

# Setting New Frontiers for 21<sup>st</sup> Century Food Systems Research and Action

## Agriculture for Nutrition and Health (A4NH) and Convergent Innovation (CI)

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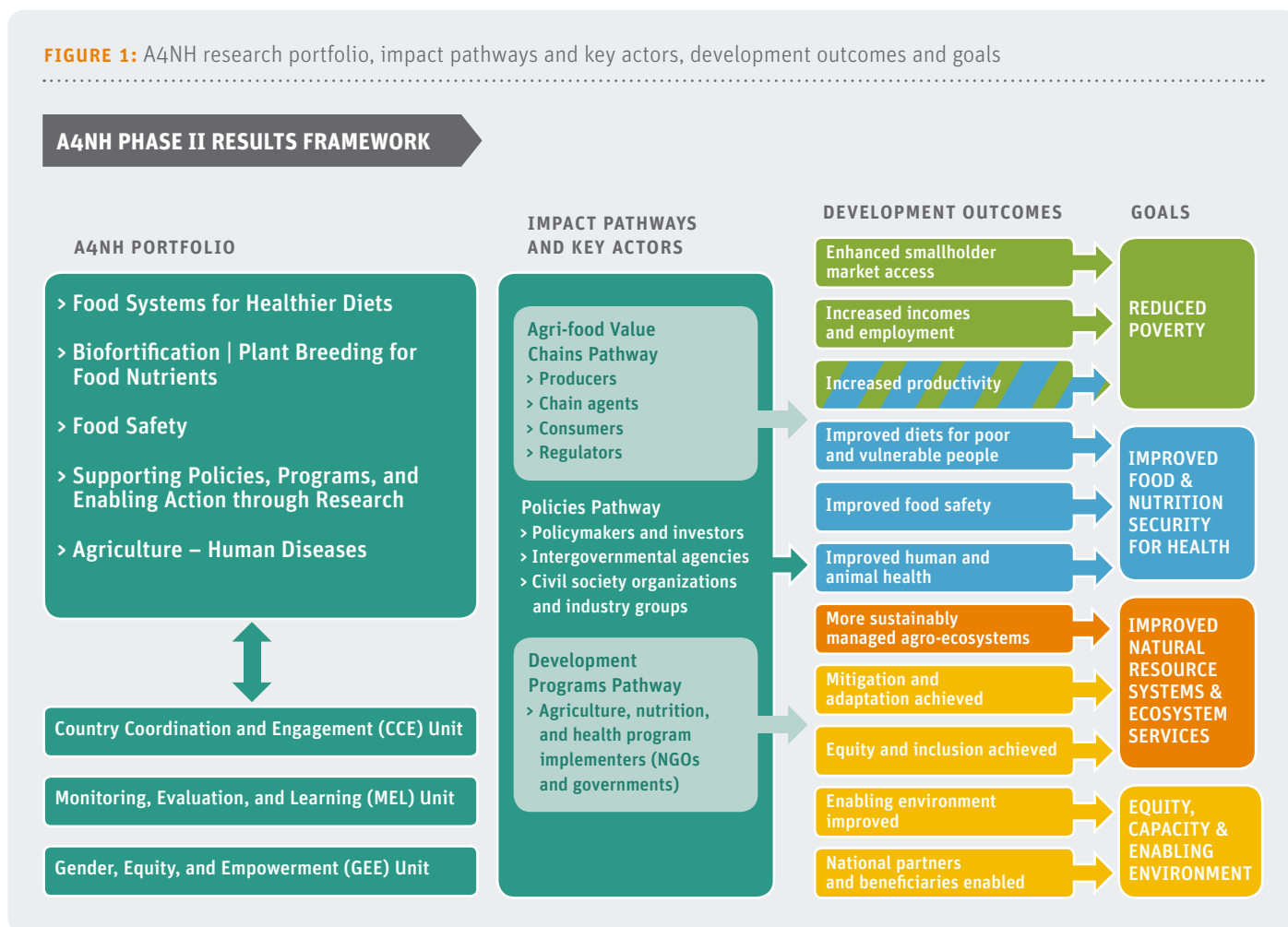
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### Key messages

