

Executive summary

How can transformed agriculture and food systems in Africa contribute to reaching the SDGs within the planetary boundaries? How do the visions for agriculture and food systems in Africa align to the perspectives expressed in global scenarios?

THE SECOND AFRICAN DIALOGUE on The World in 2050 (TWI2050) brought together stakeholders to discuss pathways to reach the UN Sustainable Development Goals (SDGs), within the planetary boundaries, and through the transformation of African agriculture and food systems. The motivation for the discussion is the understanding that for implementing the SDGs it is vital to connect actions across local, national, regional and global levels. The 2nd African Dialogue was planned as a step to contribute to this in the context of the global TWI2050 initiative. The event was held in Kigali, Rwanda in October 2018, and was organised by the SDG Center for Africa in partnership with SwedBio and the Stockholm Resilience Centre. It followed on from the first Dialogue that was held in 2017.

The **goal of the Second Dialogue** was to give voice to sub-regional African aspirations related to pathways toward sustainable futures, providing relevant insights to: (1) practitioners/policy makers involved in SDG implementation processes by shedding light on the option space (including tensions) around alternative pathways; (2) modelers and scenario builders involved in the design of alternative (sustainability) scenarios for Africa within the context of TWI2050 and other such initiatives.

Using a ‘pathways approach’ derived from the **Three Horizons framework** – adapted by the Stockholm Resilience Centre researchers to support cross-scale discussions in the context of the SDGs (see *Figure 1*) four different pathways emerged: the *Ubuntu* pathway (by the West Africa group), the *Prosperous and Peaceful East Africa* pathway (by the East Africa group), the *Urugendo* pathway (of the Southern Africa group) and the *Rainbow* pathway (of the African Continent group). Each pathway is separately described in the second part of this report titled, *Pathways for Africa*. During the process, the participants were also exposed to the global perspectives on pathways to reach the SDGs that are expressed in global models and scenarios. Commonalities and differences within each group, across the results of the four groups, and in relation to the global perspectives are detailed in the third part of this report titled, *Discussion about convergences and divergences*.

Convergences and divergences

Core present concerns across the groups relate to climate change, land degradation, food insecurity, inadequate governance, inadequate infrastructure, low level of financing and issues related to technology (including the dichotomy between modern and indigenous knowledge). Several other aspects were also common or complementary across the four pathways in relation to the solution space. Throughout all the groups, a vision emerges of peaceful and prosperous rural and urban Africa, capable of feeding itself and the world – although the actors and agricultural practices in such visions vary. Table 1 presents a synthesis of some **common actions** towards achieving these visions, grouped into three large interdependent categories: *Empowerment*, *Partnerships for change* and *Knowledge sharing*. Such actions can be understood as the backbone for transformation towards the desired futures (*Figure 2*) and, through this transformation, to the achievement of several SDGs in a holistic way. Table 1 also brings examples of existing ‘seed’ initiatives discussed in the groups.

Several **divergences** were also identified inside the groups and across them. These relate to different perspectives concerning, for example, urbanisation, population growth, consumption changes, agricultural practices (sustainable intensification, agroecology), the role of different actors and agricultural systems in the future (community-oriented farming, market-oriented small-holder farming, large-scale industrial agriculture) and the role of the agriculture sector in the African Economy. Such branching points can be understood as points to be deliberated at different levels and across diverse geographic contexts, by multiple societal actors and decision makers, and according to their different socioeconomic, institutional and cultural characteristics.

The discussions in the groups also challenged some of the basic assumptions of existing global sustainability scenarios¹ (such as massive urbanisation, very low population growth and very high urbanisation levels, reduced area for agriculture due to the expansion of biofuels and large scale forest restoration for carbon absorption, land-sparing approach, drastic reduction in meat consumption), indicating

