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联合国粮食及农业组织 Food and Agriculture Organization of the United Nations Organisation des Nations Unies pour l'alimentation et l'agriculture Продовольственная и сельскохозяйственная организация Объединенных Наций Organización de las Naciones Unidas para la Alimentación y la Agricultura منظمة الأغذية والزراعة للأمم المتحدة

FAO REGIONAL CONFERENCE FOR ASIA AND THE PACIFIC

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Strategic Regional Foresight for Asia and the Pacific region

Executive Summary

Responding to calls by the 28thSession of the Committee on Agriculture and other governing bodies, FAO is currently engaged in foresight exercises for the transformation of agrifood systems at all levels. This information note outlines the findings to date of the Regional Foresight Exercise (RFE) for sustainable and resilient agrifood systems, ongoing in the Asia and the Pacific, and elicits further engagement of Members and other regional stakeholders in strategic foresight to support decision making processes.

Agrifood systems in the region face short- and long-term challenges and opportunities. Within the conceptual and methodological framework established by the recently published FAO flagship report *The future of food and agriculture – Drivers and triggers for transformation* (FOFA-DTT), regional experts are analysing selected priority drivers (driving forces) of agrifood systems to detect signals of possible future trends, outline alternative future scenarios, identify global priority areas or '*triggers for transformation'* and strategic options to activate such triggers.

The different demographic, economic growth and urbanization patterns in the various sub-regions signal that future significant intra- and inter-regional migrations may materialize, with implications for agrifood systems both in origin and destination countries. Concurrently, climate change and the degradation of natural resources and ecosystems, including oceans, highlight the emerging trade-off between rapid economic growth and intergenerational equity. On the demand side, the, increasing prevalence of obesity in the region signals that the future outcomes of agrifood system could vary depending on the prevailing consumption patterns.

If the neglect of public investment continues, innovative production approaches may be more unlikely to materialize, while differences of per capita income, savings and investment potential may further exacerbate the different capital-intensities of agriculture across countries. Concurrently, though, emerging agroecological practices that trade off physical with human capital and other innovative approaches may signal a possible future change of paradigm in agricultural practices. On a global scale, the ongoing conflicts such as the wars in Ukraine and

the Middle East stress the trade-off between efficiency, brough by specialization, and resilience, implied by diversification of activities and income sources. This trade-off is particularly important for countries in the region that are increasingly relying on imports for their food supplies.

The RFE builds on four global long-term alternative scenarios of possible futures presented in FOFA-DTT, to provide more region-nuanced narratives. To move future agrifood systems towards a scenario of sustainability and resilience, FAO has identified, four '*triggers for transformation'*, to be targeted by suitable strategies, policies and behavioural changes: i) Institutions and governance; ii) Consumer (citizen) awareness; iii) Income and wealth distribution; and iv) Innovative technologies and approaches.

Preliminary RFE findings emerged about the regional nuances of these triggers, to be further articulated at country level for HICs and LMICs. Middle-income countries are at a crossroads. They may follow the unsustainable development paradigm adopted by HICs, thus largely contributing to further degrading natural resources, exacerbating climate change and leading to ungovernable inequalities such as the FOFA-DTT paradigmatic '*Race to the Bottom*' (RAB) scenario. Alternatively, particularly if HICs set a good example, they may adopt innovative development paradigms towards more sustainable alternative futures such as the paradigmatic '*Trading off for Sustainability*' (TOS) scenario.

Suggested action by the Regional Conference

The Regional Conference may wish to:

a. acknowledge FAO's achievements in the Strategic Foresight domain, including the publication of the corporate flagship series The Future of Food and Agriculture (FOFA), the Regional Foresight Exercises (RFEs) and all the sector-specific foresight activities;

b. recognize the importance for FAO to strengthen its Strategic Foresight work at all levels by reinforcing the FAO Foresight Network;

c. encourage Members to actively participate in the RFEs to ensure that these processes reflect regional specificities and considerations, and utilize FAO's foresight work in policymaking processes;

d. provide guidance on identifying priority drivers and triggers for the region and subregions;

e. encourage FAO to pursue complementarities between qualitative and quantitative analysis and modelling for foresight;

f. encourage FAO to actively participate in United Nations (UN) System exercises such as the Futures Lab, the Foresight Community of Practice, the UN Summit for the Future, Common Country Assessments and United Nations Sustainable Development Cooperation Frameworks (UNSDCF), and use foresight to ensure achievement of the *four bbetters* and the Sustainable Development Goals (SDGs);

g. Take note that guidance from the Regional Conferences and subsequent RFE work will feed in the review of the FAO Strategic Framework 2022-31.

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I. Short and long-term challenges facing countries in the region

1. The post-2008 financial crisis, the COVID-19 epidemic, and the wars in Ukraine and the Middle East are compelling signals of many challenges that governments are facing: geopolitical and geoeconomic tensions, unilateral decisions, economic crises, growing inequalities, ecosystems degradation and climate change. These signals may push to trade off short-term efficiency with longer-term resilience, reliance on own production processes and favour reshoring. These consequences will have a heavy impact on trade and investment flows. The model that has supported the economic development of Asia and the Pacific region, fuelled by globalization in the last 50 years may need to be rethought.

2. The reassessment of global value chains to reduce their dependence from the external context may change the relative domestic prices of goods, including food and factors of production, while geopolitical conflicts may increase the cost of servicing external debt and importing food and agricultural inputs.

3. Since 2022, foreign currency reserves of low- and middle- income countries (LMICs) have fallen significantly, with increasing exchange rates that reflected on food prices, particularly in food-importing countries causing distress in parts of societies. Political and social unrest and reignition of previously settled disputes may ensue. Long-lasting debt problems may also strengthen income divergence between LMICs and high-income countries (HICs). In the region, smaller economies are particularly exposed to debt distress[1] and are already being impacted by the effects of global monetary policy change and the evolution of interest rates.

4. The transition towards sustainability and resilience are all the more challenging and urgent, owing to disparities across subregions in terms of: population growth and urbanization; external migrations and increased reliance on remittances, particularly in Pacific Islands and South Asia; and the degradation of natural resources, including ocean habitats.

5. Towards sustainability, decarbonizing economies may require substantial investment. Concurrently, claims to grant workers' rights could increase labour costs, while the ageing population could reduce labour supply. These trends could accelerate robotization and automatization, with significant structural impacts and shifts in income distribution due to shrinking the share of wages in gross domestic product (GDP) and increasing the profits' one.

6. Amid these challenges, the need to move away from short-termism towards a more strategic long-term approach is crucial.

II. Background to the Regional Strategic Foresight Exercise

7. Responding to calls by the 28thSession of the Committee on Agriculture[2] to reinforce strategic foresight capacities and activities, FAO is currently engaged in foresight exercises for the transformation of agrifood systems at all levels. In this endeavour, the Organization benefits from the conceptual and methodological framework established by the recently published FAO flagship report *The future of food and agriculture – Drivers and triggers for transformation* (FOFA-DTT),[3] based on the Corporate Strategic Foresight Exercise 2020–2022. This approach underscores the complementarity of qualitative and quantitative foresight; therefore, FAO is strengthening its quantitative analysis and modelling capacities to support Members to better anticipate future scenarios for strategic decision making.

8. In this context, the Regional Office for Asia and the Pacific (FAO RAP), as well as the other FAO Regional Offices, is engaged in a Regional Foresight Exercise (RFE) on the future of agrifood systems, supported by the FAO Foresight Network which comprises several Offices and Divisions.