- > Food systems are key to our ability to ensure sustainable development and well-being while arresting ballooning healthcare costs in industrialized and emerging economies alike.
- > Nutrition is front and center in the global development agenda, and there is growing interest in making agriculture and other large development sectors more nutrition-sensitive.
- > Low- and lower-middle-income countries are increasingly emphasizing the role of agriculture and food in their economic development plans. This requires a change in perspective – moving from a focus on agricultural production to a consideration of the entire food system.
- > Since 2012, CGIAR has increased its emphasis on how to change agricultural research to improve nutrition and health through an interdisciplinary, multisectoral research program, Agriculture for Nutrition and Health (A4NH). Compared with traditional agricultural research, the A4NH program puts more emphasis on consumption and demand, and on processing, storage and other value chain elements, beyond the farm.
- > A key transdisciplinary concept that expands on the implementation of inter-sectoral initiatives such as A4NH is Convergent Innovation. The CI ecosystem covers the full continuum from smallholder farms and community to local, state/provincial, national, and global markets.

**FIGURE 1:** A4NH research portfolio, impact pathways and key actors, development outcomes and goals



- > In low-income countries and emerging economies, CI engages food businesses on two fronts: improving food security and reducing undernutrition, and shaping the food habits of the affluent population.
- > It is our hope that across low-income, emerging, and industrialized economies alike, A4NH and CI will yield insights for other researchers, decision-makers from the private and public sector, and civil society, for a better convergence in human and economic development.

Food systems are at the core of our ability, as a 21<sup>st</sup> century society, to ensure sustainable development and well-being while arresting ballooning healthcare costs in industrialized and emerging economies alike. Food is at the nexus of the positive and negative externalities that agricultural, health, and other related systems have had on rural and urban communities worldwide since the onset of the industrial revolution. To go beyond what has been possible thus far, there is a need to reinvent food systems research and action so as to accelerate the scope and im-

port of significant sectoral and inter-sectoral investments made by governments, the private sector, civil society, and academia, for better convergence in efforts. This perspective features two pioneering initiatives in the nutrition research landscape: the CGIAR’s Agriculture for Nutrition and Health (A4NH) program, and the development and implementation of Convergent Innovation (CI) platforms.

**CGIAR’s Agriculture for Nutrition and Health (A4NH) Program**

Nutrition is front and center in the global development agenda in low-income countries and emerging economies. Although commitments to prioritize and invest in improving nutrition have soared, intent needs to be translated into successful action. Additionally, while nutrition-specific interventions, usually delivered by the health sector, have well documented efficacy, they will only reduce undernutrition by about 20%, even if implemented at scale.<sup>1</sup> Thus, there is growing interest in inter-sectoral approaches, including through making agriculture and other large development sectors more nutrition-sensitive.

Agriculture is particularly important in low-income countries, as the majority of people (typically 60–80%) and a large share

