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MOND'Alim 2030: a forward look at food system globalization

The globalization of food systems is not limited to trade and culinary influences. As a centuries-long, but partly reversible, phenomenon, it is increasingly contributing to the interpenetration of different geographical levels: local regions, nations, continents, world. As an economic process that is also cultural, political and legal, it is radically transforming the ways in which food is produced and consumed, changing the risk landscape and complicating the interplay between actors. The *MOND'Alim 2030* strategic foresight exercise led by the Centre for Studies and Strategic Foresight is aimed at characterizing the present phase of globalization, documenting the dynamics at work, looking at their possible extrapolation to 2030 and identifying certain potential breakpoints. In six thematic sections, this paper summarizes the main lessons of the results produced by that exercise[1].

In the agricultural, agrifood and food domains, globalization is playing an increasing, and in some cases highly visible, role in France, like Japanese and American culinary influences or the establishment of new and "exotic" crops such as sorghum. It also has more indirect, deep-seated effects: corporate social and environmental responsibility policies in large multinational corporations, harmonization of technical and sanitary standards, and so on. Looking beyond the economic processes to which it is often reduced, the globalization of food systems is also cultural, social, political, informational, scientific, legal, etc. We define it here as the whole series of phenomena in all areas of life and society that contribute to an expansion of the interdependence of the various actors and situations around the world, thereby tending to build a planetary-wide system.

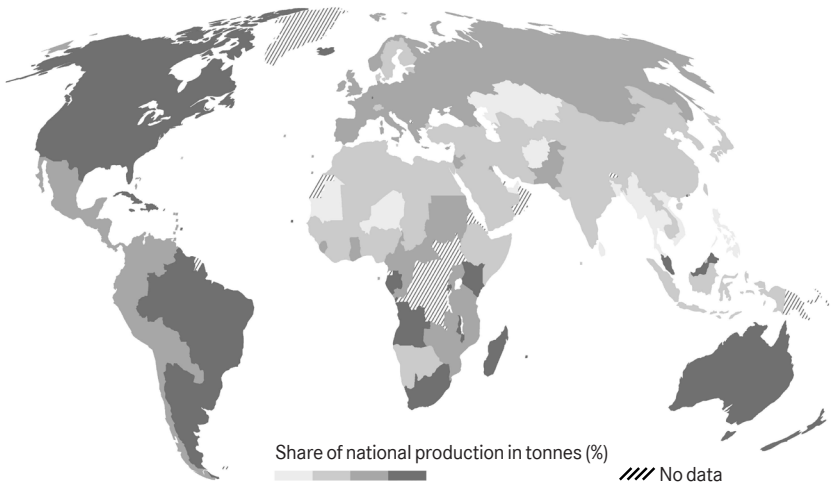
Globalization is not a recent phenomenon, as is attested by the importance of so-called "non-native" crops in national production (cf. Figure 1): a number of products now considered traditional are in fact evidence of the acculturation of plants previously seen as exotic (e.g. potatoes in Belgium, cassava in Africa). Globalization is a centuries-long process that is still ongoing, still changing, strengthening in some periods and fading in others.

The MOND'Alim project set out to characterize the phase we are currently going through, to document the dynamics at work, to look at their possible extrapolation to 2030 and to identify certain potential breakpoints. Based on the work of about thirty experts, meeting on nine occasions between October 2014 and November 2015, we looked at the fundamental changes characterizing the globalization of "food systems", as understood to mean "the ways in which people organize in space and time to obtain and consume their food"[2].

Six themes have been identified and provide the framework for the report published by La Documentation française and the present paper: changes in food behaviours and models; international trade dynamics; internationalization of research, databases and innovations; globalization of risks and public issues; public- and private-sector actors in globalization; issues and trends in governance.

1. Claquin P., Martin A., Deram C., Bidaud F., Delgoulet E., Gassie J., Hérault B., 2017, *MOND'Alim 2030, panorama prospectif de la mondialisation des systèmes alimentaires*, Paris, La Documentation française. http://www.ladocumentationfrancaise.fr/ouvrages/
2. Malassis L., 1979, *Économie agro-alimentaire (vol. I). Économie de la consommation et de la production agroalimentaire*, Cujas, Paris.

Figure 1 - **Non-native crops in national production, 2009-2011**



Source : Khouri *et al.*, 2016.

1 - Food behaviours are both globalizing and diversifying in equal measure

Involving imperative daily actions as they do, food behaviour patterns embrace consumption (e.g. products, quantities ingested), practices (e.g. supply methods, culinary standards, numbers of daily occasions for food intake) and representations (knowledge, values and images associated with food). The worldwide rise of the middle classes fosters tendencies toward uniformity in some of these aspects. Urbanization, development of salaried employment and population ageing also lead to the spread of common practices and concurrent changes such as the reduction in the time devoted to food, although the rate of change may vary between local situations. Due to nutritional transitions, the average quantities consumed per head and the broad nutritional balances in the ration are tending to converge at global level. The industrialization of food systems is driving a large-scale spread of "global" processed products (sodas, for example) and the consumer's alienation[3] with regard to basic commodities is increasing (not only the geographical but also cognitive and cultural distance). Particular foods[4] and the claim laid to them by individuals and groups as social markers are increasingly frequent: such singularization of diets is a global trend. At the same time, we are witnessing a patrimonialization of food-related practices and types of production for the protective purposes (e.g. UNESCO classification) or for economic reasons (e.g. tourism): the confrontation of different food models is also generating intensified competition between traditions and heritages.

Simultaneously, globalization mixes local *terroirs*, disseminates culinary particularities and diversifies cultures. While the increase in consumption of animal products is becoming more generalized, this is occurring at different rates in different countries (cf. Figure 2) following a variety of nutritional pathways. Global products, and globalized foods and dishes (e.g. pizza, hamburger) are reinterpreted and appropriated culturally[5] at local level (ingredients, preparation, manner of consumption). In some countries, the food models currently being constructed are a strong element in the ongoing definition of a national identity, while in others where such models formed long ago, they are radically changing or even eroding. The globalization of food behaviours brings together trends shared across the planet and, at the same time, generates reactions, combinations, differentiation and anxiety (Box 1).

In the coming years, global challenges will make themselves increasingly felt in food behaviours. Already, nutritional issues are changing radically, especially around the concept of "hidden hunger" (vitamin and mineral deficiencies, for example) and food-sourced non-communicable diseases (e.g. obesity, type 2 diabetes).