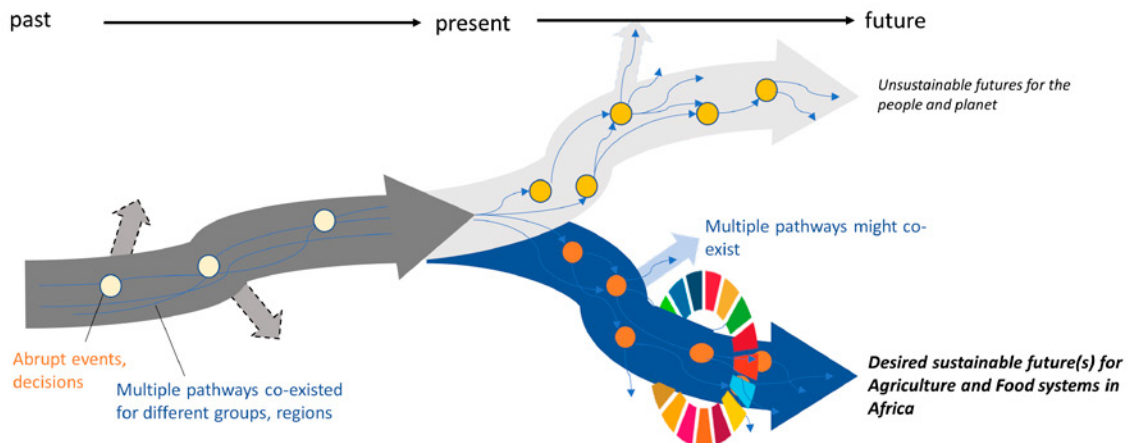


Figure 1. The Dialogue was structured around three sub-themes: (1) Values and social-ecological resilience (clusters of SDGs in the middle and to the right, outside the dashed boxes); (2) The resilience of Africa's life-support systems (in the dashed area left and at the bottom); and (3) Governance of socially inclusive, resilient agriculture (the dashed area at the top).

the importance of these type of cross-scale dialogues for improving the design of scenarios. In the next section, we recommend that future sustainability-oriented scenarios should consider the insights from these discussions and use them to inform a broader combination of premises and measures to be explored in future scenarios for Africa. Table 2 synthesises the core divergence points, their implications for societal decisions at different political and geographical levels, and also for future scenario design.

Finally, the participants acknowledged and explicitly discussed in the final plenary, the enormous challenges for implementing an African agricultural transformation,

considering current societal and power structures, vested Interests, the power of elites, rising inequalities, etc. Another key aspect that emerged from the discussion was a need to recognize the multiple uncertainties related to the impacts of disruptive technological changes in the near future, including those related to democracy (as discussed in the TWI2050 report²). Multi-stakeholder dialogues are essential to help navigate such complex and uncertain futures. We hope this Dialogue can inspire similar ones to be held in different levels and geographic contexts. We included a short guide (see appendix C) detailing the method and how to repeat and adapt it.



<p><i>Backbone necessary actions to all pathways to the desired futures of agriculture in Africa (Table 1)</i></p> <p>Empowerment (youth, women and population) Partnerships for change Knowledge, technology and data sharing</p>	<p><i>Decision points /branching points in alternative pathways related to (Table 2)</i></p> <ul style="list-style-type: none"> Urbanization: rate and quality Population growth as a problem or opportunity Agricultural intensification approach Actors in agriculture: future of small farmers, cooperatives and role of the States Alternative diets: meat free or diversified Local to global production and markets Land-based climate change mitigation
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Figure 2: Schematic representation of our synthesis based on the analysis of convergences and divergences inside and across the pathways. From the convergence analysis we derive insights about actions considered necessary (backbone) in all pathways (Table 1). From the Divergence analysis we derived branching points (Table 2). Branching points can be understood as issues to be discussed and deliberated about at different levels and geographic contexts by society and decision makers, according to their socioeconomic, institutional and cultural characteristics. They can also provide insights for the designing of alternative scenarios representing pathways to sustainability. The idea of the pathways representation was adapted from the IPCC Special Report on Global Warming of 1.5°C (Chapter 5) and Fazey et al. (2016)³.

Table 1: Backbone actions to support multiple pathways derived from the convergence analysis of the four pathways.

