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DISCUSSION PAPER No. 288

Adopting a sustainable food system approach: IMPLICATIONS FOR IRELAND'S DEVELOPMENT PROGRAMMING AND POLICY INFLUENCING

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January 2021

In today's increasingly complex and interlinked world, we need approaches for navigating complexity, to help us analyse, understand and decide. This is especially true for food-related development and sustainability challenges, which span multiple domains, actors and connections. The many demands placed upon food systems requires systemic approaches that achieve multiple goals at the same time, while being attentive to trade-offs.

This paper discusses the design options and considerations for a sustainable food system approach for Ireland's development cooperation. While Ireland's new international development policy, A Better World (2019), underscores the need for systemic responses to the challenges posed by food systems, this has not been integrated into strategy or operations. As such, this paper discusses the advantages and disadvantages of food system approaches and provides an overview of two recent case studies of food system approaches in practice. This paper also describes the process through which Ireland's development cooperation could integrate a sustainable food system approach in strategy or operations, or both. At the strategic level, food-related development cooperation would use a food system narrative and support partners to place their own priorities within it. At the operational level, programming would be determined by an overarching food system strategy that guides the selection of development activities.

There are several opportunities, either currently in place or upcoming, for discussing and adopting a sustainable food system approach by Irish development cooperation, both domestically and internationally. By adopting a food system approach in strategy and programming, Irish food-related development cooperation can tackle multiple priorities more effectively.

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Acknowledgements

This paper was commissioned by the Irish Department of Foreign Affairs to discuss the design and adoption of a food system approach in Irish official development assistance. The authors would like to warmly thank Chris Somerville for guidance, comments, and editing, and Neil Gannon for several paragraphs overviewing Irish official development assistance. We would like to thank the Irish Department of Foreign Affairs for their feedback and comments, Michelle Luijben for editing and Alexandra Beijers and Claudia Backes for the layout. The views and opinions expressed in this paper do not reflect those of ECDPM nor the Irish Department of Foreign Affairs. For more information about ECDPM' Sustainable Food Systems programme, please visit ecdpm.org. For comments and feedback please get in touch with Koen Dekeyser (kde@ecdpm.org) and Francesco Rampa (fr@ecdpm.org).

Acronyms

ECDPM	European Centre for Development Policy Management
ABW	A Better World
CGIAR	Consultative Group on International Agricultural Research
EU	European Union
NGOs	Non-Governmental Organisations
NTTRA	National Task Team for Rural Africa
ODA	Official Development Assistance
SASS	Sustainable Agrifood Systems Strategies
UN	United Nations

1. Introduction

Ireland's International development policy, A Better World (ABW), recognises that agriculture and food systems are central to a sustainable future. It underscores the need for systemic responses to the "complex human and environmental health challenges posed by food systems". The policy states that "*sustainable agri-food systems must properly nourish, provide energy, damage neither health nor environment, and support equitable access to resources*" (p. 7). This statement reflects the multiple demands placed upon food systems and indicates a shift within the agrifood domain of international development cooperation from support primarily for food security ('feeding the planet') to sustainable food systems ('nourishing everyone within planetary boundaries').

Moreover, ABW commits Ireland to refresh and evolve its approach to hunger and undernutrition using a sustainable food system lens. The policy states that Ireland "*…will take an evolving approach to food systems that builds on [Ireland's] strong track record in reaching the poorest, tackling hunger and fostering sustainable livelihoods*" (p. 7). As such, an approach is required to bridge the gap between Ireland's current agrifood-based development cooperation engagements and its intended pursuit of systemic responses. ABW suggests that Ireland's approach to food interventions may change in the following ways:

- Bringing on board a systemic approach to resolving hunger and undernutrition within sustainable food systems, considering links to climate adaptation, gender equality and private sector engagement;
- Deepening the focus on agricultural markets and investments for development; and
- Increasing support to inclusive economic growth around agriculture, especially for women and young people (Government of Ireland, 2019).

This paper's primary goal is to start a discussion about the design and adoption of such an approach. The concept of food systems is fairly new, but has gained momentum over the last ten years. During this period, less holistic approaches, such as value chain and sectoral approaches, have proved less adequate for incorporating complexity and trade-offs between sustainability dimensions. This has led conventional food and nutrition security analyses to focus less on the multidimensional nature of food and nutrition security, and to omit the more complex causal mechanisms linked to emergent system properties, dynamic feedback mechanisms and competing goals (Ruben et al., 2018).

Food system analysis adds value compared to value chain analysis particularly where there is a need to understand contexts, where different goals are pursued simultaneously and where trade-offs are likely (ibid). Given the nascency of food system approaches and the early evolution of this research field, the design and adoption of these approaches will inevitably involve learning and experimentation **both among users of the approach and stakeholders**. For Ireland, that learning process can be a vehicle for defining the parameters of its approach, including consideration of how, when useful, such an approach could be integrated into development programs and partnerships within partner countries. Any such integration is likely to be gradual, given the difficulty of making coherent policies linked to, for example, agriculture, nutrition and climate.

Many governments and practitioners still grapple with the complexity of the food systems concept. Therefore, the design, adoption and implementation of related approaches will bring a need to critically reflect on resource availability, particularly time and partnership capacities. It must also be kept in mind that certain assumed advantages of the food system approach, for example, that it aids stakeholder engagement, have yet to be strongly

validated, as there are simply not enough cases for a systematic review.[1] However, there is now widespread recognition that many food-related development challenges are interlinked, that trade-offs are abundant, that actors beyond governments matter for successful food system governance, and that the currently fragmented and siloed policy landscape allows waste and inefficiencies to thrive.

As such, navigating food systems' complexity and interlinkages requires new approaches and tools, such as sustainable food system approaches. The European Union (EU) has already adopted a food system approach, through its 2020 'Farm to Fork Strategy'. The United Nations (UN) is also moving in this direction. In 2021 the UN Secretary-General will convene a major global conference, the Food Systems Summit, to raise global awareness and land global commitments on food systems transformation. These **international processes are opportunities for Ireland** to tap into as part of the preparation and implementation of its own food system approach to development cooperation.

In support of Ireland's food system ambitions in international development, this paper introduces the concept of food systems; debates its advantages, disadvantages and transformative potential; and introduces ECDPM's sustainable food system approach, featured in Dekeyser et al. (2020). Following this, the paper discusses two recent applications of the food system approach in practical cases, and suggests several opportunities and challenges for Ireland in designing and adopting a food system approach to development cooperation. Finally, recommendations and potential next steps towards a food system approach are presented, including consideration of how Ireland's move in this direction could influence its partner countries.

2. The sustainable food system approach[2]

2.1. What are food systems?

The challenges of food and nutrition security, environmental sustainability, and social equity are interlinked and can rarely be tackled in isolation (IPCC, 2019; Springmann et al., 2018). To understand how these issues interlink with food and to act upon the resulting complexity, **policymakers and researchers increasingly turn to the concept of food systems**. In general, 'food systems' refers to the multifaceted and multi-layered processes linking food production, processing, distribution and consumption, while recognising that these processes are underpinned by intertwined political, economic, social and ecological relationships. Food systems "*encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and food industries, and the broader economic, societal and natural environments in which they are embedded*" (Von Braun et al., 2020: 6). This includes the environment, the people, the inputs, the processes, the infrastructure and the institutions involved in taking food from farm to mouth (IFPRI, 2016).

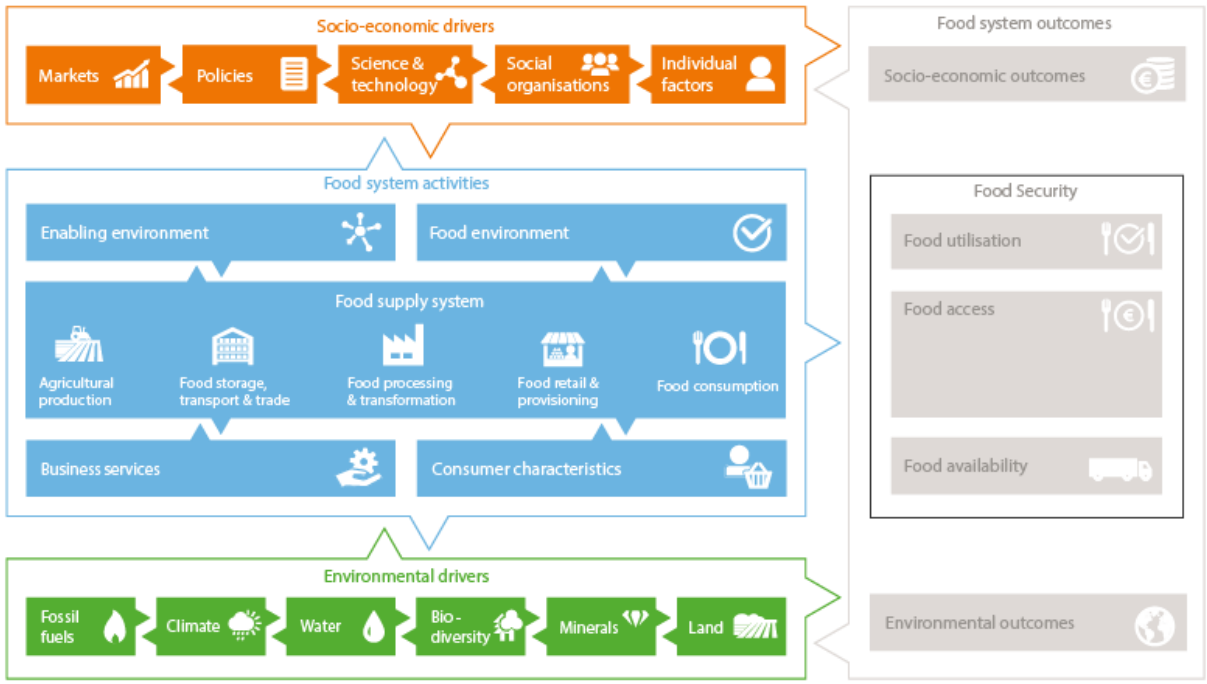
In this paper, we build on the conceptualisation of food systems by Van Berkum (2018) and HLPE (2020). We look at both 'hard' (e.g., biophysical) and 'soft' (e.g., social, economic and political) elements in an effort to identify and understand the relevant linkages, for instance, between the production of particular crops (hard) and social relations

[1] Most food system research still focuses on supply and mid-stream analysis rather than system-oriented analysis (Brouwer et al., 2020).

