

Subsidies and Sustainable Agriculture: Mapping the Policy Landscape

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Executive summary

Agricultural subsidies have long been a consistent feature of government policies; they are granted in order to influence the use of resources in the pursuit of different policy goals. This support largely shapes production and consumption patterns, with potentially significant effects on poverty, food security, nutrition, and other sustainability concerns such as climate change, changes to land use practices, and biodiversity. This paper provides a broad mapping of different types of direct and indirect support provided by governments to different actors in the agricultural sector, and highlights some of the complex dynamics, in terms of political economy, that underpin the relevant policies.

In the absence of a universally agreed definition of what constitutes a subsidy, the paper builds on the approach taken by international institutions such as the World Trade Organization (WTO) and the Organisation for Economic Co-operation and Development (OECD) to define existing support measures, classify them under different categories, and estimate their magnitude and effect. Transfers covered in this paper consist not only of explicit budgetary disbursements, but also tax concessions, as well as market price support where policy measures such as setting minimum guaranteed prices or tariff barriers create a gap between domestic market prices and international prices for a commodity. Notably, agricultural policies that do not generate transfers are not addressed here. For example, regulations, even if they have an impact on production or prices (e.g. biofuels mandates), are not considered as subsidies.

Support measures can be targeted at the farmers themselves, for example through income support, or payments based on what they produce or the inputs they use; at the sector in general, for example through irrigation infrastructure or research and development (R&D) spending; or at consumers, for example through food stamps. Overall, subsidies targeting producers – particularly when linked to inputs, volume produced or export performance – have the most immediate effect on production and the greater trade-distorting effect. By promoting domestic production and discouraging imports, they have traditionally encouraged overproduction, leading to food surpluses that have to be disposed of via international markets – often with the help of export subsidies. This further exacerbates the pressure on international prices, and contributes to a vicious downward spiral of low prices. In the absence of adequate environmental regulation, production-enhancing subsidies tend to intensify the negative environmental effects associated with agricultural practices. They can contribute to bringing marginal land into production, promoting unsustainable types of intensification, or incentivizing the excessive use of pesticides and fertilizers.

By contrast, payments to farmers that are delinked from production – also known as decoupled payments – have far fewer distorting impacts. They may even help address market failure and deliver essential public goods. For example, the EU provides direct payments to farmers if certain requirements are met: these include the need to maintain a diversified set of crops, to conserve permanent grassland, and to devote a share of arable land to ecological practices such as the maintenance of buffer strips. Among the payments made to the sector as a whole, support for R&D, extension services and technology transfer tends

to provide some of the highest rates of return among all rural development investments, and is often considered as a key vehicle for ending hunger and poverty. Finally, transfers to consumers can play a significant role not only in ensuring food accessibility, but also in fostering healthy diets for the poor. From a trade policy perspective, the idea of enhancing the purchasing power of poor consumers is also superior to more indirect methods of dealing with food insecurity or poor nutrition, such as price controls or production support.

According to OECD data,¹ between 2015 and 2017 more than \$620 billion was paid in annual transfers to the agricultural sector by the 20 largest producing countries for which subsidy data are available. Of this, nearly \$475 billion was transferred directly to farmers. China alone accounted for more than 40 per cent of total support in 2015, with transfers exceeding \$280 billion; it was followed by the EU28, with \$107 billion; the US, with \$93 billion; and Japan, with \$41 billion. Together, these four entities accounted for more than three-quarters of total support provided to their agricultural sectors by the countries analysed in this paper.

Over recent decades, policy reforms in advanced economies have resulted in a gradual reduction of the amount of trade-distorting support provided by major players such as the EU, the US or Japan. By contrast, governments in large emerging economies – particularly China, India, Indonesia and Turkey – have considerably increased their support to agriculture, in efforts to incentivize domestic supply or to support small farmers' incomes. Today, the support provided by those countries, in US dollar terms, is rapidly approaching the levels of support granted by OECD countries.

From a product perspective, subsidies are highly concentrated around a few commodities. Rice, maize, pig meat, beef and veal, and milk products account for roughly three-quarters of total commodity transfers. These are followed by wheat, poultry, cotton, sugar and sheep meat. The concentration of support on a few products – notably including cereals – has contributed to an intensification of production, reinforcing global dependence on a few calorie-dense crops suited to large-scale industrial farming. This has often come at the expense of both biodiversity and dietary diversity. While these crops are calorie-rich, they are relatively poor in nutrients, and so diets have become more uniform, more calorific and less nutritious as consumption of these crops has increased. This is contributing to the global obesity pandemic as well as other non-communicable diseases including type 2 diabetes, undernutrition and heart disease.²

If subsidy policies are to be reformed to help deliver healthier diets and encourage more sustainable production, it is essential to understand not only the type and amount of support that key countries provide, but also the domestic dynamics that can underpin such

¹ For database, see OECD (2019), *Agricultural policy monitoring and evaluation*, <https://cht.hm/2Pgfra4> (accessed 12 July 2019).

² Bailey, R., Lee, B. and Benton, T. (2018), 'Breaking the Vicious Circle: Food, Climate & Nutrition', Hoffmann Centre for Sustainable Resource Economy, 11 June 2018, <https://cht.hm/2zAqf8F> (accessed 28 Aug. 2019).

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policies. In practice, the goals pursued by the main subsidizers vary greatly, reflecting differences in natural resource endowments, socio-economic conditions, political considerations or, more broadly, societal preferences. For example, addressing price and harvest risks while enabling poorer segments of society to purchase food at affordable prices is at the heart of the US approach. In the EU, the main rationale for subsidies is to support the income of a fragmented sector with relatively small farms while also addressing the environmental challenges associated with intensive agriculture. At the other end of the spectrum, China's main objective remains the need to feed its growing population while at the same time reducing income disparities between urban and rural populations. In the case of India, subsidies are essentially aimed at supporting the livelihood of small farmers and providing access to cheap food for poor consumers. For Brazil, the chief priority is to reduce disparities between smallholders and large commercial farmers while keeping productivity high and protecting poor consumers.³ Other countries, among them Japan, have focused on maintaining farmers' income levels, improving rates of food self-sufficiency, and preserving the role of agriculture in environmental conservation.

The instruments chosen to achieve these policy objectives also differ significantly. Price support, input subsidies or investment aids, for example, remain the central pillars of programmes in large developing countries such as Brazil, China, India or Indonesia. This is largely because such instruments are perceived as yielding quick returns in terms of production, and are relatively easy to operate compared with other – less distorting – instruments such as direct payments to producers. In contrast, the EU member states and Japan increasingly rely on direct payments, support for general services and set-aside schemes, while maintaining significant border protection particularly for sensitive products. For its part, the US focuses on subsidized insurance schemes and other measures, combined with expenditure on food programmes for poorer consumers.

Given the negative spillover effects that subsidies create, the natural mechanism to foster reform is that of international cooperation. Past experience suggests, however, that multilateral talks demonstrate a poor track record in promoting domestic changes. Governments (particularly those regarded as large players) will only agree to binding international disciplines on subsidies once they have unilaterally implemented domestic reforms. This largely explains why it was possible in 2015 for the members of the WTO to achieve agreement on the abolition of export subsidies – an instrument which had gradually been abandoned by governments in all the major economies – while it remains extremely difficult to make progress on other forms of support more widely used by WTO members.

The political economy of subsidies is such that the removal of support once it has been granted remains particularly difficult, with

³ International Centre for Trade and Sustainable Development (2015), *National Agricultural Policies, Trade, and the New Multilateral Agenda*, Information Note, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2Zp7xiL> (accessed 4 Jun. 2019).

most attempts at cutting support encountering significant political resistance. Lessons from past experiences tend to show that reform is more likely to succeed if it promotes a gradual transition towards less perverse forms of support. While there may be a case for some production-enhancing support, through output- or input-based subsidies, at an early stage of agricultural development, delinking support from production in the longer term will reduce both its trade-distorting effect and the negative spillover effects for third countries. It also significantly reduces the risk of exacerbating the negative environmental effects associated with certain agricultural practices.

If the main rationale for policy intervention is to address nutrition or food insecurity, consumer subsidies – preferably delivered by means of cash transfers or food stamps, as opposed to in-kind food distribution – remain the preferred option. In other words, transfers should target people, not commodities. This not only limits the risk of creating distortions; it also allows governments to specifically target those consumers who need support, instead of encouraging production with the hope that this would address the problem. If the goal is to enhance productivity and make the sector more competitive, support in the form of general services tends to be the most efficient way to achieve such results without generating distortions. And if the objective is to promote a transition towards more environmentally friendly production systems, or to promote the delivery of public goods, payments for environmental services, as well as other types of payments delinked from production, may constitute the best approach. However, these payments should be related clearly to the cost of delivering such public goods, under a performance-based approach, with clear and measurable targets supported by objective indicators of success. While this poses a number of practical and conceptual challenges (e.g. that of measuring progress in, say, increasing biodiversity, or reducing greenhouse gas emissions) the experience of the EU Common Agricultural Policy (CAP) tends to show that such an approach may be more flexible and practical than a set of uniform rules defining how subsidies should be applied.

1. Introduction

It is widely accepted that achieving the Sustainable Development Goals (SDGs) agreed by the UN General Assembly in 2015 by the given target date of 2030 will require significant investments in agriculture, particularly in poorer countries. This is especially true for SDG2, which commits governments to ‘end hunger, achieve food security and improved nutrition and promote sustainable agriculture’.⁴ While a large part of such investments must come from private operators, government spending will also play a critical role in achieving specific SDG targets such as Target 2.3, which envisages doubling the productivity and income of small-scale farmers, or 2.4, which promotes sustainable production.

Public spending in the form of agricultural subsidies has been a constant feature of government policies. Subsidies are granted in order to influence the use of resources in the pursuit of different policy goals. They have been particularly pervasive in developed countries, but increasingly also in emerging economies. According to the 2019 OECD Agricultural Policy Monitoring and Evaluation report,⁵ in 2016–18, the 53 countries surveyed provided \$705 billion in support to the agricultural sector – a figure that is likely to continue increasing in the future. Around 75 per cent of this amount was transferred directly to farmers.

In an increasingly integrated and interdependent world, it is critical to address the long-recognized ‘beggar-thy-neighbour’ effects of subsidies, while maintaining their role in correcting market failure⁶ and delivering public goods. Critics often point to the inefficiencies and economic distortions that subsidies create, their perverse distributive consequences – in that they often benefit mostly large and wealthy farmers – and the negative impact they can have on the environment and diets by distorting prices and exacerbating externalities that are not reflected in market prices.⁷ Others, on the contrary, argue that subsidies represent sensible policy responses to a range of market failures, and that they play a useful role in advancing certain public policy objectives – such as reducing income inequality, supporting the livelihood of small farmers, or delivering essential public goods.⁸

Regardless of the stated objective pursued by individual countries,

⁴ United Nations Sustainable Development Goals (2019), ‘Sustainable Development Goal 2’, <https://cht.hm/2ZvEZA2> (accessed 16 July 2019).

⁵ OECD (2019), *Agricultural Policy Monitoring and Evaluation 2019*, Paris: OECD Publishing, <https://doi.org/10.1787/39bfe6f3-en> (accessed 12 July 2019).

⁶ In economics, a market failure refers to cases where the free market doesn’t result in an efficient allocation of goods and services, a situation which often leads to a net social welfare loss. This may occur, for example, when the cost of environmental degradation associated with the production of a particular good is not taken into account into or reflected by the final price. In the absence of government intervention, this may lead to a situation where non-renewable resources are exhausted or fragile ecosystems or services are disrupted.

⁷ Horlick, G. and Clarke, P. A. (2016), *Rethinking Subsidy Disciplines for the Future*, E15 Task Force on Rethinking International Disciplines, Policy Options Paper, Geneva: International Centre for Trade and Sustainable Development and World Economic Forum, <https://cht.hm/32cxj7D> (accessed 4 Jun. 2019).

⁸ Sykes, A. (2005), ‘Subsidies and Countervailing Measures’, in Appleton, A., Macrory, P. and Plummer, M. (eds) (2005), *The World Trade Organization: Legal, Economic and Political Analysis*, Boston, MA: Springer Verlag.



Aerial view of wheat field in summer in Linyi, Shandong Province of China. Image: Wu Jiquan/Visual China Group via Getty Images.

the precise allocation of support has helped shape production and consumption patterns, as well as trade flows and ultimately land use decisions – with potentially significant positive or negative effects on poverty, food security, nutrition, and other sustainability concerns such as climate change, changes to land use practices, and biodiversity. This paper broadly maps different types of direct and indirect support provided by governments to different actors in the agricultural sector that contribute to shaping production, consumption, trade and land use decisions. It highlights some of the complex dynamics, in terms of political economy, that underpin different kinds of subsidies, and identifies possible opportunities for reform and entry points for intervention by both public and private actors. In doing so, the paper focuses on support that implies some financial contribution that, in turn, confers a benefit to the recipient. In other words, not all measures are considered subsidies. For example, rural credit would only be considered as a subsidy if it is provided at a preferential interest rate, with the subsidy element consisting of the difference between the market interest rate and the preferential rate. Second, the paper only considers support that is specific to the agricultural sector. This includes subsidies provided directly to farmers, for example to produce a certain quantity of a particular good, or to buy inputs such as seeds or fertilizers at a cheaper price. Subsidies may also be provided for the consumption

of agricultural products (e.g. through the provision of food through public distribution systems at a low price). Finally, subsidies may include spending that benefits the sector as a whole, such as subsidies for irrigation infrastructure or subsidized storage facilities. The paper, however, excludes spending on more general rural infrastructure like roads or ports, which may in addition benefit other sectors, such as extractive industries or tourism.

Chapter 2 provides a typology of different direct and indirect measures, such as market price support, input subsidies like the provision of seeds, pesticides, or farm credit at below market prices, income support or general services such as extension services, R&D, marketing or storage facilities. It reviews how subsidies are calculated using different approaches, and their potential impact on food and nutrition security, or on sustainability concerns. Chapter 3 focuses on who is providing what type of support, and for which products (using the OECD classification). It demonstrates the evolution of different forms of transfer in countries that have traditionally provided a large amount of support to their agriculture (such as the EU, the US or Japan), and the growing convergence with some of the large emerging economies such as China or Indonesia. It also identifies the main commodities that have received the bulk of support, such as rice, pork, dairy, beef or wheat, and the implications for sustainability. Chapter 4 concentrates on the five largest agricultural economies, namely China, the EU, the US, India and Brazil, focusing on the most salient considerations in terms of political economy that have hindered or accelerated agricultural policy reforms in those countries. Overall, it shows how the different policy measures used by the largest agricultural economies reflect heterogeneities in natural resource endowments, socio-economic and political considerations or, more broadly, societal preferences. In conclusion, Chapter 5 identifies priority areas for action, taking into account existing political realities.