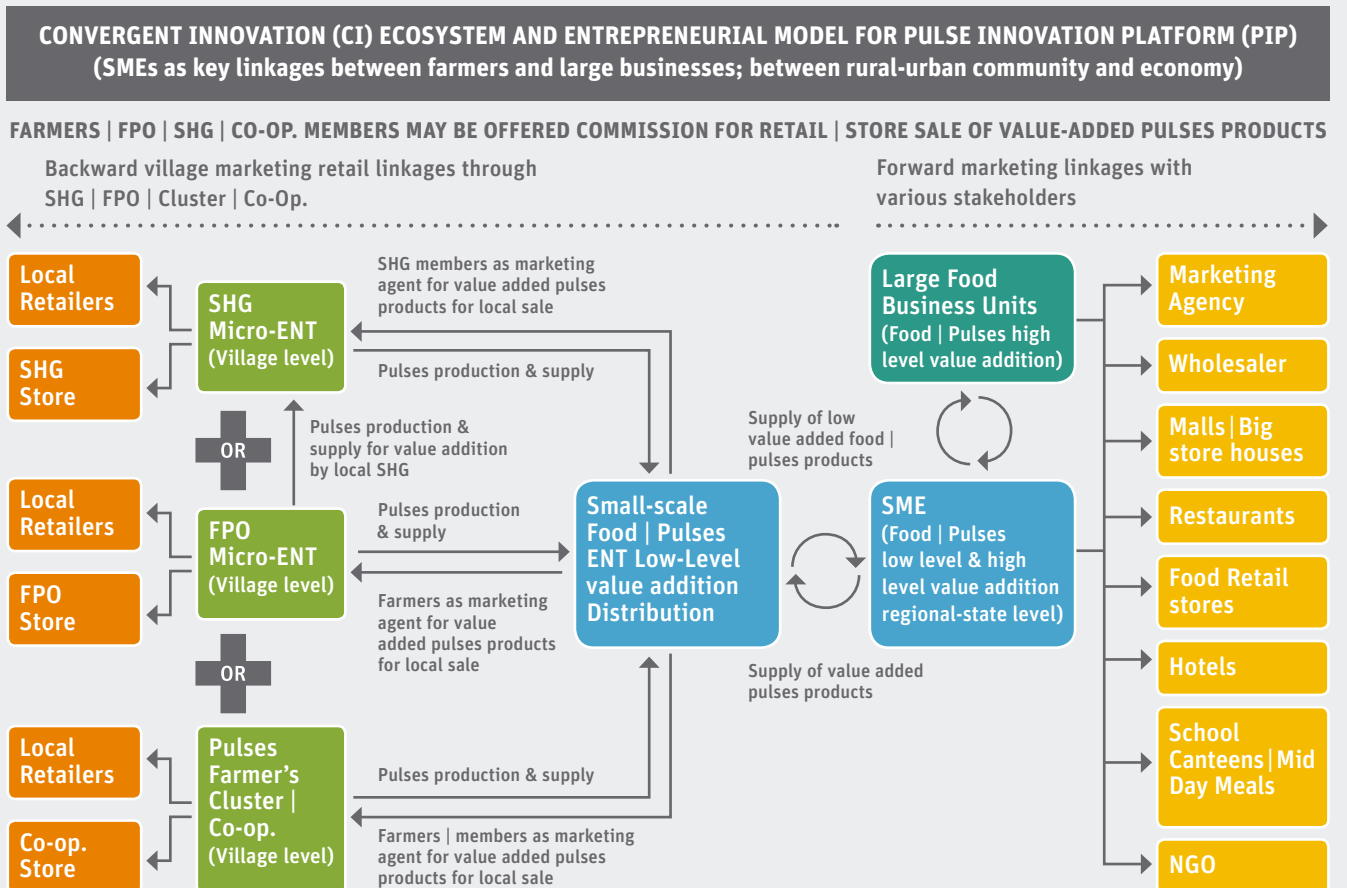
of GDP (25–40%) come from agriculture.<sup>2</sup> Agriculture is charged with providing safe, healthy, diversified, and nutritious foods at affordable prices. The diets of many people in low-income countries, especially mothers and children who are most vulnerable, often lack fruits, leafy green vegetables, pulses, seeds and nuts, and animal-sourced foods. In addition to food, agriculture contributes to nutrition through improved incomes. Attention to gender, both the role of women and of men, is critical. With a gender focus, benefits multiply, particularly where empowered mothers are more capable of raising healthy children.

“There is growing interest in making agriculture more nutrition-sensitive”

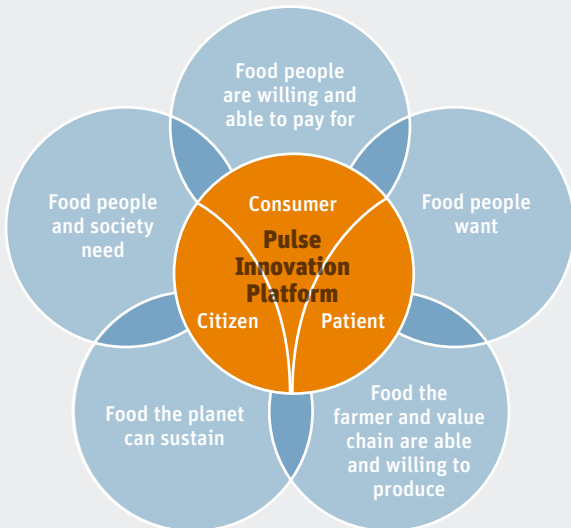
Low- and lower-middle-income countries are increasingly emphasizing the role of agriculture and food in their economic development plans. As economies develop, more people

