuela		96
19	Sweden		248	44	Vitol (NL/CH)		152	69	Fannie Mae (US)		111	94	China Railway Constr. (CN)		95
20	Exxon Mobil (US)		246	45	Ford Motor (US)		151	70	Ping An Insurance (CN)		110	95	Microsoft (US)		94
21	Volkswagen (DE)		237	46	China Constr. Bank (CN)		150	71	Kroger (US)		109	96	Bank of America Corp. (US)		93
22	Toyota Motor (JP)		237	47	Saudi Arabia		150	72	Société Générale (FR)		108	97	ENI (IT)		93
23	Apple (US)		234	48	AT&T (US)		147	73	Amazon.com (US)		107	98	Greece		93
24	Belgium		232	49	Total (FR)		143	74	China Mobile Comm. (CN)		106	99	Nestlé (CH)		92
25	BP (GB)		226	50	Hon Hai Precision Ind. (TW)		141	75	SAIC Motor (CN)		105	100	Wells Fargo (US)		90

Nation states

Multi-national company

Fossil-fuel based industry

Based on Babic M, Fichtner J, Heemskerk EM. 2017. States versus Corporations: Rethinking the Power of Business in International Politics. The International Spectator. 52(4):20–43.

doi:[10.1080/03932729.2017.1389151](https://doi.org/10.1080/03932729.2017.1389151).



... and losers



Counter-transformations: nationalism and populism

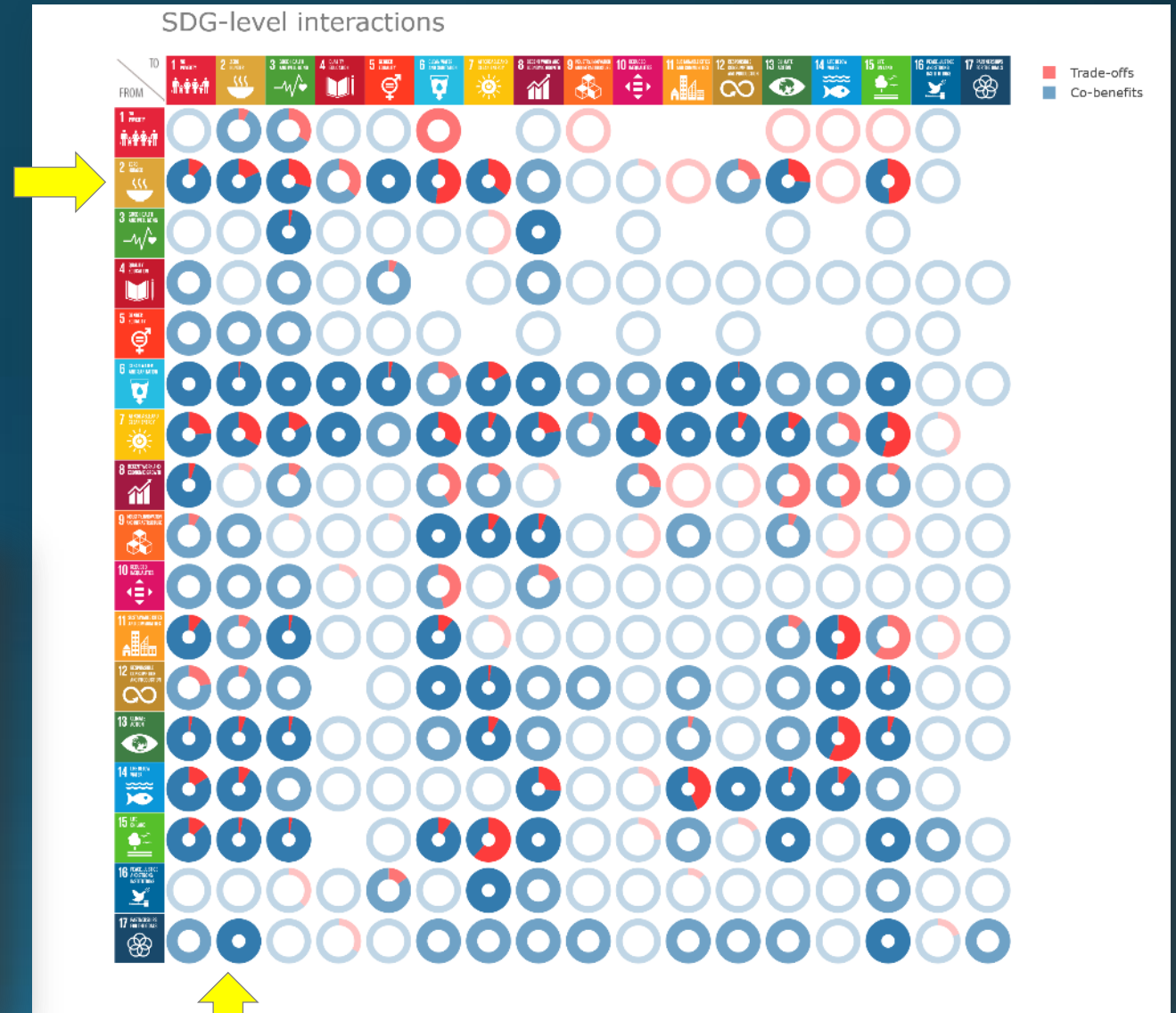


2. Knowledge-based transformations

Insight (a): From boxes to arrows – a systems perspective

Moving forward:

- *address trade-offs*
- *harness co-benefits*
- *turn vicious- into virtuous cycles*