	Convergences (backbone actions in all pathways)	Some examples of good seeds⁴
Empowerment (youth, women and population)	<ul style="list-style-type: none"> – Investment in education and adequate skills for agriculture that combines traditional and innovative knowledge (essential for the population empowerment and transformation of the sector). – Mechanisms for guaranteeing youth participation in politics. – Involvement of communities in decisions: bottom-up and top-down balance. – Addressing gender issues – a constant theme in all pathways – including land tenure, finance access and political representativeness for women. – Structured markets and incentives to transform agriculture in an attractive sector for the youth (addressing the concern of out-migration). 	<p>RWEE (Rural Women Economic Empowerment) Joint Program UN-Women, WFP, IFAD and FAO.</p> <p>Mastercard Foundation: Youth Africa works initiative</p> <p>In Rwanda: young people (engaging) in the political system.</p>
Partnerships for change	<ul style="list-style-type: none"> – Political will at different levels. – Pro-active approaches to change among all actors and parts of the society, not relying solely at governments to initiate changes. – Consolidation of small farmers’ cooperatives (from production to markets). – Investments in physical infrastructure (roads, energy, irrigation, agro-processing, climate resilient solutions, etc.) and finance infrastructure (easy access to credit and insurance for farmers). – Adequate trade agreements and development of local to global markets. – Regional and Continental cooperation and planning (markets, governance, infrastructure, technology), including environmental concerns (conservation, climate change adaptation/mitigation). – International compromise (aligned to regional plans, alliance against corruption, aiming at independence from donors). 	<p>Land consolidation and crop intensification program in Rwanda.</p> <p>Government of Uganda has initiated E-voucher system invested in agro-processing facilities and distribution of inputs to farmers for increased production.</p> <p>Kenyan government invests in large- and small-scale irrigation systems to reduce dependence on rain fed agriculture (1.2 million acres to date).</p>
Knowledge, technology and data sharing	<ul style="list-style-type: none"> – Data collection for natural resources monitoring, (agroecological) spatial zoning and regional planning. – Creation of collaboration platforms/hub for sharing best-practices. – Improvement of extension systems focusing on context-specific solutions embedded in collaboration networks. – Research and development combining traditional values and modern techniques (seeds, climate resilient practices). 	<p>Mobile tech-based payment/transfer systems (similar to Kenya’s MPESA*) applied to agricultural production may help farmers attain higher shared values.</p>

Table 2: Branching points and implications for society decisions and scenario design derived from the convergence analysis of the four pathways and global scenarios.

	Divergences (possible branching points)	Implications for societal decisions at different levels	Implications for alternative scenario design
Urbanization	Current global scenarios reflect a vision of a highly urbanised Africa, contrasting with the participants perspective on a more balanced urban-rural future for Africa, with quality of life in both.	The need to discuss and design policies aiming at the desired rate and quality of urbanisation in each context.	Alternative scenarios representing multiple urban/rural relations, including strong rural communities and high quality of life, providing food first to local markets then to distant markets. Scenarios should address the quality of urbanisation too (prosperity and services for all versus a chaotic urbanisation in the Global South) and its implications for the SDGs.
Population growth	The issue of population growth was one of the core aspects of divergence inside the groups and in relation to the global perspectives: population growth can be seen as a problem (because of resource use and consumption trends), or as an opportunity for innovation and new youth markets, acknowledging that consumption patterns are the actual problem.	The need to discuss the role of family planning, technology and education in creating opportunities in rural and urban contexts.	Alternative sustainability scenarios beyond current assumptions of very low population growth and massive urbanisation. Participants argued for seeing people as an opportunity (innovation, local markets) and excessive consumption the problem.
Agricultural intensification and practices	A core divergence that emerged from the comparison across groups relates to the debate around agroecology or sustainable agricultural intensification (SAI) as pathways to a sustainable agriculture. Another key point debated as the use (or not) of Genetically modified crops (GMO).	The need to discuss alternatives, limitations and benefits of agricultural systems, directing policies according to different contexts.	Current global models adopt a land sparing narrative, basically relying on the “Sustainable intensification” proposal. New scenarios could allow for a broader range of options, including agroecology, or mixture of both these approaches in different contexts. Also allow for a combination of land sharing and land sparing at different scales and contexts.
Actors in agriculture	The role of different actors (small farmers, large-scale farmers, agribusiness companies, national States) in the agriculture system of the future was also a point of divergence, mainly related to the role of large-scale industrial agriculture. All groups emphasized the importance of cooperatives though. Some middle ground emerged in some groups related to develop a more holistic approach towards agriculture as a part of the general economy, including actions to protect small farmers and regulate what might be perceived as necessary large scale (sustainable) cultivation (not one actor in opposition to the other).	The need to discuss the role of different actors in the agricultural system of the future in different regions, and plan actions accordingly to protect (cooperatives of small farmers, for instance)/ regulate them. This also has links to other sectors of the economy (through education and jobs) and to the urbanisation processes. This issue is also related to the role of the agriculture sector in the economy as a whole (when compared to industry and services).	Future models/scenarios should be able to represent land tenure issues that are strongly linked to rural/urban well-being and urbanisation. Alternative scenarios could represent a range from an extremely land concentrated landscape (in a highly urbanised world, with very few actors producing food) to a more balanced mix of types of actors and agricultural systems. Models should also represent cooperatives as economic actors.