[1] See International Monetary Fund's list of debt distress status, as of 30 November 2023. https://www.imf.org/external/pubs/ft/dsa/dsalist.pdf
[2] https://www.fao.org/3/nj008en/nj008en.pdf
[3] https://www.fao.org/3/cc0959en/cc0959en.pdf

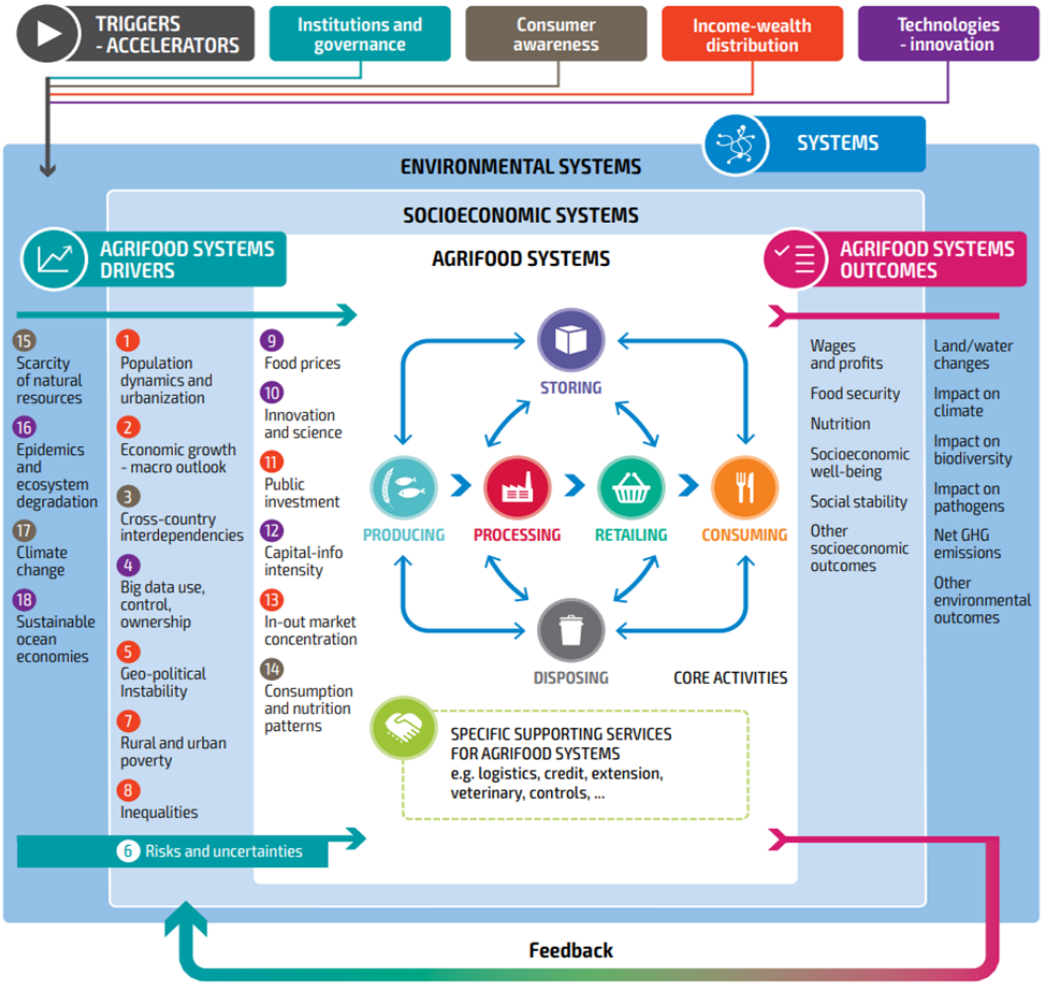
9. The RFE aims to: i) develop regional and subregional strategic visions and actions to move agrifood systems towards sustainability and resilience; ii) support common Country assessments and Country Programming Frameworks ; and iii) enhance institutional capacities on strategic foresight exercises at all levels.

10. The RFE provides a granular assessment of regional dynamic relationships occurring among agrifood, socioeconomic and environmental systems (**Figure 1**), through a stepwise analytical process that considers:

a. **Key drivers** (driving forces) of agrifood systems;
b. **Weak signals** of possible futures;[4]
c. **Scenario narratives** for alternative futures based on weak signals;
d. **Triggers for transformation** – priority focus areas that could transform agrifood systems; and
e. **Strategic options** and policies to activate key triggers for transformation

11. This information note outlines RFE's findings to date and elicits further engagement of Members and other regional stakeholders in strategic foresight.

Figure 1. Agrifood systems: key drivers, activities, outcomes, and triggers for transformation



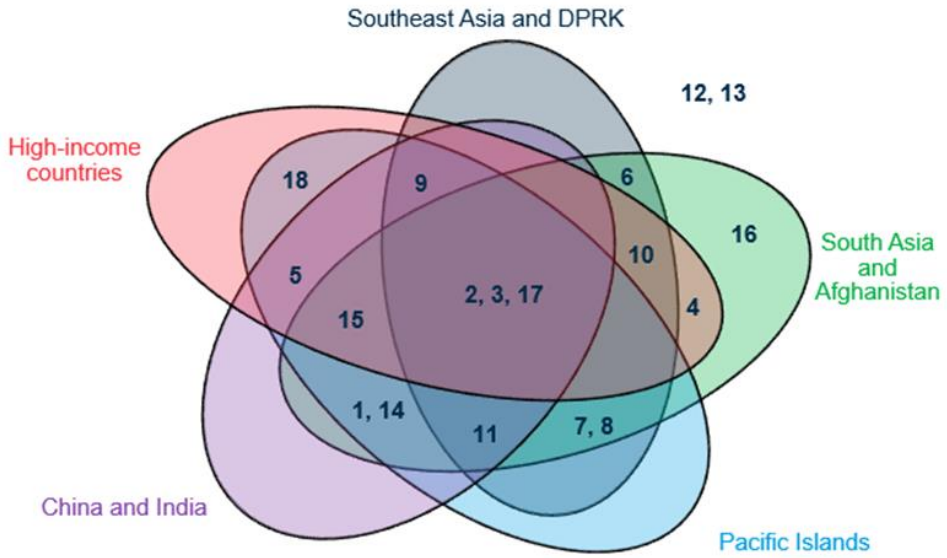
Note: Agrifood systems (white box at the centre) operate within broader socioeconomic and environmental systems (light blue and dark blue boxes). Drivers (left-hand side) influence agrifood systems' outcomes (right-hand side). Triggers for transformation (top) affect agrifood systems through their impacts on drivers.
Source: FAO. 2022. https://www.fao.org/3/cc0959en/cc0959en.pdf , Rome, based on F4F Model https://foresight4food.net/food-systems-model/

[4] The term "weak signals" in future studies, borrowed from Strategic Early Warning Systems, refers to events that could magnify to determine the future, or shrink and become irrelevant.

III. Drivers of agrifood systems in the region

12. Through various consultations, among 18 global drivers of agrifood systems analysed in the FOFA-DTT,[5] regional experts identified priority drivers in each subregion (**Figure 2**).[6]

Figure 2. Priority drivers of agrifood systems by subregion



1. Population dynamics and urbanization 2. Economic growth/macroeconomic outlook 3. Cross-country interdependencies 4. Big data generation, control, use and ownership. 5. Geopolitical instability and increasing conflicts. 6. Uncertainties 7. Rural and urban poverty 8. Inequalities 9. Food prices	10. Innovation and science 11. Public investment in agrifood systems 12. Capital and information intensity of production 13. Input and output market concentration 14. Consumption and nutrition patterns 15. Scarcity and degradation of natural resources 16. Epidemics and degradation of ecosystems 17. Climate change 18. The "sustainable ocean economies"

Notes: Each circle represents a subregion; numbers refer to the drivers listed above.