More generally, the trends toward the medicalization and dietization of food are intensifying. New values will continue to globalize and influence food-related behaviour: the reference to the "local" level, to "proximity" on the one hand (cf. Figure 3), and to the environment and sustainable development, on the other.

Box 1 - Towards glocalized eaters ?

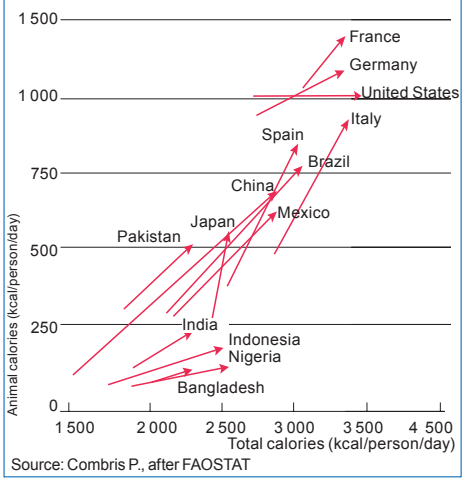
Globalization is a source of ambivalence for individuals between openness to the world and attachment to specific territorial characteristics. While behaviour patterns are localized geographically, they are also influenced at a distance[6]. An increasingly "glocalized" eater is appearing, a person rooted in the local reality and influenced by the global context. This trend is strengthened by actors in civil society with a global take on food and consumers, as well as by informational and normative systems established across the planet. The development of digital tools is a key to the construction of this more demanding, more political eater, with a number of trends at work: easier expression of individual preferences to a larger number of interlocutors, new forms of collective action involving dematerialized vectors and renewal of the collaborative consumption and economy, among others.

2 – Increased dependence on international trade but no vast globalized market

International trade in agricultural and food products has expanded constantly in recent decades: in terms of volume, it has been multiplied by a factor of seven in the space of 50 years. The last fifteen years has seen its centre of gravity shift from the North

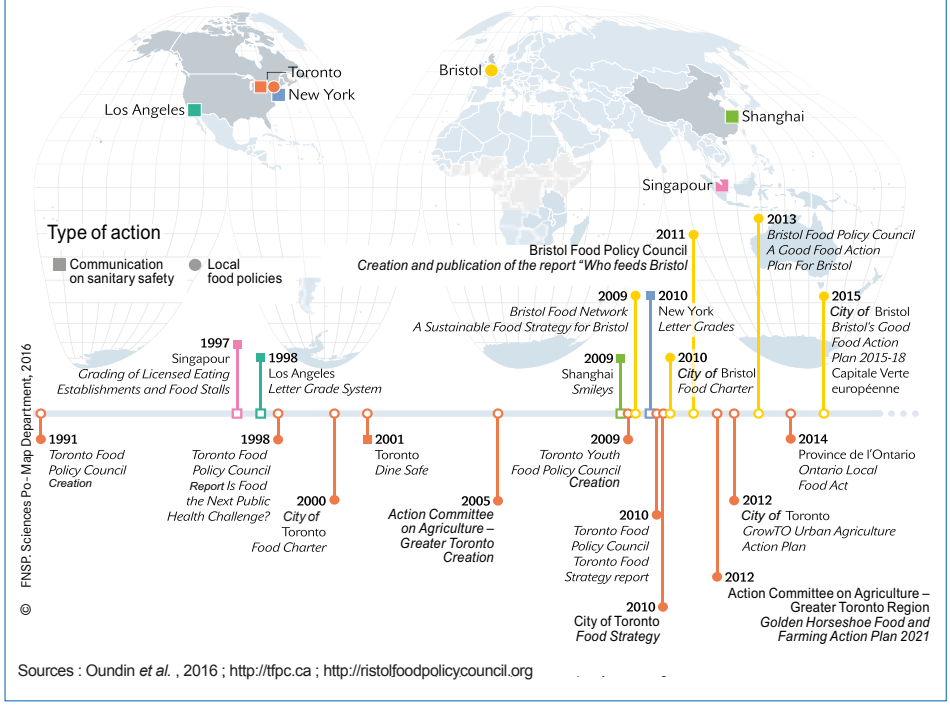
3. Bricas N., Lamine C., Casabianca F., 2013, "Agricultures et aliments : des relations à repenser ?", *Natures Sciences Sociétés*, 21, pp 66-70.
4. Fischler C. (ed.), 2013, *Les alimentations particulières. Mangerons-nous encore ensemble demain ?* Odile Jacob.
5. Sanchez S., 2008, " Frontières alimentaires et mets transfrontaliers : la pizza, questionnement d'un paradoxe", *Anthropologie et Sociétés,* vol. 32, no. 3, pp 197-212.
6. Giddens A., 1994, *Les conséquences de la modernité,* L'Harmattan.

Figure 2 – **Animal calories and food availability : from 1961-63 to 2009-11**



Source: Combris P., after FAOSTAT

Figure 3 - **Instances of local action, 1991-2015**



Sources : Oundin *et al.* , 2016 ; http://tfpc.ca ; http://ristolfoodpolicycouncil.org

to the South, from the Atlantic (21 % of intercontinental trade) to the Pacific (32 %). Above all, this fundamental geographical shift in commerce (cf. Figure 4) involves a still limited number of countries: Brazil (now the world's third largest exporter) and China, a strong centre of attraction (approximately 10% of all world imports but up to 60 % in the case of soya). Substantial dynamics are also to be seen in other countries: Argentina, Indonesia, Malaysia, India, Turkey, etc.

The emergence of these new giants is no impediment to the trend towards fragmentation of international trade between a constantly rising number of countries: in 1960 the twenty biggest importers accounted for approximately 90% of world trade, compared with less than 70% today. This increase in numbers of flows is reflected in diversification of the products traded (cf. Figure 5). The share of cereals and tropical products exported (coffee, tea, cocoa) has shrunk, in favour of the oilseed family of products (including oils and oilcake) and products considered to be relatively insensitive to sanitary and supply issues (e.g. non-alcoholic drinks, ultra-processed products). The latter are indirectly benefited by the fact that governmental authorities concentrate essentially on high-risk products (beef) and "basic foods" (wheat, maize, rice).