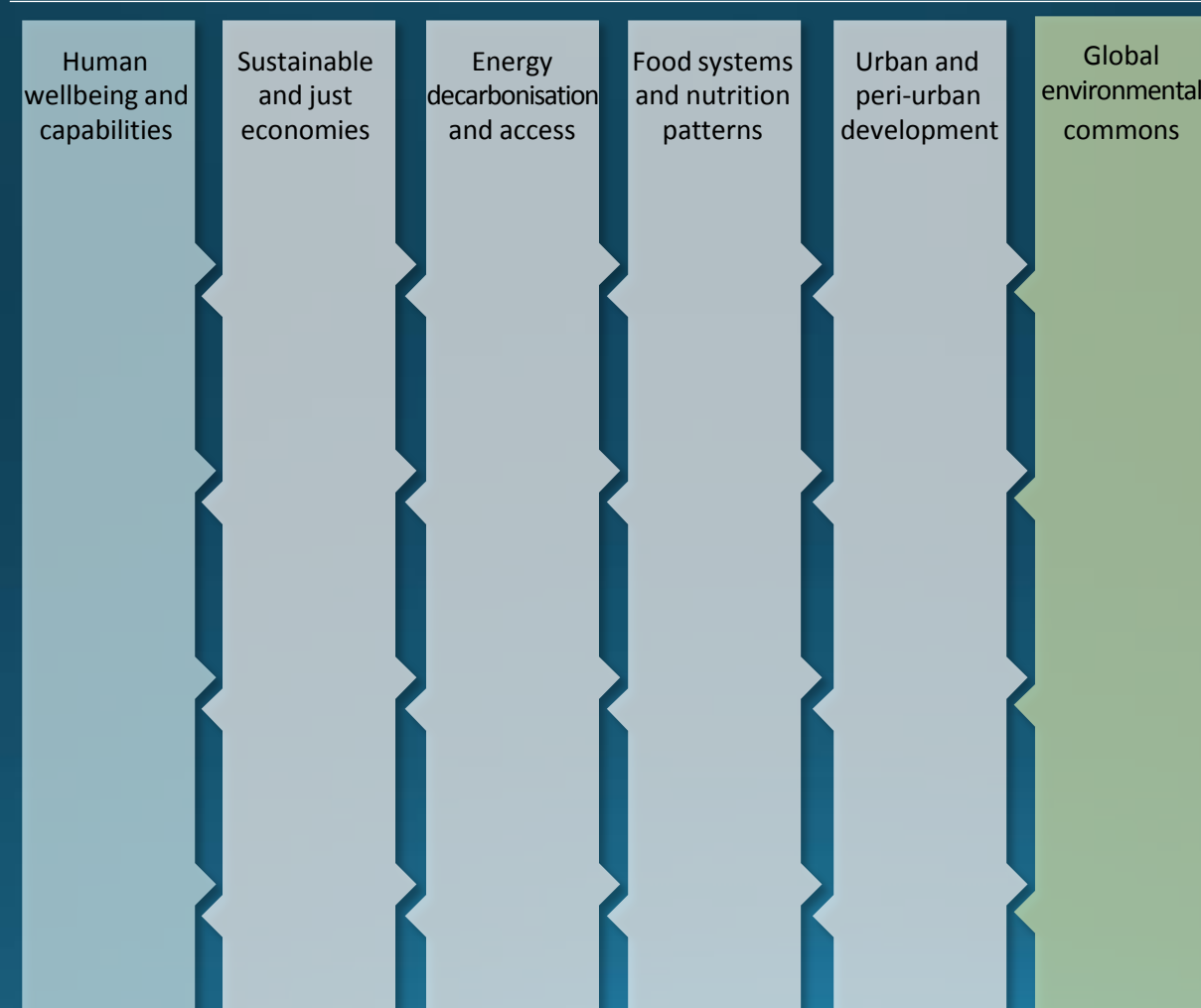




2. Knowledge-based transformations

Systemic entry points

ENTRY POINTS FOR TRANSFORMATION



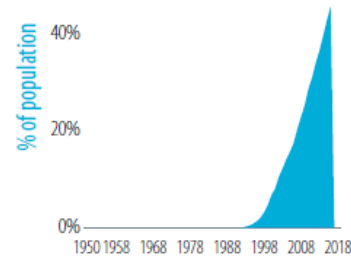


Insight (b): Levers for change in a hyper-connected world

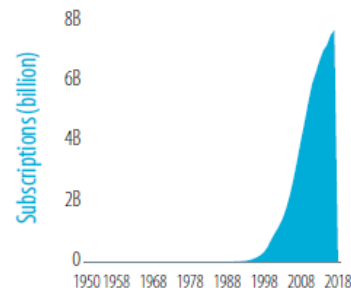


Flows of information

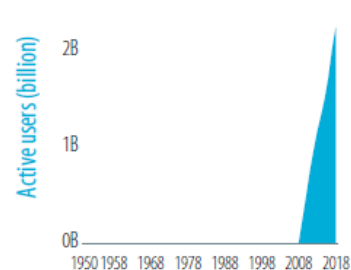
Individuals using the Internet



Mobile cellular subscriptions