Source: FAO. 2023. *Regional Foresight Report for Asia and the Pacific*. Draft. Unpublished

13. By glancing at the diagram, it appears that the drivers: Economic growth/macroeconomic outlook (2), Cross-country interdependencies (3), and Climate change (17) are common to all subregions. In addition, specific subregional commonalities and differences appear. For example, for South Asia, Southeast Asia and Pacific Islands, Rural and urban poverty (7), Inequalities (8) and Public investment in agrifood systems (11) are common defining features. In contrast, experts agreed that Food prices (9), Geopolitical instability and increasing conflicts (5), and Scarcity and degradation of natural resources (15) are common key drivers for HICs, China and India. Indeed, concerns emerge

[5] https://www.fao.org/3/cc0959en/cc0959en.pdf

[6] The analyses of the Asia and the Pacific region in the RFE are carried out at subregional level, with six subregions considered: South Asia, Southeast Asia, Pacific Islands, HICs, China and India. China and India have been singled out due to their size and peculiarities. The list of countries included in the subregional aggregates is provided in the documentation of the FOFA Data Dashboard (https://www.fao.org/global-perspectives-studies/fofa-dtt-dashboard/en/).

for LMICs regarding accessibility and availability of food, while for HICs and larger countries food stability concerns prevail.

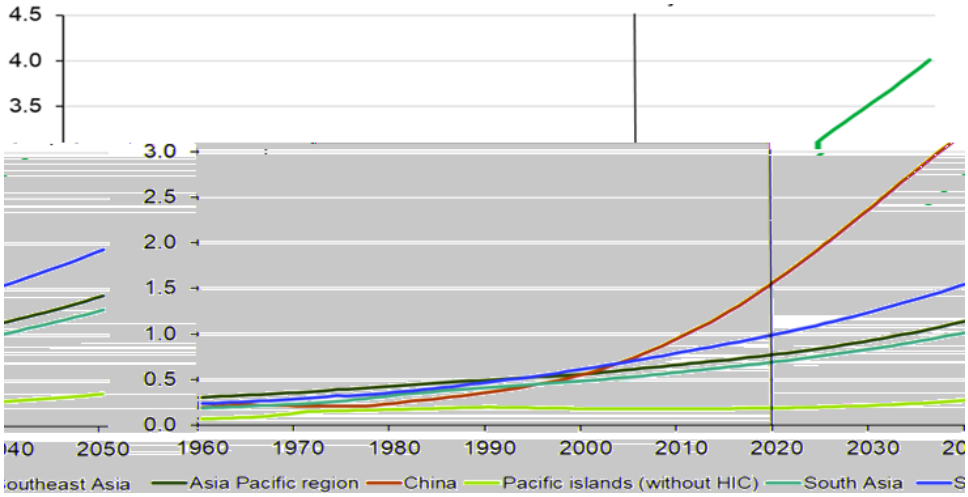
IV. Selected key drivers and related weak signals

14. To complement experts' opinions and identify "weak signals" of possible futures, quantitative analyses of key drivers, were provided through the interactive FOFA Data Dashboard.[7] Preliminary key findings in the Region are summarized here below.[8]

Population dynamics, economic growth, and poverty

15. In the last decades, China and selected countries in Southeast Asia have increased manifold the urban/rural population ratio (**Figure 3).** Concurrently, the very different population growth rates across subregions are changing the structure of the population, ageing much faster in HICs and China in comparison to other subregions. At the same time, rapid economic growth occurred across subregions, albeit at very different rates, except for the Pacific Islands, which experienced an even falling GDP per capita (**Figure 4).**

Figure 3. Urban/rural population ratio, historical (1960–2019) and projected (2020–2050)

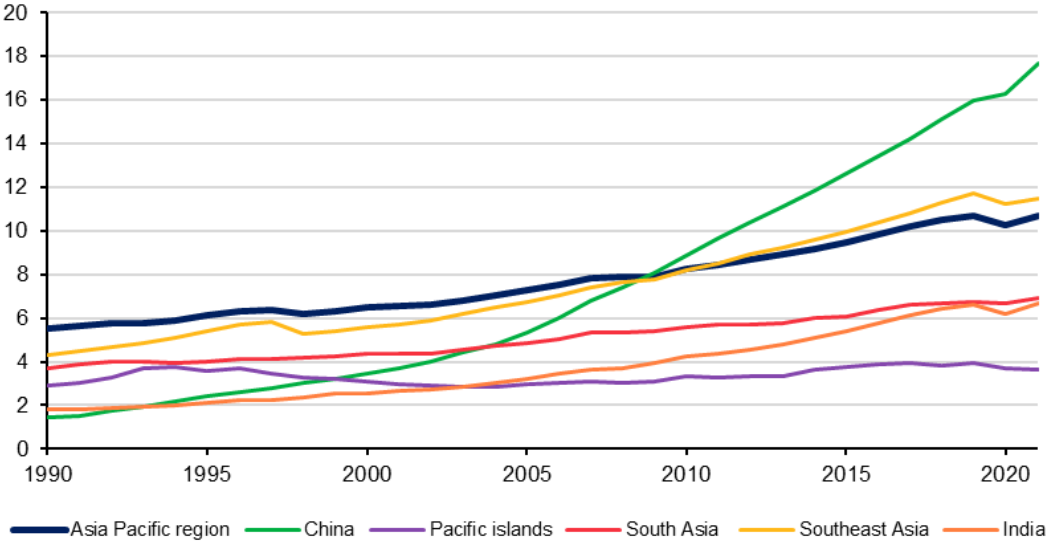


Source: UN Population Division Data Landing Page. https://www.un.org/development/desa/pd/data-landing-page ; accessed through the FOFA Data Dashboard. https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

[7] https://www.fao.org/global-perspectives-studies/fofa-dtt-dashboard/en/

[8] This information note portrays selected preliminary analyses of drivers. Full analyses are to be provided in the Regional Foresight Report under preparation as part of the RFE.

Figure 4. GDP per capita (thousands, constant 2017 international (USD)

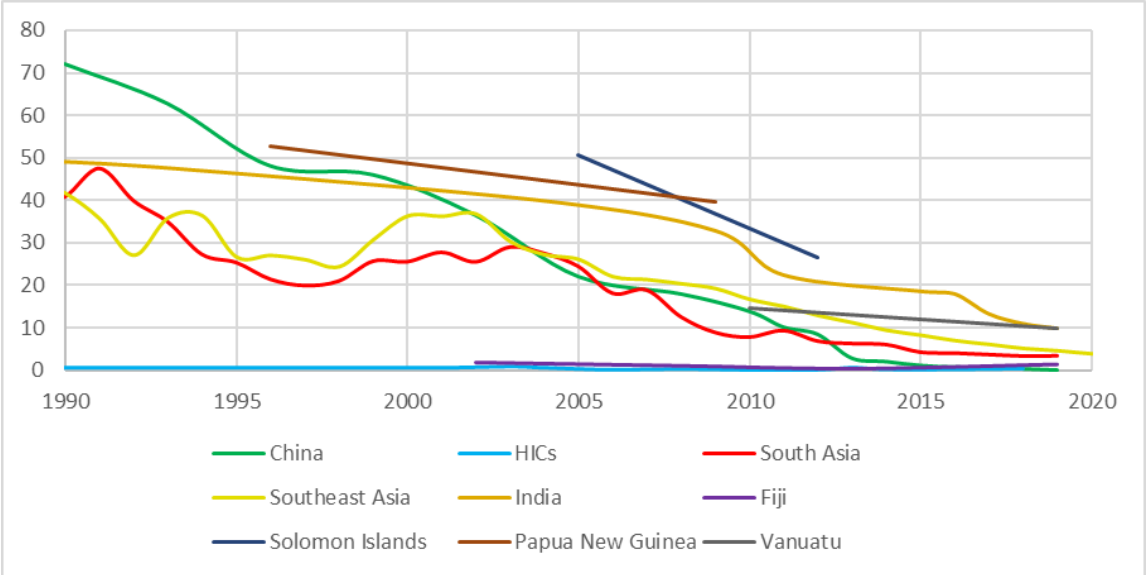


Note: HICs are excluded as they portray a different order of magnitude.