Involvement and control by governmental authorities in the trading of food is a constant factor, although the tools may differ: limited reductions in customs duties, sustained increases in non-tariff measures. According to the World Bank, this explains the relative weakness of what the experts call "economic integration": agricultural prices within national borders continue to be substantially decorrelated from international prices. This observed fact is not however a sign of the independence of domestic and global markets. Porkka[7] sums up past changes as follows: "in the space of 50 years, the world has gone from food insufficiency to a growing dependency on world trade". In 2010-2011, 30% of the world's population (20% in 1990) was living in countries importing at least than 20% of their consumption of cereals. At the same time, due to the organization of global value chains, over 20% of the value of agrifood exports from any given country will have been previously imported. A number of indications, foremost among them the unequal possession of the factors of production (land, water, workforce, capital), lead observers to think that this trend towards increased dependence on international trade will continue over the period to 2030 despite the slowdown currently observed across all sectors.

3 – The consolidation and reinvention of the agro-industrial paradigm goes hand in hand with the globalization of alternative models

Innovations and data are more mobile than goods and people. Some are central to the processes of food system globalization, most notably information and communication technologies (Box 3). For example, in the agrifood industry, marketing is exploiting increasing quantities of "big data" everywhere in the world, in its efforts to reach out to consumers and customize advertising. Individual preferences are determined using algorithms to process the tracks web users leave on the Internet. Hand in hand with the worldwide spread of smartphones and Internet access, such predictive techniques encourage the globalization of food systems and behaviours.

Globalization also operates through the dissemination of technologies and equipment. Considered modern and efficient, these are produced in innovation clusters (usually in the United States or in Europe) with the intention of replacing traditional systems throughout the world. For example, an imported tractor that takes the place of draught animals in India and GMO soya that replaces small crops-plus-livestock holdings in Argentina. This technological globalization, which frequently involves an artificialization of the conditions for its introduction, is always accompanied by local adaptation.

7. Porkka M., Kummu M., Siebert S., Varis O., 2013, "From Food Insufficiency towards Trade Dependency: A Historical Analysis of Global Food Availability", *PLoS ONE*, 8(12).

Figure 4 – **Changes in intercontinental trade : a shift towards Asia and the Pacific**

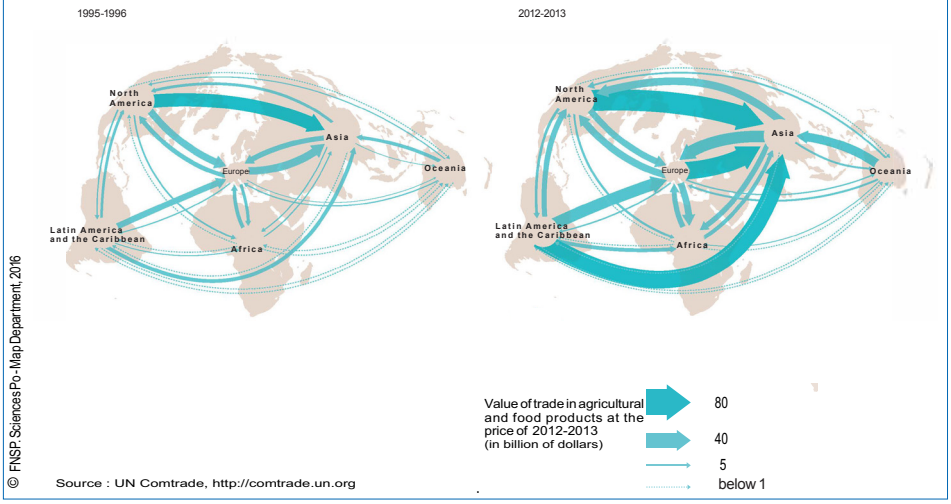
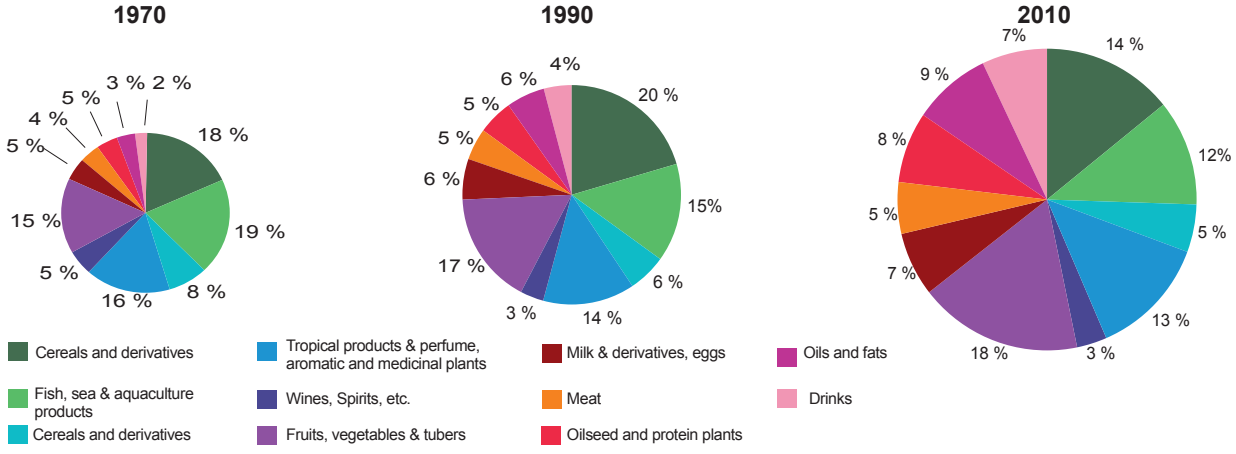


Figure 5 – **The changing basket of goods at three dates : 1970, 1990 et 2010 (constant prices)**



Source: the authors, after FAOSTAT data

N.B.:Intra-Community trade included

Box 2 - Commodities and differentiated products: two opposing logics

Some products undergo a process of differentiation due to specific characteristics desired by major agrifood corporations or retailers, or alternatively to recipe convenience. At the same time, we are witnessing a "commodification" of certain raw materials, which is a very long-standing phenomenon (Aashish Velkar[8] traces it back to the 19th century for wheat) that is deepening and expanding to include new products (powdered milk, palm oil). Commodification involves, for a given product, selecting only a limited number of characteristics common to, or imposed upon all actors, making it possible to define a number, also limited, of standards or grades. This reduction in heterogeneity enables different batches to be combined with, where applicable, the establishment of common reference prices. These two approaches have different consequences: differentiation leads to more numerous, concurrent flows, sometimes in very limited competition with each other, as well as prices that are decorrelated to some extent, while commodification leads to increased correlation of price movements and competition between provenances.