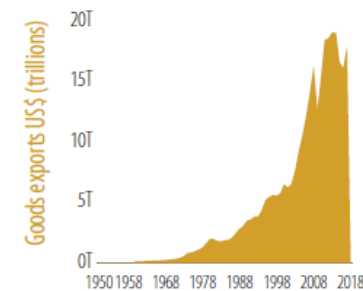


Monthly active Facebook users worldwide

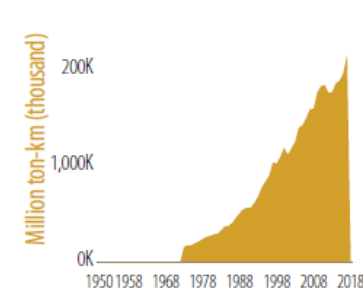


Flows of goods

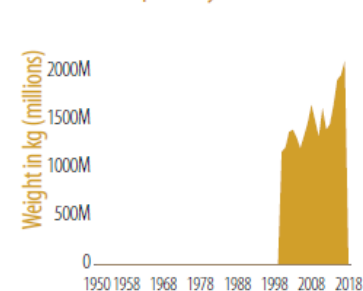
Merchandise exports



Air transport, freight

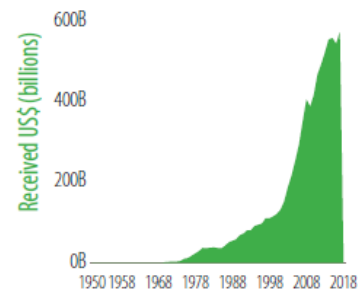


Rice imports by the EU

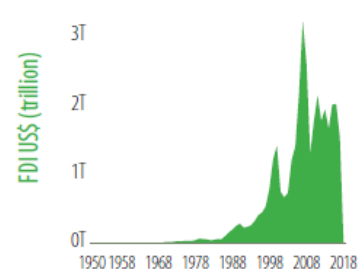


Flows of capital

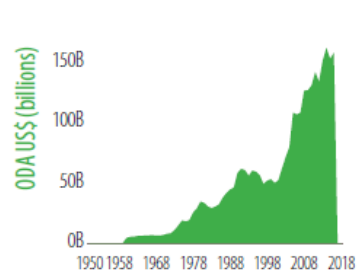