Source: The World Bank. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators ; accessed through the FOFA Data Dashboard. https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

16. These dynamics accompanied a significant drop in extreme poverty across the subregions. Although some subregions almost managed to eliminate extreme poverty, others still have an important share of the population living below the extreme poverty line **(Figure 5**).

Figure 5. Poverty headcount ratio at 2.15 USD-PPP 2017 (percent of population)

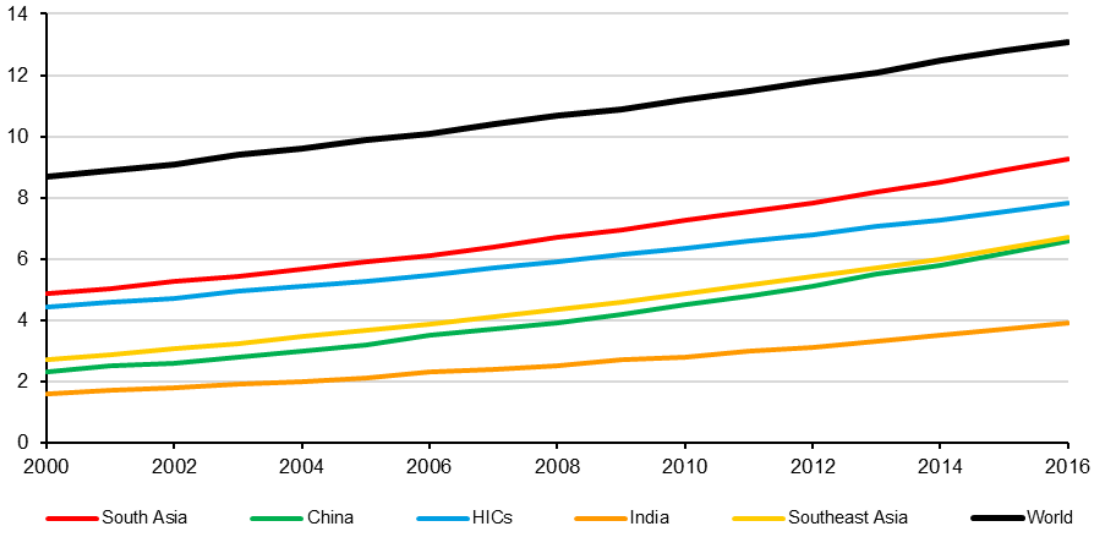


Note: Subregional aggregates provided in the scattergram are five-year right-side moving averages, based on a limited number of countries and years for which data are available. For Pacific Islands, only disaggregated data for selected countries are provided due to limited and scattered information available.

Source: The World Bank. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators ; accessed through the FOFA Data Dashboard. https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

17. Despite the significant reduction in extreme poverty, the nutrition patterns raise some concerns. In the region, the prevalence of obesity in the adult population is increasing across the board, particularly in South Asia (due essentially to Iran and Pakistan), although it remains well below the world average, (**Figure 6**), with the apparent exception of Pacific Islands, where obesity rates range between 40 and 60 percent. HICs in the region, on average well below the other HICs (Particularly North America, which ranges between 30 and 35 percent), present a dichotomy – Japan and Korea on one side, with a prevalence of obesity below 5 percent, and Australia and New Zealand on the other side, with trends and levels like North America. China and Southeast Asia appear to be catching up rapidly with HICs, while India reveals a much lower pattern.

Figure 6. Prevalence of obesity in adult population (>18 years) (percent)



Note: The prevalence of obesity for the Pacific Islands is not reported in the graph as it is of a different order of magnitude compared to the rest of the region.

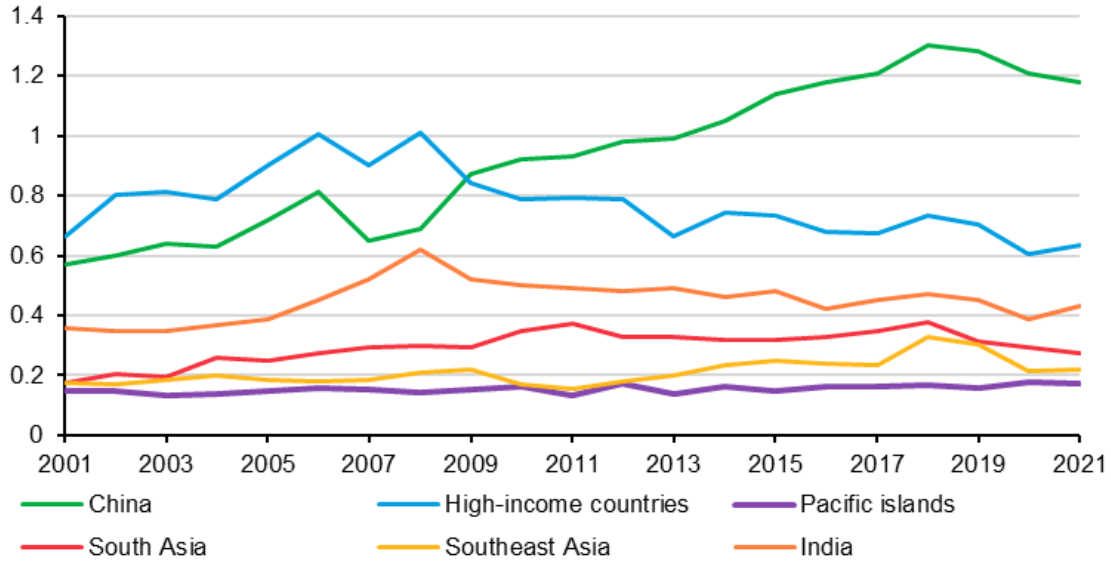
Source: FAOSTAT, accessed through the FOFA Data Dashboard.
https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

18. **Weak signals of possible futures**. The slowdown of population growth may signal a possible stabilization, although differences across subregions persist that reflect diverse ageing patterns, which may have implications for cross-subregional and external migrations, in view of the need to satisfy labour demand in rapidly ageing countries such as HICs and China. Furthermore, if the urbanization rates of China anticipate the pattern of the other subregions, strong urbanization processes may occur. If, instead, this is merely a peculiar pattern, different rural–urban relationships may emerge in the future. Regarding nutrition, specifically obesity, the different subregions reveal possible alternative patterns, not necessarily determined by income levels (Japan and Australia are clear contrasting examples). Depending on the prevailing dietary patterns in the future, in large countries, such as China, the challenges to achieve sustainable agrifood systems could be pronounced. In addition, the very different GDP-per-capita patterns observed across subregions may reveal a future of intra--regional inequalities that may trigger further migrations, skewed saving-investment potential, asymmetries in capital ownership and further geostrategic dependencies.