This dissemination process is based on a global system of innovation driven by the budgets of multinational corporations (cf. Figure 7) in which patents play a key role and public-private partnerships (PPP) become the preferred funding arrangement. This dominant approach favours some innovations more than others, with numerous pathways to dependence and socio-technological lock-ins that inhibit any development of alternatives.

In addition to the spread of technological innovations, another, more centralized, form of globalization is generating what are genuinely integrated worldwide structures: international information systems, platforms for public statistics and private data, scientific programmes, global R&D by major corporations that bring together facilities with global reputations, regional clusters and networks of researchers. In the process, a form of "global engineering" is created, driven by promotion of major world causes: "feeding the tomorrow's world", "combating deforestation", "slowing resource depletion", "mitigating climate change", and so on. In response to these new global public concerns, notably defined by the scientific community, there are new inspirational paradigms which are themselves increasingly global in scope (e.g. the bioeconomy).

There are contrary trends pushing back at the above: reassignment of value to the autonomy of smallholders, urban farming, defence of local supply channels, and so on. While digital tools accelerate globalization by enabling low-cost communication, they also spread criticism of globalization. Some of these trends are crystallizing into new inspirational paradigms with ambitions to become universal – agroecology, for example. By 2030, the clash of these different models will give way to hybridization and forms of convergence around shared logic such as the effort to ensure more effective closure of the major natural cycles (water, carbon, nitrogen) and the preservation of biodiversity.

4 – Worldwide awareness of global issues and the emergence of systemic risks

Whether they influence globalization or are influenced by it, more and more problems initially identified at local level are being considered at global level and described as "challenges for the planet". For example, dependence on phosphatic rocks raises the question of depletion by 2030 of a phosphorus

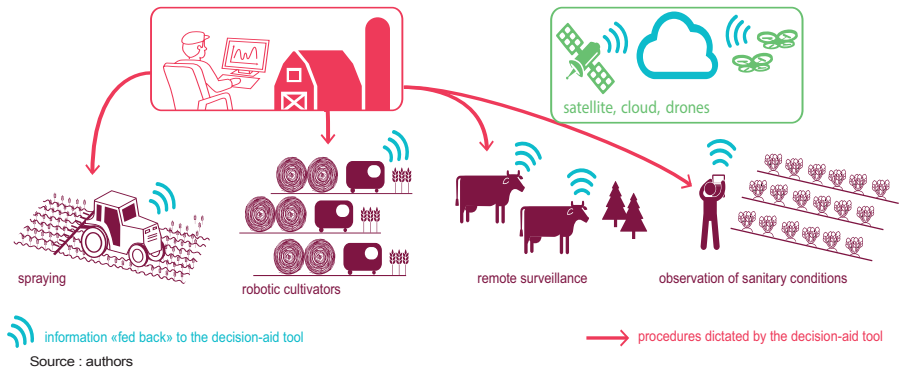
8. Velkar A., 2010, "'Deep' integration of 19th century grain markets: coordination and standardisation in a global value chain", *Economic History Working Papers*, 145/10, London School of Economics and Political Science.

Box 3 – Precision agriculture and new legitimacy for the Green Revolution

The expression "Green Revolution" refers to the projected modernization of farming based on technology transfers from the United States to countries in its sphere of influence, with the support of major philanthropic bodies. It involves far-reaching changes in family farming, which is made more productive but also more dependent on synthetic inputs. This model for development is currently questioned, most notably on the grounds of its environmental impacts.

The spread of this paradigm worldwide will therefore depend in the future on its capacity to define new farming practices of reference. Revised technical packages were developed in the 1990s. Among these, precision agriculture makes use of GPS technology, onboard sensors and decision-aid tools to ensure application of accurate dosages of fertilizer and pesticide. This heralds a connected form of agriculture using robotics and marshalling digital data flows and automated procedures with the goal of optimizing, from the economic and environmental standpoints, interventions in the living world (cf. Figure 6).

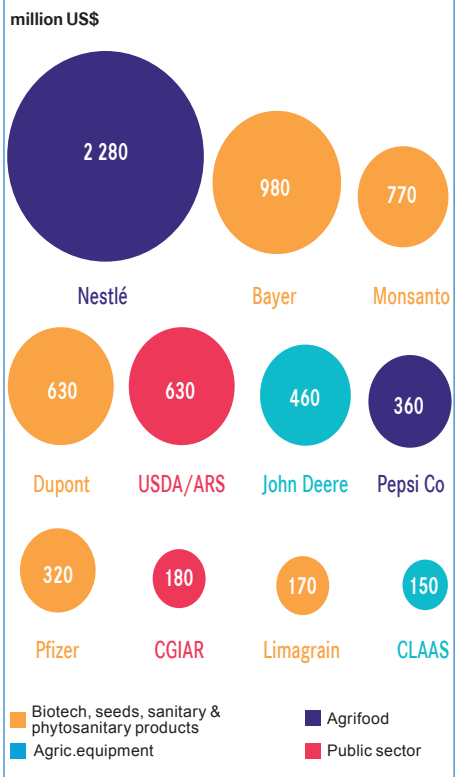
Figure 6 – **Connected agriculture – a reality by 2030**



Source : authors

Can these technologies be adopted by small family farms, which account for 99% of all holdings around the world, in the same way that the technical packages of the first Green Revolution were adopted after the war? Compatibility between these technologies and continuation of family smallholdings will be among the issues for 2030.