	Divergences (possible branching points)	Implications for societal decisions at different levels	Implications for alternative scenario design
Alternative diets	Participants in one of the groups disagreed about the adoption of meat free diets, then converging to “diversified diets” adapted to different contexts. Some argued that meat-consumption has negative consequences on the environment (such as deforestation, greenhouse gas emissions, etc.). Others argued that meat is important for nutrition, for the livelihoods for pastoralists and cultural attachments. Changes in diets was not a central issue in the other groups, but represents a major divergence in relation to global patterns, in which drastic reduction in meat consumption is usually necessary.	The need to discuss the impacts of alternative diets in the environment and health using scientific evidence, local and global environmental impacts, and socio-economic and cultural contexts.	Scenarios should explore multiple combinations of diets depending on context and cultural background, beyond the meat-free narrative. Better practices for herding could also be included to explore potential detrimental environmental impacts and the impacts of environmental change on this livelihood.
Markets for agricultural products	The issue of producing food to the global market and/or to local markets was present in several discussions, including the concern about local food security. In contrast, most current global sustainability pathways rely on a global free market narrative.	The need for planning according to best market solutions at different contexts (several backbone actions refer to market infrastructure)	Current sustainability scenarios rely mainly on a global market for food production. Future scenarios could explore a broader range of narratives, including regional cooperation and local markets. Besides, more sophisticated models could explore the role of a few global corporations controlling the food system versus a more decentralized system.
Land-based climate change mitigation	Most discussions in the groups refer to the need to adapt to climate change. Global scenarios rely in general on a (global) land reduction pathway, in which food is produced on more suitable lands through highly technological and intensive production – which would also free land for restoration and biofuel production (both necessary to mitigate global emissions).	Discuss benefits and disadvantages of global mitigation at multiple levels, including internationally.	Global scenarios could explore a broader range of land-based mitigation options, from the current globalized ones (based on land adequacy and economic compensation through REDD) to a more distributed alternative (each continent mitigates its own historic emissions, for instance) or a mix between the two.

References and notes

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- Seeds are initiatives of a good future that are existing in the present, but to a smaller scale.
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- For more information and other applications of the framework, please see: Sharpe, B., A. Hodgson, G. Leicester, A. Lyon, and I. Fazey. 2016. Three Horizons: a pathways practice for transformation. *Ecology and Society* 21(2):47. <http://dx.doi.org/10.5751/ES-08388-210247> H3 Uni: A university for the third horizon.2018. <http://www.h3uni.org> Kate Raworth is presenting the use of 3Horizons in the following video: https://www.youtube.com/watch?v=_5KfRQJqpPU
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- One of the participants added some comments after the workshop. Because these comments changed the content of the report, we do not include them in the tables. These comments related to Table 3:
 - Affordable locally produced food crops are accessible to all.
 - Easily accessible markets (for agricultural products and for farmers to purchase farm inputs)
 - Economy at service of society (not other way around)
 - Subsistence agriculture will completely transform (increase productivity and crop quality)
 - Reinforcing intra-African markets.
 The same participant also noted that subsistence farmers are not a feature of this future. The participant also commented on the zero CO2 emissions: “we need to be realistic: Energy for food production is clean with reasonable CO2 emissions (not zero)”. To the point “A farming system fully organic”, the participant added: An integrated farming system that includes organic and reasonable use of chemical inputs.
- One of the participants added some comments after the workshop. Because these comments changed the content of the report, we do not include them in the tables. This comment related to Table 4:
 - The participant suggested the following point: Old-fashioned education to be replaced by to Old-fashioned agricultural extension method
- The original one was “Towards a Food Secure, Peaceful and Prosperous East Africa”
- This step of the exercise is important as a preparation for discussing the actual pathways (and eventually to inform future quantitative/modeling analysis). In future dialogues, we will explicitly include the development of causal diagrams in the process (see Conclusion section – Recommendations for future dialogues).
- Following the STEPS centre paradigm of first “opening up” to multiple perspectives, appreciating the existing pathways: https://stepscentre.org/wp-content/uploads/STEPS_Pathways_online1.pdf
- For further information about this topic, see the DIE report: “Beyond the Agroecological and Sustainable Agricultural Intensification Debate: Is Blended Sustainability the Way Forward?”, Jonathan Mockshell and Josey Kamanda, Discussion Paper / Deutsches Institut für Entwicklungspolitik ISSN 1860-0441, Bonn, 2018.
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- According to the IPCC's Working Group III (WG3), Integrated models are simplified, stylized numerical approaches to represent enormously complex physical and social systems. Important input assumptions include population growth, baseline economic growth, resources, technological change, and the mitigation policy environment. However, they do not structurally represent many social and political forces that can influence the way the world evolves. The models use economics as the basis for decision making. This may be implemented in a variety of ways, but it fundamentally implies that the models tend toward the goal of minimizing aggregate economic costs of achieving mitigation outcomes. The models also typically assume fully functioning markets and competitive market behavior.