Public investment and capital intensity in agriculture

19. Government expenditure in agriculture relative to other sectors is low across the board in the region. Excluding China, the Agriculture Orientation Index – the share of government expenditure relative to the share of value added in agriculture – is below one **(Figure 7**).

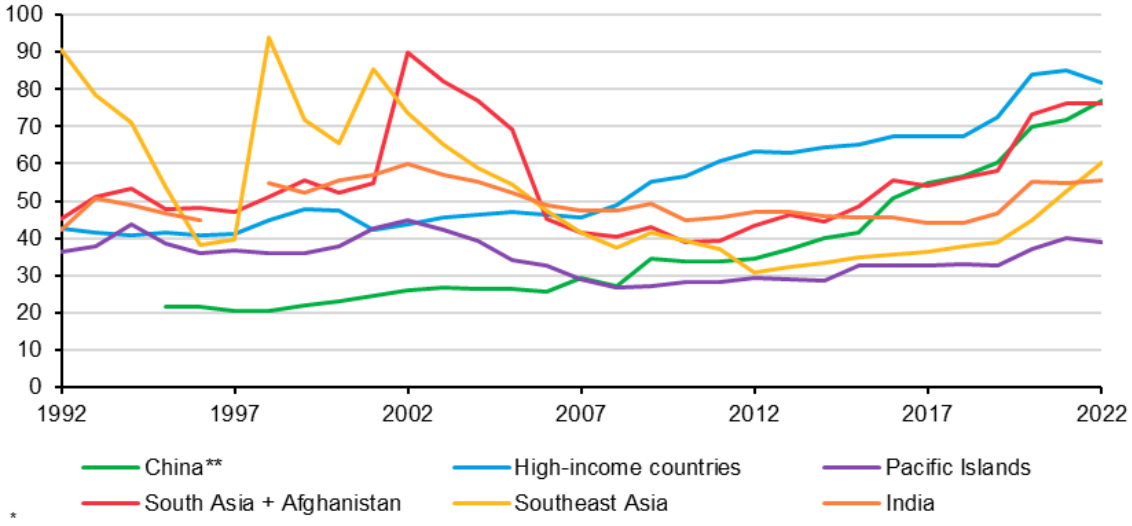
Figure 7. Agriculture Orientation Index for government expenditures



Source: FAOSTAT, accessed through the FOFA Data Dashboard. https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

20. Governments in South Asia, China and HICs may claim to be constrained by high and rising levels of debt in their ability to channel resources to agriculture (**Figure 8**).

Figure 8. Central government debt (Percent of GDP)

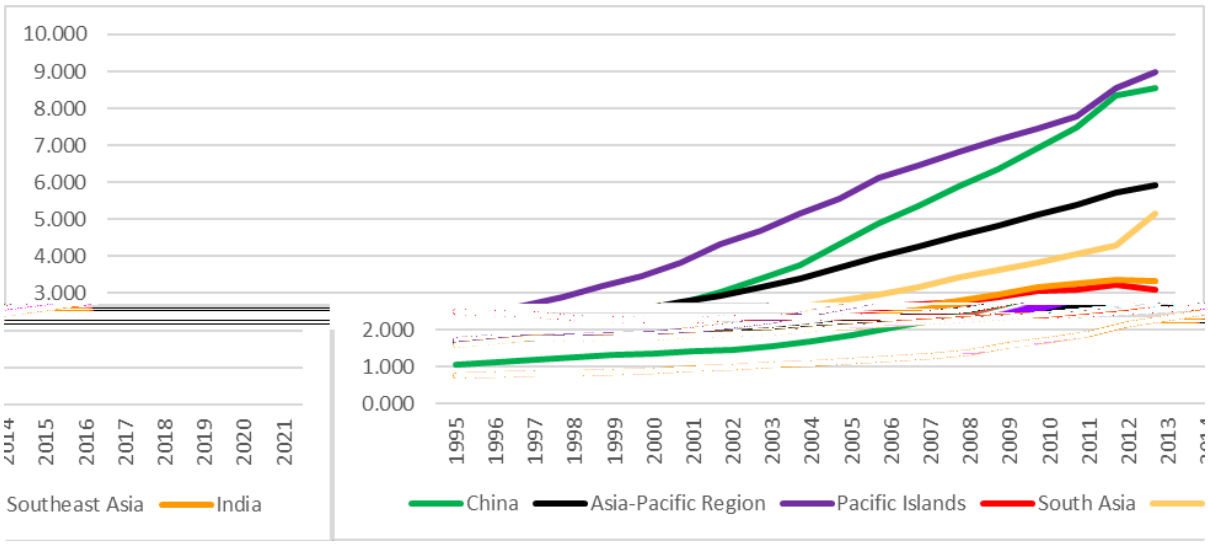


Notes: Average of countries with available information; **General government debt for China.

Source: International Monetary Fund. https://www.imf.org/external/datamapper/profile/WEOWORLD

21. Despite low public expenditure, in some sub-regions, gains in agricultural productivity of labour and land were achieved thanks to the greater use of machinery (**Figure 9)** and the deployment of intermediate inputs. This, together with extensive land use, has boosted production and helped meet growing demand. Employment in agriculture, in contrast, has been broadly flat and even decreasing in some areas, despite population increases, thus reducing the share of the labour force employed in agriculture.

Figure 9. Capital per worker in agriculture (USD thousands, constant 2015)



Note: HICs are excluded as they portray a different order of magnitude, ranging from 51 200 per worker in 1995 to 78 900 in 2021. The Pacific Islands in this graph include only Fiji, Papua New Guinea, Solomon Islands, Tonga and Vanuatu.

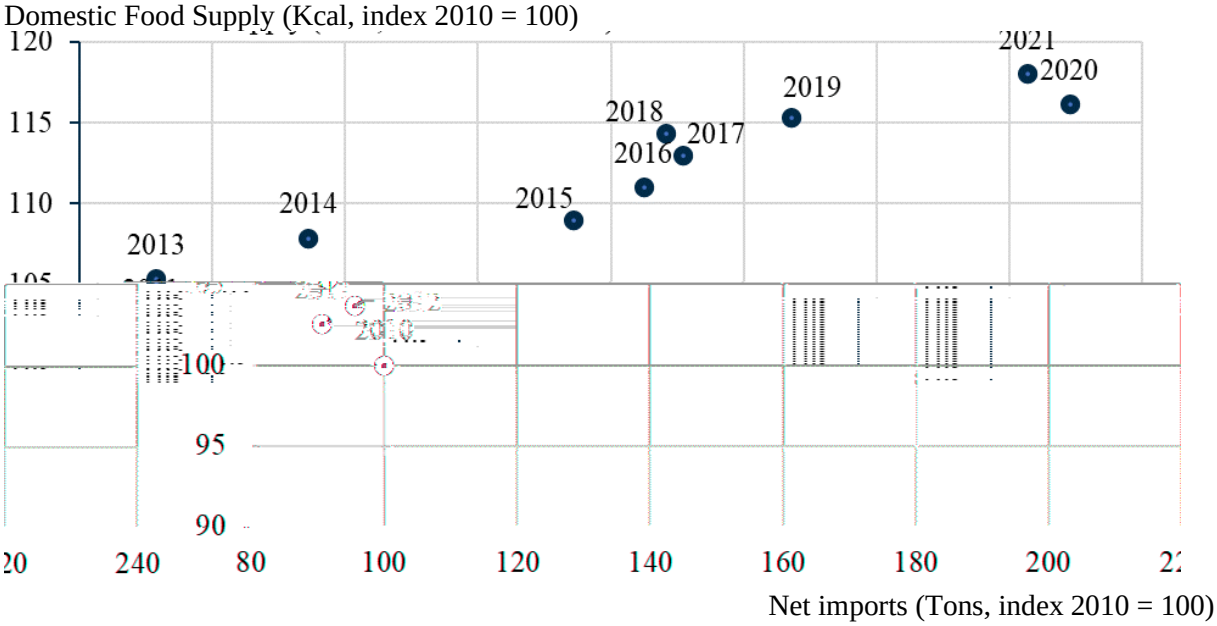
Source: FAOSTAT, accessed through the FOFA Data Dashboard.
https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