are involved, and greater economic value is added beyond the farm. This requires a change in perspective – moving from a focus on agricultural production to a consideration of the entire food system. In low-income, agrarian countries, an obvious starting place is to invest in more efficient ways of supplying nutritious foods, such as milk, fish, and vegetables, to households, whether through their own production, or through markets. With economic growth and urbanization, agri-food systems become more complex, and investments beyond the farm, such as storage facilities and cold chains, become more important. There have been major transformations in food systems in middle-income countries in recent decades.<sup>3</sup> These transformations include changes in food supply chains, which have grown longer and more capital-intensive, with much additional processing of food products.<sup>4</sup> Even in low-income countries, there have also been dramatic changes in food consumption patterns, often driven by the rapid urbanization and improved domestic markets and some increased trade.<sup>5</sup>

FIGURE 2: Key ecosystem and enterprise considerations for pulse innovation



Terminology: FPO Farmer Producing Organization, SHG Self-Help Group, ENT Entrepreneur, SME Small and Medium-sized Enterprises, NGO Non-Governmental Organization, PIP Pulse Innovation Platform

**FIGURE 3:** Convergent Innovation “sweet spot”

We note, however, that most changes in food systems have been ad-hoc and opportunistic. If food systems are to provide healthier food both sustainably and equitably, a more systematic approach will be needed. Such an approach establishes national consensus on objectives, and considers key actors and the drivers and enablers of food system transformation. This is a major challenge for countries, as food systems must balance and resolve trade-offs between health, socioeconomic and environmental objectives, and endowments and constraints. Thus food systems research and thinking must embrace multiple technical disciplines within an overall national, socioeconomic and political economy context.

Since 2012, CGIAR has increased its emphasis on how to change agricultural research to improve nutrition and health through an interdisciplinary, multisectoral research program, Agriculture for Nutrition and Health (A4NH). Hosted by the International Food Policy Research Institute (IFPRI), the program includes reducing stunting and micronutrient deficiency on the one hand, while controlling alarming increases in obesity and non-communicable diseases on the other. **Figure 1** describes A4NH’s research portfolio, impact pathways and key actors, development outcomes and goals. Classically, the research for development pathway focuses on: identifying and developing nutrition-enhancing production technologies, knowledge and evidence; the institutional innovations that support sustainable access to and/or application of these technologies and knowledge; and policy and investment options that can increase the contribution of agri-food systems to nutrition and health. Compared with traditional agricultural research, the A4NH program puts more emphasis on consumption and demand, and on pro-

cessing, storage and other value chain elements, beyond the farm. Given the scale of nutrition and health challenges, and of urgent needs, there is also emphasis on how proven approaches to improving nutrition and health can be scaled up and sustained in specific countries and contexts.