Unless otherwise specified, throughout this paper European Union (EU) corresponds to EU12 for 1986–94, EU15 for 1995–2003, EU25 for 2004–06, EU27 for 2007–13, and EU28 from 2014 onwards.

2. Agricultural support and sustainability

2.1 What is an agricultural subsidy and how is it measured?

There is no universally agreed definition of what constitutes a subsidy. For practical reasons, this paper builds on the approach taken by international institutions such as the WTO and the OECD to define existing support measures and to estimate their magnitude and effect. Even though the two institutions use fairly similar definitions, they use different methodologies to quantify subsidies (see Box 1). For the WTO Agreement on Subsidies and Countervailing Measures (ASCM), a subsidy is deemed to exist if ‘there is a financial contribution by a government or any public body within the territory of a Member [...] or there is any form of income or price support [...] and a benefit is thereby conferred’.⁹ The ASCM further specifies that a financial contribution can include a direct transfer of funds (e.g. grants, loans and equity infusion); or liabilities (e.g. loan guarantees); revenue foregone or not collected (e.g. tax credits); or the provision or purchase of goods or services. A subsidy also occurs if the government pays a funding mechanism, or entrusts or directs a private body to carry out one of the functions described. The notion of benefit being conferred also implies, for example, that government purchase of food at market prices would not be considered as a subsidy, nor would government loans or credit, if they are granted at market rates.

The OECD, in its calculations of agricultural support estimates, uses a similar approach but with important differences. It refers to the notion of ‘transfers’ rather than subsidies. As with the WTO, these transfers include not only explicit budgetary disbursements but also implicit budgetary support through tax concessions or fee reductions (termed revenue foregone). They also include market price transfers when policy measures create a gap between the domestic market prices and international prices of a commodity. This covers measures such as the setting of minimum guaranteed prices, or intervention purchases – which are also considered as subsidies under WTO commitments – and the effect of trade policies such as tariffs, tariff quotas or licensing requirements, which are considered separately under WTO agreements. These measures have the effect of securing a higher price for farmers when selling their goods on the domestic market compared with what they would receive if exposed to international competition.

Box 1: Quantifying subsidies It is relatively easy to quantify government direct expenses in agriculture by looking at budgetary spending. Similarly, it is possible to assess the amount of subsidy provided in the case of tax exemptions by calculating the amount of uncollected taxes or revenue foregone. However, measuring the amount of subsidy provided through market price support can be more challenging. Support is provided, for example, when a government buys a particular crop from domestic producers at a minimum guaranteed price. Here, the WTO and the OECD take different approaches:

⁹ WTO (1994), Agreement on Subsidies and Countervailing Measures, Geneva: World Trade Organization, <https://cht.hm/2zpvpnI> (accessed 4 Jun. 2019).

The WTO calculates the difference between the price set by the government and a fixed and unchanging reference price agreed at the end of the Uruguay Round of negotiations (in most cases based on 1986–88 average prices). This difference is then multiplied by the quantity of food eligible under the government purchase scheme to estimate the amount of subsidy provided. This approach has been criticized by several developing countries, which argue that the 1986–88 fixed reference price should not be used as a point of comparison because it is not a good proxy for what undistorted prices are. As most agricultural prices are considerably above their 1986–88 level, this methodology tends to overestimate the amount of subsidy. Others, however, have argued that this was intended as an inbuilt mechanism to ensure continuous reduction in domestic support and thus encourage governments to shift towards less trade-distorting forms of support.

The OECD, in contrast, uses current prices as reference to compare with prices fixed by government – a measure that arguably provides a more accurate picture of effective transfers and potential trade distortions.¹⁰

Importantly, both the WTO and the OECD exclude from their definitions agricultural policies that do not generate transfers, such as regulations (or a lack thereof), although compensation for the costs of compliance is included.¹¹ For example, biofuels mandates, which establish that a certain proportion of biofuels should be used for transport purposes, will tend to encourage production and have an effect on prices under certain circumstances.¹² However, mandates do not involve a financial contribution by the government imposing them (there is clearly a financial contribution from consumers), nor any form of income or price support, and therefore would not be considered as subsidies.¹³ In other words, the fact that a particular regulation has an impact on production or prices is not in itself sufficient to consider it as a subsidy. Finally, policies must deliver transfers to the agricultural sector specifically – excluding, for example, general energy subsidies available to all sectors of the economy, or policy measures implemented by an agricultural ministry but related to non-agricultural activities such as forestry or fisheries. For example,

¹⁰ For further details about the difference between the way in which the WTO and the OECD calculate market price support, see Brink, L. (2018), 'Two indicators, little in common, same name: Market Price Support', *CAP Reform* blog, 29 August 2018, <https://cht.hm/2PxtMzp> (accessed 4 Jun. 2019).

¹¹ Neither the WTO nor the OECD considers unpriced externalities, such as the public health cost of unhealthy food or environmental degradation associated with certain agricultural practices, as subsidies. However, other international institutions, such as the IMF, have considered such externalities when estimating fossil fuel subsidies – an approach which significantly increases the number of subsidies that are determined to have been provided.

¹² The effect may not in all cases be to lower prices. For instance, the price of maize for human or animal consumption may increase if large amounts are used to produce biofuels.

¹³ Other examples of measures which are not considered as agricultural subsidies include preferential treatment of farmers in retirement schemes (e.g. exemption from or reductions in contributions), or exemptions from or reductions in property taxes.

spending for rural development in the form of transport or electricity infrastructure may not be considered specific to the agricultural sector, not least because they also benefit other sectors.

2.2 What are these support measures?

All subsidies are subject to international rules and disciplines established under WTO auspices by its member states. These disciplines set out circumstances whereby subsidies may be challenged and, in the case of trade-distorting agricultural subsidies, numerical ceilings that cannot be exceeded. In doing so, the rules differentiate between different types of support measures. More specifically, the WTO uses essentially an 'effect-based approach', distinguishing subsidies according to their trade-distorting effect.¹⁴ The ASCM, for example, prohibits certain subsidies deemed to have the most significant trade-distorting impact, namely export subsidies and those conditioned on the use of domestic rather than imported goods. All other subsidies are considered as actionable, meaning that they may be challenged if another member can show that they cause adverse effect. Instead of categorizing different types of support, the ASCM mainly relies on an *ex post* assessment of the impact of a particular measure.

The WTO's Agreement on Agriculture (AoA) goes one step further by defining *ex ante* certain categories of agricultural subsidies based on their trade-distorting impact (see Box 2). By putting a cap on the more trade-distorting forms of support, the system encourages members to shift subsidies towards minimally trade-distorting domestic support for which no limits are envisaged. While this approach may be suitable for the purpose of designing international trade disciplines, in practice, even the policy measures that are most apparently 'decoupled' from production decisions still tend to have some trade impact, and with the rapid increase in such spending in some parts of the world, even a small trade impact per dollar may no longer remain small if multiplied by a large number of dollars.¹⁵ An example of this is provided by the EU, which significantly reduced its trade-distorting subsidies in the 1990s and 2000s but replaced them with so-called non- or minimally trade-distorting support under the 'green box' category in the AoA (see Appendix II), raising concerns that the mere scale of such support would inevitably have some effect on production.¹⁶

Other institutions analyse subsidy schemes according to the way they are implemented, as is the case with the OECD consumer and producer support database. This approach does not prejudge the impact on production, farm income, consumption, trade or the environment;

¹⁴ This adverse effect is defined as injury to the domestic industry of another WTO member, the nullification or impairment of a trade concession or a serious prejudice or threat of serious prejudice to the interests of another member. What exactly constitutes a prejudice or injury is, however, left to be decided on a case-by-case basis in the event of a dispute.

¹⁵ Galperin, C. and Doportto Miguez, I. (2009), 'Green box subsidies and trade-distorting support: is there a cumulative impact?', in Meléndez-Ortiz, R., Bellmann, C., and Hepburn, J. (eds) (2009), *Agricultural Subsidies in the WTO Green Box: Ensuring Coherence with Sustainable Development Goals*, New York: Cambridge University Press.

¹⁶ It should be noted that, since the demise of the peace clause, any country can challenge even green box subsidies as having an adverse effect, but none have so far done so directly.

rather, it focuses on how the transfers are made, and particularly on who receives the support. According to this approach, support measures can be targeted either at producers individually (e.g. through income support, or payments based on what they produce); at the sector in general (e.g. through irrigation infrastructure or R&D spending); or at consumers (e.g. through food stamps or school feeding programmes). In the first case, transfers are captured by the OECD's producer support estimate (PSE). Transfers benefiting the sector as a whole are defined as general services; and, finally, consumer subsidies are covered under transfers from taxpayers to consumers. The total support estimate (TSE) is, in turn, the sum of these different types of transfer.

Chapter 3 of this paper provides a detailed overview of these different categories, using the OECD classification. While the classification does not in itself refer to the impact of the different types of transfer, empirical evidence and analysis point towards likely effects associated with such transfers, from both an economic and a sustainability perspective. The following subsection highlights some of these considerations.

Box 2: The WTO approach to agricultural subsidies In the WTO AoA, subsidies are organized under different categories or 'boxes' according to their trade-distorting effect. Overall, the disciplines follow a 'traffic-light' approach, aimed at limiting the most trade-distorting forms of support while establishing less stringent disciplines on measures generating less distortions. Appendix I of this study shows, for six key WTO members, the most recent domestic support notifications organized under these different 'boxes', both in absolute terms and expressed as a percentage of the value of production.

Export subsidies

Since the 2015 Nairobi Ministerial Decision on Export Competition, WTO members have agreed to prohibit export subsidies – i.e. subsidies making it cheaper for members to export their agricultural products. The decision also introduced initial disciplines on exports credits, and on food aid to ensure that in-kind food aid does not displace locally produced food.

'Amber box' measures and the AMS

Besides the now prohibited export subsidies, the most trade-distorting forms of domestic support fall under the so-called amber box (the aggregate measurement of support – AMS – in the language of the AoA). These subsidies are divided into two main categories: those that are product-specific, and those considered as non-product-specific. Product-specific support would include, for example, cases where the government guarantees a certain minimum price for specific commodities. Non-product-specific support would include input subsidies (e.g. for fertilizers, pesticides and machinery) and subsidized credit or infrastructural investment. In the first case, subsidies are directly linked to the production of specific commodities. In the second, they are not. In both cases,

however, the support directly encourages production and provides incentives that affect relative prices of agricultural goods, ultimately creating economic distortions. Under the AoA, these measures are allowed up to a certain limit.

'Blue box' measures

Blue box support measures correspond to payments under production-limiting programmes. In general, these schemes are used in more advanced countries (e.g. in Japan) where governments try to limit production and ensure higher revenues for producers. While such payments still have trade-distorting effects (e.g. by maintaining high prices for producers), they are arguably less distorting than those encouraging production. Under existing disciplines, such payments are allowed without limits.

Article 6.2 measures

These refer to certain types of non-product-specific support provided in the form of generally available investment subsidies or input subsidies targeting low-income or resource-poor producers in developing countries. They also include domestic support to encourage diversification away from the cultivation of illicit narcotic crops. Such payments would otherwise fall under the amber box category, but, since they are provided to low-income or resource-poor producers in developing countries, they arguably generate fewer negative effects and are not limited.

'Green box' measures

These payments are required to cause no more than minimal trade distortion. They include support ranging from the provision of general services – such as farm research, pest control or advisory services – through consumer subsidies such as food stamps programmes, to income support (the payment of which does not require farmers to produce a certain commodity), or environmental payments. Overall, their impacts should be production- or trade-neutral. For this reason, they are allowed without any limitation.

2.2.1 Support provided to producers Transfers to producers – particularly when linked to inputs, volume produced or export performance – tend to have the most immediate effect on production. In turn, additional production of those goods may have an impact on trade by encouraging exports and discouraging imports. They may also encourage consumption of certain goods by artificially lowering domestic or international prices, or exacerbate unsustainable patterns of land use and natural resource exploitation. They can also affect employment, rural development, or food and security livelihoods in third countries through the negative spillover effects they generate (see Box 3).

Box 3: The perverse effects of agricultural subsidies Historically, increases in food production as a result of enhanced productivity and falling production costs have resulted in a long-term decline in agricultural prices. These benefits have been passed on to consumers and have contributed to enhancing per capita calorie consumption and reducing the number of chronically hungry people. However, falling prices have also put pressure on farm income. As a result, policymakers – particularly in OECD countries – have had recourse to establishing various forms of farm support as well as border taxes to protect their farmers from international competition. These measures helped stabilize domestic prices, but also generated significant negative spillover effects by exerting further downward pressure on international prices while increasing price volatility. They also encouraged domestic overproduction, resulting in food surpluses that had to be disposed of via international markets, often with the help of export subsidies. The latter contributed to further lowering world prices, generating a vicious downward spiral of those prices.¹⁷

In third countries, and particularly in developing countries, these low and volatile prices further strengthened the tendency of many governments to ignore investment in agriculture, often resulting in lower levels of domestic food production while encouraging consumption of cheap, subsidized imported foods. While these policies may have helped net food-importing countries with limited resources and unable to produce all their own food, they affected the competitiveness of efficient agricultural exporters, as well as countries with untapped food production potential – notably in sub-Saharan Africa.¹⁸