22. **Weak signals of possible futures.** The different trends in public and private investment in agriculture led to important structural differences across subregions. If the neglect of public investment in most subregions continues, innovative production approaches may be more unlikely to materialize. In addition, intraregional differences in terms of per capita income, savings and investment potential may further exacerbate the dichotomy between countries with capital-intensive agriculture and countries with low capital intensity. However, emerging agroecological practices that trade off physical with human capital and other innovative approaches may signal a possible change of paradigm.

Cross-country interdependencies, resource degradation and climate change

23. Cross-country interdependencies within and outside the region increased in the last decades on many grounds, comprising intra- and interregional migrations, (for example from the Pacific Islands to New Zealand and Australia under seasonal labour mobility agreements, or from South Asia to Gulf countries), foreign investment, food and raw-materials trade and climate change. The growth of net food imports of countries largely outpaced the growth of their food supply **(Figure 10**). Reliance on food trade has been a viable strategy for some, although this occurred in a context of significant depletion of natural resources for others (**Figure 11**). Overall, wealthier countries deplete more resources per capita and largely contribute on a per capita basis to climate change. Regional carbon dioxide (CO_2) emissions per capita are largely above the world average (**Figure 12**).

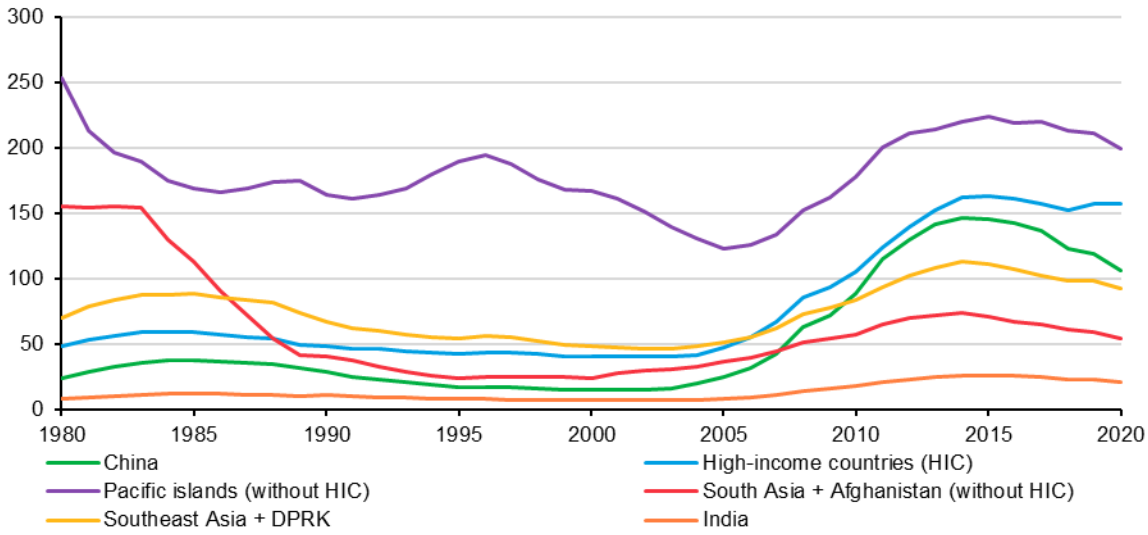
Figure 10. Import dependency of domestic food supply in the region (2010–2021)



Notes: Domestic food supply is the total food available in a country. The index refers to a homogeneous subset of commodities across countries and years. Net imports refer to the same subset, gross of intraregional trade, that is, include trade occurring between two countries in the same region.

Source: FAOSTAT. https://www.fao.org/faostat/en/#data/FBSH

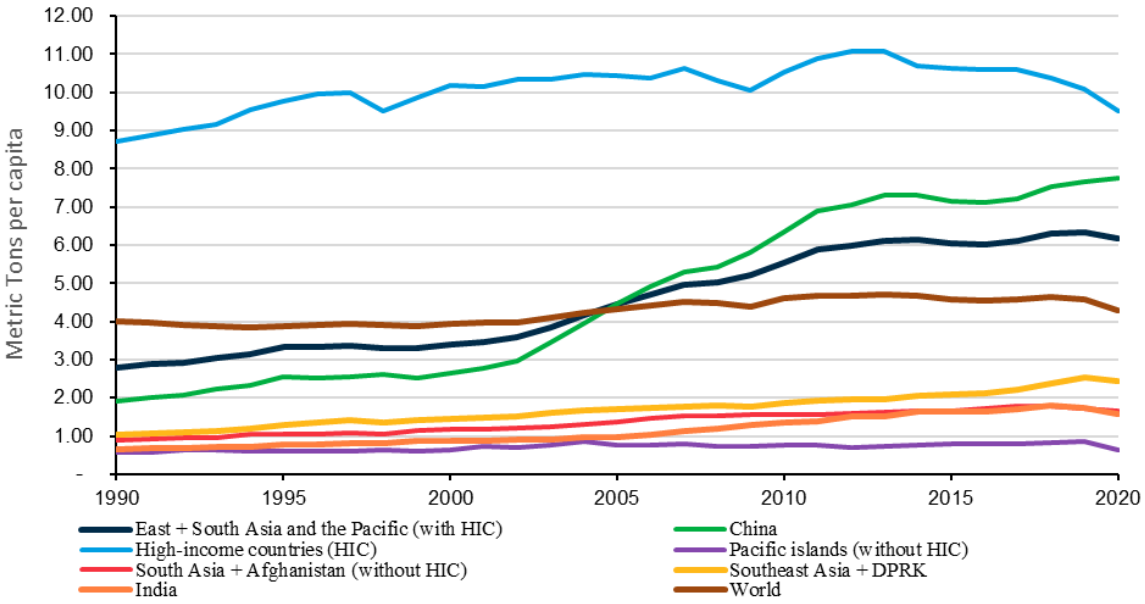
Figure 11. Natural per capita resources depletion (USD, at 2015 constant prices)



Notes: Values are ten-year moving averages.

Source: World Development Indicators. World Bank, accessed through the FOFA Data Dashboard: https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

Figure 12. Economy-wide carbon dioxide emissions per capita



Notes: Non-CO_2 greenhouse gases are excluded.

Source: World Development Indicators. World Bank, accessed through the FOFA Data Dashboard: https://foodandagricultureorganization.shinyapps.io/FOFA-DASHBOARD/

24. **Weak signals of possible futures.** The increasing food trade dependency may expose countries to geopolitical instability which could disrupt supply chains. If countries increasingly trade off benefits of food imports for reduced risks from external instability, established trade patterns could be redesigned. In the absence of improved governance of regional and global relationships, high reliance on food trade could weaken policymaking for long-term sustainability and favour short-term commercial interests. Moreover, extreme climate events, rising temperatures due to climate change and degrading ocean ecosystems may increase competition for the already eroded resources. However, strategic visions at all levels aimed at coordinating policy responses to long-term existential threats such as climate change could emerge, also supported by already active civil society movements.