## “Most low- and middle-income countries are undergoing unbalanced diet transitions”

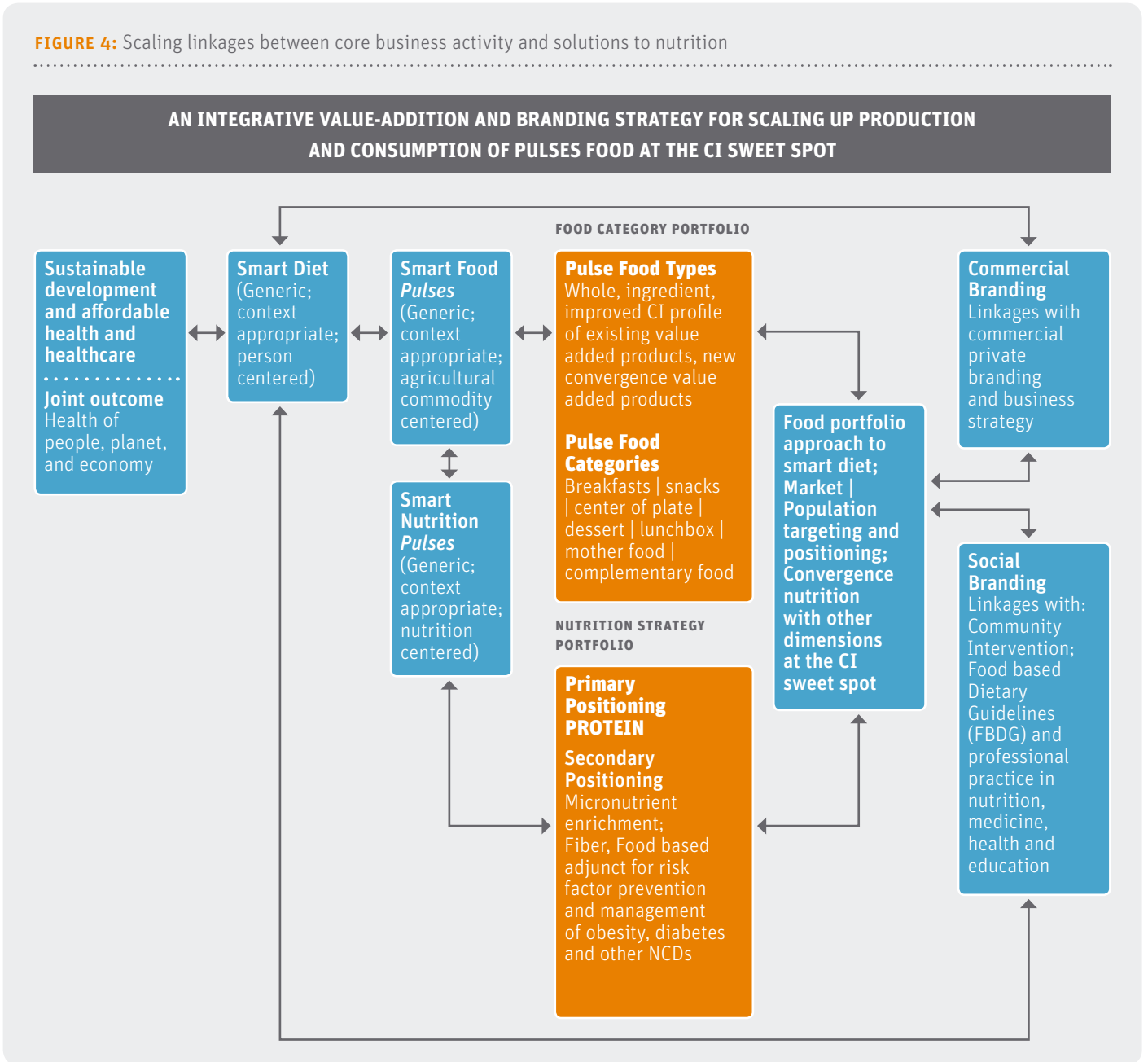
Most low- and middle-income countries are undergoing unbalanced diet transitions – too slow improvements in chronic undernutrition and micronutrient deficiencies, and rapid increases in overweight and obesity. Such countries also have strategies and plans for agri-food transformation as a key element of their economic development. For these reasons, A4NH plans much greater emphasis on food systems research through its “Food System for Healthier Diet” program. This program brings together a new partnership, led by Wageningen University Research, bringing together CGIAR Centers, national research and development partners, and private sector companies, facilitated by the Global Alliance for Improved Nutrition (GAIN), and business schools, coordinated by McGill University. The program builds on current capacities in agricultural production and value-chain innovations for nutritional quality and food safety, with greater emphasis on assessment of consumption and diet quality and on multi-chain food systems innovations and analysis. The research program will be organized in three main components:

- > Assessing regional and sub-regional drivers of food system transformation, and options and constraints for dietary change (**diagnosis and foresight**);
- > Testing concrete agri-food value chain innovations and interventions for improving diet quality and diversity (**food system innovations**); and
- > Supporting the scaling-up of successful actions through effective engagement of multi-stakeholder platforms and multisectoral mechanisms (**scaling up and anchoring**).