Personal remittances, received



Foreign direct investment, net outflows

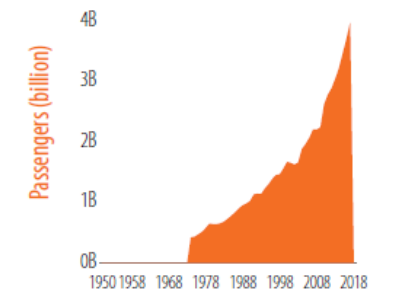


Net official development assistance received

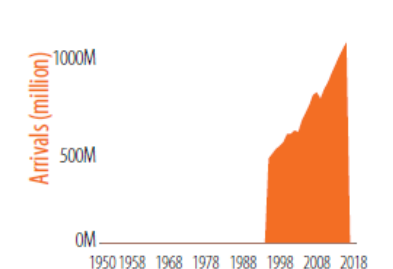


Flows of people

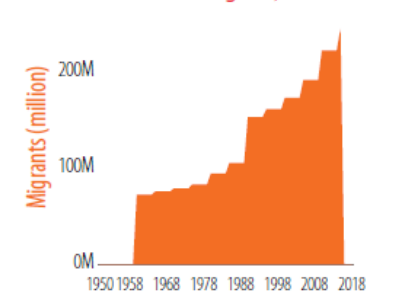
Air transport, passengers carried

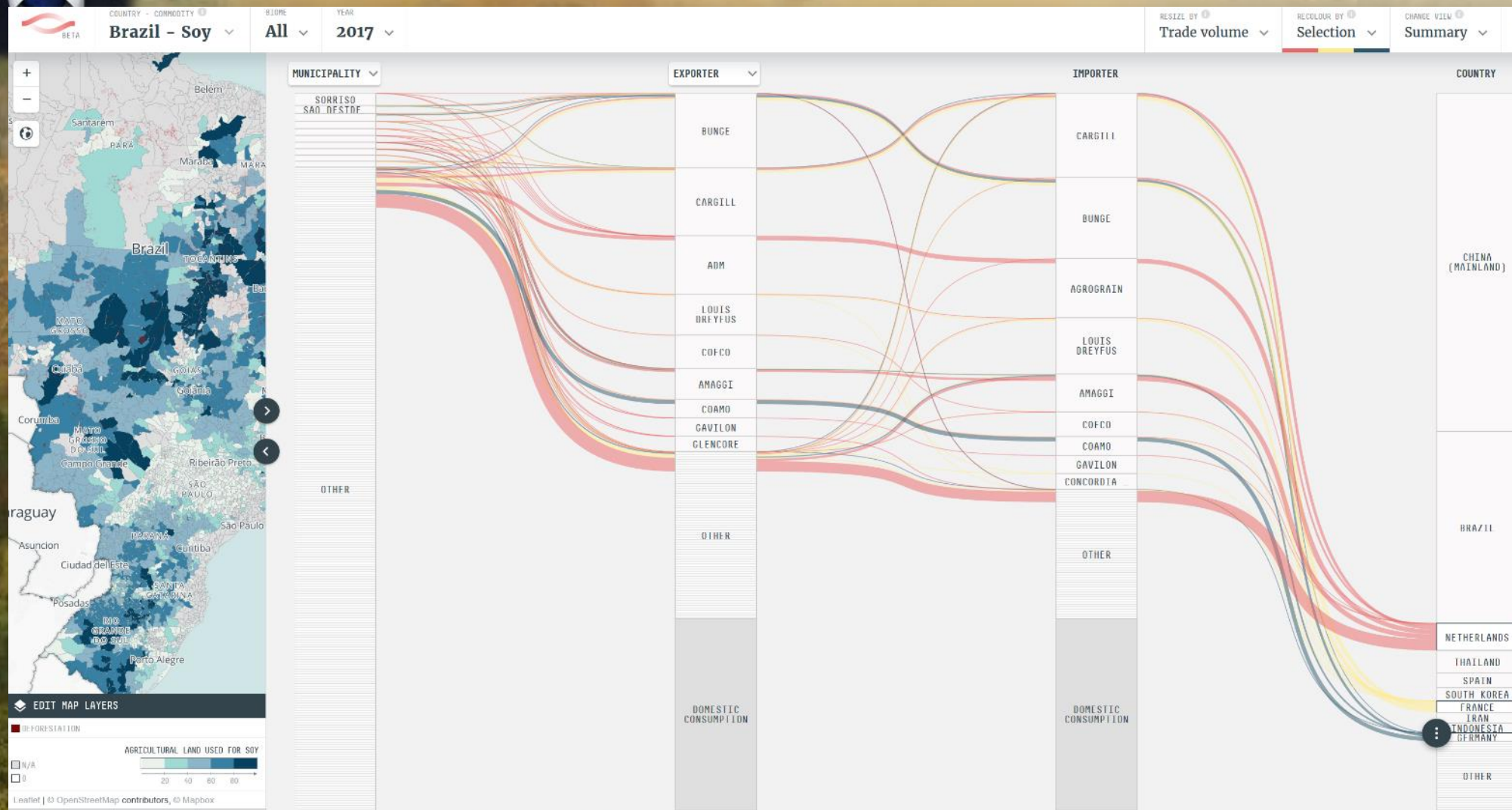


International tourism, number of arrivals