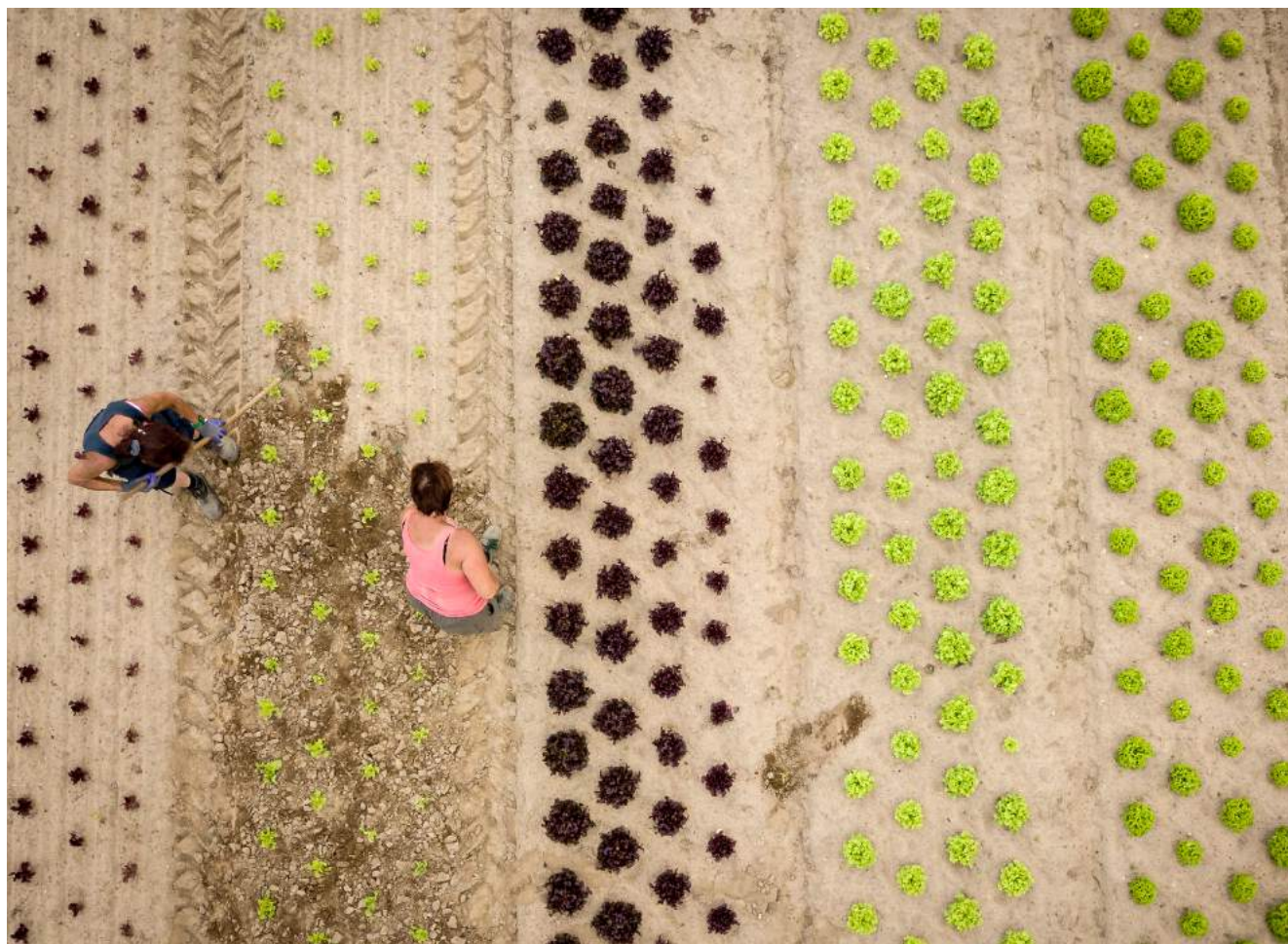
The concentration of support on a few products – cereals, for example – has contributed to an intensification of production, reinforcing global dependence on a few calorie-dense crops suited to large-scale industrial farming. This has often come at the expense of both biodiversity and dietary diversity. While such crops are calorie-rich, they are relatively poor in nutrients, and so diets have become more uniform, more calorific and less nutritious as consumption of them has increased. This is contributing to the global obesity pandemic and public health crisis.¹⁹

Transfers to producers can take several forms. They can be linked to the production of specific commodities, as is the case with market price support. Such transfers are classed as support based on outputs: the more a farmer produces, the greater the

¹⁷ Schmidhuber, J. and Meyer, S. (2014), *Has the Treadmill Changed Direction? WTO Negotiations in the Light of a Potential New Global Agricultural Market Environment*, E15Initiative Overview Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2Pdu8eb> (accessed 4 Jun. 2019).

¹⁸ Ibid.

¹⁹ Bailey, Lee, and Benton (2018), 'Breaking the Vicious Circle: Food, Climate & Nutrition'.



Employees work on an organic salad field at farm producing organic vegetables, meat and dairy products in Germany. Subsidy schemes that require a certain level of production can include payments to promote organic agriculture. Image: Axel Schmidt/Getty Images.

subsidy received. Transfers can also be provided in the form of input subsidies (e.g. for fertilizers, pesticides, seeds, electricity, machinery or subsidized investment credits). In this case, the subsidy reduces production costs and allows farmers to produce more, or the same, but at a lower cost. Finally, subsidies can be related to one or more of the following: current or historical area planted, animal numbers, farm receipts or income – A/An/R/I in the OECD database classification. This can include schemes that require a certain level of production by the farmers; it can also include schemes that do not. An example of the first instance would be subsidized insurance schemes, such as those existing in the US, which award compensation to farmers in the case of unexpected declines in prices or poor harvests compared with previous years. The subsidy component of such programmes is the reduced cost of purchasing the insurance. Payments to promote organic agriculture would also fall under this category. As regards the second instance, an example is provided by the EU, which increasingly provides direct payments for income support, based on historical planted area but delinked from current production. In this case, farmers simply receive a lump sum, regardless of what and how much they produce in a particular year. Finally, certain payment schemes can be completely independent of any commodity-related criteria (e.g. land retirement programmes, or payments for the preservation of biodiversity). In

these last two types of scheme, the fact that payments are delinked from what farmers produce tends to remove the incentive to increase production in order to receive more subsidies; however, as will be shown later, these programmes may still influence producers' decisions, depending on how they are designed and implemented.

Support based on output

Support based on output typically involves transfers that provide incentives to increase production of certain commodities. In practice, the vast majority of output subsidies take the form of market price support schemes (see Box 4). Such support tends to isolate farmers from international competition and market signals. It guarantees that farmers receive a higher price for what they produce, although, by construction, most of the benefit accrues to the larger producers who have most to sell. While these schemes may help protect farmers from market fluctuations and volatility when countries are at an early stage of agricultural development, they can also deny producers in both developed and developing countries – who produce at lower cost – the opportunity to sell their products abroad.

There is also a general agreement that, in the absence of adequate environmental safeguards, programmes that are production-enhancing tend to intensify the negative environmental effect associated with certain kinds of agricultural practices (e.g. by bringing marginal land into production, increasing use of pesticides and fertilizers, destroying wildlife habitats, and accelerating land degradation).²⁰ The incentivization of the production of certain commodities can promote intensification of production at the expense of diversification, and contribute to exacerbating commodity-driven deforestation. It is estimated that 27 per cent of deforestation is still due to permanent land use change for commodity production.²¹

Furthermore, transfers linked to production in this way depress international prices and, at the global level, may ultimately result in higher consumption of cheap products with a significant environmental footprint in terms of biodiversity loss, water use, soil erosion or greenhouse gas emissions.²² Such transfers can make it difficult for non-subsidized producers to bear the cost of higher environmental standards – if their competitors are not operating

²⁰ Earley, J. (2009), 'The environmental impact of US green box subsidies', in Meléndez-Ortiz, R., Bellmann, C., and Hepburn, J. (eds) (2009), *Agricultural Subsidies in the WTO Green Box: Ensuring Coherence with Sustainable Development Goals*, New York: Cambridge University Press.

²¹ Curtis, P.G. et al. (2018), 'Classifying drivers of global forest loss', *Science*, 361(6407): pp. 1108-1111, <https://doi.org/10.1126/science.aau3445> (accessed 4 June 2019).

²² It should be noted, however, that the opposite is equally possible. For example, coupled support to beef production in the EU may displace some beef production in Latin America, but if emissions per kg of beef produced are much lower in the EU, this may contribute to reducing overall GHG emissions. Similarly, if environmental standards are higher in the subsidizing country, there could be a net gain in environmental terms.

under the same constraints.²³ Finally, from a nutritional perspective, output subsidies can arguably contribute to increased availability and lower prices of certain products. If these are healthy products, the impact on nutrition may be positive. However, subsidies may also indirectly contribute to a 'nutrition transition' towards diets that are higher in animal products, sugar, salt and processed foods, sometimes resulting in increases in weight and obesity.²⁴

Box 4: Market price support Market price support accounts for a significant part of output subsidy programmes, particularly in emerging economies. It can result from a high degree of border protection (e.g. through tariffs or quotas that restrict imports) or from programmes aimed at guaranteeing minimum prices for producers. Price support schemes are often backed by government purchases at a price fixed by national authorities in the context of food stockholding programmes. These programmes usually operate buffer stocks to stabilize commodity prices, or serve to run public distribution systems that provide food grains at concessional prices to the poorer segments of society, therefore playing a critical role in fighting hunger and malnutrition.

By guaranteeing minimum prices, governments aim to provide farmers with a more predictable and perhaps higher price than they could receive in an open market. This could encourage farm investment and improvements in production methods. In practice, however, the complexity of public procurement programmes requires a high degree of organization and skills within the responsible public institutions.²⁵ The impact on price stability is often limited, and critics point to the 'leakage' of food grains due to factors ranging from poor targeting to outright corruption or wasteful management of stocks. In other cases, such schemes end up benefiting only a small set of wealthier farmers, with small producers often being unaware of the existence of government procurement programmes. Finally, from a government perspective, the fiscal cost can be substantial, especially if the prices paid to farmers exceed market prices.

²³ Charveriat, C. (2018), 'SDG 2.4: Can Policies Affecting Trade and Markets Help End Hunger and Malnutrition within Planetary Boundaries?', in Hepburn, J. and Bellmann, C. (eds) (2018), *Achieving Sustainable Development Goal 2: Which Policies for Trade and Markets?* Geneva: International Centre for Trade and Sustainable Development.

²⁴ Food and Agriculture Organization of the UNO (2018), *Trade and Nutrition Technical Note. Trade Policy Technical No. 21. Trade and Food Security*, FAO Trade Policy Technical Note, Rome: FAO, <https://cht.hm/345G7xC> (accessed 4 Jun. 2019).

²⁵ Arias, P., Hallam, D., Krivonos, E. and Morrison, J. (2013), *Smallholder Integration in Changing Food Markets*, Report, Rome: FAO, <https://cht.hm/377COre> (accessed 4 June 2019).

Support based on inputs

Input subsidies can take the form of investment credit with preferential interest rates; lower electricity prices; and subsidized fertilizer, pesticides, seeds, or machinery. Each of these has the effect of lowering production costs, thereby providing incentives for producers to increase production. On the positive side, input subsidies can help farmers achieve higher profitability, and reduce the risks associated with the adoption of new technologies and production practices.²⁶ Subsidies supporting investment by poorer farmers (for example, through preferential credit lines, as provided in Brazil) can also help correct market failures when prohibitive interest rates in the market prevent small farmers from accessing rural credit facilities – a situation that often results in insufficient credit allocation to medium, small and micro-producers in developing countries. At the same time, input subsidies tend to be costly. They can discourage private sector actors from participating in input markets, and the production response is often lower than expected, due to, among other things, a poor targeting of programmes.²⁷

Box 5: The case of irrigation subsidies Irrigation subsidies usually relate to the cost of operating and maintaining irrigation infrastructure. Such subsidies are considered an input subsidy, whereas the subsidization of the construction of the facilities themselves would be considered as an infrastructure subsidy. Other forms of support to facilitate irrigation also include fuel or electricity subsidies used for groundwater pumping. Overall, critics argue that such support mechanisms contribute directly to the misallocation – and ultimately the overuse – of water resources, at the expense of aquatic ecosystems or other needs of society.

In the early 2000s, for example, a study by the US-based Environmental Working Group (EWG), found that the Central Valley of California – a state where water was already scarce – received up to \$416 million per year in federal water subsidies for the production of fruit and wine. The availability of water at an artificially low price not only contributed to inefficient use of water, but also to a host of problems such as the devastation of fish and wildlife habitats, and severely toxic pollution. The distribution of such support was also largely biased in favour of large agribusiness operations, with the largest 10 per cent of farms receiving 67 per cent of total support in 2002.²⁸

²⁶ Dorward, A. (2009), *Rethinking Agricultural Input Subsidy Programmes in a Changing World*, Research Paper, Rome: FAO, <https://cht.hm/2KXTSXU> (accessed 4 Jun. 2019).

²⁷ Ibid., p. 14

²⁸ Environmental Working Group (2004), 'California Water Subsidies: Large agribusiness operations – not small family farmers – are reaping a windfall from taxpayer-subsidized cheap water', 15 December 2004, <https://cht.hm/2Zi8DgM> (accessed 4 Jun. 2019).

A 2009 study by the Institute for European Environmental Policy²⁹ concluded that water subsidies in Spain, which amounted to roughly €165 million per year, led ultimately to poorly maintained infrastructure, pushing farmers to choose unsustainable practices and water-inefficient crops. The scheme, initially developed to enhance productivity and combat desertification, resulted instead in groundwater depletion, increased concentrations of nitrates, soil salination and biodiversity losses.

Striking the right balance between environmental imperatives and social priorities is even more challenging in developing countries, where the majority of the population is rural and where agriculture is the main economic activity. In India, for example, the state of Andhra Pradesh provides significant subsidies to develop irrigation for rice production. According to the Global Subsidies Initiative of the International Institute for Sustainable Development (IISD), annual subsidies for irrigation projects in Andhra Pradesh were estimated at \$282 million per year between 2004 and 2008.³⁰ As a result, groundwater pumping by millions of smallholder farmers overexploited the water resources on which their livelihoods depend. In the state of Gujarat, when fuel prices increased, many farmers switched from diesel- to electric-powered pumps using subsidies provided by the government for domestic consumption. This not only continued to deplete water resources, but also overtaxed the electricity distribution systems, leading to frequent blackouts.³¹

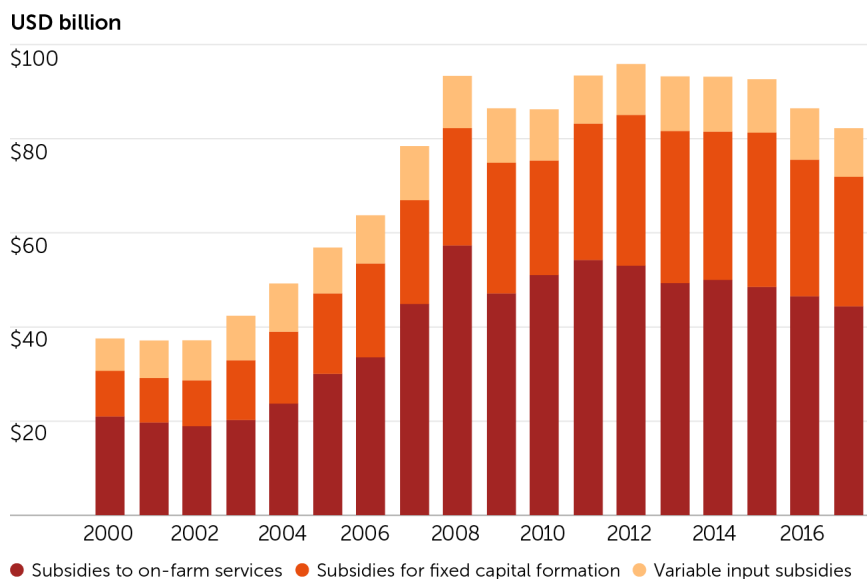
From an environmental perspective, well-designed fertilizer subsidy programmes may help support a sustainable intensification of production – particularly when such inputs are underused – and avoid the expansion of the agricultural frontier (e.g. through deforestation and land use change). In most cases, however, input subsidies tend to encourage unsustainable energy use (as with subsidies for the purchase of fossil fuels) and the excessive use of pesticides, fertilizers or groundwater (see Box 5). This can, in turn, directly contribute to habitat loss and soil degradation. Excess nutrients and chemical pesticides may also result in the pollution and eutrophication of surface waters, as well as the impairment of groundwater. Agriculture remains the main source of nutrient overload from leakage of nitrogen and phosphorus into waterways. Unsustainable intensification is depleting soils, creating a vicious

²⁹ Valsecchi, C., ten Brink, P., Bassi, S., Withana, S., Lewis, M., Best, A., Oosterhuis, F., Dias Soares, C., Rogers-Ganter, H. and Kaphengst, T. (2009), *Environmentally Harmful Subsidies (EHS): Identification and Assessment*, Final Report for the European Commission's DG Environment, London: Institute for European Environmental Policy, <https://cht.hm/320ZGFA> (accessed 4 Jun. 2019).