V. Alternative future scenarios for agrifood systems

25. The RFE builds on the four FAO global long-term alternative scenarios for the future of agrifood, socioeconomic and environmental systems, to provide more nuanced narratives of possible futures that highlight key regional specificities.[9] The four RFE scenario narratives, that portray a retrospective view to be intended as paradigmatic of a virtually infinite set of possible futures, are summarized below (**Table 1**).

[9] "Long-term" in this context refers to the years from 2030 up to 2100.

Table 1. Narratives of alternative scenarios for agrifood systems

More of the same (MOS). Muddling through reactions to crises, just to avoid systemic collapses, led to progressively unsustainable agrifood systems and poor living conditions for many people. In this scenario the region achieved very limited economic growth, due to unsustainable production systems. Economic divergence with HICs increased and the lack of inclusive policies exacerbated inequalities and social tensions. Poverty of rural and forcibly urbanized people increased. Value chain management became increasingly detrimental to smallholders, geared only towards exports and urban supermarkets. Even though the limits of resource-intensive production become apparent, short-term commercial interests kept dominating decision making, thwarting sustainability initiatives. Recurring extreme climate events disrupted crops, increased food import dependency and raised food prices. Without valuing ecological services appropriately and empowering small-scale producers to diversify livelihoods, the region remained locked into vulnerability to markets, climate change and health shocks. Systemic failures thus loomed by mid-century, lacking systemic policy changes.
Adjusted future (AFU). Some late moves towards sustainability were triggered in an attempt to achieve some goals of the 2030 Agenda for Sustainable Development . This led to improvements in well-being, but the lack of overall sustainability and resilience hampered their maintenance in the long run. In this scenario, policymakers expanded social protections for marginalized groups. but the mixture of incentives and regulations to slow the rate of natural resource depletion remained largely ineffective. Attempts made to increase land productivity and ensure affordable healthy diets proved to be unsustainable. Civil society advocacy for less resource-intensive diets also had limited impact. Prices kept increasing in the medium and long terms due to eroded natural resources. Consequently, while pockets of agroecological practices emerged, the dominant agricultural model remained conventional monocrop geared to external markets, with sustainability as an afterthought. The region thus failed to chart an ecologically sustainable and resilient pathway, remaining vulnerable to external shocks and ecological decline.
Race to the bottom (RAB). Gravely ill-incentivized decisions led the world to the worst version of itself after the collapse of substantial parts of socioeconomic, environmental and agrifood systems, with almost irreversible consequences for many people and ecosystems. In this scenario, skewed value chains exacerbated smallholders' distress while agribusinesses accumulated land and influence. Rural joblessness drove distress migrations and social tensions. Concurrently, exacerbated climate change damaged agriculture, destroyed infrastructure and pushed mass displacement from low-lying megacities facing rising sea levels. Most governments eventually went bankrupt after decades of de-taxing policies favouring elites and soaring bills from military expenditure and recurring disasters. The region increasingly faced food deficits and massive poverty. Dormant geopolitical tensions reignited as policymakers tried to deflect attention from progressively deteriorated social conditions. Thus, the region descended into a vicious cycle of ecological crises, social polarization, conflicts and policy paralysis that melted down agrifood, socioeconomic and environmental systems.
Trading off for sustainability (TOS). Citizens' awareness, education, social commitment and participation triggered new power relationships. A broad understanding emerged that short-term GDP growth and final consumption had to be traded off for huge public and private investments to achieve systemic sustainability and resilience. In this scenario, governments, pushed by civil society, undertook integrated policy reforms to increase ecological sustainability and resilience of agrifood systems focused on a mix of regulations and support with clear transformative conditionalities. While securing past advances in poverty reduction, higher prices reflecting the "true cost" of food were accepted by wealthier countries and people as a bill for sustainability. Being an early adopter, the region became a global leader in sustainable agrifood systems and enjoyed a health dividend in

terms of better longevity, higher productivity, and a decreased public healthcare burden. As a result, by mid-century, most countries in the region attained high well-being levels.

VI. Triggers for transformation, strategic options, and trade-offs

Triggers for transformation and strategic options

26. To move agrifood systems towards sustainability and resilience, FAO has identified four global priority areas, or "triggers for transformation*",* to be targeted by suitable strategies, policies and behavioural changes: i) Institutions and governance; ii) Consumer (citizen) awareness; iii) Income and wealth distribution; and iv) Innovative technologies and approaches (**Figure 1,** top part). Thanks to their transformative potential, these triggers are expected to spread impacts throughout agrifood systems. Depending on whether they will be activated or disabled, the future could mimic one of the four paradigmatic scenarios, as illustrated in **Table 2** and the four FAO inspirational *four betters* – *better production, better nutrition, a better environment* and a *better life* – could materialize or dissipate (**Figure 13**).

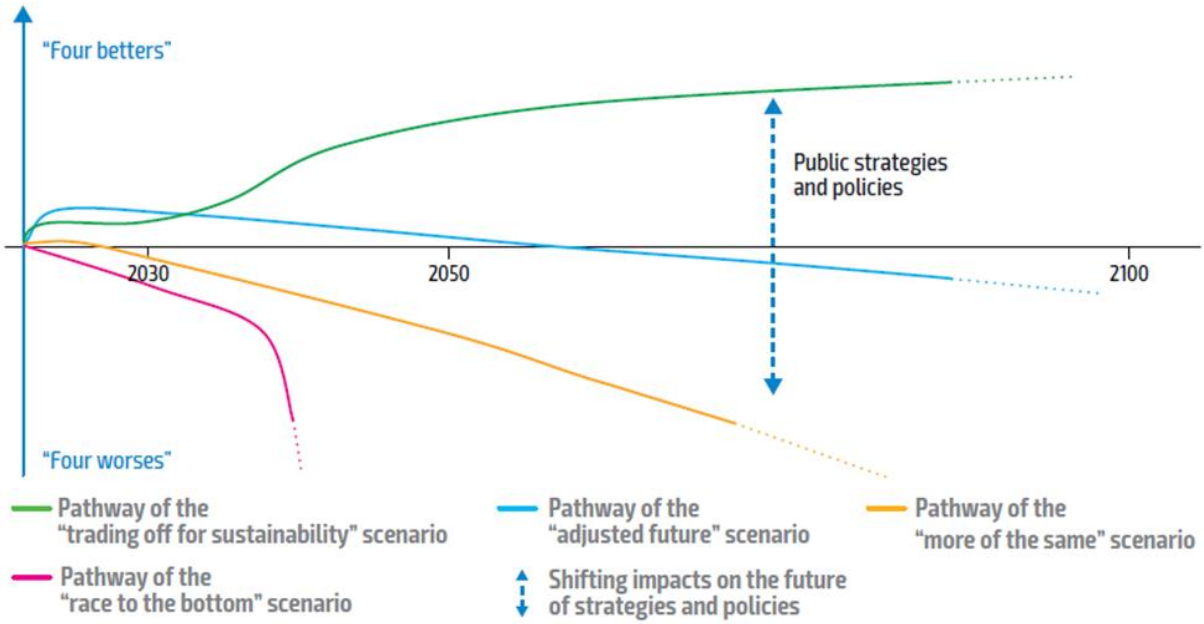
Table 2. Triggers for transformation under alternative scenarios