International migrant, total

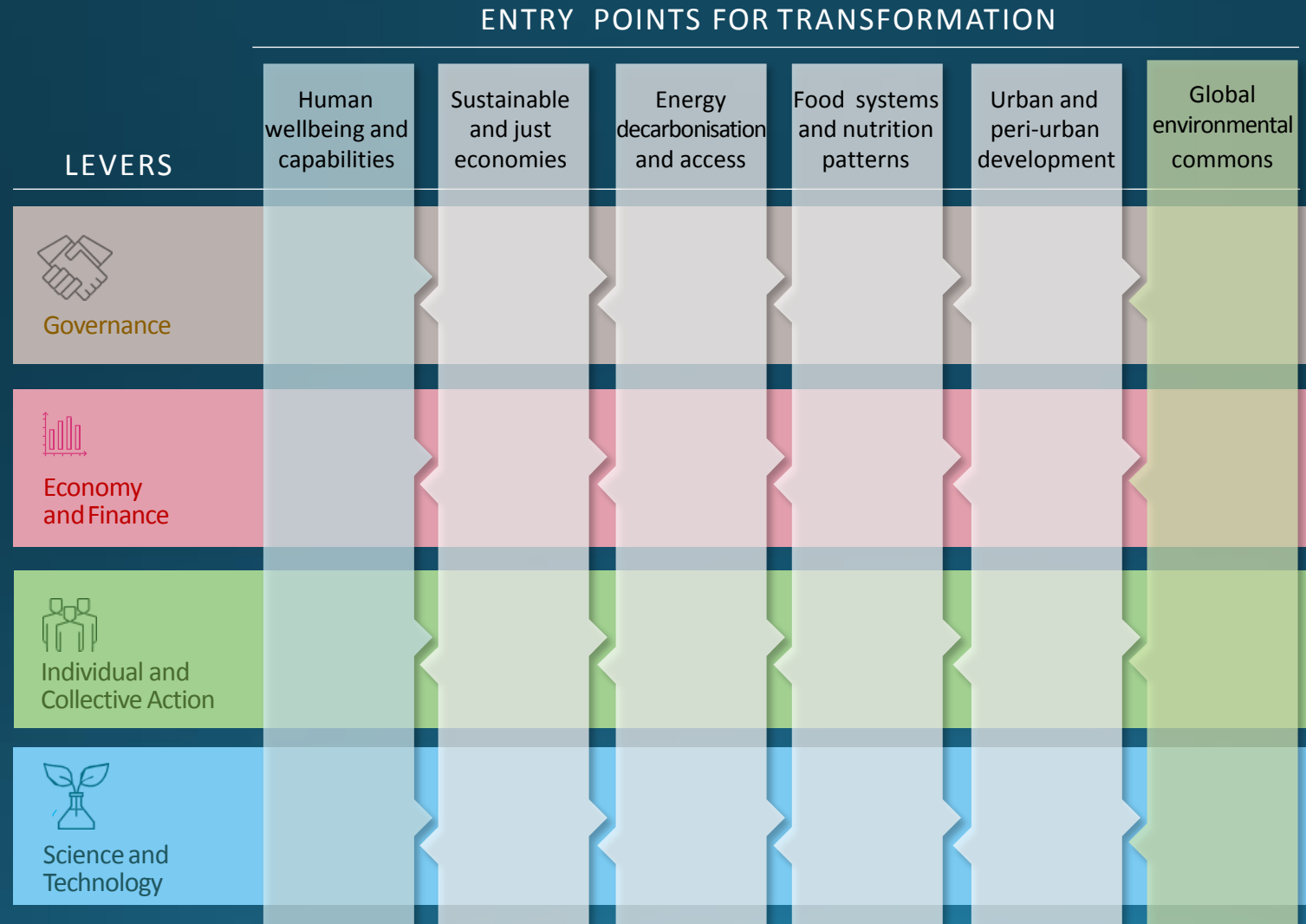






2. Knowledge-based transformations

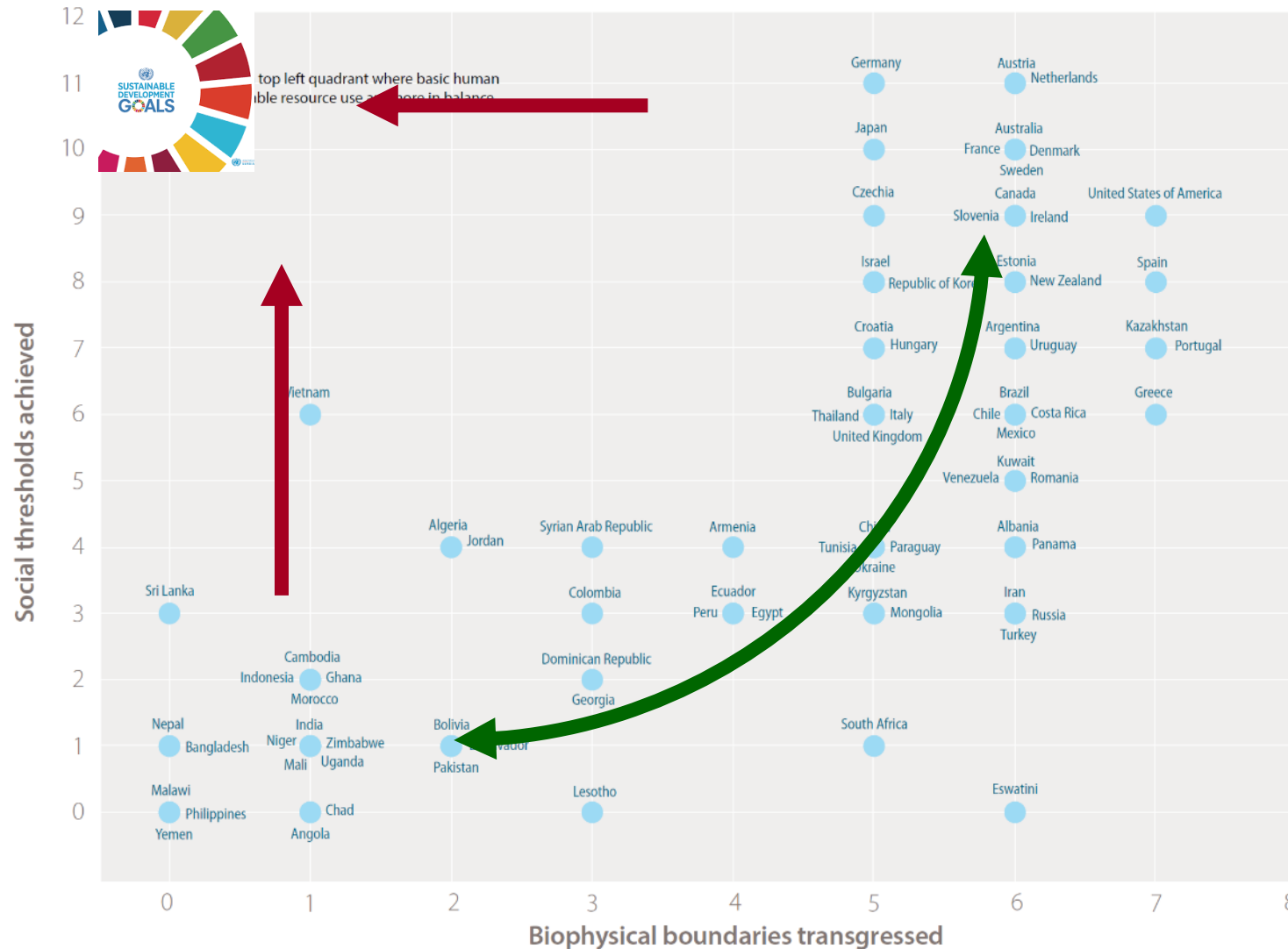
Innovation through combined levers and new partnerships





Insight (c): Context and universality matter!

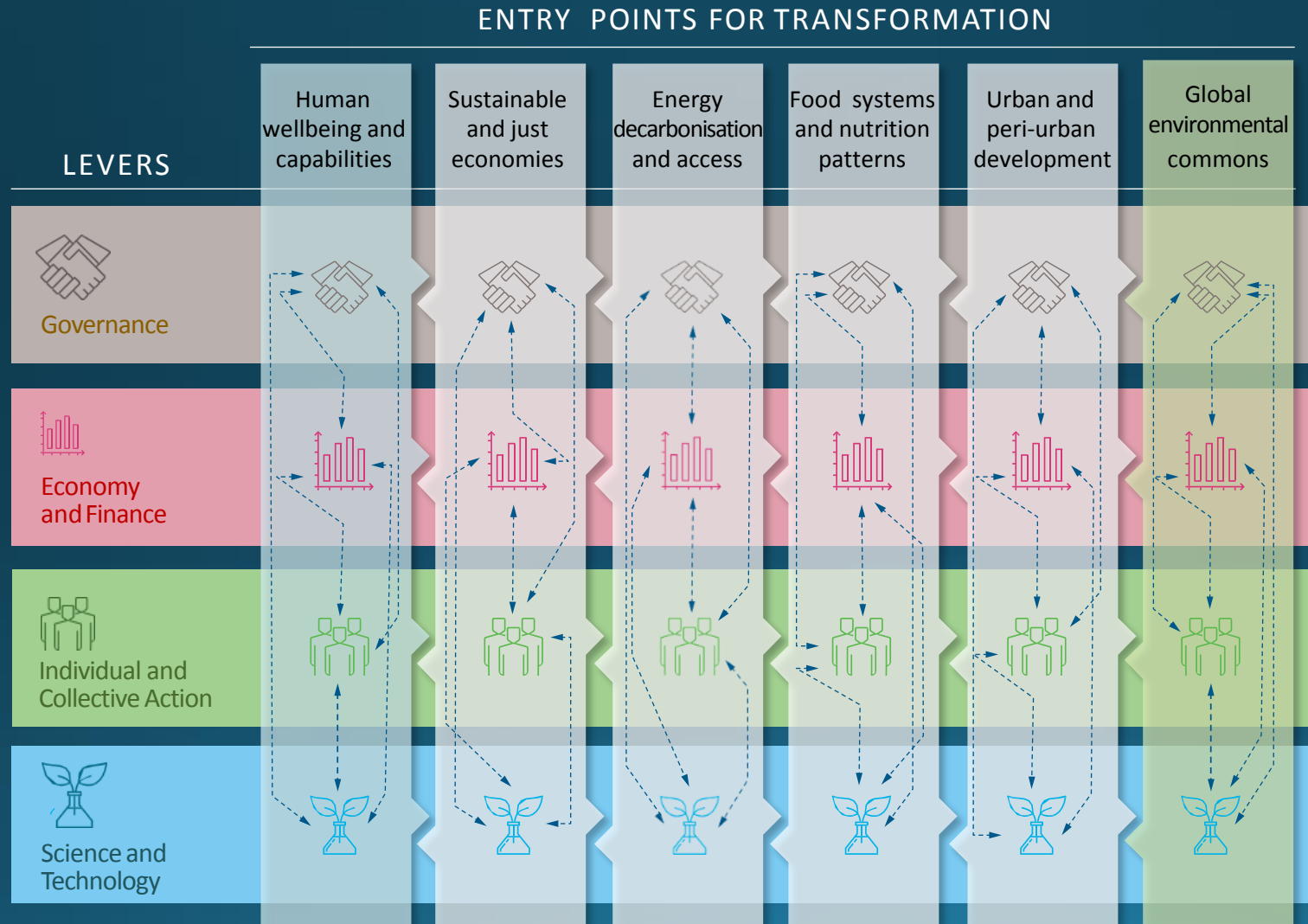
Striking the balance: no country is meeting basic human goals within biophysical boundaries