Figure 7 – **R&D budgets: comparative orders of magnitude in the public and private sectors**



Source : figures for 2007 taken from Fuglie *et al.*, 2011, and corporate financial statements

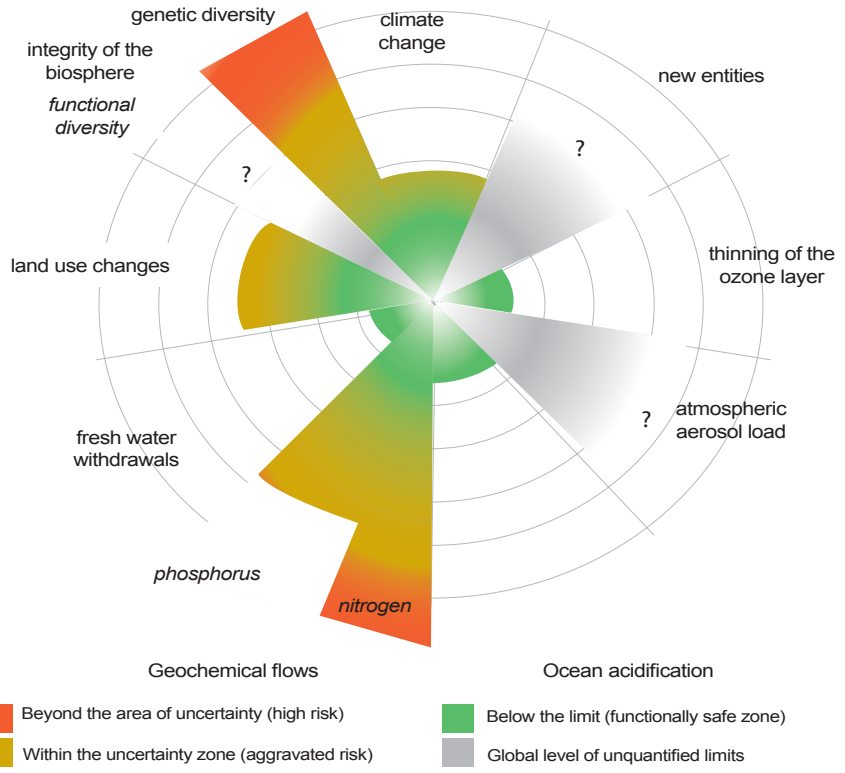
resource essential for the growth of plants and animals. The condition of the world's soils, the substrate for agricultural production, also receives close attention in the work of the Intergovernmental Technical Panel on Soils[9] and the 4 per 1,000 Initiative. The same can be said of the erosion of genetic diversity and ecosystemic services. Perceived as risks shared by all, they are the subject of communication and shared diagnostic analyses at global level (cf. Figure 8) aimed at alerting and mobilizing the actors. Globalized representation of these issues (in maps and graphs), underpinned by research, emphasizes the commonality of the risks, going beyond the diversity of regional circumstances. It also highlights the existing forms of interdependence and "glocalization" of the risks: local action, global impact. The expansion in the number of these risks is driving competition to capture attention and resources in order to exert influence on international agendas.

Globalization changes risk regimes by, for example, mitigating certain risks due to the effects of risk pooling (the role played by international trade in the event of adverse climatic events at local level). But it also leads to the emergence of completely new problems whose significance can be seen only at planetary level (Box 4). The emergence of a global food system goes hand in hand with "global systemic" risks: large-scale effects that follow the spread of an initially limited sudden break with the past, the concomitance of localized events (e.g. price rises further accentuated by successive trade restrictions imposed by national governments) and concentration of risks on key actors, etc. Such systemic effects mean that approaches that are excessively sectoral or focused on a single actor are now obsolete. Specifically, all-encompassing challenges such as climate change raise questions for certain practices that have proven their worth in past decades as well as for our ability to adapt (cf. Figure 9).

Global risk governance is in the process of consolidation. This dynamic is particularly visible in animal health with the implementation of a holistic doctrine ("One Health") and a large number of instruments that exploit the fluidity provided by communication technologies: shared databases, structural organization of surveillance and alert networks, research programmes, and so on. Nevertheless, that governance is faced with tensions between unilateral strategies and collective management. The same is true of economic risks: stabilization of domestic prices is a goal, often given priority, that can be pursued to the detriment of commercial interests[10].

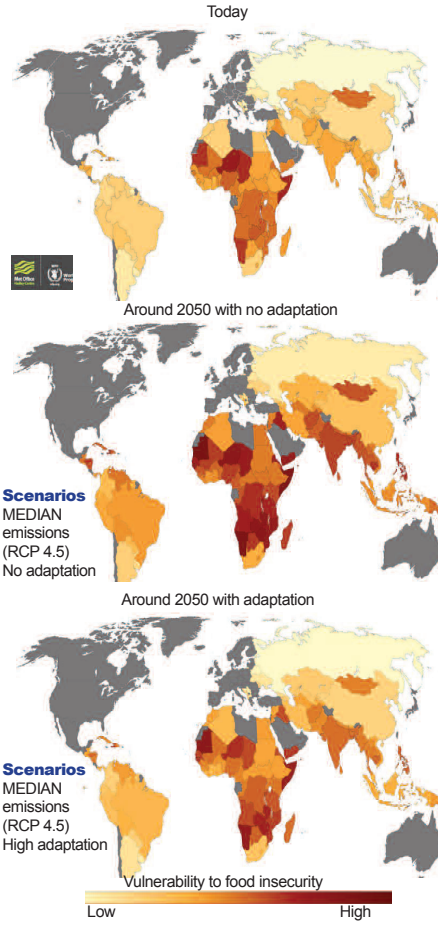
9. FAO, ITPS, 2015, *Status of the World's Soil Resources (SWSR). Main Report,* Intergovernmental Technical Panel on Soils, Rome.
10. Gouel C., 2014, "Trade policy coordination and food price volatility", CEPII Working Paper 2014-23.

Figure 8 – Planetary boundaries by major biophysical regulation domains



N.B.: Planetary limits are bounded by a functionally safe zone in green and an uncertainty zone in yellow. A quantitative variable is defined for each factor (e.g. climate change and atmospheric concentration of CO2 in ppm) along with two values defining the uncertainty zone. The current level of the control variable is compared with these two values in order to determine the zone in which the relevant factor is located.
Source: after Steffen *et al.*, 2015. Reproduced with AAAS consent.

Figure 9 – **Food insecurity and adaptation to climate change over the period to 2050**



Source: http://www.metoffice.gov.uk/food-insecurity- index/

N.B.: These GHG emission scenarios (IPCC) are estimates for the years 2041-2070.

Box 4 – Emerging Risks

"Emerging risks" are hazards that have only recently been identified and are subject to some uncertainty as to their effects on health and the environment, as well as exposure (e.g. endocrine disruptors, nanotechnology). They are the focus of scientific controversy and societal concerns.

Such "emerging risks" are mainly a concern in the developed world, but they could become a major topic for worldwide scientific collaboration over the period to 2030: this can be said because they call into question current detection, evaluation and management methods inherited from previous generations of hazards. They are also perceived to be genuine political issues calling for intervention by governmental authorities working more and more closely with private-sector actors. And lastly, these "emerging risks" represent a challenge to trade, a source of friction between protection of public health and international commercial regimes.