[2] Based on the work of ECDPM's Sustainable Food System programme and in particular Dekeyser et al. (2020).

among tradespeople (soft). **Food system outcomes are the result of food system activities, which themselves are linked to socio-economic and environmental drivers** (figure 1). Myriad food system activities generate many different food system outcomes, with all of these activities and outcomes also being influenced by socio-economic and environmental drivers. Thus, the different parts of a food system – the drivers, the activities and the outcomes – constantly act upon one another. Moreover, within a system, the boundaries of what constitutes an outcome, an activity or a driver can shift. For example, one element – such as food production – can be an outcome, an activity and a driver simultaneously.

Figure 1. Food system framework



Source: van Berkum et al. (2018).

Socio-economic drivers affect or influence the food system through, for example, trade relations and economic growth (markets); land rights and food safety legislation (policies); technological innovations (science and technology); households and social movements (social organisations); and lifestyles (individual factors; Van Berkum et al., 2018). To these we add 'demographic drivers', particularly population growth and urbanisation. We also broaden the 'policies' category to 'governance', to better reflect the many informal and formal rules beyond the state that influence or affect food systems.

At the core of food systems are the **food system activities**, which link food production and food consumption through supply chains and are supported by an enabling environment and business services.[3] Environmental and consumer characteristics influence the retail and consumption side of food system activities.[4] **Environmental drivers** relate to the biophysical context in which a food system operates, but their influence differs per food system activity. For example, food production is especially influenced by the biophysical context and is likewise the main pressure exerted by the food system on the environment. Food transport is much less influenced by the biophysical context. The **outcomes** are primarily food and nutrition security (including diets), socio-economic well-being (e.g., gender

[3] Such as regulations and research (van Berkum et al., 2018).

[4] A food environment "*refers to the physical, economic, political and socio-cultural context in which consumers engage with the food system to make their decisions about acquiring, preparing and consuming food*" (HLPE, 2017: 11).

equality, women's economic empowerment, livelihoods) and environmental quality (e.g., soil and water conditions). Each food system exhibits a unique combination of drivers, activities, outcomes and governance arrangements (HLPE, 2017; Van Berkum et al., 2018).[5]

Identifying drivers of change within a food system and engaging with potential trade-offs and synergies are central to the food system approach. Interventions in a food system inevitably encounter trade-offs, due to the complexity, linkages and competing objectives involved. Synergistic interventions are also possible, bringing opportunities to advance multiple goals simultaneously. A food system approach "*offers not only a means to compare different intervention options but also a framework for systematically analysing synergies and trade-offs between various policy objectives*" (Van Berkum et al., 2018: 24). The linkages between food systems and other domains imply that changes in one domain are likely to impact other domains. These impacts, and thus the potential for synergies and trade-offs, are often context-specific. Researchers and policymakers regularly overemphasise win-win outcomes and neglect the trade-offs in food systems (Béné et al., 2019). However, win-wins are relatively rare and difficult to implement.

Overlooking synergies and trade-offs comes at a cost, as it can lead to policy incoherence, adverse impacts of policy in one sector on another sector, missed opportunities for positive synergies and delayed outcomes (Mainali et al., 2018). In contrast, **the sustainable food system approach places trade-offs central.** However, acknowledging trade-offs does not make difficult choices unnecessary. For example, in low- and middle-income countries closing the yield gap could help combat undernourishment, but it is also likely to create a larger environmental footprint, as more intensive production requires additional resources. Animal-sourced foods are another example where difficult trade-offs can be found. Including animal-sourced foods in diets can increase nutritional adequacy, but the livestock sector can be especially taxing on the environment (Adesogan et al., 2020). "*In sum, while synergies are feasible, if we capitalize on innovations, trade-offs and hard choices are more likely to characterize the near future of food systems*" (Béné et al., 2019: 121).

2.2. Advantages and disadvantages of food system approaches

Food challenges have been, and are, often approached in isolation using a simple, linear cause-effect rationale (an 'input-output' model; van Berkum et al., 2018). But the challenges posed by food and nutrition security, environmental sustainability, and social equity are interrelated. Solutions to problems in one domain often have unintended consequences for other domains. Because trade-offs between different dimensions of food system sustainability are unavoidable, they need to be navigated explicitly when developing and implementing interventions (Béné et al., 2019). In an effort to better understand the interlinkages and act upon the resulting complexity, policymakers, development practitioners and researchers are increasingly shifting from value chain analysis to the **more holistic food system approach** incorporating environmental, social and economic drivers and a wider array of system elements (Béné et al., 2019; Ericksen, 2008).

A **food system approach embraces complexity, temporal interactions and soft dimensions.** First, food systems are highly context-specific. For effective change processes, knowledge gaps have to be filled concerning the power, politics, institutions, ideas and beliefs that shape the food system. These will be different in every context; and it is important to realise that building knowledge on local contexts takes a long time. Second, with regard to the temporal dimension, a food system approach implies working within a dynamic 'movie', not a static 'picture'. There is a

[5] Useful data sources are the Food Systems Dashboard, FAOSTAT, UN Comtrade, World Development Indicators and the Global Food Security Index.

constant need to understand and act upon feedback loops between food system activities, drivers and outcomes. Moreover, short- and medium-term synergies and trade-offs of proposed interventions must be discussed iteratively with all relevant stakeholders. Third, while a food system approach requires examining the physical interactions surrounding food production, distribution and consumption (the 'hard' subsystem), the governance relations between them are at least as important. This refers to the formal/informal role of relevant actors (the 'soft' subsystem). An inclusive food system approach can be used for learning within multi-stakeholder partnerships, as it links different domains, thus connecting the work of all stakeholders.

Use of a food system approach brings a number of advantages in helping practitioners and policymakers analyse, diagnose and make decisions that impact food systems (HLPE, 2020; van Berkum et al., 2018).

1. The first advantage of a food system approach is in better **understanding activities, drivers, outcomes, events and trends** related to food in a certain context by defining and linking these elements in a mapping exercise. The approach shifts the focus away from any single element – such as food production or distribution – to emphasise instead the interactions between elements, including actors' influences and interests. A wide view can link how, for example, power (e.g., gender, race), governance (e.g., policies, institutions), ideas (e.g., focus on productivity or nutrition) influence the food system;
2. Second, the approach makes **trade-offs and synergies more explicit** by pointing out linkages and providing a broad view. This is particularly relevant to food systems, as they must meet multiple – often conflicting – demands simultaneously, and actions in one domain invariably affect other domains as well (Hawkes et al., 2019; UNDP, 2019). Use of a food system approach brings out interactions between different sectors and systems, revealing potential links between policy domains;
3. Third, by helping to **identify effective entry points for change and opportunities for synergetic interventions**, the approach enhances the 'menu of options' for programming (Ruben et al., 2018); and
4. Lastly, a food system approach can benefit from **stakeholder participation**. The food system approach need knowledge about different parts of a food system to be brought together, a practice which often requires bringing many different actors across the food system together. These actors have different capacities to participate, which requires care to include less powerful actors such as women and youth. This exchange of information helps create a shared understanding amid complexity, and can provide a basis for coherent and inclusive action. To work more coherently and effectively, actors need to think and work at the system level.

A **food system approach has disadvantages** as well, particularly, its novelty, resource intensity, capacity requirements and partnership complexity. While there is general agreement on what constitutes a food system, the development of food system approaches and **understanding of food system dynamics are still in their infancy**. Multiple food system approaches have rather recent origins (Dekeyser et al., 2020; Posthumus et al., 2018a; UNDP, 2019), and no feedback or adaptations based on initial applications have as yet been published. Understanding of food system dynamics has also lagged due to the fragmentation and inadequacy of datasets (Béné et al., 2020b), though important progress is being made (Fanzo et al., 2020).

Box 1. Advances in food system approaches, data and tools

Since 2018, several tools and data repositories for food system analysis have come out. Dekeyser et al. (2020), UNDP (2019) and Posthumus et al. (2018a) are examples of recent publications that aim to make the food system approach more practical. Rather than developing new tools, these publications draw on existing tools to analyse different facets of food systems, such as food and security outcomes, stakeholders' positions, environmental interactions and economic viability. The goal is to bring together and analyse food- related dimensions that are typically analysed separately – such as trade statistics and crop yields – and to analyse their interactions through a systems lens.