2. Knowledge-based transformations

Context-specific pathways to transformation for sustainability



Each entry point:

- ✓ Impediments
- ✓ Levers
- ✓ Integrated and context-specific pathways
- ✓ Call to Action

Pathways to Transformation as context-specific configurations of levers to achieve transformation in each entry point

Building sustainable food systems and nutrition patterns



Pathways

Food systems
and nutrition
patterns

Levers



- Social protection floors
- Integrating social & env. externalities
- Governing value and supply chains



- Insurances against shocks
- Improved trade agreements
- Market access



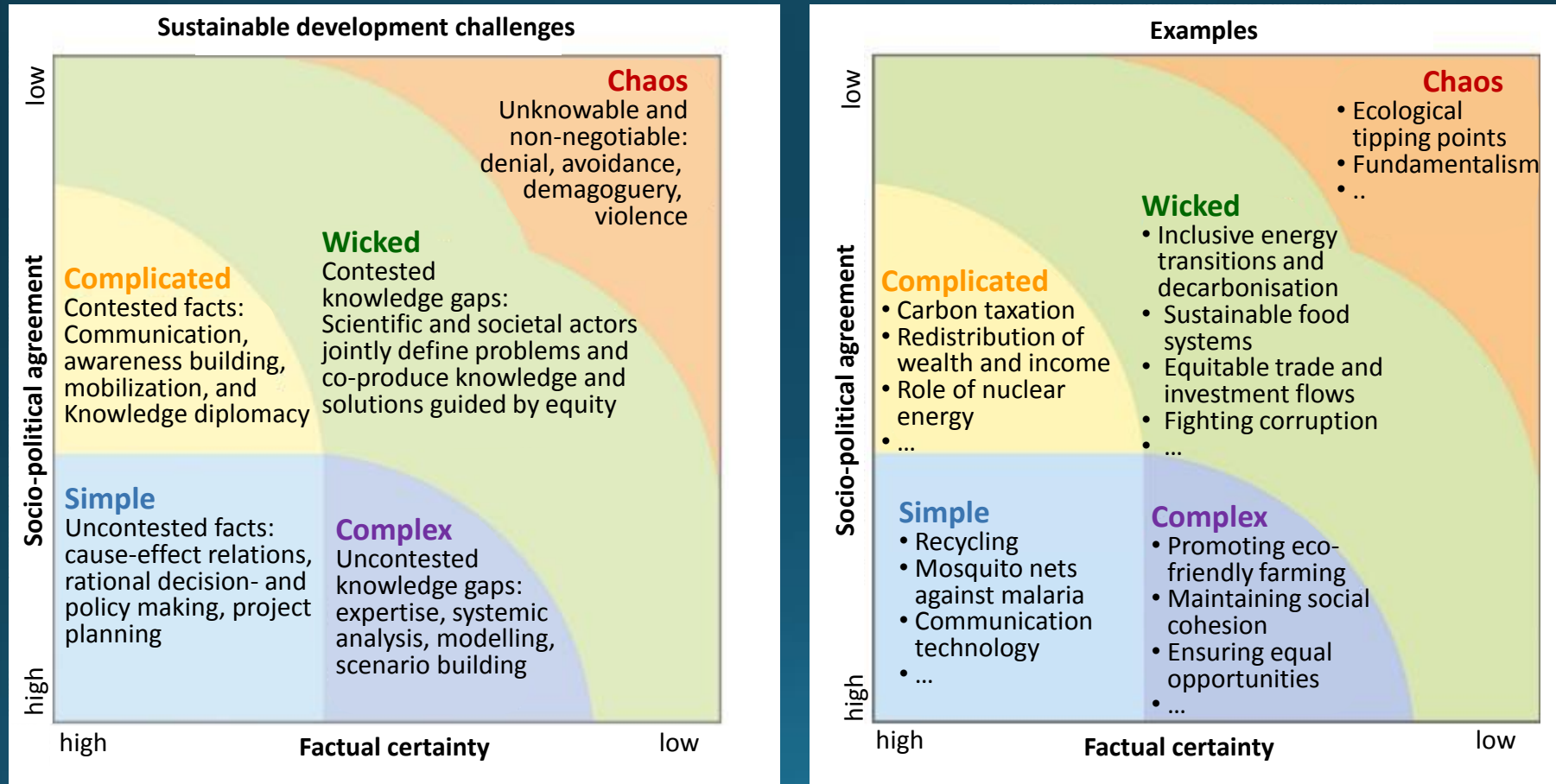
- Reducing food waste
- Changing dietary habits



- Lower environmental impacts
- Access to information and data
- Infrastructure and transportation