While the forward steps are more numerous than those made backwards, the possibility of a regression in international cooperation due to loss of trust or an accumulation of tensions (especially geopolitical) cannot be ruled out.

5 – Increasing numbers of actors, hybridization of their statuses, rapid expansion in their interactions

The globalization of food systems is also the outcome of the intentions and strategies of interconnected actors operating within a complex interplay of power relationships: international organizations, national governments, multinational corporations, large NGOs, foundations, etc.

Concern over food security and agricultural production is very long-standing. They continue today to be motivations for action and levers for influence for international organizations and national governments. The *MOND'Alim* group's reflections on these aspects confirm the key place of agricultural issues in the international agenda, with polarization around the food issue, especially after the crisis of 2007-2008. The "emerging nations" not only occupy strategic positions now in international agricultural trade, they are also increasingly assertive on the diplomatic stage. Their companies are positioned in international rankings and can rely on scientific excellence and South-South cooperation (Brazil, China, India). These countries are also seeking a more important role in multilateral relations, whether in historical international organizations or by creating their own institutions to compete more effectively with the positions of Western countries. In the future, the number of governments that will need to be taken into account will continue to expand and the pathways adopted for the agricultural and food strategies will be increasingly diverse.

The influence of corporations on food globalization is also growing. Their ability to organize global value chains (notably through the use of standards and generation of competition between different territories) and influence international negotiations (expertise, lobbying, etc.) is a major trend, further intensified by the effects of concentration (cf. Figure 10), this despite the fact that their base in developing countries is still limited in some cases (cf. Figure 11). These corporations often have more resources at their disposal than many national governments and they have become stakeholders in global food governance[11]. Their economic power is not a new phenomenon but it has become more marked and is now visible, recognized and legitimized by traditional public-sector actors, in public-private partnerships, for example (Box 5).

The influence of the major NGOs is also rising. They are increasingly active, called upon for action and institutionalized and are confronted with a number of contradictions: they purport to speak for the South and "small" stakeholders (peasant farmers, consumers, etc.), they have acknowledged capacity for expertise and action, they are capable of influencing the strategies of international organizations, governments and global corporations, yet at the same time there are questions as to their independence and accusations of playing into the hands of globalization.

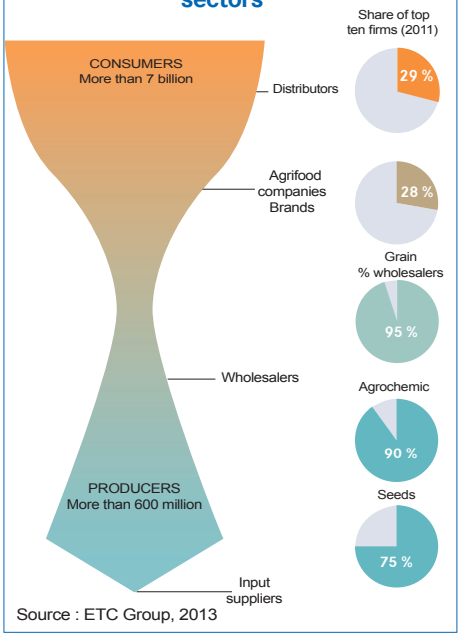
Lastly, it is worth noting that local regions, and large conurbations in particular, are increasingly involved in global regulation (cf.

11. Basso O., 2015, *Politique de la très grande entreprise. Leadership et démocratie planétaire,* PUF.
12. Devin G., Placidi-Frot D., 2011, "Les évolutions de l'ONU : concurrences et intégration", *Critique internationale,* 4/2011, no. 53.
13. Binet N., 2014, "Le rôle des entreprises et des fondations privées dans la gouvernance mondiale agricole et alimentaire", *Mondes en développement,* 165.

Box 5 – Public-Private Partnerships – a new model for development ?

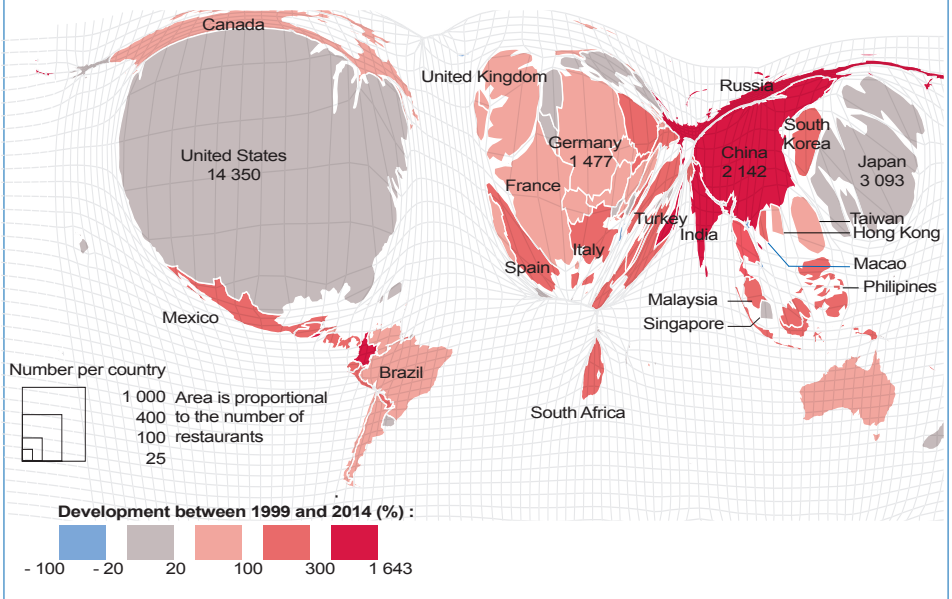
Public-Private Partnerships (PPPs) are developing both for international organizations and governmental overseas cooperation agencies given that private corporations are today the only entities capable of compensating for insufficient public investment[12] . PPPs are frequently founded on the so-called "bottom of the pyramid" business model whereby multinationals can make very substantial profits by offering massive quantities of products suited to large low-income populations. Corporations see this as a domain for application of their corporate social responsibility and environmental policies. The non-profit association sector is often a stakeholder in such programmes[13]. Numerous PPPs, especially those at the multilateral and macro-regional scale, such as *Grow Africa*, also have support and funding from large private foundations.