Though data related to food systems is spread across various data repositories, the Food Systems Dashboard recently combined multiple data sources to give a more complete picture of (mostly national level) food systems. Perhaps the major advance of such a data repository – besides convenience – is in the analysis of synergies or trade-offs between different components.
A major publication on food system sustainability, Béné et al. (2019), presents a global map and indicators of food system sustainability. This was followed by a publication on the trade-offs between different food system sustainability dimensions. Gaining a better understanding of the current state of food systems is constrained by the limitations associated with any complex system, as these defy clear input-output mechanisms. However, foresight and scenario planning have helped facilitate discussions on the future of food systems, such as the 'Global Foresight Tool for Food and Agriculture' of the International Food Policy Research Institute.

Food system approaches can be resource intensive, too, depending on their scope and depth, due to the multiple domains and components that have to be considered, alongside the many interactions and wide array of stakeholders. Unlike, for example, food security evaluation techniques, such as the Household Dietary Diversity Score, there is no standard methodology as yet for food system analysis. Rather, food system analysts are likely to employ a range of tools and methods to capture the various elements, linkages, actors and dynamics of the food system under study. Instruments linked to food security and livelihoods, environmental analyses, systems science, and political economy can all be drawn upon. Certainly, food system analysis, given its novelty, has less of a fixed suite of methodologies than more established concepts, such as food and nutrition security. Practitioners must therefore navigate the complexity using their own interpretations and selections of methods.

This may be time-consuming, pointing to **another disadvantage: high capacity requirements**. Food system analysts and practitioners need to possess a basic grasp of a wide range of food-related topics; be proficient in systems thinking, methods and tools; and preferably be adept at both qualitative and quantitative data analysis. Though the vast range of potential stakeholders in food system approaches provides ample opportunities for interventions, these can be time-consuming to manage and streamline. While the food system concept is not yet as widely recognised as concepts like malnutrition or livelihoods, it is better known than concepts like 'food environments'. As such, working with stakeholders in a food system approach might have to start with education about the concept and methods, before moving on to intervention design.

Lastly, while the literature lays out the potential advantages of a food system approach (Ruben et al., 2018), **a systematic review of its advantages and disadvantages must await more cases**. Even then, such a review will be hampered by the lack of a standard methodology for food system approaches. However, several reviews of food system cases are under way. These could provide a stronger evidence base for debate.

2.3. Selected challenges related to food systems

General food system challenges[6]

Food is linked to a host of challenges. Here we name just a few:

- Food production provides most livelihoods worldwide but high agricultural employment strongly correlates with poverty;
- Food production and land clearing for agriculture are large contributors to greenhouse gas emissions and the leading causes of biodiversity loss;
- Climate change is expected to hinder yields further in regions already plagued by low productivity.
- Growing populations and dietary changes bring greater demand for more nutritious food; and
- Both moderate and severe food insecurity have risen for four years in a row, while malnutrition caused by unhealthy diets remains the leading cause of poor health globally (FAO et al., 2020; Springmann et al., 2018; Swinburn et al., 2019; Willett et al., 2019).

Moderate and severe food insecurity increased from 22% of the world's population in 2014 to 26% in 2019; it is 52% in Africa (FAO et al., 2020). Developing countries bear the greatest burden of malnutrition, with particularly high rates of undernourishment and undernutrition. In recent decades, however, every region of the world has seen a continual rise in obesity, which is now a pandemic. No country has reversed its obesity levels (Roberto et al., 2015). While previously, mainly developed countries faced problems of overweight and obesity, developing countries are catching up, with some exceeding rates in the developed world (FAO et al., 2020)

Different lifestyles and 'food environments' driven by broader societal and economic changes are partly responsible for the shift in populations' nutrition status. Food environments are the broader context in which consumers engage with the food system. It is where they make decisions about the foods they acquire, prepare and consume. The greater availability of ultra-processed foods, high in fat and sugar, in today's food environments encourages consumers to purchase and eat less healthily.

Around the world, market share and power are unevenly distributed among food system actors. Agricultural inputs are perhaps the most concentrated component, as input markets are often dominated by only a few companies. Recent mega-mergers have only exacerbated the concentration. Farmlands and food production are concentrated as well. While 84% of farms are smaller than two hectares, they occupy just 12% of farmland, while producing 30-34% of the world's food (Lowder et al., 2016; Ricciardi et al., 2018). Though countries' food supplies are becoming more diverse, this is thanks more to trade than to national production (Aguiar et al., 2020).

Enhanced soil fertility and pollination are examples of ecosystem goods and services that food systems produce and consume. However, food systems overall also contribute to the crossing of several 'planetary boundaries' that delineate a safe environmental space for humanity (Springmann et al., 2018). Global food production is the largest pressure that humans exert on the Earth (Willett et al., 2019). Food systems, and particularly food production, are a major driver of climate change, land-use change and biodiversity loss, as well as depletion of freshwater resources and ecosystem pollution (Springmann et al., 2018). Food systems emit up to 37% of anthropogenic greenhouse gas emissions, with livestock alone accounting for 12-19% of the total. Food security, especially around the equator, is already being negatively impacted by climate change (IPCC, 2019). The leading cause of biodiversity loss is deforestation for expanded food production (IPBES, 2019). Agriculture consumes up to 70% of freshwater

[6] This section is partly based on Adelle, C. and Dekeyser, K. (forthcoming). Food Systems. In D. Russel and N. Kirsop-Taylor (Eds), *Handbook on the Governance of Sustainable Development.* UK: Edward Elgar.

withdrawals (IPCC, 2019), while nitrogen and phosphorus runoff from agriculture causes aquatic and terrestrial ecosystems to deteriorate and lose their regulatory functions (Springmann et al., 2018). There is wide consensus that soil degradation has reached urgent levels, though we do not yet have reliable maps depicting this (IPCC, 2019).

Economic development, urbanisation, population growth and other trends are likely to increase these environmental pressures too (Béné et al., 2020b). Wealthier households, which are associated with urbanisation, generally consume diets with higher resource-use intensity. If the current trends continue, some food system pressures could increase by half or double by 2050, especially greenhouse gas emissions (87% increase), lands cultivated to crops (67% increase) and water use (65% increase), particularly due to more animal products being produced and consumed (Springmann et al., 2018). This would cause the food system to exceed planetary boundaries. In summary, food systems affect, and are affected by, various sustainability challenges, but are also central to their solutions (Adelle and Dekeyser, forthcoming).

COVID-19 emergence, spread and impact

Besides these general challenges, COVID-19 and the ensuing lockdowns created severe and unexpected pressures on food systems in 2020, on both the supply side and the demand side. First, COVID-19 hit the more labour-intensive production systems hardest, as labourers became sick and migrant workers less mobile. Second, lockdowns hampered food distribution, and social distancing was particularly hard to enforce in informal wet markets. The closure of these markets limited the availability of and access to fresh foods, while certain export and import markets virtually collapsed. Third, the economic effects of lockdowns hindered households' livelihoods, resulting in worse diets. Fourth, nutrition programmes, such as school meal schemes, were disrupted during lockdowns (FAO et al., 2020). As a result of these factors, and others, acute hunger is projected to double to 265 million by the end of 2020 (FAO, 2020).

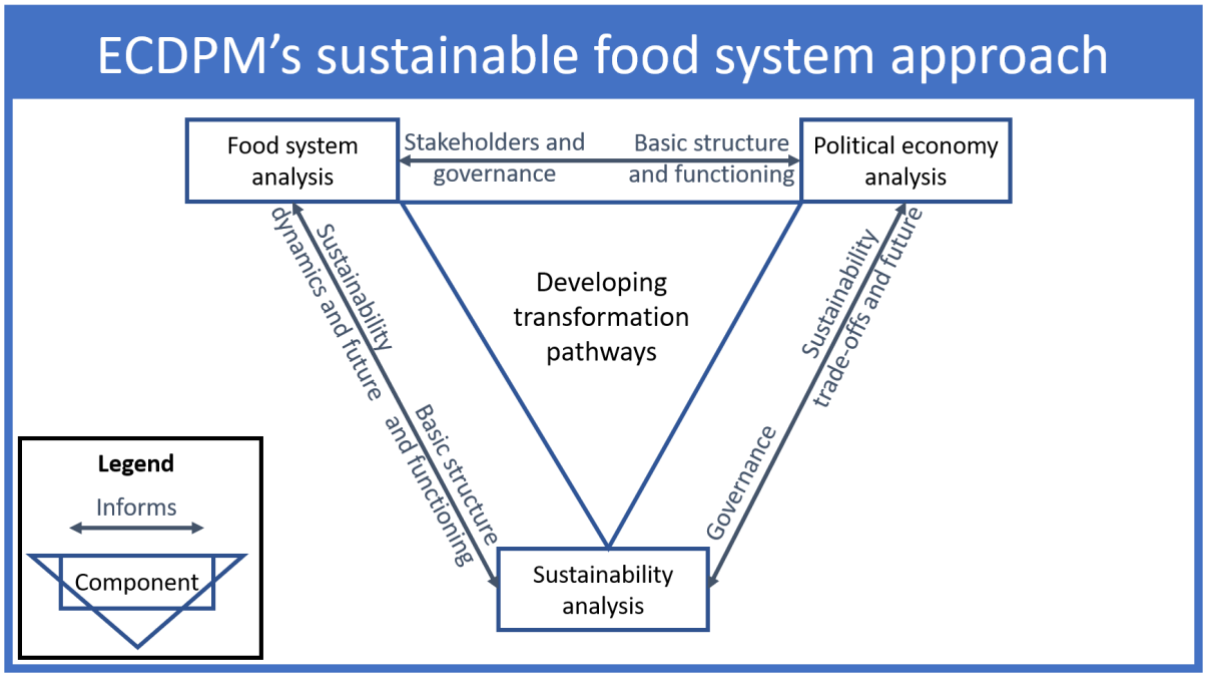
The effects of COVID-19 have spurred new interest in food system resilience, particularly the balance between national production, international trade and measures such as food stocks. Nonetheless, the importance of trade, both national and international, is expected to continue to increase, in order to feed the many growing urban zones in developing countries. At the same time, the pandemic has spotlighted existing issues of import dependency, trade balances, price shocks and sovereignty related to food imports. COVID-19's impacts on food systems have been mostly local, as the global food system showed particular resilience, with only 5% of globally traded calories placed under trade restrictions (IFPRI, 2020). However, like in the food crisis of 2008, governments have been anxious to avoid food price hikes, because of their potential to fuel social unrest. Many governments thus moved to support food systems amid the pandemic, including monitoring food availability and prices in markets; aiding food distribution through temporary food hubs and direct distribution to vulnerable populations; purchasing foodstuffs directly from local producers and other distribution channels; introducing alternatives for school meal schemes; providing financial support to vulnerable people; and developing campaigns to stimulate responsible food purchase behaviour (FAO, 2020).