³⁰ Global Subsidies Initiative (2011), 'Measuring Irrigation Subsidies: GSI case study on Southern India', 11 April 2011, <https://cht.hm/2Zw4B3N> (accessed 27 Aug. 2019).

³¹ Muller, M. and Bellmann, C. (2016), *Trade and Water: How Might Trade Policy Contribute to Sustainable Water Management?*, Research Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2Ziafat> (accessed 4 Jun. 2019).

Figure 1: Input subsidies granted by type of input, 2000–2017



Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates database*, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* Selected countries include: Australia, Brazil, Canada, Chile, China, Colombia, EU28, Indonesia, India, Japan, Mexico, New Zealand, Philippines, Russia, South Africa, South Korea, Turkey, Ukraine, United States and Vietnam. For the EU, see explanatory note on p. 11.

circle of increasing intensification and further land degradation and abandonment, leading FAO to announce, in 2015, that there may only be 60 years of harvests left.³²

Figure 1 provides an overview of input subsidies granted in the 20 largest agricultural producing countries for which consistent subsidy data are available, organized by type of inputs – namely variable inputs (e.g. fuel or fertilizers), capital formation (e.g. investment credit) or on-farm services (e.g. pest and disease control). Overall, the largest share is accounted for by variable input subsidies, with more than \$40 billion being transferred to this end every year. This form of input subsidy includes fertilizers, pesticides, electricity for groundwater pumping, machinery and seeds. Not only is this type of input subsidy one of the most production- and trade-distorting forms, it is also highly prone to overuse, or skewed use, which could entail potentially significant environmental damage.

Support based on area planted, animal numbers, farm receipts or income

Instead of being linked to inputs or outputs, these payments are calculated based on A/An/R/I (in the OECD classification). Farmers still receive the money directly but, depending on how schemes are designed, payments may or may not be linked to what farmers produce. Those requiring a certain level of production are more likely to have similar effects to output-based payments, as highlighted above. Payments may include support for the delivery of environmental services or take the form of subsidized insurance to protect farmers against production or price shortfalls. Under such programmes, payments may be triggered when farm prices fall below fixed reference prices, or when revenue per acre falls below a

³² Food and Agriculture Organization of the UN (2015), 'International Year of Soil Conference', 6 July 2015, <https://cht.hm/2ZnNsdI> (accessed 4 Jun. 2019).

benchmark. Depending on how those benchmarks and reference prices are set, these programmes can encourage production. High income or yield expectations, for example, may result in payments being triggered nearly every year.³³

Box 6: Payments for environmental services Payments for environmental services (PES), or payments for ecosystem services, are usually voluntary payments to farmers or landowners who agree to manage their resources sustainably by protecting watersheds, promoting biodiversity conservation or reducing greenhouse gas emissions through carbon sequestration. These payments are made either directly by the beneficiaries of the environmental services, including private sector actors, or by national or local governments on behalf of their citizens, who benefit from the ecosystem services.³⁴ PES respond to permanent market failures that undervalue benefits and result in the suboptimal provision of such services.

The concept of payment for ecosystem services has generated substantial interest as a cost-effective means to promote sound environmental management. In developing countries, PES have also played a critical role in offering alternative and more diversified sources of livelihood for small farmers. However, this does not always happen. For example, assessments undertaken by Porras³⁵ of Costa Rica's pioneering PES programme, which began in the 1990s, show that these payments tend to go to areas with lower opportunity costs, relatively large farms and private companies, suggesting that more needs to be done in order for PES to have genuine social and economic benefits for the poor.

While these schemes can contribute to addressing critical environmental challenges, including the biophysical impact of climate change on yields, they can also have perverse effects by reducing incentives to adapt more sustainable production methods. For instance, subsidizing crop insurance – instead of providing other forms of support, conditional on changing practices – can insulate producers from increased climate risk and create a disincentive for the adoption of climate-smart agriculture.³⁶

³³ Glauber, J. and Westhoff, P. (2015), *50 Shades of Amber: The 2014 Farm Bill and the WTO*, Invited Paper, Boston: Allied Social Science Associations, <https://cht.hm/2Ztc2EP> (accessed 4 Jun. 2019).

³⁴ Porras, I. (2010), *Fair and green? Social impacts of payments for environmental services in Costa Rica*, Research Paper, London: International Institute for Environment and Development, <https://cht.hm/2KYqYqr> (accessed 4 June 2019).

³⁵ Ibid.

³⁶ Charveriat (2018), 'SDG 2.4: Can Policies Affecting Trade and Markets Help End Hunger and Malnutrition within Planetary Boundaries?'

Similarly, reduced insurance premiums or relief from natural disasters can serve as a perverse incentive to continue farming on marginal and degraded land not suitable for agricultural production.³⁷

In contrast, support based on A/An/R/I that does not require production, or support based on non-commodity criteria, would tend to have a smaller impact on production. These kinds of decoupled payments include, for example, the fixed amounts paid to farmers under the EU's basic payment scheme. In the EU, this income-support programme is complemented by additional payments for farmers adopting certain agricultural practices that are deemed to be beneficial for the climate and the environment. Such requirements include the need to maintain a diversified set of crops, to conserve permanent grassland and to devote a share of arable land to ecological practices such as the maintenance of buffer strips and afforested areas.³⁸ While these payments essentially remain income support with added environmental conditionality, they reflect a move towards payment for environmental services (see Box 6). From a sustainability perspective, such approaches may result in significant benefits by promoting environmentally sound agricultural practices, fostering diversification or increasing the range of economic opportunities for farmers to generate income and diversify its sources.³⁹

As highlighted above, delinking payments from production means that transfers are also likely to have a much less significant trade-distorting effect than that associated with other forms of producer support. That said, a broad consideration of the economic effects of such programmes, particularly when operated on a large scale, suggests that they may still have production and trade impacts. For example, Swinbank⁴⁰ argues that payments remain linked in one way or another to various factors of production in a given year, due to requirements that land must be kept in good agricultural and environmental condition and by specifying that environmental conditionalities must be respected. The mechanisms through which such decoupled support may still have an impact on production have been well documented in the literature (e.g. wealth,

³⁷ Earley (2009), 'The environmental impact of US green box subsidies'.

³⁸ Matthews, A. (2015), 'The Common Agricultural Policy and development', in McMahon, J. and Cardwell, M. (eds) (2015), *Research Handbook on EU Agriculture Law*, Cheltenham: Edward Elgar Publishing.

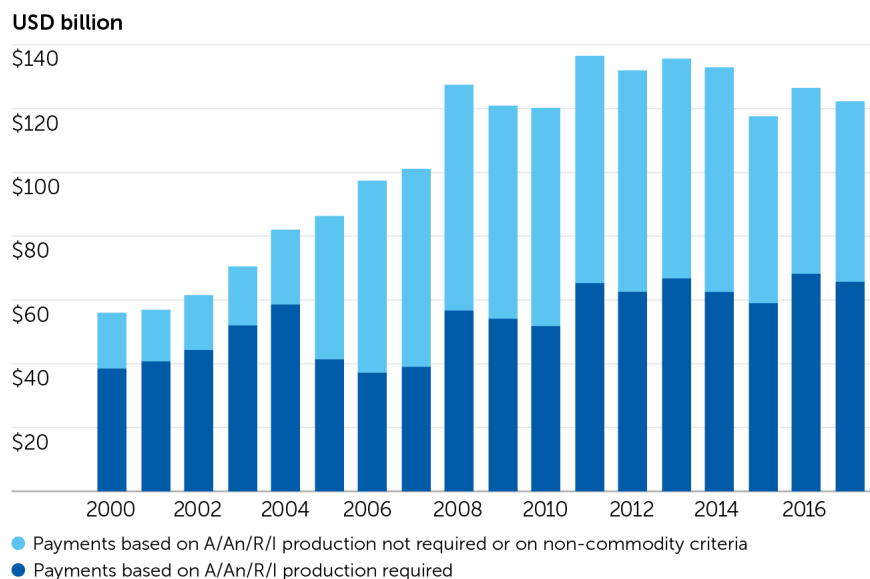
³⁹ As discussed later in the paper, it should be noted, however, that such additional support essentially remains a form of income support, not least because the amounts may not be related to the actual cost of adopting these more environmentally friendly agricultural practices.

⁴⁰ Swinbank, A. (2009), 'The reform of the EU's Common Agricultural Policy', in Meléndez-Ortiz, R., Bellmann, C., and Hepburn, J. (eds) (2009), *Agricultural Subsidies in the WTO Green Box: Ensuring Coherence with Sustainable Development Goals*, New York: Cambridge University Press.

Figure 2: Payments based on A/An/R/I, 2000–2017

Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates database*, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* Selected countries include: Australia, Brazil, Canada, Chile, China, Colombia, EU28, Indonesia, India, Japan, Mexico, New Zealand, Philippines, Russia, South Africa, South Korea, Turkey, Ukraine, United States and Vietnam. For the EU, see explanatory note on p. 11.



risk and dynamic effects).⁴¹ In practice, they are further exacerbated when payments are combined with more trade-distorting transfers.

Figure 2 provides an overview of the evolution of payments based on A/An/R/I since 2000. Together, they accounted for more than \$120 billion across 20 countries and entities divided almost equally between measures linked to production and decoupled payments. As agricultural policies continue to evolve in emerging economies, such as China, and in other large subsidizing entities such as the EU or the US, this type of support is likely to account for a growing share of total transfers, and will require close monitoring, given the often ambiguous effects arising from such support on trade and environmental sustainability.

2.2.2 Support provided to the sector as a whole These payments are usually referred to as payments for general services. They are not made to individual producers, but are transfers to the agricultural sector as a whole. They may be provided through different channels, including by supporting knowledge and innovation (e.g. R&D), inspections and control (e.g. focused on product safety, or pests and diseases), development and maintenance of infrastructure (e.g. hydrological, storage, marketing or institutional infrastructures), marketing and promotion, or supporting the costs associated with public stockholding.

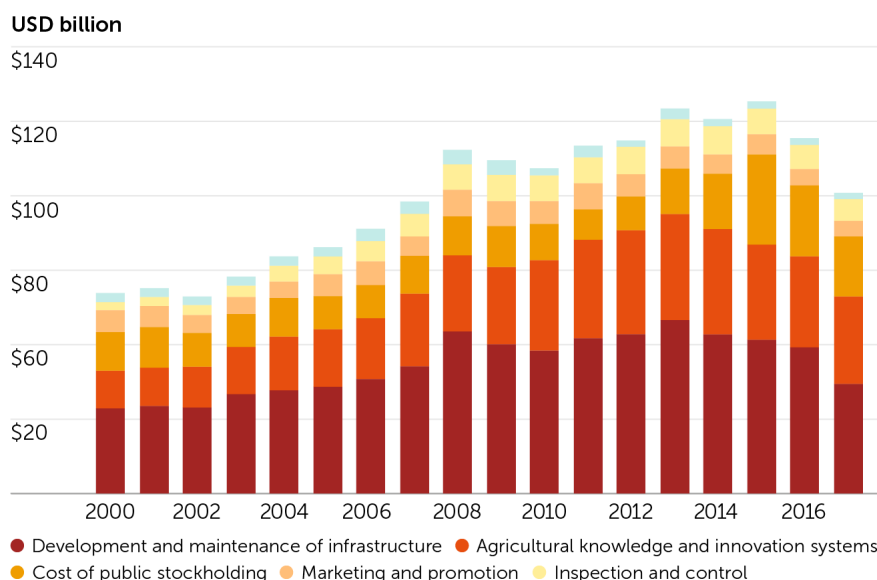
In the early stages of a country's development, when agricultural production systems are rudimentary, public

⁴¹ The wealth effect occurs when a guaranteed stream of income influences producers' decisions and discourages exit from the sector. The risk/insurance effect reduces the perceived income risk associated with agricultural production, and dynamic effects generate expectations about future government decisions. Antón, J. (2009), 'Agricultural support in the green box: an analysis of EU, US and Japanese green box spending', in Meléndez-Ortiz, R., Bellmann, C., and Hepburn, J. (eds) (2009), *Agricultural Subsidies in the WTO Green Box: Ensuring Coherence with Sustainable Development Goals*, New York: Cambridge University Press.

investments in irrigation, transportation or market infrastructure can allow countries to establish the basic conditions for agricultural productivity to rise and for farmers to generate surplus production for markets.⁴² Overall, since support for general services is not directly linked to production, it is unlikely to generate significant trade-distorting effects. For these reasons, these payments are relatively uncontroversial in policy debates.

Support for R&D, extension services and technology transfer tends to provide some of the highest rates of return among all rural development investments, and is often considered as a key instrument for ending hunger and poverty. Public research has historically provided the basis for technological change, even though the private sector has played an increasingly major role. In a similar vein, extension and training services tend to be highly effective in improving agricultural practices. Inspection and control programmes are usually beneficial from an environmental perspective, as long as the standards applied are environmentally sound.

Figure 3: The composition of general services, 2000-2017



Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates database*, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* Selected countries include: Australia, Brazil, Canada, Chile, China, Colombia, EU, Indonesia, India, Japan, Mexico, New Zealand, Philippines, Russia, South Africa, South Korea, Turkey, Ukraine, United States and Vietnam. For the EU, see explanatory note on p. 11.