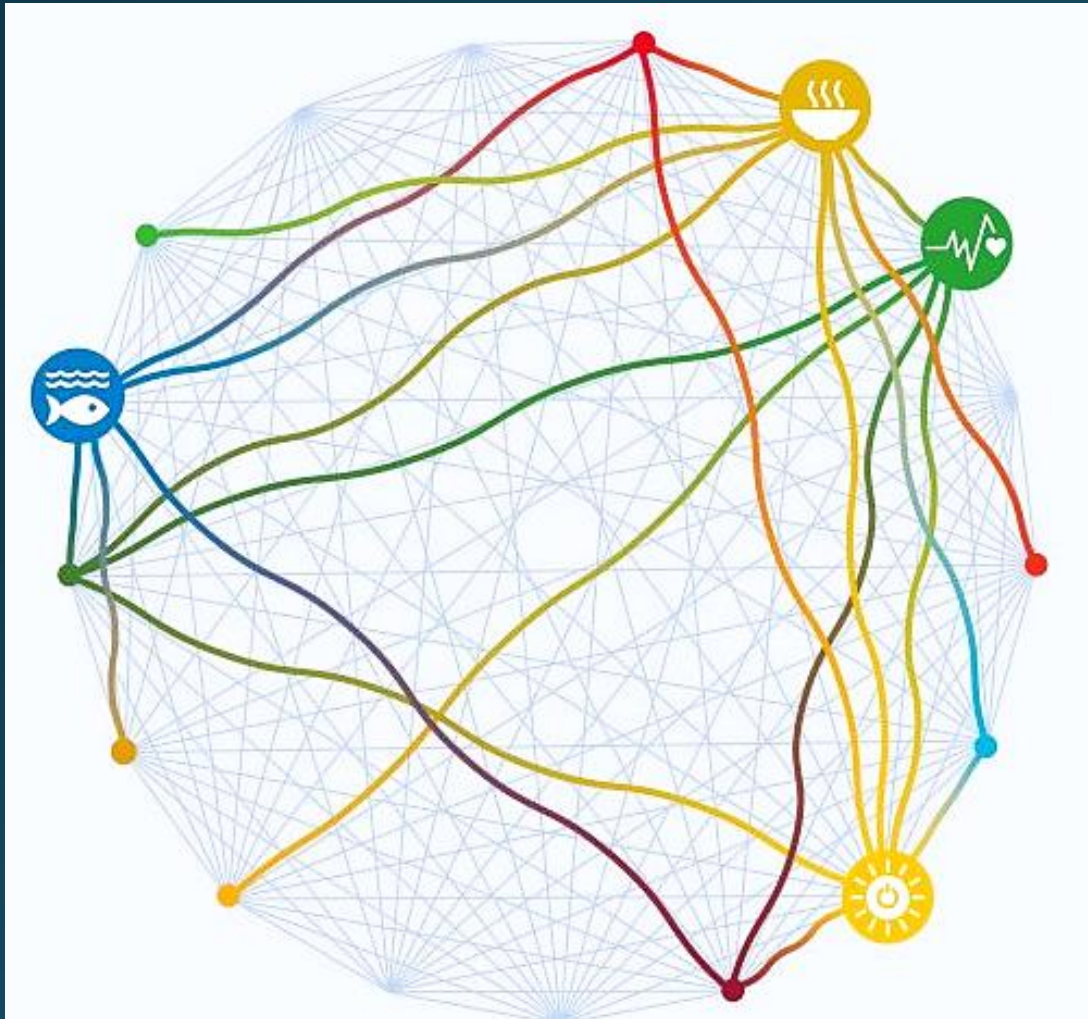
3. The role of STI in knowledge-based transformations to sustainable development





Call to Action (1/3):