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31. The Shared Socioeconomic Pathways (SSPs) were developed by the global change research community, to be used by the Intergovernmental Panel on Climate Change (IPCC). The SSPs are based on five different development routes for societal trends: i.e., sustainable development (SSP1), global fragmentation (SSP3), strong inequality (SSP4), rapid economic growth based on a fossil-fuel intensive energy system (SSP5) and middle of the road developments (SSP2). Each of the SSPs has been elaborated in a storyline and quantified using models. These storylines can be combined with different assumptions about climate policy to form a larger context of socioeconomic development and level of climate change (see for instance, Riahi et al., 2017 and Rogelj et al., 2018). The sustainable development scenario (SSP1) combined with stringent climate policy is a scenario exploring the route towards a more sustainable world—although the SDGs were not targeted in its development (Zimm et al, 2018).
Sources:
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32. In fact, in one of the plenaries there was a comment that African concerns are more focused on adaptation than on mitigating (other countries') emissions (and leading to questions about which compensation mechanisms would be in place and how this would affect small farmers)
33. Collste, D., Pedercini, M., & Cornell, S. E. (2017). Policy coherence to achieve the SDGs: using integrated simulation models to assess effective policies. *Sustainability Science*, 12(6), 921–931. <https://doi.org/10.1007/s11625-017-0457-x>
34. A significant point in the design of the Second Dialogue was that funding was not provided for the invited stakeholders to travel to Kigali, so most of the accepted invitations came from Eastern Africa (although many were born or experts in the other regions). Maybe as a result of this, the division of groups according to a geographic criteria proved useful for fostering the emergence of diversity between the pathways, but it did not lead to regional specificities in general. The gender ratio of the event was not balanced – 7 women: 24 men (23%).
35. In fact, during the last phase of preparation of this report, we learned one of the participants actually applied the method to discuss pathways to the SDGs in an Italian city. See: <https://twitter.com/JacopoBencini/status/1096833769301032960> and <https://twitter.com/GiovaGraziani/status/1096728194739290112>
36. Schultz, M., T. Hahn, N. Hällström, and C. Ituarte-Lima. 2016. The Biggest Single Opportunity We Have Is Dialogue-Dialogue Seminars as a Methodology for Transformative Social Learning and Conflict Resolution in International Environment Negotiations, SwedBio at Stockholm Resilience Centre. This Is a Modification of a Paper with a Similar Name under Review in *International Journal of Biodiversity Science, Ecosystem Services & Management*.
37. Such divergences and branching points could for instance be a rural versus a total urban future; industrial versus agroecology; large scale versus small farms, land sharing versus land sparing; farmers subsidies like in the US and EU or not.
38. At the beginning of the third step of the Second African Dialogue, the break-out groups compared the content of their diagrams with the global scenarios that had been presented. They were asked to consider what was common and what was different between the global model scenarios and the pathways discussed by the participants. The facilitators noted the divergences on a flip chart. Also, the groups went back to consider the root causes that had been noted down during Step 2.