Figure 3 provides an overview of the global composition of general services in 20 countries and entities. Infrastructure spending accounts for the largest share of support, followed by research and innovation. However, expenditure on these types of service has been declining in recent years, falling back to its 2007 level in 2017 – a development that could be of concern, given the importance that these types of service play in improving the long-term competitiveness of the agricultural sector. In contrast, the steady increase in expenses to cover the cost of public stockholding

⁴² Beintema, N., Stads, G.-J., Fuglie, K. and Heisey, P. (2012), *ASTI Global Assessment of Agricultural R&D Spending: Developing Countries Accelerate Investment*, International Food Policy Report, Washington: International Food Policy Research Institute, <https://cht.hm/326rlox> (accessed 4 Jun. 2019).



A worker sweeps the floor at a rice stockpile in Bangkok, Thailand. Increases in costs of public stockholding reflects the large amounts invested in several Asian countries. Image: PORNCHAI KITTIWONGSAKUL/AFP via Getty Images.

reflects the large amounts invested in stockpiling in several Asian countries, such as China, India and Indonesia.

2.2.3 Support provided to consumers Transfers from tax payers to consumers usually include policies that target poor consumers by providing social safety nets of different kinds, ranging from food-for-work schemes through in-kind or conditional cash transfers. Unlike infrastructure spending or investments in R&D, which target the agricultural sector as a whole, such forms of support can target a subset of the relevant population. The objective of many programmes is to allow poor consumers to access food. While transfers to producers may ultimately also contribute to lower prices for consumers, supporting consumers can directly avoid creating many of the production distortions highlighted in previous sections and can be more closely targeted. They can take the form of in-kind transfers, used when households are unable to source foodstuffs from the market at a reasonable price, or when specific nutritional deficiencies exist. Alternatively, governments can provide targeted

Table 1. Potential effects of different support measures on sustainable development concerns

Type of transfer		Production and trade	Rural development and livelihood	Food and nutrition	Sustainability (e.g. soil, water, GHG)	
Producer support	Support based on output	Highly distorting	Potentially beneficial but costly; usually untargeted and ineffective	Mostly ineffective and high risk of negative effect	Potentially highly damaging	
	Support based on inputs	Highly distorting	Potentially beneficial but costly; usually untargeted and ineffective	Mostly ineffective and high risk of negative spillover	Potentially highly damaging	
	Support based on A/An/R/I/I	<i>Production required</i>	Likely distorting	Ambiguous	Mostly ineffective and high risk of negative effect	Mostly ineffective and high risk of negative effect
		<i>Production not required</i>	Minimally distorting	Ambiguous	Potentially beneficial	Potentially beneficial
General services	Agricultural knowledge and innovation systems	Not or minimally distorting	Potentially highly effective if well targeted	Indirectly beneficial	Ambiguous	
	Inspection and control	Not or minimally distorting	Indirectly beneficial	Beneficial	Beneficial	
	Development and maintenance of infrastructure	Not or minimally distorting	Potentially highly effective but costly	Indirectly beneficial	Ambiguous	
	Marketing and promotion	Not or minimally distorting	Potentially highly effective	Indirectly beneficial	Ambiguous	
	Cost of public stockholding	Not or minimally distorting	Indirectly beneficial	Beneficial but very costly	Ambiguous	
Consumer support	Transfers from taxpayers to consumers	Largely non-distorting	Indirectly beneficial	Potentially highly beneficial but risk of leakage	Ambiguous	

Potential impact



Source: Author's elaboration.

cash transfers when food insecurity is more the result of problems relating to accessibility.⁴³

Conditional cash transfers constitute the largest share of support provided in the US. They are primarily provided through the Department of Agriculture's Supplementary Nutrition Assistance Program (SNAP – previously known as the Food Stamp Program). In India, the National Food Security Act of 2013 seeks to roll out an ambitious food subsidy scheme providing 67 per cent of the country's citizens with the legal right to cheap grain. One of the main challenges facing the scheme, however, is that it relies on the existing public distribution system, which is characterized by high levels of 'leakage' and waste.⁴⁴ Furthermore, the current programme design may overemphasize grain at the expense of other nutritious foods that the poor also need to be able to access at affordable prices. The Brazilian Food Acquisition Programme, in contrast, purchases food at market prices from approximately 200,000 farmers and distributes it to 15 million people. The National School Feeding Programme, in particular, purchases at least 30 per cent of its food from family farmers and supplies school lunches. It has avoided the leakages and the lack of diversification faced in India.⁴⁵

Overall, consumer schemes can play a significant role, not only in ensuring accessibility, but also in fostering healthy diets for the poor. From a trade policy perspective, the idea of enhancing the purchasing power of poor consumers has many attractions and is superior to more indirect methods of dealing with food insecurity or poor nutrition, such as price controls or production support.

Table 1 summarizes the different types of transfers described above, and their likely implications for sustainable development concerns, keeping in mind that such effects may vary significantly according to the level of economic development, the design and implementation of specific schemes, and local conditions and context. Table 2 compares the OECD classification with the WTO approach adopted in the AoA. The column in the middle provides examples of the different categories. The categories on the left are those used by the OECD, while those on the right reflect the WTO approach, including its system of 'boxes'.

⁴³ Davis, B., Handa, S., Hypher, N., Rossi, N. W., Winters, P. and Yablonski, J. (eds) (2016), *From Evidence to Action: The story of Cash Transfers and Impact Evaluation in Sub-Saharan Africa*, New York: Oxford University Press.

⁴⁴ High Level Committee on Reorienting the Role and Restructuring of Food Corporation of India (2015), *Reorienting the Role and Restructuring of Food Corporation of India*, Report, New Delhi, <https://cht.hm/2L0R8Jm> (accessed 4 Jun. 2019).

⁴⁵ Bellmann, C., Hepburn, J., Krivonos, E. and Morrison, J. (2013), *G-33 proposal: early agreement on elements of the draft Doha accord to address food security*, Information Note, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/3440Ba4> (accessed 4 Jun. 2019).

Table 2. A comparison of the OECD and WTO classifications of support measures*

OECD categories			Examples of support measures	WTO categories	WTO 'boxes'
Producer support estimate (PSE)	Support based on output	Market price support	Resulting from trade barriers (e.g. tariffs, tariff rate quotas)	Not considered as subsidy in the WTO	
			Minimum guaranteed price (e.g. purchase of governments at administered price)	Product- and non-product-specific aggregate measure of support (AMS)	Amber box
		Payments based on outputs	Production aid for specific commodities		
	Input subsidies	Variable inputs	Seed, fertilizers, electricity, pesticides	Input subsidies for low-income or resource-poor producers	<i>Article 6.2 exception[†]</i>
		Fixed capital formation	Investment aid, subsidized credit	Investment subsidies in developing countries	
		On-farm services	Pest and disease control		
	Payments based on current A/An/R/I	Production required	Subsidized insurance scheme		
			Production-limiting programmes	Direct payments under production limitation programmes	Blue box
		Production not required	Direct payments, income support	Decoupled income support	Green box
			Social safety nets	Income insurance and safety net	
Compensation for leaving the sector			Producer retirements		
Afforestation			Resource retirements		
Aid for farm modernization			Investment aids		
Support to disadvantaged regions	Regional assistance				

* This comparison is indicative only and largely made for the purpose of understanding the different approaches to classification. The exact correspondence of measures depends on the detailed nature of particular programmes.

† Article 6.2 exception: allows these forms of support - normally considered amber box - but only for low-income or resource-poor producers in developing countries.

Table 2. *continued*

OECD categories		Examples of support measures	WTO categories	WTO 'boxes'
Producer support estimate	Payments based on non-commodity criteria	Payments for bio-diversity conservation	Environmental	Green box
General services	Knowledge and innovation systems	R&D spending	Research	
		Extension services	Extension and advisory services	
		On-farm training	Training services	
	Inspection and control	National expenditure on pest and disease control	Pest and disease control	
			Inspection services	
	Development and maintenance of infrastructure	Hydrological infrastructure	Infrastructural services	
	Marketing and promotion	Market access programmes	Other farm services	
Cost of public stockholding	Storage costs	Public stockholding		
Consumer support		Nutrition assistance programmes	Domestic food aid	

Source: Author's elaboration.

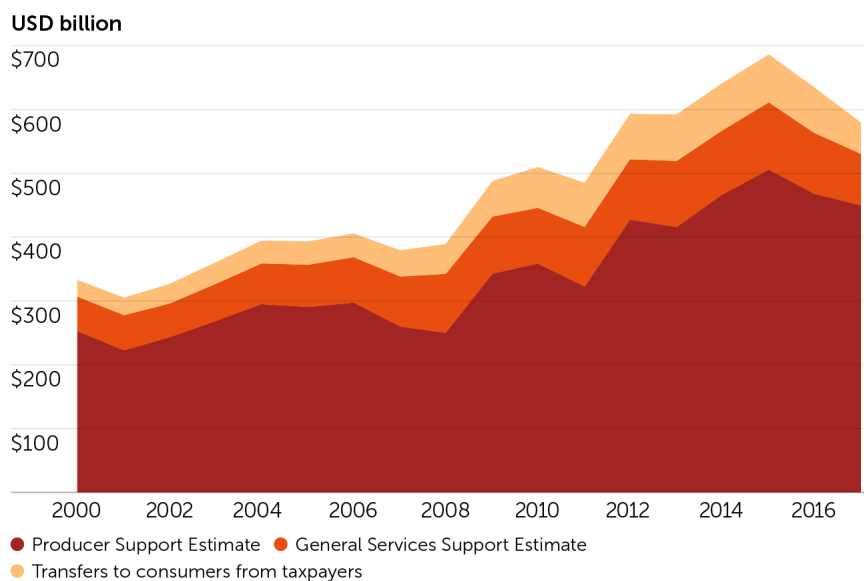
3. Mapping the agricultural support landscape

This chapter provides an overview of the main trends in agricultural support, both in the aggregate and for individual commodities, as well as in the nature and level of support granted in recent years. It largely relies on data compiled by the OECD in its Producer and Consumer Support Estimates database,⁴⁶ and focuses on some of the 20 largest agricultural producers for which reliable and consistent data are available⁴⁷ (counting the EU28 as one producer). This list roughly coincides with the 20 largest agricultural exporters with consistent OECD data,⁴⁸ and accounts for over 80 per cent of world agricultural production during the 2014–16 period. To complement these figures, Appendix I provides an overview of agricultural subsidy notifications to the WTO for some of the largest subsidizers.

3.1 Composition, evolution and trends: the aggregate picture

Figure 4 shows the evolution of total support (i.e. producer subsidies – PSE, general services and direct transfers to consumers) since 2000 in 20 key countries. The graph illustrates the large preponderance of transfers provided directly to the producers as opposed to the sector as a whole or to consumers, with PSE accounting on average for 72 per cent of total support. The slight decline in producer support observed in 2008 and 2011 is probably explained by the food price spikes experienced during those years, as during these times the price gap between international and domestic prices is reduced. Overall, total support has been constantly increasing over the last 18 years in absolute value terms, peaking at \$685 billion in 2015 before showing a decline in 2016 and 2017. (However,

Figure 4: Total support estimate across selected countries, 2000–2017



Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* Selected countries include: Australia, Brazil, Canada, Chile, China, Colombia, EU, Indonesia, India, Japan, Mexico, New Zealand, Philippines, Russia, South Africa, South Korea, Turkey, Ukraine, United States and Vietnam. For the EU, see explanatory note on p. 11.

⁴⁶ OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

⁴⁷ The list includes Australia, Brazil, Canada, Chile, China, Colombia, EU28, Indonesia, India, Japan, Mexico, New Zealand, Philippines, Russia, South Africa, South Korea, Turkey, Ukraine, United States and Vietnam.

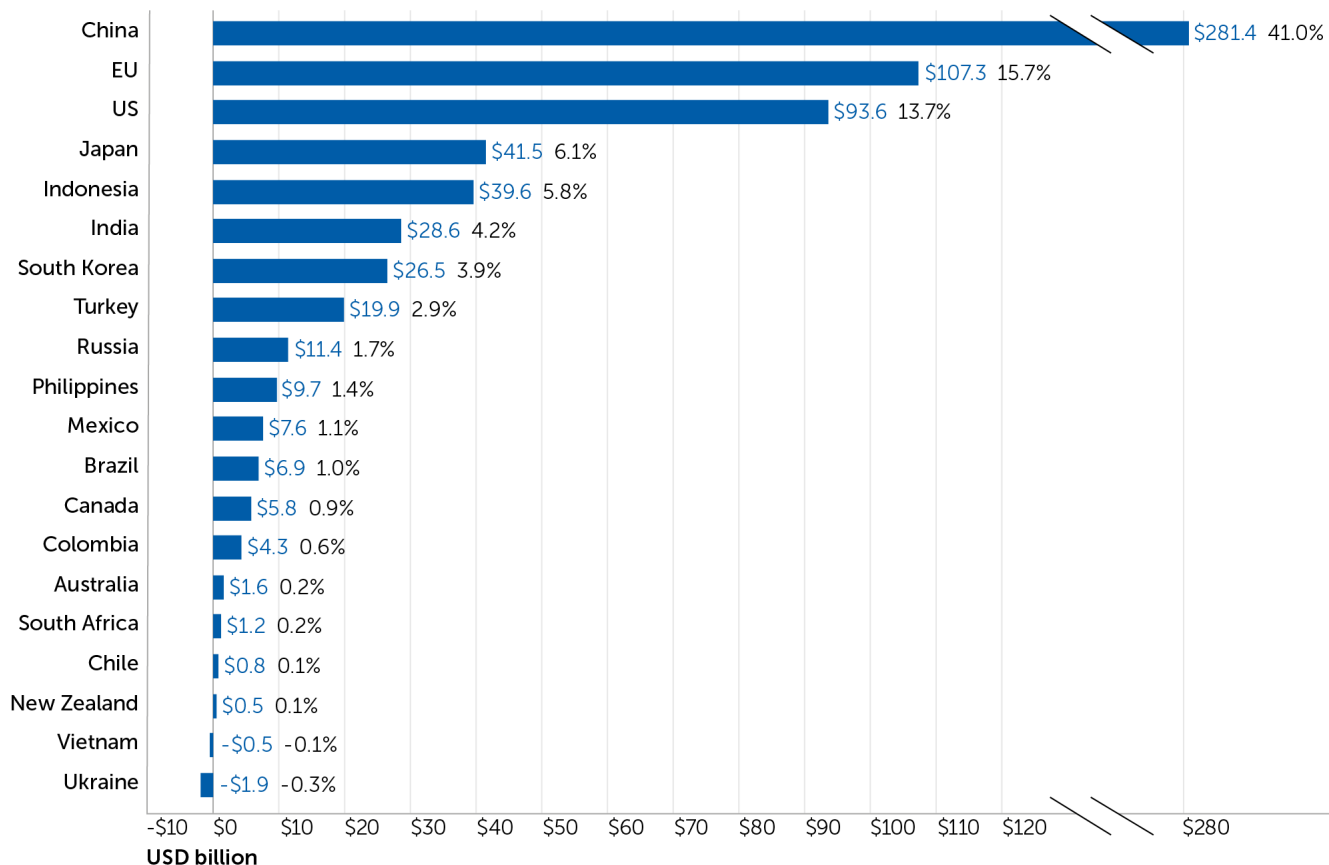
⁴⁸ Argentina, Thailand and Malaysia, which are among the top 20 largest exporters, were not included in the study given the lack of consistent and readily available data on agriculture support.

the total for 2016 did not include Indonesia, and that for 2017 also excluded India.)