The emergence, spread and impact of COVID-19 stand to benefit from being analysed through a food systems framework. For example, humans are pushing the agricultural frontier deeper into biodiverse areas. This creates breeding grounds for the emergence and spread of zoonotic disease, as humans, tropical animals and domesticated animals come into closer contact. Proximity to exotic animals played a role in the emergence or spread of HIV, Ebola and Zika, as well as the Middle East Respiratory Syndrome and COVID-19. The COVID-19 virus likely spread through a wet market selling exotic animals, while obesity may be one of the most important predictors of severe COVID-19 illness and mortality. As such, the emergence, spread and impact of COVID-19 interlinks with food system challenges, from deforestation to unsafe food and unhealthy diets. To avoid emergence of other viruses and to ameliorate disease impacts, food systems need to be made more sustainable, not only more resilient.

2.4. ECDPM's sustainable food system approach

ECDPM's sustainable food system approach combines four research components: a food system analysis, a sustainability analysis, a political economy analysis and a transformation pathways mapping. First, the food system analysis helps uncover the key activities, drivers and interactions of the food system under study. Second, the sustainability analysis explores the food system's current sustainability dynamics and future sustainability challenges, including social sustainability characteristics like gender equality. Third, a political economy analysis provides an understanding of the governance of the food system by exploring the dynamic interactions between structures, institutions, incentives and actors. This includes issues of power, such as gender inequalities, are analysed here. Combined, these first three analyses provide an indication of *what* the food system looks like, *how* it operates, *who* makes decisions and *why* these are made, especially in regard to sustainability. Fourth, based on these analyses, transformation pathways are identified that present targeted and politically feasible options for increasing the sustainability of the food system. The feasibility of these pathways improves if stakeholders are incorporated into pathway identification and design. Stakeholders should be selected based on their roles in the food system, as indicated by the food system analysis and political economy analysis components. In short, a **sustainable food system approach analyses and helps in designing and implementing transformation pathways to resolve unsustainable aspects of food systems**.

Figure 2. ECDPM's sustainable food system approach



Source: Dekeyser et al. (2020).

As shown in figure 2, **these four components are interlinked**. We describe them separately here to clarify the rationale and importance of each and to explain the respective steps and methods. However, **our approach is an iterative one**. Every component informs and guides the others, though without any strict chronology applied. Being intertwined, there may be overlaps between the components. Sustainability dimensions, for instance, might emerge from the food system analysis and insights from the political economy analysis might suggest a focus on a certain part of the food system.

Importantly, the choices made during the food system analysis, the sustainability analysis and the political economy analysis – as well as their results and the outcomes of the associated multi-stakeholder dialogue – are mutually supportive ed and improved by the insights from each other. Given the uncertainties involved in all complex change processes, the transformation pathways (our fourth component) are developed adaptively as well, to enable adjustments to be made in response to unexpected changes and to iteratively take into account insights that in the meantime have emerged from one or more of the three analysis components.

Box 2. Political economy analysis as a priority within an Irish food system approach

Complex power relations across actors and institutions underpin formal institutions and policies as well as the informal rules that govern food systems. Power relations matter for the design and implementation of successful food system interventions. This is one reason why food systems are so highly heterogeneous. A food system approach will therefore benefit from the systematic inclusion of political economy analysis. Attention to political economy issues has long been recognised as essential for food system sustainability (Béné et al., 2020a). Political economy analysis can show challenges and opportunities and identify realistic entry points to improve food system outcomes and sustainability (Dekeyser et al., 2020). Including the political economy component can also help in analysis of the synergies and trade-offs emerging from specific transformation pathways.

More systematic development of knowledge on power, politics and institutions, both in the target country in general and in the partner context specifically, could make Ireland's bilateral programme more 'politically savvy'. As badly performing governance arrangements can be a driver of adverse food system outcomes, Ireland could also use political economy analysis to support partners' advocacy for better food system governance. Because the focus is on governance rather than policy, actors beyond government can be involved, such as those from the private sector, the research community, international non-governmental organisations (NGOs), consumer organisations and financiers. As an example, Ireland could support value chain-specific, multi-stakeholder platforms that debate policy improvements by contributing evaluations of synergies and trade-offs between different options. Options explored might include the 'informal rules of the game' as well as formal policies. Political economy analysis can also be used to determine who gets invited to the platform in the first place, and to help identify strategic partnerships.

In summary, food systems generally have complex governance arrangements that involve many actors. They are rarely governed as a system. Rather, they are shaped by governance in related domains, such as agricultural policy or informal market arrangements. Political economy analysis can help Ireland to better understand, collaborate and design interventions for food systems and their governance arrangements.

The presented food system approach offers a **'menu of options' to choose from**. A study may choose, for example, to work on only a few drivers and outcomes of the system. The approach does not prescribe particular strategic choices or sustainability improvements that a project or organisation should aim for. While we recommend integrating all the components, as they inform one another, each project or organisation can decide where its resources are best allocated, perhaps devoting less effort to certain components. Similarly, some organisations may be unable or unwilling to single-handedly undertake the three analysis components together to facilitate the development of transformation pathways; in such a case, collaborating partners may decide to divide tasks based on their respective comparative advantages.

3. The food system approach in practice

Given the novelty of the food system approach, no systematic review of its advantages and disadvantages is yet available. In lieu of that, this section briefly introduces two recent applications of food system approaches. These provide useful insight into how some donors are exploring the use of the food system approach, in these cases, Italy and Netherlands.

3.1. Sustainable Agrifood Systems Strategies in Kenya and Tanzania

Between 2017 and 2019, the Sustainable Agrifood Systems Strategies (SASS) project piloted ECDPM's sustainable food system approach in Tanzania (Bizzotto Molina et al., 2020) and Kenya (Rampa and Knaepen, 2019).[7] First, an analysis was conducted of food system drivers (e.g., demography, drought and regional trade), activities (e.g., food supply, food environments and distribution) and outcomes (e.g., diets, malnutrition and food security) both in the national food systems of each country and in the local food systems of Arusha region in Tanzania and Nakuru county in Kenya. The research was undertaken in close consultation with local stakeholders by a consortium led by ECDPM and involving Italian and local universities. The multidisciplinary team brought together researchers in anthropology, economics, agronomy, biology, nutrition and political science. This broad disciplinary base proved especially valuable given the complex nature and operation of the food systems under study, which were influenced by many factors and subsector dynamics.

First, a food system analysis was carried out, resulting in a **comprehensive map of food system elements and dynamics** for both the local food systems and their interactions with the national food systems. Second, from this map, the **level of sustainability** of the local food systems was explored, including malnutrition rates, pressures on natural resources and economic marginalisation. Combined, the food system and sustainability analyses helped the team understand the current weaknesses of the food systems and key economic, social and environmental sustainability challenges. They also provided a starting point for reflecting on priorities for improvement or transformation of the local systems. With the findings, investigators were able to narrow down the complexity of their analysis, setting boundaries of the studied food systems and deciding on what subsectors, actors and drivers to focus on.

Among the emerging features and opportunities of the local food systems, one stood out: a dualism between commercial, mostly mono-crop export-oriented agriculture, and smallholder farming, which was largely informal, multi-crop and destined for local markets. A key sustainability challenge was the lack of diversification in food production and consumption, with the associated social and environmental risks. This led the SASS project to focus on diversification as a way to improve the economic, social and environmental sustainability of the local food systems, with particular emphasis on understanding the current role of indigenous vegetables within these systems and their potential for increased sustainability.

Third, for the political economy component, an **in-depth analysis of the governance** of the food systems (within the set boundaries) was undertaken. This provided clarity on the key policies, processes and main actors in the national and local food systems. It also shed light on their dynamics, in terms of policy and investment decisions, political traction, economic incentives, power relations and partnerships. Through the policy analysis and stakeholder

[7] SASS (2017-2020) is a multidisciplinary consortium funded by the Italian Ministry of Education, University and Research, and comprised of ECDPM, the University of Milano-Bicocca, the Catholic University of the Sacred Heart, the University of Pavia and the University of Gastronomic Sciences.

mapping, drivers and constraints could be identified for more sustainable food systems in the Arusha region and in Nakuru county.

Lastly, from these analyses, several **pathways to improved sustainability** were identified in consultation with local stakeholders. These were organised as related to production, distribution, consumption or governance, and discussed to explore synergies and trade-offs between the different proposed interventions and categories (figure 3a).