### Convergent Innovation (CI)

A key transdisciplinary concept that expands on the implementation of inter-sectoral initiatives such as A4NH is Convergent Innovation. The development and deployment of CI has benefited from the support of the International Development Research Centre and the Social Sciences and Humanities Research Council of Canada. CI fosters behavior change and societal transformation through instilling social and environ-

**FIGURE 4:** Scaling linkages between core business activity and solutions to nutrition



mental objectives of agriculture, food product development, nutrition, and health into business strategies, while improving the economic viability of efforts focused on social benefit. CI intertwines technological innovation, social innovation, and institutional innovation to simultaneously derive measurable economic and social benefits.

“CI takes food as the transformational layer between agriculture and the health of people, economy, and planet”

CI takes food as the transformational layer between agriculture and the health of people, economy, and planet. Research and practice based on CI focus on agricultural commodities of high strategic significance at local, state/provincial, country or global levels. The CI ecosystem covers the full continuum from small-holder farms and community to local, state/provincial, national, and global markets, with small start-ups, small and medium-sized enterprises (SMEs), and large businesses competing and collaborating in novel ways for better distributed value addition.

Pulses have served as the test bed for CI’s operational deployment through global and national innovation platforms. Over the last four years, academic, civil society, private, and public-sector partners in the Global Pulse Innovation Platform (PIP) have spearheaded a social movement that led to the UN’s

declaration of 2016 as the International Year of Pulses (IYP). The Global PIP, launched in March 2016 in Montreal, is the core food convergent innovation hub of the sector, with national platforms in development in Canada, India and Ethiopia. Some key ecosystem and enterprise considerations for pulse innovation are illustrated in **Figure 2**.

A “sweet spot” for CI is illustrated in **Figure 3** by the overlap between characteristics of safe and nutritious food that people and society need, food they want, food people are able and willing to pay for, food farmers and the value chain are able and willing to produce, and food the planet can sustain. The characteristics of food at the CI sweet spot – be they in people’s minds or in terms of actual physical characteristics – are likely to present both conflict and convergence in their contribution to the health of people, economy, and planet. CI therefore considers the diverse and dynamic nature of individual food choices, and diet, from the joint perspective of consumer, patient, and citizen. Successful 21<sup>st</sup> century food systems from this perspective are ones that can produce a rich portfolio of food at the CI sweet spot for domestic and/or international markets.

For food businesses in both traditional and industrialized contexts, scaling the linkages between core business activity and solutions to nutrition is non-trivial, and presents several challenges (see **Figure 4**). First, placing nutrition and health sensitivity as a core driver of technological innovation, product category transformation, and commercialization requires a strategic shift in mindset and activities. Second, to change product and brand portfolio in a nutrition- and health-sensitive direction, businesses have to be able to produce an appealing product that balances immediate desires (e.g. tastiness) and long-term benefits (e.g. healthiness), and can be produced at a price point that the consumer can afford and is willing to pay, without losing out on profitability.

## “CI fosters health promotion and nutrition transformation as economic development occurs”

Thus, in low-income countries and emerging economies, CI engages food businesses on two fronts: improving food security and reducing undernutrition by seeding business entrepreneurship and innovation in resource-poor communities, and shaping the food habits of the affluent population. CI fosters health promotion and nutrition transformation as economic development occurs, and sets the agri-food sector on a path to prosperity that balances tradition and modernity, and builds more rural-urban continuity. In industrialized countries, business engagement is about mainstreaming CI in innovation pipelines, business strat-

egies, and investment. CI acceleration processes combine principles and methods from multiple domains, including behavioral insights from consumer research, entrepreneurship training, and Big Data analytics. These principles and methods are applied in providing support, through training and mentorship, for small start-ups, SMEs, and large businesses, with incubation facilities being available as needed for SMEs.

### Conclusion

Research that informs, and emerges from, the CGIAR’s Agriculture for Nutrition and Health (A4NH) program and partnerships around Convergent Innovation (CI) provides opportunities for engaging agriculture, nutrition, and health researchers for sustainable development and improvements in well-being. It is our hope that across low-income, emerging, and industrialized economies alike, A4NH and CI will yield insights for other researchers, decision-makers from the private and public sector, and civil society at local, state/provincial, national, and global levels, for a better convergence in human and economic development.

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