As Figure 5 shows, China alone accounted for 41 per cent of total support in 2015, with transfers exceeding \$281 billion, followed by the EU28 with \$107 billion, the US at over \$93 billion, and Japan with \$41 billion. Together, these four economies accounted for more than three-quarters of total support provided by governments in the 20 economies analysed in this paper.

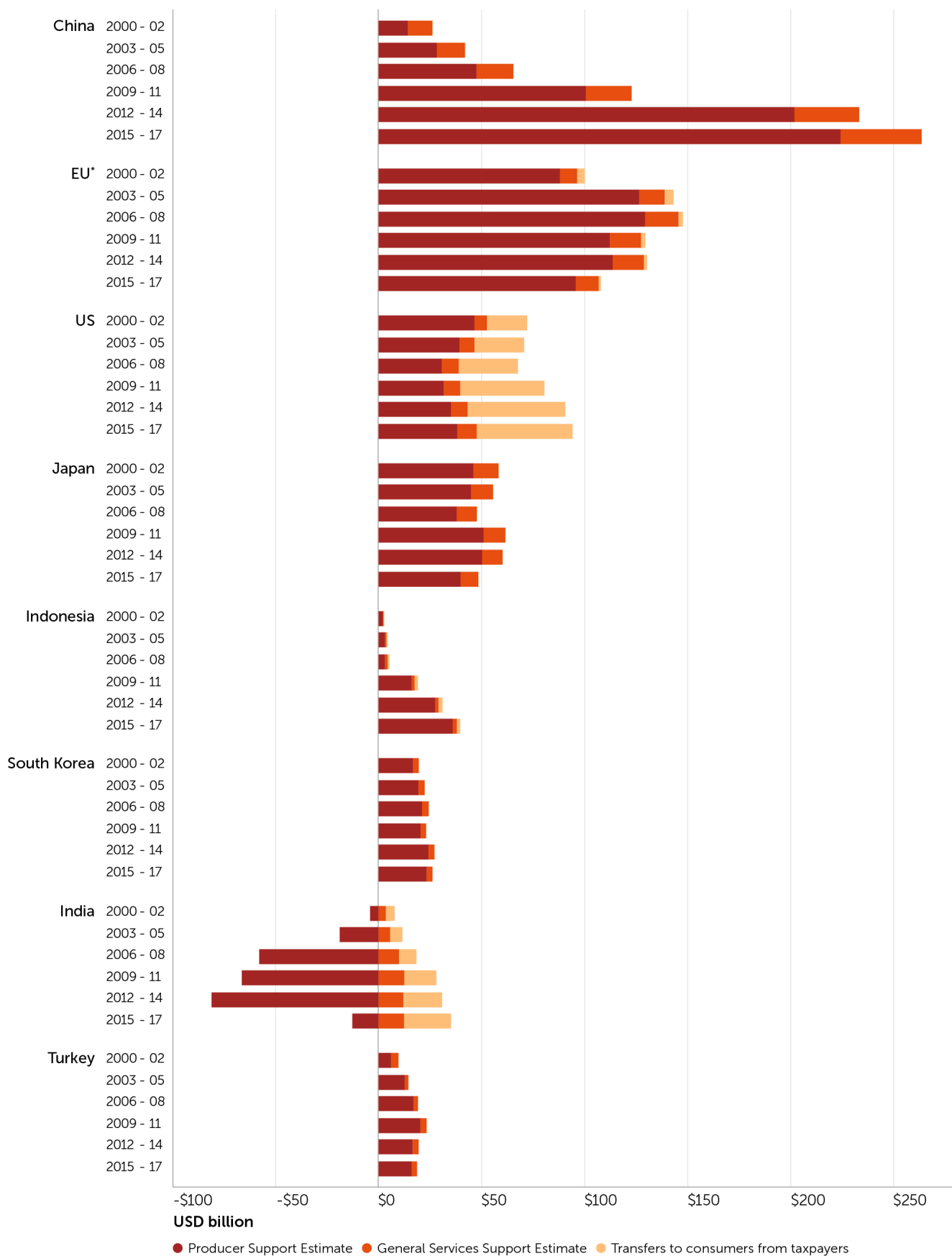
Figure 6 provides a more detailed picture of the evolution of total support between 2000 and 2017. While the EU saw a 50 per cent increase in its level of support between 2001 and 2004, the total value of transfers gradually returned to the 2000 level over the period to 2017, largely driven by reductions in the amount of support paid to producers. The US, on the other hand, increased its support fairly consistently, from \$64 billion in 2006 to \$96 billion in 2017, although most of this growth was due to increased consumer support, essentially in the form of food stamps. Growth across the rest of the developed countries remained relatively constant, with only a slight decline observed in the second half of the period. Several emerging economies, in contrast, saw a significant increase in total support. This trend was led by China, where support grew more than 10-fold during the period, but was also due to rising levels of support in Indonesia, Turkey and the Philippines – a development that largely reflected enhanced budgetary capacity in those rapidly growing economies.

Figure 5: Total support estimate by country, 2015



Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates database*, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

Figure 6: The evolution of total support estimate in selected countries, 2000-2017



Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* For the EU, see explanatory note on p. 11.

In less than six years, China had outperformed the US in terms of total transfers, and four years later it also outperformed the EU to become the largest provider of agricultural support in absolute terms.⁴⁹

India remains a special case, not least because it shows a persistent negative level of support provided to producers, as illustrated in Figure 6. This rather counterintuitive result is explained by the fact that, between 2000 and 2016, producer prices remained below comparable international prices for a large set of commodities. In other words, producers in India have been implicitly taxed rather than subsidized. A similar situation occurred in the early days of China's and Indonesia's agricultural policies, and, as shown in Figure 6, during some years in Vietnam and Ukraine: however, this trend has been particularly marked and persistent in India. As explained later in this paper, the negative producer support in India is induced both by policy decisions – such as the setting of administered prices below market prices, or the imposition of export restrictions, the effects of which have been to depress domestic prices – and by inefficiencies in the marketing chain, such as deficient infrastructures.⁵⁰

3.2 A focus on producer support

As highlighted above, subsidies directly provided to farmers not only constitute the largest share of total support globally, but also are most likely to affect production, trade and land use decisions, with potentially significant impacts on sustainability. Figure 7 compares, for each country, the composition of such support in 2000 and 2017.⁵¹

In Asia, market price support and other output-based subsidies constitute the largest share of producer transfers. In China, India, Indonesia and the Philippines, market price support schemes essentially take the form of minimum guaranteed prices set by governments for key commodities, such as rice, wheat or maize. These schemes aim at supporting smallholder farmers by ensuring remunerative prices. In recent years, transfers under such programmes have increased significantly, prompting concerns about the degree of distortion that they create, and raising fears that some Asian WTO members may be exceeding the upper limit allowed under WTO rules.

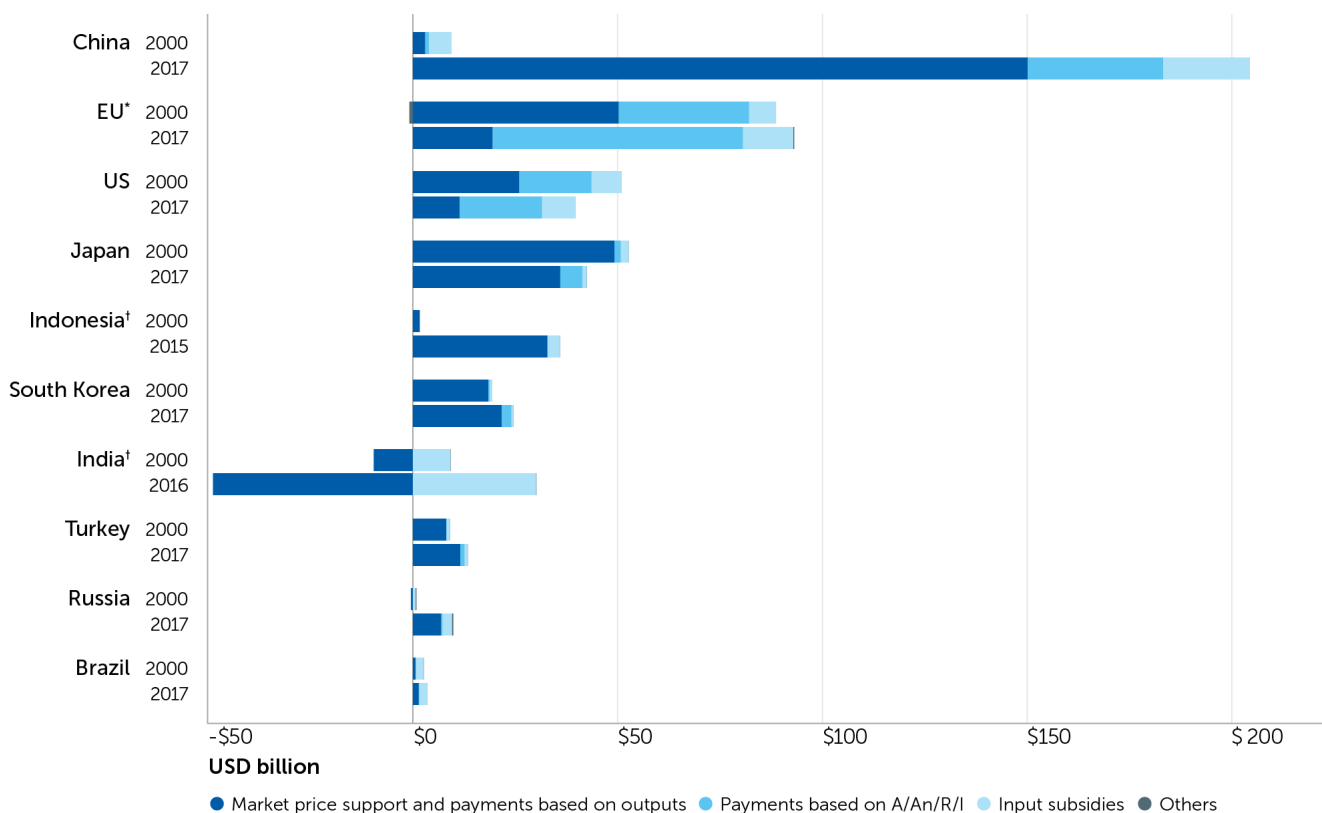
In Japan, production limitation programmes have had the impact of maintaining high prices. This policy aims to support farmers' household income and to preserve the positive environmental effects generated by traditional agricultural practices, with rice terraces contributing to retaining water and preventing floods and landslides, while preserving biodiversity and traditional landscapes. With no price associated with such positive externalities, government intervention is seen as necessary to ensure the supply of these public goods. Beyond rice, price stabilization policies apply to beef calves, pork, fruits, vegetables and some other

⁴⁹ As discussed later, these figures need to be nuanced by comparing them with the growth and the size of the agricultural production. For example, when the amount of support is calculated as a share of farm income, China still provides less support than in the EU or Japan.

⁵⁰ OECD and Indian Council for Research on International Economic Relations (2018), *Agricultural Policies in India*, Paris: OECD Publishing.

⁵¹ In the case of Indonesia and India, the latest year for which data are available is 2015 and 2016 respectively.

Figure 7: Composition of producer support, 2000 and 2017



Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates* database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* For the EU, see explanatory note on p. 11.

† In the case of Indonesia and India, the latest year for which data are available is 2015 and 2016 respectively.

products. Finally, Japan maintains high levels of import protection, through tariffs and other measures for rice but also for wheat, sugar, dairy products, beef and pork.

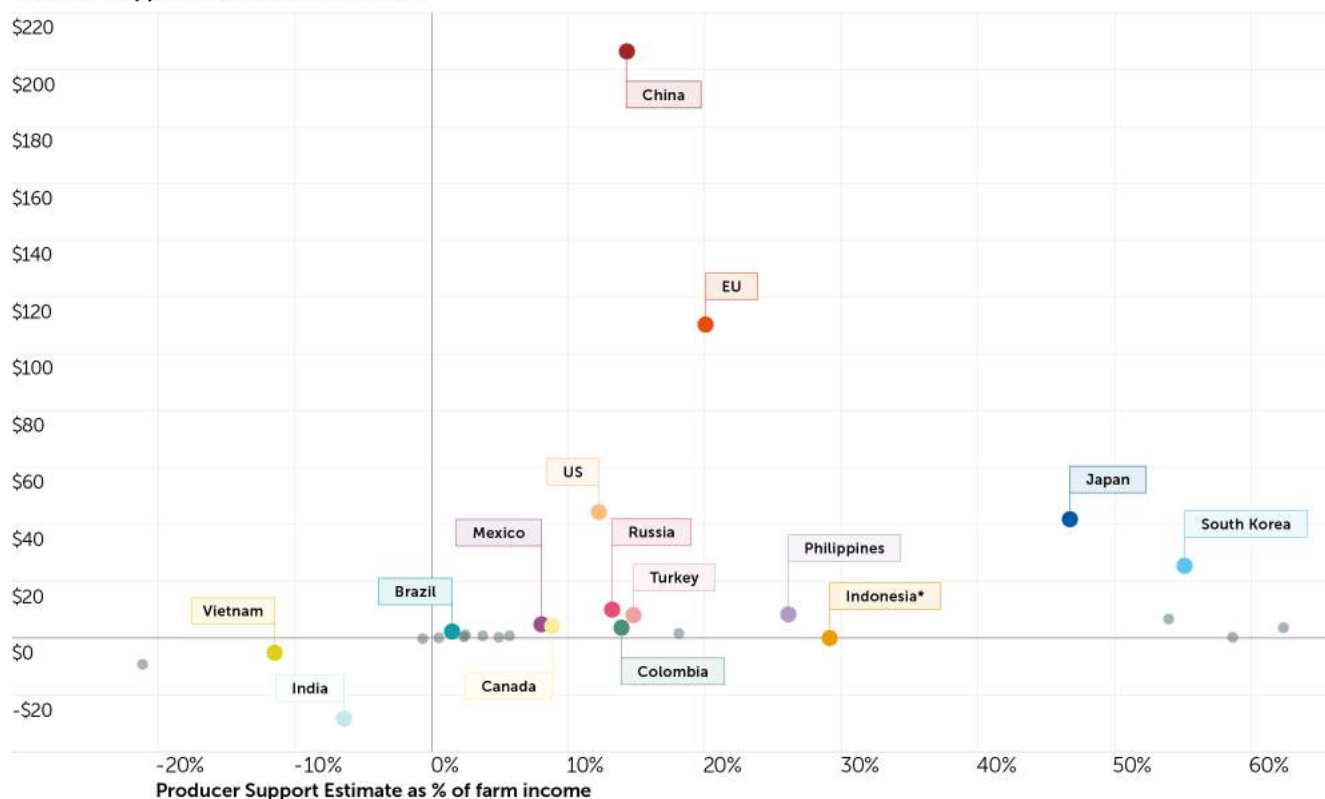
In Europe and the Americas, market price support has been less prevalent in recent years and has generally declined – except in Canada, where the dairy sector continues to benefit from highly protective supply management and import protection. In Brazil, producers receive support through preferential access to credit, but also through subsidized rural insurances and price guarantees. Most of the support comes in the form of input subsidies through the provision of access to credit at lower interest rates for poor farmers. Such support arguably aims at correcting persistent market failures that result in insufficient credit allocation to medium, small and micro-producers.