Implementation of the four components was **iterative**. Thus, the research and dialogue activities under each component benefitted from insights that had emerged in the meantime from one or more of the other components, including new evidence from the political economy or sustainability analyses or new information about the feasibility of a proposed transformation pathway.

In **the case of Kenya**, the piloting of the approach led to **interesting choices and results**. Nakuru county was experiencing growth in economic opportunities and jobs, especially in export-oriented floriculture and horticulture. However, the lack of diversification within the local food system suggested unsustainable outcomes in the social and environmental dimensions. Nutrition instead of caloric security was the key issue to focus on in this part of Kenya. Furthermore, food affordability appeared more problematic than food availability. The depletion of natural resources caused by mono-cropping pointed to an urgent need to address the impact of different production models on the quality of soils. A 'systemic bias' in favour of staples and export-oriented horticulture, and against indigenous vegetables, was also identified. Indeed, attracting foreign direct investment for agricultural exports had received much more policy support than the many small and medium enterprises (SMEs) producing for the Kenyan market.

Thanks to the insights provided by the food system approach, the SASS project chose to prioritise and deepen analysis in several areas: soil quality within the production part of the food system; nutrition and price dynamics within the distribution and consumption parts; and challenges and opportunities to diversify the food system beyond maize and large-scale horticulture; and concentrating on better understanding of SMEs as actors that could receive more support in future policies and investments.

The political economy analysis shed light on the factors underlying the bias against indigenous vegetables. In Nakuru's food distribution system, for instance, indigenous vegetables had limited entry to rural and urban markets, which constrained incentives to produce and consume more of them. This was a consequence of the nature of the vertical and horizontal linkages between key actors in the distribution subsystem. Such linkages are shaped by the array of interests, opportunities and constraints that actors in the food system face. In the study region, informal and spontaneous cartels formed by traders and the 'cost of formalising' the indigenous vegetable value chains contributed to make demand for these vegetables unstable and uncertain among supermarkets and individual consumers (e.g., due to safety concerns and uncertainty about contracts). This discouraged growth in production and consumption.

Based on these analyses, entry points for food system diversification and improved sustainability were identified and the feasibility of related policies and investments were discussed iteratively with Nakuru county stakeholders. This led to selection of four transformation pathways to maximise synergies and minimise trade-offs between proposed interventions:

1. Policies and investments to improve the supply of smallholder-saved seeds (a pathway focusing on production drivers and also improving environmental outcomes of the food system);
2. Measures to incentivise the processing of vegetables to extend shelf-life and create new market opportunities (focusing on distribution drivers and improved economic outcomes, e.g., from drying vegetables and blending them into maize flours);

3. Policies and investments to improve market access (focusing on consumption drivers and improved nutritional outcomes of the food system, e.g., via public procurement of vegetables for hospitals and schools); and
4. Creation of a multi-stakeholder platform including often-neglected informal actors to coordinate support for indigenous vegetable value chains (focusing on enhancing governance at the system level). Specific implementation steps, roles and responsibilities, and public-private partnerships that could contribute to these four pathways were in the process of being designed, under the leadership of the Nakuru county administration.

The **case in Arusha, Tanzania,** was similar. Like Nakuru county, malnutrition, especially stunted growth in children, was high in the Arusha region of Tanzania, while production was dominated by small-scale farming. The population here was growing fast, and food distribution was mostly informal. Tanzanian food policy, too, was focused mainly on staples, largely bypassing nutritious indigenous vegetables. Production and consumption of the latter were hampered by issues such as perceptions of low social status, lack of extension support, unfamiliarity, food safety concerns and low seed quality. The food system mapping and political economy analysis provided a comprehensive view of Arusha's food system and actors. Solutions to support diversification were proposed in partnership with and validated by local stakeholders with the aim of maximising sustainability gains, based on synergies with other domains. Several of the proposed interventions were developed into transformation pathways to resolve specific problems that hampered diversification, including identification of policy entry points and coalitions of possible actors to facilitate further design and implementation. Specifically, four interventions were elaborated: (i) a multi-stakeholder platform for stronger value chain governance; (ii) more informed choice through extension support; (iii) improved food safety along the value chain; and (iv) an information campaign for greater food knowledge. Discussions about the implementation of these pathways are under way.

These experiences in Tanzania and Kenya help clarify the **relevance of a food system approach for policymakers and development practitioners**. The approach enables identification of 'bottom lines' about 'why' a food system functions as it does, 'who' is responsible for the current dynamics and outcomes, and 'how' to improve food system performance and sustainability. This helps in navigating the extreme complexity found in food system dynamics. In this case, the approach supported evidence-based choices on where to focus multi-stakeholder dialogue and interventions, in terms of levels (local, national or international), subsectors (priority value chains, food system activities and parts of the food system) and actors (e.g., who has influence or should be prioritised for support at a particular level or subsector within a system). The approach also provided different policy and investment options for improving the social, environmental and economic sustainability of the food systems, each option with its own trade-offs and synergies. Finally, all this was done in a participatory and iterative way which facilitated identification of promising initiatives, partnerships and policy processes and provided indicators of where opposition might be encountered or political traction found for the selected solutions. An inclusive multi-stakeholder dialogue and local cooperation activities crucially complemented the multidisciplinary research throughout the whole process. The iterative process meant that the four components could be dynamically reapplied with information from the others. This allowed for adjustments in response to unexpected changes, experiential learning and policy experimentation. This ultimately helped policymakers and practitioners develop more coherent, effective, politically feasible and context-appropriate interventions for transformations within the food systems.

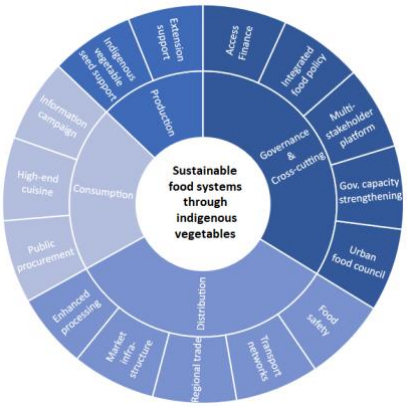
3.2. Enhancing food systems in Nigeria

Posthumus et al. (2018a) used a food system decision-support tool to analyse Nigeria's food system and identify opportunities for investment (figure 3b). This was part of a series of food system analyses that also included Ethiopia and the Sahel. Application of the tool was at the request of the Dutch Ministry of Foreign Affairs and Ministry of Agriculture, Nature and Food Quality. They sought to better understand how the food system approach could be used to support Dutch embassies in their official development assistance (ODA) programming and the influence of Dutch policies in low-income countries. The pilot elicited some criticism and concern from Dutch policymakers and development cooperation staff due to the lack of evidence of the food system approach's practical relevance. These concerns were raised in an intense debate in the Netherlands among professionals from policy, research and practice circles interested in the food system approach. Their interest and inputs led to the creation of a food systems 'Community of Practice' dedicated to exchanging information on how food system approaches were being brought into practice, to identify lessons learned and to sketch future prospects.[8]

The decision-support tool consisted of seven steps, leading to creation of a 'map' illustrating the underlying structures of the food system. With this map, stakeholders could be identified and a programme strategy developed. The tool's first step aimed at defining an existing policy objective, to better delineate the food system that would be the focus of analysis. That policy objective might be food and nutrition security or better access to finance for agriculture in a certain country. The second step was a mapping of the food system, particularly indicating trends and events, interdependencies between different elements, and possible trade-offs and synergies between elements, based on figure 1. The third step was to identify causal processes between the different food system elements and the chosen policy objective. Here feedback loops emerged which could be particularly worthwhile for interventions. Fourth, 'archetype' system behaviours were identified; these are recurrent patterns of behaviour in a system. The fifth step was to identify 'leverage points' for the archetypes; in other words, entry points with maximum transformative potential with minimal effort. Sixth, actors with influence on or interest in achieving the policy objective were mapped, together with possible mechanisms to influence these actors. The tool's last step was to translate the results into a policy strategy based on the attainable leverage points and the influence of the actors that could be influenced (Posthumus et al., 2019).

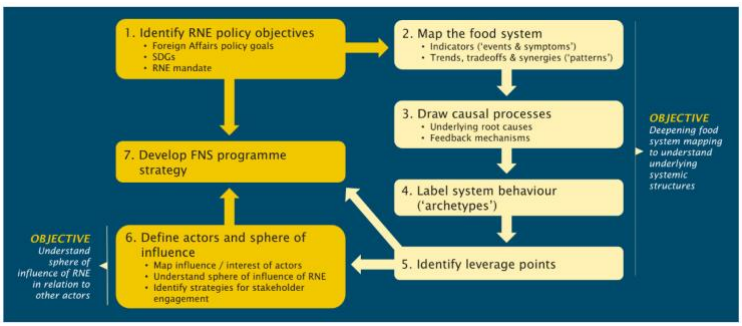
Figure 3. Illustrations for case 1 and 2

a. Entry points to improve indigenous vegetables in Arusha's food system



Source: Bizzotto Molina et al. (2020)

b. Objectives and steps applied in the food system decision support tool



Note. Food and Nutrition Security (FNS), Royal Netherlands Embassy (RNE)
Source: Posthumus et al. (2018b)

[8] https://knowledge4food.net/theme/food-systems-approach/

The tool was applied to **Nigeria's food system and policy**, exploring six policy themes: access to finance, agribusiness development, youth employment, inclusive economic growth, climate change adaptation, and food and nutrition security. The exercise produced essentially a macro view of the Nigerian food system. Then four 'archetypes' of system behaviour were identified: 'growth and underinvestment', 'success to the successful', 'fixes that fail' and 'tragedy of the commons'. The archetype 'success to the successful', for example, represented a system behaviour in which those who started with greater resources were able to attract more and more. Then leverage points were identified for the six policy themes. Here, lack of investment was singled out as a foremost constraint. A stakeholder analysis was carried out for each policy theme using an influence-interest matrix. Thus, an overview was obtained of who needed to be engaged on the different policy themes. Afterwards, policy recommendations were formulated to improve Nigeria's food system.