	Institutions and Governance	Consumer (citizen) awareness	Income and wealth distribution	Innovative technologies and approaches
More of the Same (MOS)	Weak governance of global issues; roles of public and private confused	Piecemeal approaches of few groups have limited or no impacts on transformation	Inequalities, hunger, extreme poverty not tackled; HICs and LICs diverge	Within the current paradigm (large scale, labour saving) CC 2100: 3+
Adjusted Future (AFU)	Selective pursuit of 2030 Agenda for Sustainable Development; private bodies cover public functions	Segmented pressure groups focus on well--being of selected societal layers/LICs	Voluntarist actions to combat most striking situations; weak fiscal systems	Mostly within the current paradigm; small-scale survives CC 2100: 3-
Race to the Bottom (RAB)	Short-termism, dismantlement of rules; government collusion with elites	Green-social washing fools consumers; citizens irrelevant in all systems	No taxes, no services - "stratified societies"; exacerbated poverty in HICs and LMICs	Extractive economies based on exhaustible resources dominate CC 2100: 4+
Trading off for Sustainability (TOS)	Global governance of global phenomena; power distributed; roles well defined	Consumers give up final consumption to invest in transformation; HICs give room LICs in resource use	Efficient fiscal system, new metrics for well--being adopted; less leakages from LICs	Effective strategies for "circular" economies dominate CC 2100: 2-

Note: CC2100: 3+ means: Scenario compatible with an increase in the average global temperature by 2100 due to climate change above 3 degrees Celsius compared to the pre-industrial period. Analogously, 3-, 4+ and 2-, mean, respectively: below 3, above 4 and below 2 degrees Celsius.

Source: Based on FAO. 2022. The future of food and agriculture – Drivers and triggers for transformation. Rome. https://www.fao.org/3/cc0959en/cc0959en.pdf

Figure 13. Scenario pathways and public strategies and policies to trigger transformation



Source: FAO. 2022. The future of food and agriculture – Drivers and triggers for transformation – Rome. https://www.fao.org/3/cc0959en/cc0959en.pdf

27. Through Regional Expert Consultations, preliminary findings emerged about the regional nuances of these triggers, to be further articulated at country level for HICs and LMICs:[10]

a. ***Institutions and governance***. Governance is likely to play a central role in shaping the future of agrifood systems in the region. Countries like Bangladesh, Cambodia, Indonesia, Lao People's Democratic Republic and Nepal, need to balance rapid economic growth against the imperatives of environmental sustainability, while also considering the long-term consequences of their decisions. Strategic options in this domain include: transforming voluntary guidelines into enforceable legislation; setting trade rules to protect virtuous countries that adopt stricter social and environmental rules; enforcing emission targets and compensations; and investing in human capital to improve negotiating skills.

b. ***Consumer (citizen) awareness***. Possible transformative options include: leveraging consumer awareness to shift towards less animal-protein-based diets and away from cattle meat in HICs and China; orienting future consumption towards poultry rather than red meat in LMICs; investing globally in certifications and labelling; preventing or discouraging misleading "social and green washing" of corporations; and investing in education to increase critical and active citizenship.

c. ***Income and wealth distribution.*** Key priorities are: channelling financial resources to smallholders; addressing the impacts on social cohesiveness and income distribution of migratory flows due to diverse demographic trends across subregions; and addressing the impacts of migratory flows on income distribution within and across countries. In addition, if prices have to reflect the "true cost" of food, improving income distribution is the only option

[10] Strategic options, policies and investments to activate these triggers at global level are reported in part 3 of FAO, 2022. *The future of food and agriculture – Drivers and triggers of transformation*. Rome. https://www.fao.org/3/cc0959en/cc0959en.pdf

for future food security and nutrition. Possible strategic options include: investing in activities that retain and share large portions of value added in LMICs; tracking and stopping illicit financial flows (Sustainable Development Goals [SDG] target 16.4) that drain LMICs' value added; implementing equitable fiscal systems; and providing essential public goods.

d. ***Innovative technologies and approaches***. Investing in national and local research and development in LMICs on innovative technologies (conservation, integrated precision, organic agriculture and biotechnologies) and systemic approaches (agroforestry, agroecology and circular bioeconomy)[11] may drastically reduce environmental costs, increase resilience, prevent the import of "second hand" obsolete technologies, and reduce income drains due to profit expatriation and payment of royalties to foreigners.

The integration of governance, innovation, technology, and finance is essential to address these multifaceted challenges. In some subregions, such as Southeast Asia, and HICs, decades of strong economic growth may have created some policy inertia, weakened long-term visions, strengthened commercial interests and prioritized short-term goals. These countries may have the most to benefit from a renewed strategic and transformational focus.

Trade-offs along transformative patterns

28. In addressing the transformation of agrifood systems, win-win solutions would be welcome. However, most likely trade-offs – that is, potentially conflicting objectives – will need to be balanced, as frequently emerged during the RFE Expert Consultations. They include, for example, the possible trade-off between reducing greenhouse gases to mitigate climate change and achieving other key SDG targets, such as Zero Hunger, as envisaged in the Trading Off Sustainability "TOS" scenario. Trade-offs and balancing actions are expected to be considered in initiatives at all levels, as articulated in FAO's global roadmap for *Achieving SDG 2 without breaching the 1.5°C threshold: A global roadmap*(**Box 1**).

Box 1. *Achieving SDG 2 without breaching the 1.5°C threshold: A global roadmap*

FAO's Global Roadmap[12] to achieve SDG 2 without breaking the 1.5°C threshold involves a process that spans three years, starting with the 28th United Nations Climate Change Conference (COP) in 2023, with a global vision of the limits of agrifood systems today and a diagnosis of what has not worked so far in transforming agrifood systems. It then moves from a global vision implying theories and practices of change at global level to the identification of actions required at regional level and related costing and financing options (thanks to quantitative modelling) to be discussed at COP 29. It then ends by establishing country action plans and funding and monitoring mechanisms at country level, by the time COP 30 takes place. It also examines how to integrate technical assistance into strategies while supporting sustainable investment plans.

The global roadmap presents 120 actions, divided in ten domains of actions, and associated with 20 global milestones aimed to track progress in the right direction. Put together, they show a consistent pathway, starting from today's situation and pivoting quickly towards a trajectory like the FOFA's "Adjusted Future" (AFU) scenario, before accelerating transformation to converge towards a "Trading Off Sustainability" (TOS) scenario. In 2024, the global roadmap will be adapted to the regional context, building on the work initiated by the Regional Foresight Exercise (RFE).[13]

29. Along their development pattern, middle-income countries are at a crossroads. They may follow the unsustainable development paradigm adopted by HICs, thus largely contributing to further degrading natural resources, exacerbating climate change and leading to ungovernable inequalities such as the FOFA-DTT paradigmatic "Race to the Bottom" (RAB) scenario. Alternatively,

[11] "The bioeconomy is the production, utilization, conservation and regeneration of biological resources, including related knowledge, science, technology and innovation, to provide sustainable solutions […]". FAO, 2023. *Bioeconomy for sustainable food and agriculture*. Rome. https://www.fao.org/3/cc6905en/cc6905en.pdf

[12] https://www.fao.org/3/cc9113en/cc9113en.pdf

[13] See more details at https://www.fao.org/interactive/sdg2-roadmap/en/

particularly if HICs set a good example, they may adopt innovative development paradigms towards more sustainable alternative futures such as the paradigmatic “TOS” scenario.

30. National governments are instrumental in steering agrifood systems towards sustainability, yet their efforts cannot exist in isolation due to the supranational nature of the challenges ahead, such as international conflicts, governance of global finance, trade and multinational corporations, climate change, biodiversity loss and resource depletion. These issues underscore the need for extensive international cooperation and support.