Harness existing knowledge for accelerated SDG implementation

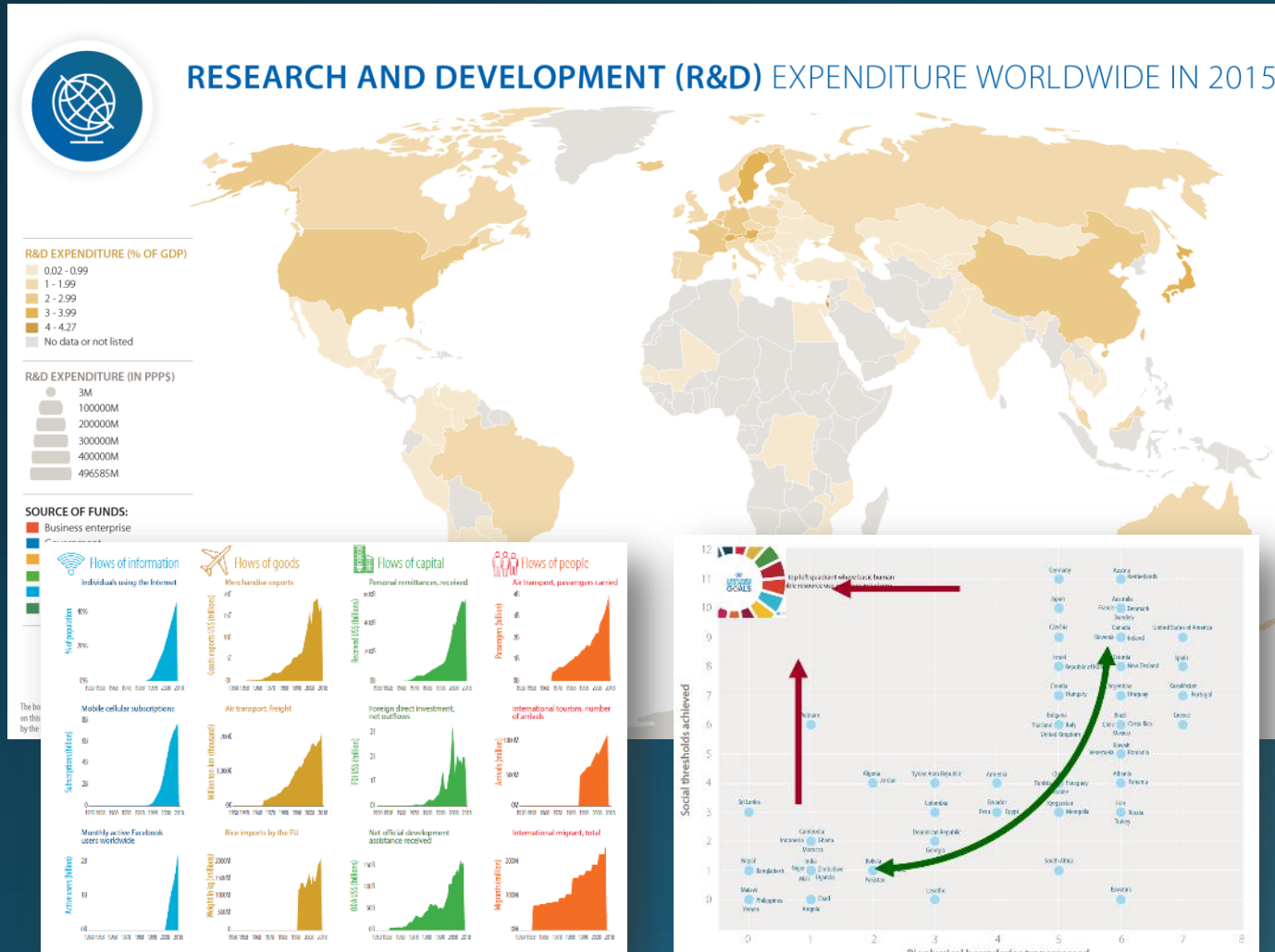


1. Continued support for international scientific assessments and synthesis and their increased coherence
2. Open access to scientific publications
3. Sustainable development councils and knowledge diplomacy
4. Support novel partnership of science (public-private-civil society) and building of competencies



5. Call to Action (2/3):

Boosting scientific knowledge in low and middle income countries

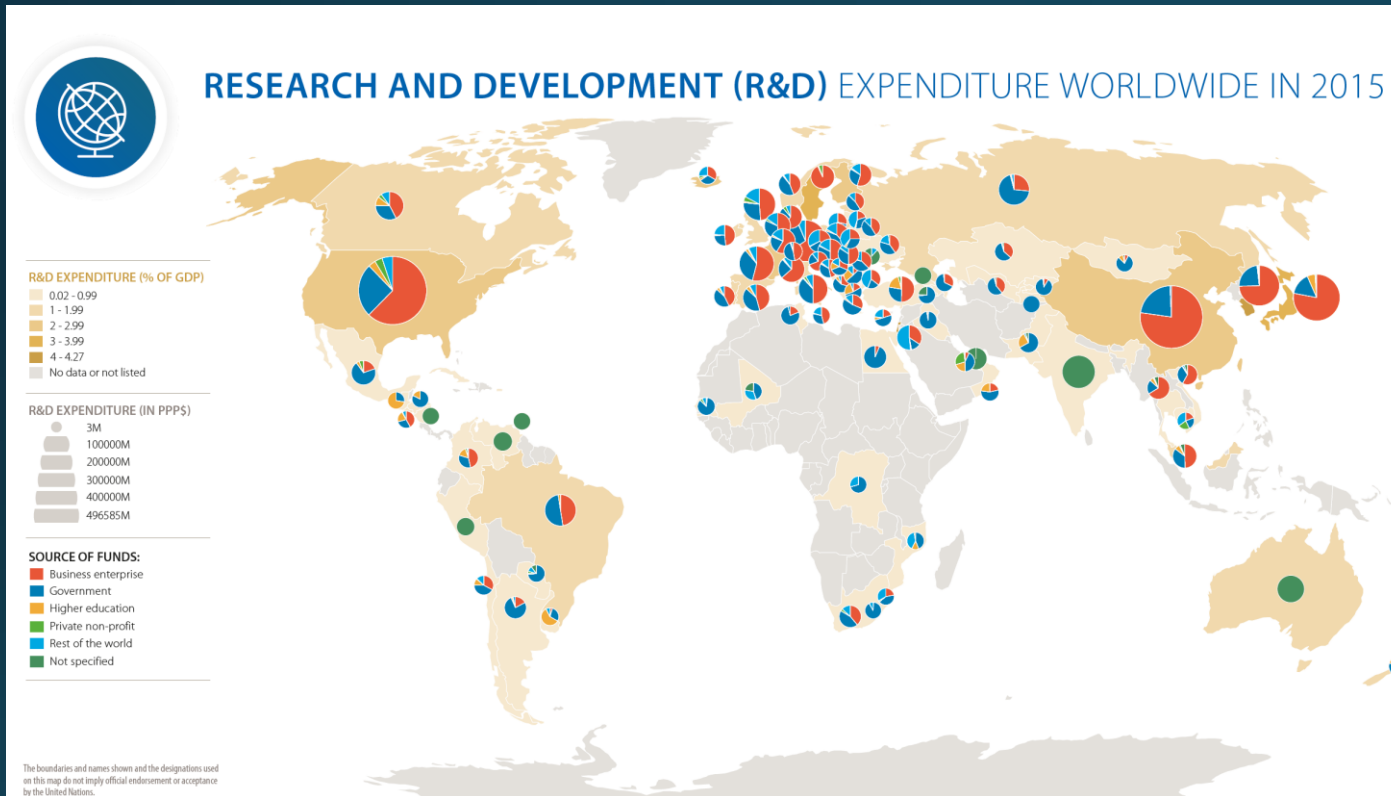


1. Build open-access SDG knowledge and technology platforms to design, monitor, and evaluate transformations to SD
2. Harnessing and boosting scientific capacities through North-South and South-South transboundary research partnerships
3. Support curricula and education in sustainable development
4. Build national and regional scientific funding institutions



Call to Action (3/3):

A 'moon-shot' mission for Sustainability Science



1. Rapid increase of mission-oriented research guided by the 2030 Agenda
2. Scientific assessment of existing transformation knowledge including non-academic sources
3. Adapt funding schemes to programme structures supporting inter- and transdisciplinary research
4. Expand incentive- and evaluation schemes
5. Create experimental spaces and transformation labs for next generation science-policy interfaces

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