The value of the analysis for policymakers – particularly those in the Dutch government – resided in the quick scan of the food system that was produced, as well as the identified leverage points for feasible interventions to achieve systemic change. Given that the Dutch government has neither the mandate nor the resources to address all systemic issues in the Nigerian food system, it must therefore focus more on a subsector or value chain within a certain region. The food system mapping provided insights into where, and with whom, this could best be done. As such, the mapping could guide strategic decisions, for example, the choice of which theme or nexus to focus on, while also helping to bring together a coalition to intervene on the chosen theme or nexus.

3.3. Advantages of the food system approach in the cases

The tools used in both cases aimed to provide policy recommendations for the food system under study. In both applications, comprehensive 'maps' were created showing the connections between the many relevant topics, actors and policies. Both external drivers and internal system components were identified. A main advantage of the food system approach was that multiple intervention options became available, each with their own entry points and coalitions of stakeholders. As such, different routes and alternatives for interventions were recognised, each with their own sets of advantages, obstacles and stakeholders. Going forward, this comprehensive mapping can form the basis for more coherent, effective and context-appropriate interventions. It can also provide a better understanding of the positioning of interventions within the wider system, and potentially feed into the development of interventions to address larger systemic issues (Brouwer et al., 2020). For example, the pathways developed for Nakuru county (case 1) are being followed-up by the AgrInvest project, which is utilising the acquired information and the partnerships and networks built to navigate bottlenecks hampering private investments for improved food system sustainability.[9]

[9] The FAO-led AgrInvest project is funded by the Italian Ministry of Foreign Affairs and International Cooperation, and piloted by ECDPM in Burkina Faso, Niger, Kenya and Ethiopia.

4. Adopting a food system approach: Challenges and opportunities for Ireland

4.1. Is a food system approach right for Ireland?

Ireland's international development programming recognises that investment in agriculture and rural development is one of the most effective ways to support transformative and inclusive economic growth. It also promotes improved resilience and sustainable resource management and livelihoods. Ireland's historic experience of hunger continues to resonate, which has led to sustained action to address the immediate impact and structural drivers of hunger and undernutrition.

Ireland's current engagement includes support provided via a number of modalities and funding channels, both at the headquarters level and through the bilateral work of Ireland's embassy network. Headquarters-level funding includes core support to multilateral institutions such as the World Food Programme, the International Fund for Agricultural Development and the Food and Agriculture Organization. Headquarters-level funding is also provided to civil society partners (Concern, GOAL, Self-Help Africa, Trocaire, VITA, Misean Cara, etc.), and both domestic (Teagasc, IFIAD) and international (CGIAR) research organisations.

At the embassy level, too, Irish ODA is managed and distributed via various modalities, in line with country-specific programmes aimed mainly to promote sustainable and inclusive agricultural and rural development. Through these programmes, funding is allocated across bilateral partners, reaching national and local government agencies, multilateral organisations, civil society partners, and domestic and international NGOs. Examples of embassy-level engagements are the following:

- In Ethiopia, support to the Agriculture Transformation Agency to accelerate inclusive growth of the sector and support to a consortium of NGOs (SOS Sahel, Farm Africa, VITA and Self Help Africa) to promote climate-smart agricultural policy, research and practices to benefit smallholders;
- Participation in the 'Linking Agriculture and Natural Resource Management towards Nutrition Security' programme with Welthungerlife in Sierra Leone;
- Contributions to the World Bank's agriculture sector-wide approach programme in Malawi for sustainable agriculture practices;
- Work with the International Potato Center in Mozambique to promote nutrition-sensitive agricultural development around orange-flesh sweet potatoes; and
- Support to the Zambian non-profit organisation, MUSIKA, in its initiatives to strengthen nutritious food value chains via technical and financial support to agrifood small and medium enterprises.
- Support to the Agricultural Markets Development Trust in Tanzania to accelerate inclusive growth of selected value chains

In 2018, Ireland provided approximately €66 million in ODA across its various modalities and funding channels to support sustainable and inclusive agricultural and rural development. Roughly €27 million was provided via bilateral engagement by Irish embassies; €10 million was provided to civil society partners; €25 million went to multilateral organisations; and €4 million went to global programmes and policy partners.

Ireland's four policy priorities for international development, as set out in 'A Better World', are gender equality, reduced humanitarian need, climate action and strengthened governance. All of these **are linked to food systems**. Gender inequality (e.g., less power and economic opportunities) leads to worse malnutrition for women; food insecurity is on the rise in part due to a rise in conflict; food systems are a substantial contributor to, and impacted

by, climate change; and coherent and effective governance of food systems is often lacking. Development cooperation that targets extreme poverty, intergenerational cycles of malnutrition and unpaid gender roles (e.g., child rearing), all of which are predominantly rural, contribute to the goal endorsed by Ireland of 'reaching the furthest behind first'.

Given the advantages of food system approaches, as outlined in previous sections, adopting such an approach could benefit Ireland's ODA programming and policy influencing. In particular, a food system approach could bring out the linkages between food systems and Ireland's four policy priorities, and it could help in identifying the most promising sustainable development nexuses and entry points for transformative change to achieve multiple policy priorities simultaneously.

For example, supporting effective land registration can help protect women's access to land and strengthen land governance, while also reducing gender discrimination. Similarly, strong governance is crucial in climate change adaptation and mitigation in relation to food systems, from sustainable diet communications to reducing waste and losses in value chains. Moreover, the political economy component of a food system approach can indicate whether current conditions are right for support to a certain intervention in a given context, as aligning interventions with stakeholders' needs is crucial for success in implementation.

Given the potential benefits, what would it mean for Ireland to adopt a sustainable food system approach in its ODA programming and policy influencing? What would the implications be?

4.2. A food system approach at 'strategic' and 'operational' level

In general, development cooperation organisations supporting third parties can use a sustainable food system approach at two complementary levels. **First,** the approach can be used primarily at the 'strategic' level, to reframe the narrative of an organisation's interventions while supporting partner countries and actors in adopting their own food system approaches, reflecting their own priorities. This would not necessarily significantly change the organisation's own cooperation activities and projects, beyond better contextualising these and their core objectives within the food systems they operate in. **Second,** the food system approach can be taken further, to the 'operational' level. Here, the organisation would rethink and modify its own core interventions by developing an overarching 'food system strategy' to apply to all of its development cooperation activities. This strategy would guide the programming of all relevant cooperation activities at HQ level and in partner countries (or support to specific actors) in line with local circumstances.

Though Ireland could choose either of these options, the choice does not have to be a binary one. A combination of the two options could be pursued over time, either sequentially or in parallel, while piloting use of a food system approach. The **choice of adoption at the strategic and operational levels will determine the scope and resource intensity of the food system approach** for Irish development cooperation. The depth of the implications will also depend on the specific objectives of the food system approach, and how much and how quickly Ireland is willing to invest in it. Choices would also have to be made about how normative Ireland wants to be in prioritising specific sustainability objectives (e.g., climate mitigation, gender equality, and malnutrition, among others) at the partner country level, in order to contribute to the SDGs at the global level. Considerations like these will ultimately determine the exact parameters of Ireland's food system approach to ODA.

Adopting a food system approach at the **strategic level would be relatively straightforward for Ireland**, as this would mean mainly a **better contextualisation** of currently planned agricultural cooperation activities, and potentially health and environmental activities, within the relevant food systems. Strategic-level adoption also implies that Ireland could support partners to adopt their own food system approaches, using replicable and/or retrofitted tools and processes that Ireland employs in developing its own national food policy. At this level, use of a food system approach could provide better analyses of activities, drivers, outcomes and trends related to food in given contexts. Bringing together knowledge about different parts of a food system can create a shared understanding amid complexity, and provide a basis for coherent action. It would also provide a more uniform narrative for Irish development cooperation projects, even those not necessarily guided strategically by the food system approach. The enriched context might well highlight relevant but overlooked actors and potentials for synergies with projects outside agriculture and the food sector (e.g., health, environment, rural economy), again without necessarily changing work areas currently programmed or moving beyond the four thematic priorities set in 'A Better World' when selecting new projects.

Ireland could **offer help to partner countries and actors in designing their own food system approaches**. Such support would leverage lessons, experience and expertise available in Irish public institutions and the mechanisms used in Ireland to develop national strategic policy. An example is the iterative inter-institutional and inter-sectoral process used to design and review Ireland's food strategies, such as Agri Vision 2015, Food Harvest 2020 and Food Wise 2025. That process employs an effective multi-stakeholder approach and implementation methodologies to 'join up' thinking across government and industry, to achieve consistency and coherence with the private sector and farmers, and to streamline use of public funds. Familiarising partner countries with such processes could put them in a better position to develop their own food system approach and strategies. Outreach to 'externalise' Ireland's own expertise and processes has already begun, particularly with the National Task Team on Rural Africa (NTTRA)[10] and Sustainable Food Systems Ireland (a consortium of five Irish government organisations). These are vehicles for sharing Ireland's core agrifood expertise with partner countries to develop safe, efficient and sustainable food value chains together.