Recent policy changes in the US have prompted a growing trend towards subsidized insurance premiums, protecting farmers from yield and price risks. The EU, on the other hand, is continuing a process that started more than two decades ago, involving a gradual shift from product-linked support to support linked to land. As a result, most of the EU's subsidies are in the form of payments that are linked not to production, but to directly supporting income. The notion of 'public money for public goods' (including environmental protection) is increasingly invoked as a justification for direct payments.

While Figure 7 compares levels of producers' support in dollar terms, the extent to which such support ultimately affects production,

Figure 8: Producer support estimate in absolute terms (USD billion) and as a share of gross farm income (%), 2016

Producer Support Estimate in USD billion



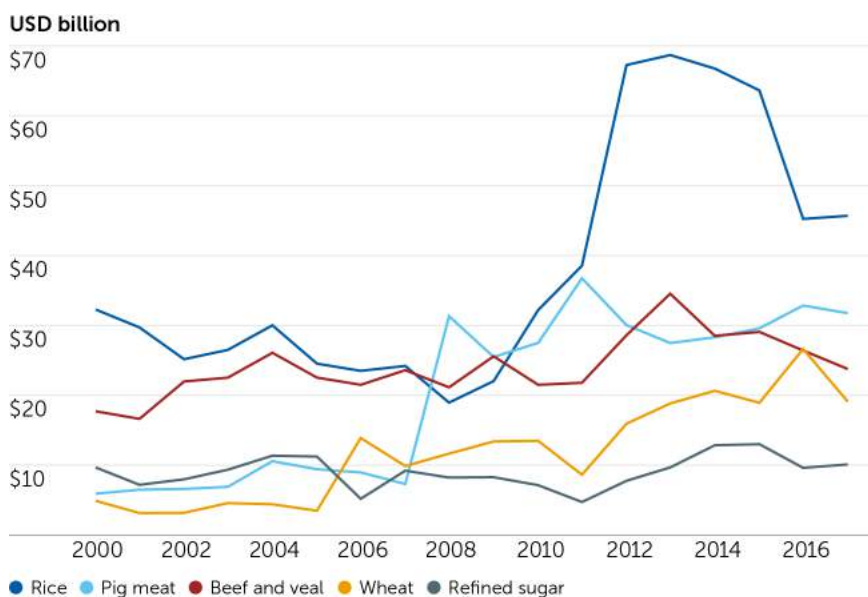
Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates database*, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* Figures for Indonesia are from 2015.

consumption, trade or even land use decisions also depend on the intensity of transfers. In other words, when looking at those figures, one needs to take into account the size of the agricultural sector or the number of people employed. Put more simply, the fact that China accounts for the largest amount of support partly reflects the fact that it is the largest producer in the world. To correct this bias, support can be expressed not only in dollar figures, but also as a percentage of the gross income of farmers. This not only allows comparison between different countries without having to convert amounts from local currencies into US dollars (a measure that can in turn introduce bias, because of exchange rate fluctuations), it also provides an indicator of support intensity in each country.

Figure 8 provides a clear representation of the distribution of producer support among selected economies in 2016, in terms of total US dollars and differences in producer transfer values when calculated as a percentage of gross farm income. This demonstrates the contrast between the relative levels of government support in both absolute and relative terms. To complement this figure, Appendices II and III provide more details by looking at producer support as a percentage of farm income in recent years, highlighting for each country the maximum, minimum and average levels recorded since 2000. Countries such as South Korea and Japan clearly top the ranking, with transfers to producers accounting for over 50 per cent of their income on average. Indeed, in South Korea this percentage has risen to nearly 70 per cent in certain years. In the EU,

Figure 9: Single commodity transfers by 5 commodities, 2000-2017



Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* Selected countries include: Australia, Brazil, Canada, Chile, China, Colombia, EU28, Indonesia, India, Japan, Mexico, New Zealand, Philippines, Russia, South Africa, South Korea, Turkey, Ukraine, United States and Vietnam. For the EU, see explanatory note on p. 11.

this support represented roughly one-quarter to one-third of producers' revenue. In China, the US, Indonesia, Mexico, Russia and Canada, transfers fluctuated around 10–15 per cent of incomes, with the remainder of the countries recording rates of below 5 per cent. Finally, in India, implicit taxes represented around 14 per cent of farmers' income but up to 30 per cent in certain years.

3.3 A focus on key commodities

Moving beyond the aggregate level, this section identifies those commodities that receive the highest levels of support among the economies covered in this study. To do so, it singles out support that can be attributed to specific commodities. In the OECD producer support database, this type of support is captured through single commodity transfers.

Figure 9 identifies the 5 commodities that receive some of the highest amount of support in the countries analysed. Rice, maize, pig meat, beef and veal, and milk products account for roughly three-quarters of total commodity transfers. These are followed by wheat, poultry, cotton, sugar and sheep meat. This fairly high level of concentration points to the role that domestic support measures tend to play in fostering the intensification of production, focusing on a narrow set of commodities sometimes at the expense of developing more diversified production systems. By designing support programmes in a way that is advantageous to certain commodities, subsidies and other types of transfer provide clear incentives to producers to shift production towards those commodities at the expense of others.

From a sustainability perspective, some of these commodities also tend to be associated with significant environmental challenges, such as greenhouse gas emissions or groundwater depletion. Similarly, from a nutritional perspective, high levels of support for certain product groups, such as sugar, livestock or animal feed, increase the availability of these products at lower prices, irrespective of their implications for diets and

nutrition, while other categories, such as fruit and vegetables, may not benefit from these subsidies.⁵²

For each of 12 different commodities, Appendix V shows the breakdown of single commodity transfers from selected countries and entities in terms of each economy's percentage share of the total. Interestingly, it illustrates similar patterns of high concentration, with sometimes a handful of countries being responsible for virtually all the support provided to a particular product.

Appendix IV also analyses single commodity transfers by commodity, but this time as a share of gross farm revenue in each of the 20 economies. As highlighted above, this measure provides a clearer picture of the support intensity for key commodities by removing the bias induced by the size of the agricultural sector. It shows, in particular, how support can be heavily concentrated on specific products. In South Korea and Japan, for example, subsidies for rice, pork, dairy, beef and veal, and sugar represent up to 80 per cent of the value of production – implying that farmers obtain the majority of their income through government transfers. These figures also modify the picture of support for China, showing that its level of single commodity transfers, when expressed as a share of farm revenue, is fairly comparable to that provided by the EU or the US, and often considerably lower than that in Japan, South Korea or Turkey.⁵³

⁵² Charveriat (2018), 'SDG 2.4: Can Policies Affecting Trade and Markets Help End Hunger and Malnutrition within Planetary Boundaries?'.

⁵³ Nonetheless, China is the only country (with the exception of Indonesia for rice, poultry and sugar) in which support has been consistently increasing over the last 20 years, particularly for beef, maize, wheat, rice and sugar.

4. Domestic policy reform trajectories

Granting subsidies and other forms of indirect support may respond to legitimate policy considerations (e.g. supporting income of poor farmers, facilitating socio-economic adjustments, addressing market failures or delivering public goods). Yet once support has been granted, removing what is rapidly perceived as an entitlement becomes exceedingly difficult, even if the underlying justification for granting such support does not exist any longer, or if those benefiting most from the support are not the intended target group. This is one of the reasons why policy reform is particularly complex and slow, as indeed are international negotiations aimed at developing further disciplines in this area. Therefore, if subsidy policy reforms are to successfully deliver on the SDGs, understanding the domestic dynamics that can underpin such policies is essential. This section focuses on five of the largest producing countries: China, the EU, the US, India and Brazil. It provides a more in-depth analysis of their respective agricultural policies, the policy objectives underlying the various domestic support schemes, the sustainability challenges resulting from such schemes and the political economy considerations and societal preferences informing domestic policy choices in national debates. Based on these considerations, it suggests possible avenues to reform domestic schemes from a sustainable development perspective.

4.1 The EU

While its share in global agricultural production and trade has been declining in recent years, the EU continues to play a central role in the global agricultural system as the single largest importer and exporter of agrifood products. Over the years, production patterns and land use decisions have been largely influenced by government interventions, including the CAP, through which EU member states provided subsidies. Successive reforms have slowly moved from production support to income support, and towards support that is justified as delivering public goods such as environmental protection, even if public transfers for the 2014–18 period still make up around 35 per cent of agricultural factor income and 57 per cent of farm family income.⁵⁴ The reform process started in 1992 with the MacSharry reform (the then European Commissioner for Agriculture being Ray MacSharry), which cut price support for a number of commodities and introduced direct payments as compensation. In 2003 most of these direct payments were progressively delinked from production, even if member states still had the possibility to provide some coupled support, notably for beef and sheep.⁵⁵ Today, the CAP is structured around two pillars. Pillar 1 addresses income support and market management, and is fully financed through the EU budget. Over time, direct payments have become the main policy instrument to guarantee income support for farmers, representing 72 per cent of the total

⁵⁴ For further details on farmers' dependence on public payments, see Matthews, A. (2019), 'Measuring farmers' dependence on public payments', 8 January 2019, <https://cht.hm/2Pi5iKh> (accessed 4 Jun. 2019).

⁵⁵ Tangermann, S. (2014), 'The EU CAP Reform: Implications for Doha Negotiations', in Meléndez-Ortiz, R., Bellmann, C. and Hepburn, J. (eds) (2014), *Tackling Agriculture in the Post-Bali Context: A collection of short essays*, Geneva: International Centre for Trade and Sustainable Development.

CAP ceiling of €408.31 billion between 2014 and 2020.⁵⁶ Pillar 2, on the other hand, deals with rural development and is co-financed with member states. Overall, around 80 per cent of support to producers is conditional on mandatory environmental constraints, with an additional 8 per cent provided through voluntary environmental schemes.⁵⁷

4.1.1 The current CAP The current (2014–20) CAP continues along the previous reform path, albeit arguably in a less decisive manner. One major consideration was the need to redistribute payments towards farmers in the EU's new member states in Central and Eastern Europe; a second was to ensure a more regionally balanced distribution within member states and towards smaller farmers. Under Pillar 1, the CAP nevertheless introduced some innovative features, including environmental requirements for the receipt of direct payments on top of the basic income support.⁵⁸ Such conditionality requires farmers to grow at least two or three different crops simultaneously (depending on their cropped area) to ensure diversification; to maintain permanent grassland at the 2014 level; and to establish ecological set-aside (e.g. land left fallow, buffer strips or afforested areas, but also leguminous crops). Still under Pillar 1, payments linked to production are limited to 8 per cent of each member state's direct payments ceiling, or exceptionally 13 per cent, under certain circumstances. In spite of these restrictions, there appears to be greater flexibility for countries to use such instruments, and the list of sectors eligible for coupled support payments has been greatly expanded, resulting in significant increases in coupled aids.⁵⁹

Rural development policies under Pillar 2 included an optional risk management toolkit for income stabilization, and a larger budget for research and innovation. Additional voluntary schemes – such as organic farming premiums, or payments for conservation agriculture, integrated production and animal welfare – are also available under Pillar 2.

4.1.2 Looking beyond 2020 After several months of consultations and deliberations, in June 2018 the European Commission issued a set of legislative proposals for the post-2020 CAP. As of mid-2019, these proposals were being examined by both the Council of Ministers and the European Parliament. Meanwhile, also in 2018, the Commission published proposals for the 2021–27 multiannual

⁵⁶ European Commission (2013), *Overview of CAP Reform 2014–2020*, Policy Brief, Brussels: European Commission, <https://cht.hm/2MHaPaU> (accessed 4 Jun. 2019).

⁵⁷ Matthews, A. (2018), *The EU's Common Agricultural Policy Post 2020: Directions of Change and Potential Trade and Market Effects*, Research Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2UaHrux> (accessed 4 Jun. 2019).

⁵⁸ Ibid.

⁵⁹ It should also be noted that the CAP does not change EU border protection such as tariffs or tariff rate quotas, a matter that the European Commission argues should be left to international trade negotiations. In practice, the relatively high and unchanging level of protection provided through quotas or tariff peaks for certain sensitive products (such as beef) also constitutes significant transfers in the form of market price support.

financial framework, setting the maximum spending limits on EU policies including the CAP.⁶⁰ Overall, the proposal reaffirms the current CAP objectives (e.g. economic and income viability, resilience, enhanced environmental and climatic performance, and strengthening the socio-economic fabric of rural areas), while aiming to simplify and modernize its implementation. With the UK being the largest net budget contributor in 2017,⁶¹ the consequences of the UK's intended withdrawal from the EU have been reflected in the new policy, not least through a 12–15 per cent cut in real terms in the overall budget – a reduction that will particularly affect Pillar 2 spending.