Figure 10 – Large numbers of agricultural producers and consumers in increasingly concentrated agrifood sectors



Source : ETC Group, 2013

Figure 11 – Locations of McDonald's restaurants : a still largely Western multinational



Source : McDonald's, Financial Information Workbook, 2014, www. aboutmcdonalds.com

Figure 3). The municipal authorities of major conurbations, backed by the sheer mass of the population they represent and their central importance for logistics, are an increasingly important component in food systems.

All in all, the assertiveness of the "private" domain (both economic and other) and its growing involvement alongside the "public" domain are tending to blur the boundaries between categories of actor and make their partnerships increasingly unstable. All are acting outside their original domains: corporations play a part in defining public policies, national governments promote economic goals and issues in their diplomatic relations, NGOs certify the products of certain firms, and so on. This mixing of their roles heightens tensions insofar as each is likely to be challenged on its specific competence, making the issue of legitimacy (effectiveness, representativeness, scientific validity, etc.) a shared concern.

6– Multilateralism in crisis and increasingly hybridized and fragmented governance

Although it has demonstrated its ability to overcome barriers in the past, multilateralism is now vulnerable and increasingly challenged. This governance principle, which sets itself up as universally applicable and allows each member state to make its voice heard, is now being circumvented by the proliferation of bilateral, regional, or even mega-regional partnership agreements, forming a totally fragmented governance for which WTO agreements nevertheless remain the common core. Furthermore, "club diplomacy", now broadened to include the major emerging economies, has been revitalized by the G20 in the wake of the financial and food crises of 2007-2008. Lastly, hybrid initiatives emerged in the 2000s and 2010s, bringing national governments and international organizations together alongside NGOs, local government and private enterprise (e.g. New Alliance for Food Security and Nutrition, GACSA). This has meant a substantial increase in the number of forums for discussion, cooperation and influence on a topic such as the future of livestock farming (cf. Figure 12).

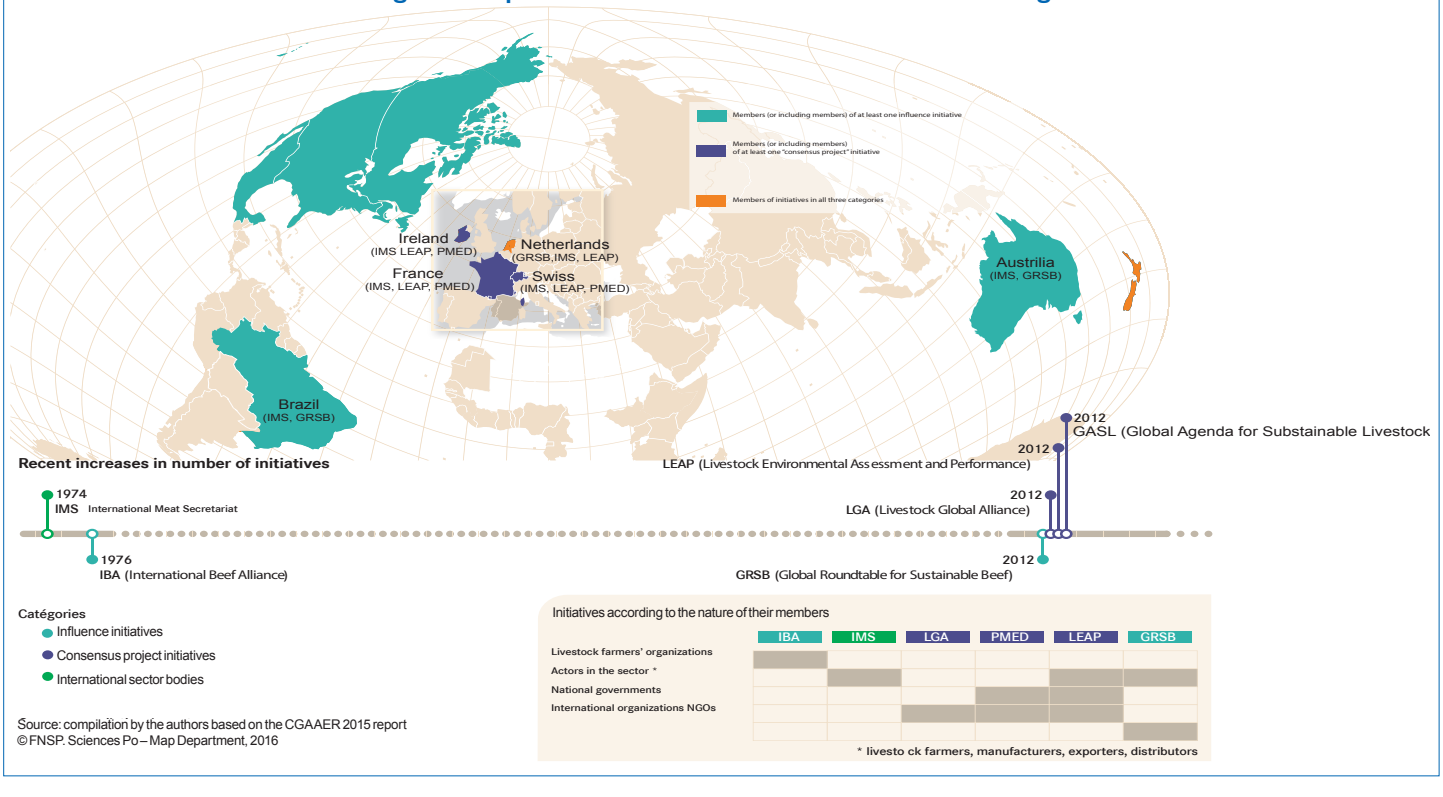
With the increasing numbers of economic partnership agreements, national governments have gradually reduced customs duties. The challenge now is one of normative convergence in the technical, sanitary and phytosanitary domains, as well as in the social and environmental spheres. In order to reduce the costs of such "non-tariff barriers", governments can choose to harmonize their mandatory standards or mutually recognize their equivalence, while at the same time protecting those that reflect "collective preferences" considered legitimate. This tension between fostering trade and protecting more or less explicit societal choices feeds into the growing distrust felt for such new-style agreements (e.g. TTIP, CETA) in some quarters of public opinion.

This "battle" of standards is also one of private initiative (Box 6). Faced with growing demand for guarantees of sanitary safety and sustainability, several dozen private international standards have been created (GlobalGAP is one example). Defined and promoted by coalitions of global actors

Box-6 Towards stricter oversight of the activities of multinationals?