Adopting a sustainable food system approach at the operational level would imply development of an overarching 'food system strategy'. Ideally, all Irish development programmes and projects related to food, from the headquarters level to embassy interventions, would be aligned with such a strategy, hence contributing to more sustainable food systems at various levels. **This option can open up new working areas**, such as new nexuses between development challenges and opportunities. A food system approach can identify underdeveloped working areas with substantial potential or need. Thus, new value chains and parts of a food system without previous Irish development cooperation precedent could surface. The path of using a food system approach to define intervention objectives and actions in specific countries or contexts could be guided by Ireland's four policy priorities for international development and previous experience. Beyond these, however, it could potentially lead to innovative programmes and projects within Ireland's ODA programming, given that at the operational level a food system approach brings out effective entry points for transformative change. More synergistic interventions could be identified from the earlier-mentioned 'menu of options' by which trade-offs and synergies are made more explicit. Connections to policy domains beyond the agriculture and food sector would similarly become more explicit.

Greater multi-stakeholder engagement at the local level is another **implication of choosing the 'operational level' option** for Ireland's food system approach. Locally based multi-stakeholder partnerships are often proposed for inclusive food system governance as a way to integrate many actors from different sectors. This implicitly recognises

[10] The NTTRA was established as an Irish follow-up to the report of the EU Task Force on Rural Africa, released in March 2019. NTTRA has taken a joint approach, involving all relevant stakeholders, aimed at advancing rural development and food systems transformation across the African continent.

that no one actor, including the government, has enough power to make transformative change to, or govern, a food system (Harvey & Trewern, 2018; Pinstrup-Andersen & Watson II, 2011; Rikolto, 2019; UNDP & GEF, 2017; van Berkum et al., 2018). Another implication would be that new projects would be accepted and funded by Ireland only if they fit within the overarching food system strategy. Operational-level adoption is the most resource intensive option, as a new operational framework, alignment activities for the different levels of Irish development cooperation, and a new monitoring and evaluation framework would be needed, aligned with the overall strategy.[11] However, this option would probably also be the most effective in yielding coherent interventions that maximise resource use for food system impact.

Many organisations interested in the food system approach have thus far adopted it mainly at the strategic level, changing their narrative but not their development cooperation practices. The **recommended way forward for Ireland in adopting a food system approach is to gradually combine the two options**, starting with use of the food system approach at strategic level and introducing it progressively at the operational level. This would envisage trialling in some partner countries, better contextualisation of currently planned agricultural development activities within the broader food system, and supporting partners to adopt their own food system approach using, when applicable, Ireland's expertise and food policy development tools and drawing on the outputs of the National Task Team on Rural Africa. In the meantime, a process could be launched to develop an overarching food system strategy for Irish development cooperation. That strategy would benefit not only from experiences with better contextualisation of cooperation activities in the relevant food systems, but also from trials using the food system approach in several countries to programme new actions related to food systems.

This dual-track way forward, with the accompanying strategic and operational choices, can be **a vehicle for outlining a food system approach for Ireland's ODA**, considering the chosen scope and resource intensity and other implications for Irish development cooperation. Experiences so far, including those facilitated by ECDPM, suggest that adoption of a food system approach can ensure that certain themes – such as sustainability objectives and political economy considerations – are included in food policymaking and ODA programming. It is, however, Irish stakeholders that will determine the parameters of a food system approach, for example, by discussing the issues and options presented in this paper and answering key associated questions. Certainly answers will be needed regarding the following:

- Timeframe and resources for adopting a food system approach;
- Preparedness to work on development nexuses (e.g., climate-malnutrition, or poverty-gender inequality) beyond the thematic priorities of Irish specialisation so far; and
- How normative Ireland is prepared to be in prioritisation of food sustainability objectives when programming ODA and influencing policy at the partner country level.

4.3. Opportunities and challenges for Ireland

In addition to the general advantages and disadvantages of food system approaches (section 2), a food system approach could bring **opportunities and challenges specific to Ireland** (Table 1). Among the **opportunities** are a leading start in the upcoming processes, conferences and summits for conceptual development and expert

[11] Given its novelty, there is little literature and consensus on what the food system approach implies for monitoring and evaluation frameworks. At this stage it seems safe to assume that programmes and interventions designed using a food system approach would still adhere to the standard logical framework and other monitoring and evaluation tools currently in use (e.g., theories of change, inputs, outputs, outcomes and impacts, assumptions, risks). This is despite the fact that, in broad terms, impacts, assumptions and risks are more difficult to gauge given food systems' complexities.

exchanges, especially the 2021 UN Food Systems Summit and the recently launched EU Farm to Fork Strategy. Various **EU processes** related to food systems and development cooperation offer Ireland and other EU member states opportunities to coalesce around a common sustainable food system approach. Such an approach could, for example, allow for a more effective division of labour in partner country support, based on a better understanding of local needs and respective comparative advantages. A shared understanding of synergies and trade-offs across value chains could emerge from a common food system approach, providing a great opportunity for coherence and collaboration across EU institutions, member states and financial institutions ('Team Europe') and with other development actors. Donors are known to 'cherry pick' certain value chains to support, often without coordination with other donors and with little analysis of the merits and sustainability of that value chain and its relation with the rest of the food system.

Box 3. The EU Farm to Fork Strategy

The EU 'Farm to Fork Strategy', at the heart of the 'European Green Deal', addresses the challenges of sustainable food systems and is central to the Commission's agenda to achieve the Sustainable Development Goals (European Commission, 2020). The Strategy aims to accelerate a European transition to a food system that (i) has a neutral or positive environmental impact; (ii) helps mitigate climate change and adapt to its impacts; (iii) reverses loss of biodiversity; (iv) ensures food security, nutrition and public health; and (v) preserves food affordability while incorporating fairness and competitiveness (ibid.). In summary, the EU wants to build a healthier and more sustainable food system that better balances environmental, social and economic concerns.

The Farm to Fork Strategy is not yet set in stone, as it must be adopted by the member states and can be changed. Moreover, no EU-level legislative proposal for a sustainable food system framework is expected before the end of 2023. The Farm to Fork Strategy will add constraints to the Common Agricultural Policy, such as on pesticide use, but will also go further, to address food production issues by incorporating distribution, consumption and governance changes to the EU's own food system. As such, Farm to Fork is arguably the world's most ambitious attempt yet to explicitly target food system sustainability. It also represents the largest policy shift since the food system concept gained currency, roughly ten years ago. Because of its potential impact, the Farm to Fork Strategy is likely to spur further development of food systems research, as many topics arising from food system analysis remain controversial, such as the role of trade, organics and genetic modification in sustainable food systems. **The Farm to Fork Strategy also has an external dimension, with the explicit ambition to promote more sustainable food systems globally, including through development cooperation and international 'Green Alliances'**.[12] Given that low-income partner countries face food system sustainability challenges that require more integrated responses, the Farm to Fork Strategy and Green Alliances could offer an overarching framework for coordination and coherence across 'Team Europe' interventions to support more sustainable food systems in partner countries.

The term 'Team Europe' was originally launched in April 2020 in reference to a package of combined resources from Europe to support partner countries in their responses to COVID-19. However, the 'Team Europe' label is already being applied to other coordinated initiatives, such as preparations for the EU's joint processes for 2021-2027 programming, led by the European Commission's Directorate-General for International Cooperation and Development (DEVCO). DEVCO plans to conduct 'rapid food system assessments' as part of the pre-programming exercises in around 40 low-income countries. All this, possibly under the overarching political and policy framework provided by the Farm to Fork Strategy (Box 3), could potentially lead to establishment of a common 'Team Europe' food system approach. This could support and influence the development of an Irish food system approach too.

[12] *"Through its external policies, including international cooperation and trade policy, the EU will pursue the development of Green Alliances on sustainable food systems with all its partners in bilateral, regional and multilateral fora"* (European Commission, 2020: 17).

Another opportunity is that, despite the fact that food system approaches are still in their infancy, there is an increasing number and quality of available cases, guidelines and toolboxes to help Irish stakeholders define parameters for an Irish approach (Box 1). For instance, the ECDPM approach presented in section 2 could guide development of an Irish approach, whether at the 'strategic' or 'operational' level, or both. As illustrated by the presented cases, that framework provides a flexible 'menu of options' for designing coherent, effective and context-appropriate interventions to advance food system sustainability. By iteratively combining food system analysis, sustainability analysis and political economy analysis, the ECDPM framework explores interactions and identifies entry points for transformative change. Moreover, it can be applied at different levels of complexity of a food system without prescribing particular strategic choices. The foremost **challenge** that Ireland will face in designing and adopting a food system approach is existing departmental silos, which are unconducive to working collaboratively.

Table 1. Summary of opportunities and challenges for designing and adopting an 'Irish-owned' food system approach

Opportunities	Development of an Irish-owned food system approach can be supported, influenced and used by ● Task Force Rural Africa (set up by the European Commission) and the National Task Team for Rural Africa established to develop an Irish response; ● Ireland's agri-food strategy 2030; ● 2021 UN Food Systems Summit; ● EU Farm to Fork Strategy, particularly its external dimensions; and ● EU joint programming processes, led by the Directorate-General for International Cooperation and Development (DEVCO). An Irish food system approach can be integrated to different degrees' in ● Global programmes and policy partners (supported by Ireland); ● Irish NGOs, businesses and research institutions working in food systems; ● Ireland's embassies abroad and its bilateral country programmes; and ● Multilateral and vertical funds.
Challenges	● Sustainable food system approaches are still in their infancy; ● Large data gaps remain, particularly regarding informal parts of food systems; ● Policy alignment and coordination within and between the different levels of Irish development cooperation, as actors in different multilateral and vertical funds, Irish-supported NGOs, and bilateral aid programmes may decide to implement the food system approach differently; ● Adopting a food system approach requires capacity building, because of the novelty of the approach in Irish development cooperation, both within Ireland (staff) and with partners; ● Broader, more systemic approaches might be hampered by path dependency coalesced into departmental silos; and ● Adopting a food system approach can be time-consuming and resource-intensive, particularly at greater levels of depth.

4.4. Prioritising some aspects of sustainability over others

The focus on sustainability has undeniably increased with the 2030 Agenda. More broadly, too, there is growing acknowledgement of the urgent need to simultaneously target social, environmental and economic sustainability. This imperative will be even greater when 'building back better' post-COVID. It is particularly important to consider the **opportunities offered by the food system approach to guide future Irish efforts towards sustainability**, including the related potential strategic and operational changes to Irish development cooperation.

Sustainability is a multi-dimensional concept,[13] with certain difficult to overcome trade-offs between social, environmental and economic goals. Focusing on one dimension, such as climate, can come at the expense of another dimension, such as food security or biodiversity. As of 2018, 130 of the 193 Irish agrifood initiatives in Africa was focused on climate resilience[14] meaning that a single dimension of sustainability has been prominently prioritised. The trade-offs between these climate-resilience projects and other sustainability dimensions are not always clear. For example, conservation agriculture (no tillage, mulching and crop rotations) is generally understood as beneficial for climate resilience. However, some recent articles indicate that conservation agriculture does little for food security in Africa and keeps African farmers poor (Corbeels et al., 2020; Michler et al., 2019). A sustainable food system approach can **help analyse and consider such trade-offs**, which are invariably encountered in strategy, intervention, company and value chain processes, among others.

Food system analysis can be used to design Irish bilateral programmes as well, to select projects and steer interventions to maximise sustainability synergies. **At the strategic level**, this could entail selecting the most pressing nexuses related to food systems (e.g., food security-climate change-poverty or nutrition-biodiversity-gender equality) rather than those that are less pressing (e.g., economic development and obesity). Selecting the former nexuses over the latter would mean framing the future of food systems within a climate-resilient and undernutrition-free environment, but with less attention to the rise of obesity. Trade-offs in selecting one nexus over another become clearer with a food system approach. **At the operational level**, selection of a climate-hunger nexus could mean (i) choosing projects that advance the climate resilience of smallholders, as they are the largest undernourished group; (ii) recommending to partners that they gradually shift towards value chains that are more climate resilient; and (iii) advancing climate-resilient business models.

Box 4. Food system analysis in humanitarian contexts

As every human is embedded within multiple food systems, food systems are linked to humanitarian contexts. Most chronically food insecure people live in countries affected by conflict. Conflict is a common denominator in situations of severe food crisis and recent famine, though weak institutions and climate-related events can exacerbate conflict's impacts (FAO et al., 2017). At the same time, food insecurity and malnutrition can drive conflicts. For example, some claim a relation between climate change, drought-induced migration of farmers and the 2011 Syrian uprising. Comprehensive context analyses such as food system analysis might be too slow in fast-developing humanitarian contexts, where quicker interventions are needed to provide for basic security, shelter and food needs. Specialised tools already exist for this.

Generally, food system analysis could be helpful before conflict erupts, as it can provide an indicator of the resilience of a food system in relation to potential conflict. It can also be used post-conflict, to point to opportunities for building more resilient food systems and societies. For protracted crises, the World Food Programme developed the 'Fill the Nutrient Gap' approach, which looks at food price fluctuations and food system inefficiencies that impact the affordability of a nutritious diet (WFP, 2020). Its analysis identifies entry points for strengthening food systems and includes a policy dialogue aimed at implementing immediate actions for vulnerable people. This tool seems to focus on specific components of a food system, rather than being broad, to offer a faster deep dive into nutrition issues. As such, the needs of a certain project or issue seem to have guided the selection of tools.

[13] For a list of food system sustainability indicators, see Béné et al. (2019).
[14] Info by the National Task Team on Rural Africa.

5. Next steps and conclusion

5.1. Recommended next steps

This paper has highlighted advantages and disadvantages of food system approaches to help Ireland with the design of a food systems approach to guide and contextualise Ireland's food-related development cooperation activities. Given the interconnected nature of the sustainability agenda and the development challenges of complex environments, future food-related sustainability and development interventions should ideally be designed in recognition of this complexity and interconnectedness, lest inefficiencies and waste continue. While forecasting is difficult and uncertain, the future is unlikely to be less complex and interconnected than the present. Food system approaches help us to analyse, **understand and decide in these complex environments**, resulting in more coherent, effective and context-appropriate interventions.

Sustainable food system approaches are still in their infancy. Moving now to design and adopt a food system approach that is fit for the future will give Ireland a leading start in this emerging area of expertise, benefitting both its own programmes and its partners. **Table 2 presents possible next steps for designing and adopting a food system approach**. In short, the process could begin with initiation of a series of meetings and workshops with key stakeholders. These would aim first to outline an Irish food system approach and then to debate it within the broader development community, adjusting it as needed. Pilots and further adaptation would follow. Ultimately, an online repository could be created to serve as a learning, dissemination and discussion tool on food system approaches generally and on the experiences of the Irish food system approach specifically. This could both inform the Irish approach and provide a vehicle for dissemination to other countries and stakeholders.

5.2. Concluding remarks

In today's increasingly complex and interlinked world, we need approaches for navigating complexity, to help us analyse, understand and decide. This is especially true for food-related development and sustainability challenges, which span multiple domains, actors and connections. This paper introduced the concept of food systems, debated its advantages, disadvantages and transformative potential, and presented ECDPM's sustainable food system approach based on Dekeyser et al. (2020). Discussions of two recent applications of the food system approach in practical cases highlighted its added value for practitioners and policymakers. Furthermore, we outlined several opportunities and challenges for Ireland in designing and adopting a food system approach. In the end, we recommended that Ireland look to adopt a food system approach that gradually combines the strategic- and operational-level options, and suggested next steps for such a process.

Early in this process, Irish stakeholders will need to determine the parameters of an Irish sustainable food system approach, for example, by discussing the issues and options presented in this paper and answering the key associated questions. Section 4.2 presented several of these, such as on the timeframe and resources available for designing and implementing an Irish sustainable food system approach.

Table 2. Possible next steps for designing and adopting an Irish sustainable food system approach

Year	Goal	Stakeholder	Process	Outcome
2020-21	Designing Ireland's sustainable food system approach.	Ireland's Department of Foreign Affairs; Food system experts; Coalition of Irish development experts and institutions in agriculture, nutrition, health, gender and environment; Partner countries.	Virtual meetings and workshops to discuss the food system concept and if/how it can add value by providing strategic guidance; Trialling better contextualisation of agricultural cooperation; Supporting partners to adopt their own food system approach benefitting from Ireland's experience.	Draft of Irish food system approach.
2021-22	Debating and adjusting sustainable food system approach; Developing an overarching 'food system strategy' for Irish development cooperation; Piloting; Adapting.	Ireland's Department of Foreign Affairs; Food system experts; Coalition of Irish development experts and institutions in agriculture, nutrition, health, gender and environment; Irish embassies in developing countries. Partner countries	Further development of the Irish food system approach through broader feedback, including from international conferences, summits and exchanges; Implementation of one or more pilot of the Irish sustainable food system approach, in line with the overarching food system strategy.	Improved version of Irish food system approach; Draft of overarching food system strategy for Irish development cooperation; First results of piloting.
2023	Development of a digital food system knowledge repository.	Ireland's Department of Foreign Affairs; Food system experts; IT developer.	Tools, methods and experiences bundled in an online repository used to inform further food system work.	Irish food system repository as a learning, dissemination and discussion tool.

As a final note, we present of a list of other key questions that will need to be answered in the short term:

- What level of resources should be dedicated to the development, piloting and mainstreaming of a food system approach for Ireland's development cooperation?;
- Should the implementation of the EU's Farm to Fork Strategy and the 2021 UN Food Systems Summit influence or be milestones in the Irish food system approach development process?
- Is Ireland willing to contribute to development of a 'Team Europe' food system approach for development cooperation?;
- How should an Irish food system approach be embedded within the broader landscape of state and non-state actors willing to promote food system sustainability, towards more cross-sector, donor-to-donor and public-private coordination?
- Are Irish stakeholders prepared to work on food system nexuses beyond Irish specialisation so far and venture outside the thematic priorities set in 'A Better World'?;
- How normative is Ireland prepared to be in prioritisation of food sustainability objectives when programming ODA and influencing policy at the partner country level?;

- What would be an effective division of tasks among Irish stakeholders for implementing an Irish food system approach, particularly undertaking food system, sustainability and political economy analyses, and who should lead the identification of transformation pathways and interventions?; and
- How will skills in the Irish government, NGOs and academia be brought into the process, and how much will it rely on multilaterals, the UN and other public and private partners?

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This publication was commissioned and funded by the Irish Department of Foreign Aid. It has also benefited from structural support by ECDPM's institutional partners: Austria, Belgium, Denmark, Estonia, Finland, Ireland, Luxembourg, the Netherlands and Sweden.

ISSN1571-7577

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