Following the deregulation of the 1980s and 1990s, private agricultural and agrifood companies have derived substantial benefit from new areas for investment, exploiting local institutional weaknesses in some cases. In reaction, a desire to apply stricter control to global corporations has appeared and could well intensify in the future. This trend has made itself felt especially in regulation of large-scale land acquisitions. In 2011, the Inter-Agency Working Group IAWG (FAO, IFAD, UNCTAD, World Bank) adopted the "Principles for Responsible Agricultural Investment", and in 2014 the "Principles for Responsible Investment in Agriculture and Food Systems" were published by the Committee on World Food Security. These initiatives, like those directed at regulating corporate social and environmental responsibility, apply non-binding rules to the private sector. In this context, there are more and more calls for multinationals to be treated as actors in international law in the same way national governments, as well as calls arguing for competition law to remedy the weaknesses of national judicial systems in dealing with private corporations whose activities are worldwide.

Figure 12 - Spheres of influence in the area of livestock farming



Source: compilation by the authors based on the CGAAER 2015 report
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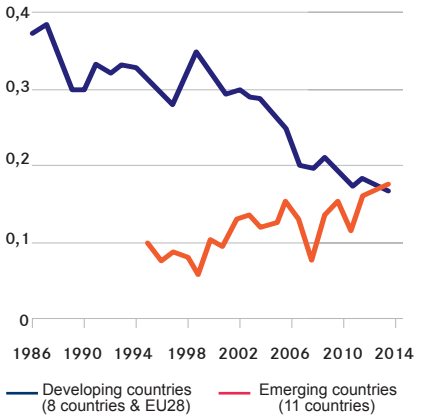
Figure 13 – **Converging levels of support for agriculture**

Support for agriculture, as calculated by the OECD, is defined as the annual monetary value of gross transfers to agriculture from consumers and taxpayers as part of agricultural support measures and irrespective of the objectives of those measures or their economic effects.



Source: Debar, Douillet, 2015; graph updated by CEP based on OECD data

(corporations, major NGOs), working together under initiatives such as GFSI and the ISEAL Alliance, such private standards facilitate supply chain control and standardize originally different products and practices.

In doing so, they influence relative negotiating power and the allocation of value-added along supply chains (Box 2).

This trend toward expansion in the numbers of topics for discussion and forums for that discussion is a reaction to the many challenges facing global food systems: volatility, poverty, hunger, employment, environment, logistics, climate change, among others. By grouping them together under a single banner, the new Sustainable Development Goals of the United Nations (adopted by 193 Member States in 2015) lay down a common roadmap to 2030. Setting out 17 goals and 169 targets, the SDGs also reveal the myriad of topics to be addressed and raise doubts as to the ability of national governments to overcome so many challenges simultaneously given the fact that the previous framework (the Millennium Development Goals) produced only patchy results despite less ambitious objectives.

*

All the above leads to a distinction between two major globalization processes. Firstly, we are witnessing globalization through flows, circulation and dissemination of people (migrants, tourists, researchers) and goods (food products, seeds, containers) as well as intangibles. Such circulation also involves food dishes (e.g. couscous, hamburger), paradigms ("agronomic progress" "good risk management", etc.) and values (sustainability, localism, health). This intensification of flows exploits channels that it in turn helps reinforce: sea and air routes, Internet and data communication networks, for example. The massification of data and information channels is particular important in this context. The forums of international negotiation and standardized protocols are other vectors. Globalization is reliant on these infrastructures, of which there is often little awareness but which can confer power if controlled.

Secondly, we have globalization through global processes: actors such as Danone, Cargill, Bayer or the Gates Foundation exert influence on food systems by implementing planet-wide strategies rolled out at local level. The consolidation of major international research programmes and the emergence of hybrid forms of governance contribute to this form of globalization. This is also manifest in the (slow) emergence of a "globalized civil society". The planet is increasingly an explicit scale of reference either because of the opportunities it offers or through necessity (for consideration of climate change and certain epizootics). In this case, globalization is no longer simply the sum of uncoordinated and decentralized flows, but the conscious and deliberate structuring of a higher sphere of action.

Dissemination and global processes: these two forms of logic are contributing to the emergence of a globalized food system. This deep-seated trend will continue over the coming years even if rejection of globalization makes itself increasingly felt in certain social contexts and even if the drivers for its expansion in the past have momentarily run out of steam, as has international trade. The indicators that enable us to establish intersectoral comparisons show that "food globalization" is, from the economic standpoint, less advanced that in other sectors. Segmentation of value chains and the importance of foreign capital, for example, are less developed in the sector than in industry. Innovations also appear to spread less rapidly in the sector.

Conversely, food globalization is further advanced at the political level. Food continues to be a strong marker for culture and a sense of identity in many countries and a factor for security and political and social stability in others. It is also connected to numerous "public issues" (health & nutrition, climate, biodiversity, water, soils, poverty, etc.) that are difficult to control. Food globalization is therefore more sensitive than other forms of globalization.

Globalization is a source of opportunities. It can accelerate the spread of ideas and innovations, it allows people to eat better (security of supply, diversification of inputs, lower prices), share solutions and experiment with new products and techniques for growing crops and raising livestock as well as access to other food models. As we have seen, the spread of innovations and food behaviours is accompanied less by uniformity than by reinterpretation and local hybridization. It increases rather than limits the options available to those actors who have the required resources. It also mitigates certain local tensions. International trade can pool certain risks such as localized adverse climate-related events and relieve pressure on water and land resources. It also facilitates improved management of other risks (epizootics, for example) on condition of effective governance.

At the same time, globalization is a threat to some social and cultural systems that find it hard to exist in the midst of competition between economies, actors and goals. Globalization leaves some behind, such as small-scale producers unable to meet private standards. It can lead to sociotechnical lock-ins that in turn result in overall agronomic impoverishment, as in the case of crop diversity for example, which has seen a dangerous decline in recent years. Globalization also generates new risks: financialization, planet-wide fraud or corporate concentration in some sectors, etc.

Looking beyond its advantages and drawbacks, globalization reflects awareness of a "community of destiny": the sense that we all share one and the same planet. The construction of overarching political goals, based on globalized research, contributes to this shared awareness: combating climate change, deforestation, food insecurity, obesity, etc. This explicit awareness of a planetary destiny cannot however mask a diversity of interests, a plurality of perceptions and values or competing legitimacies. It can lead just as much to a convergence of effort as to a multiplicity of unilateral measures, or an accumulation of tensions or indeed conflicts.

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