The main innovation in the current proposal is a shift from a 'compliance-based' approach to a 'performance-' or 'results-based' system of governance. In other words, emphasis will be put not so much on ensuring that member states allocate state aid in accordance with detailed prescriptions set down in legislation, but rather on ensuring that national programmes contribute to achieving the specific goals of the CAP. In practice, each member state should draw up a strategic plan articulating existing needs, the objectives it intends to address, and specific targets to be achieved. The plans will have to be approved by the Commission in line with the CAP objectives. A new performance monitoring and evaluation framework based on a set of common indicators will then be used to measure progress annually. This approach largely responds to the expressed desire of many governments, the Commission and some stakeholder groups to simplify and modernize existing policies. Previous schemes, including the requirement to allocate 30 per cent of member state direct payments to green payments, were criticized as being too rigid, too complex and administratively burdensome, and as failing to deliver the intended environmental results. By providing more autonomy to member states to pursue environmental policies that are more adapted to the local needs and circumstances, while at the same time focusing on measuring outcomes, the Commission's aim is to simplify the whole procedure, reduce the number and intrusiveness of compliance inspections and achieve results that are more in line with societal expectations.

Other proposals relate to the need to target payments to small farmers more closely. At the same time, the 'new green architecture' is strengthened through new standards for good agricultural and environmental conditions (e.g. in the area of permanent pasture, crop rotation, and the minimum area to be devoted to non-productive features such as hedges), and an obligation to protect carbon-rich soils or to develop nutrient management plans.

Overall, the post-2020 CAP is likely to continue the shift towards environmental payments and good agricultural practices that promote the quality of the soil, biodiversity conservation,

⁶⁰ Matthews (2018), *The EU's Common Agricultural Policy Post 2020: Directions of Change and Potential Trade and Market Effects*.

⁶¹ European Commission (2019), 'EU expenditure and revenue 2014-2020', 2019, <https://cht.hm/30AevP8> (accessed 4 Jun. 2019).

landscape preservation and water management, while reducing greenhouse gas emissions. These are increasingly seen as the main justification for the long-term support of agriculture by the public at large. By giving more autonomy to member states, the CAP may be promoting the risk of going back to more production-related payments, but at the same time it is hard to imagine how a centralized approach could efficiently respond to the different realities and sustainability concerns prevailing in different EU member states. The proposed shift away from programme design towards a more results-based approach, focusing on outcomes, probably constitutes a step in the right direction. The next challenge will consist in turning what are essentially income support payments into ones that reflect the actual cost of delivering environmental services or public goods. This debate is likely to encounter significant resistance among EU member states, where priorities diverge considerably between existing and new members, rural and urban areas, and traditional and modern agricultural systems.

4.2 The US

Support to agriculture in the US, as provided under a series of 'farm bills', has traditionally accounted for an important component of farmers' income, and has therefore played a significant role in shaping production and land use patterns. The first farm bill (the 1933 Agricultural Adjustment Act) was passed in response to the Great Depression, at a time where farmers were struggling as excess food supply depressed domestic prices. Over time, support to the agricultural sector expanded significantly, with programmes being revisited and adjusted by Congress every four to six years. In the late 1980s and early 1990s, there was a movement away from market price support, and government accumulation of stocks, towards countercyclical payments, to be triggered when prices fall, and subsequently towards subsidized insurance schemes. Direct payments, based on historical rather than current production, were also slowly introduced during that period.⁶²

4.2.1 The current Farm Bill Under the current Farm Bill, signed into law in December 2018, the overwhelming majority of total expenditure is allocated to nutrition programmes.⁶³ This support is allocated mainly to SNAP (see above, formerly the Food Stamp Program), and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). While relatively uncontroversial from a trade perspective, given their non- or at most minimally distorting nature, these payments have been criticized in the context of the debate around the federal budget deficit, with Republican congressional representatives pointing to the need to reduce coverage of the scheme to cover fewer beneficiaries.

⁶² Smith, V. (2018), *US Agricultural Policy Beyond 2018: Implications for the World Trade Organization*, Research Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2Hq1CzC> (accessed 4 Jun. 2019).

⁶³ Ibid.

Support for agricultural programmes (i.e. excluding consumer support) focuses largely on different subsidized insurance schemes such as the US Federal Crop Insurance Program, with a lower share allocated to R&D and environmental conservation programmes. Notably, the previous reform (enacted in 2014) removed a set of controversial programmes; it eliminated countercyclical payments, but also certain minimally trade-distorting payments introduced in the 1990s that were increasingly viewed as welfare payments unrelated to production and which were difficult to defend politically at times of high prices. These were replaced by new programmes, including Price Loss Coverage (PLC), and Agriculture Risk Coverage (ARC).⁶⁴ The main argument in favour of these new programmes was that they would be cost-saving, compared with the \$5 billion bulk payments made every year under the direct payment programme.^{65, 66}

Payments under those programmes are heavily concentrated on corn, soybeans, wheat and, to a lesser extent rice, cotton⁶⁷ and peanuts. Subsidies under these schemes are unambiguously linked to current production. By covering over 70 per cent of the commercial cost of the crop insurance that farmers buy, the federal programme encourages increased production of more than 150 covered crops, but mainly corn, soybeans and wheat, in part by bringing pasture and grazing land into crop production.⁶⁸ This in turn expands exports for these crops and depresses world prices. Furthermore, payments have largely benefited large producers, according to the EWG, which found in 2004 that the 10 per cent of farmers with the largest value of sales were receiving 70 per cent of payments from crop insurance.⁶⁹

Besides government spending, transfers to producers are also generated through programmes that do not involve actual

⁶⁴ Under the PLC, payments are triggered when farm prices fall below fixed reference prices, whereas under the ARC, payments are triggered when county or farm-level revenues fall below 86 per cent of a benchmark defined by a moving average of national prices and county or farm yields.

⁶⁵ Glauber and Westhoff (2015), *50 Shades of Amber: The 2014 Farm Bill and the WTO*.

⁶⁶ However, the reference prices used to trigger payments were set at relatively high levels, systematically exceeding market prices for several crops in previous years, and triggering much higher payments than anticipated. As a result, disbursement noticeably exceeded the \$5 billion previously spent in direct payments. See Glauber and Westhoff (2015), *50 Shades of Amber: The 2014 Farm Bill and the WTO*.

⁶⁷ Cotton was originally excluded from the PLC/ARC programmes, partly as a result of the WTO dispute between the US and Brazil. A special programme called STAX (Stacked Income Protection Plan) was created instead. Participation in the programme, however, turned out to be modest, not least because of high cotton prices between 2015–17. Cotton producers lobbied for a new programme to allow them to access more favourable PLC/ARC payments – a move which was authorized by Congress for seed cotton in March 2018. For some authors, this may represent a break in the terms of the agreement reached between the US and Brazil to resolve the WTO dispute.

⁶⁸ Smith (2018), *US Agricultural Policy Beyond 2018: Implications for the World Trade Organization*.

⁶⁹ Environmental Working Group (2004), 'California Water Subsidies: Large agribusiness operations – not small family farmers – are reaping the windfall from taxpayer-subsidized cheap water'.

disbursements. Sugar, for example, is supported through high tariffs and other measures that restrict supplies and raise market prices. Production of ethanol and other biofuels is supported partially by subsidies, but mainly through regulations in the form of mandated blending for fuel use. While subsidies have a particular impact on biofuel production at times of low oil prices or low corn yields, overall the blending mandate has had an important impact on production.⁷⁰

The 2019 Farm Bill does not envisage significant changes. A major uncertainty with respect to production subsidies, however, is whether the current administration will actually provide an additional \$20 billion to compensate producers for the 'loss' incurred as a result of the current tariff war with China, which prompted Beijing in early 2019 to tax several agricultural export products from the US.⁷¹ Nor is it clear how such payments would be distributed, and to which products they would be related – even if those payments are likely to be trade-distorting in nature.

4.2.2 The political economy of subsidy reform in the US Contrary to the EU, where the notion of 'public money for public goods' is increasingly seen as the main justification for continuing support, the US approach tends to place the primary emphasis on the use of government spending to provide a 'safety net' for farmers.⁷² This conception largely explains the shift from income support towards price and yield insurance schemes introduced in the 1990s. It may be related to farmers' effective lobbying after the enactment of the 1996 Farm Bill, when prices declined sharply and fixed direct payments did not compensate sufficiently for the fall in income. Similarly, during times of high prices, stories in the press about wealthy farmers still receiving payments – and sometimes earning many times the income of average Americans – further reinforced the scepticism towards lump-sum income support payments.⁷³

The debate on the 2019 Farm Bill was not different in this respect, with several lawmakers arguing that the farm sector was facing very difficult times, with a real potential for a crisis in rural America. While this may have been the case a few decades ago, existing empirical evidence suggests that this rationale for support may not be fully valid any more. Smith,⁷⁴ for example, shows that the financial state of the US agricultural sector is relatively healthy when considering objective indicators such as current prices, cash,

⁷⁰ Babcock, B. (2011), *The Impact of US Biofuel Policies on Agricultural Price Levels and Volatility*, Research Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2Pf1cm0> (accessed 4 Jun. 2019).

⁷¹ Boudreau, C. and McCrimmon, R. (2019), 'Trump readies up to \$20B more in aid to rescue farmers from trade war', Politico, 15 May 2019, <https://cht.hm/2PhxSeK> (accessed 4 Jun. 2019).

⁷² Smith (2018), *US Agricultural Policy Beyond 2018: Implications for the World Trade Organization*.

⁷³ Ibid.

⁷⁴ Ibid.

income, debt-to-asset ratio or bankruptcy rate,⁷⁵ indicating that the sector has the capacity to manage year-to-year fluctuations in prices and incomes. In spite of this reality, reforming existing programmes – particularly as regards commodity support – has been particularly difficult. This can be explained by several factors.

First, powerful commodity groups interested in maintaining or increasing farm support continue to provide vast financial support to members of Congress favourable to farmers' interests, and these representatives also dominate key committees like the agriculture committees or the Senate committees on the budget and on finance. Urban representatives who may be inclined to limit taxpayer transfers to producers tend, in practice, to support the Farm Bill, because of the significant share going to nutrition programmes. In this context, interest groups promoting subsidy reform tend to encounter stiff opposition. These include religious and charity groups focused on the impact of subsidies on the poor in Asia or Africa; environmental groups supporting conservation measures; groups concerned about nutrition and obesity; family farm coalitions pushing for more equity in the payments (e.g. through caps on payments for rich farmers); or citizens' groups lobbying against government waste. While these groups have traditionally participated in Farm Bill debates, highlighting the shortcomings of existing programmes, their heterogeneity has made it difficult for them to speak with one voice on the direction that reform should follow. This has tended to result in the status quo being maintained, while providing additional resource to special interests (e.g. for environmental conservation, organic farming or improved nutrition) without introducing significant reform.

As always, incentives for reform may come from the financial side. With growing federal budget deficits in coming years, several members of Congress may be more eager to cut government expenditures. The debate is, however, likely to focus on the need to reduce what some perceive as a lack of targeting in the SNAP programme, where most of the resources are invested. A possible option to introduce a different dynamic in this respect may consist in delinking the consumer support programmes from subsidies to producers.

4.3 China

Despite tremendous progress in reducing the prevalence of undernourishment from nearly 24 per cent in 1990 to 9 per cent of the population in 2016, China is still home to an estimated 124 million undernourished people. With about 19 per cent of the global population, but only 7 per cent of global arable land and freshwater resources, one of China's main challenges is feeding its people. With such limited

⁷⁵ It should be noted however, that the financial situation of many farmers in the US has deteriorated rapidly in 2018, due to the effect of the current administration's trade policies on exports and the impact of floods and other natural disasters on farm income. Recent reports tend to indicate increased financial stress among Midwestern farmers and increasing bankruptcy rates.

■ *As always, incentives for reform may come from the financial side. With growing federal budget deficits in coming years, several members of Congress may be more eager to cut government expenditures.*

land endowment per capita, China's agriculture remains dominated by smallholders: 90 per cent of all farms occupy less than 2.5 acres, and average farm size is among the smallest in the world. Income disparities remain high, notwithstanding improvements in recent years. In 2016, the income of people living in cities was still 2.7 times greater on average than that of people living in the country. Yet, with a rural population of 577 million depending largely on agriculture, the sector remains a critical source of income and livelihoods.

Since 2004, China has become a net importer of food, with exports essentially focusing on labour-intensive products such as vegetables and fruits. Between 2005 and 2010, the agricultural trade deficit, largely driven by soybean imports, increased by a factor of almost 20. Given its size, however, Chinese policymakers have tended to consider that the country cannot realistically rely only on imports to feed its population of an estimated 1.4 billion people. For these reasons, securing domestic supply while increasing farm income to reduce urban and rural disparities has been central to Chinese food policy for some time. Achieving these goals has put significant pressure on China's limited land, and on biodiversity and fresh water – a matter of growing concern in the country, where more than 40 per cent of arable land is already suffering reduced fertility, erosion, changes in acidity or the effects of climate change.⁷⁶

4.3.1 China's overall support structure A significant milestone in the development of Chinese agricultural policies was marked in 2006 with the abolition of several taxes on agriculture and the introduction of farm support policies. These included direct payments for grain production based on fixed taxable land area, and subsidies to agricultural inputs intended to reduce the cost of purchasing fertilizers, fuels, or pesticides. Spending on these programmes increased rapidly when grain and energy prices were at high levels, in an effort to offset input cost increases for farmers. At the farm level, however, the payments have been disbursed per unit of land, making them appear analogous to income support provided to individual farmers. A third type of programme focuses on the adoption of improved seed varieties: this has been implemented either as a direct payment or through reduced seed prices. Finally, a fourth type of support concerns the purchase of agricultural machinery.⁷⁷

To complement these programmes, China also introduced market price support policies. For example, minimum guaranteed prices for rice and wheat were implemented. During 2007–12, minimum prices increased each year on the basis of increasing costs of production. Since 2008, the government has also implemented temporary purchase and storage policies for food security, covering rice, maize, soybeans, rapeseed, cotton, sugar and pork. The main objective was to reduce risks to farmers' income or

⁷⁶ Ni, H. (2013), *Agricultural Domestic Support and Sustainable Development in China*, Research Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/30BFZnG> (accessed 4 Jun. 2019).

⁷⁷ Ibid.

to domestic market stability in the case of fluctuations in agricultural prices.⁷⁸

Other support to producers included agricultural insurance schemes and, notably, payments designed to return farmland to forests and to exclude degraded grassland from grazing, reflecting increasing environmental concerns. Finally, in terms of payments for general services, public stockholding of grains and programmes supporting the development of agricultural infrastructure – including irrigation and drainage facilities – represent the most important categories, followed by programmes supporting agricultural knowledge and innovation.⁷⁹

As a result of these policies, production has increased significantly – with the exception of cotton and soybeans, output of which declined or stagnated – with the combined output of rice, wheat and maize growing by nearly 38 per cent between 2005 and 2015.⁸⁰ During the same period, government stockpiles grew exponentially to unsustainable levels – for example, reaching twice the level of annual consumption for cotton in 2015. Furthermore, these policies contributed to increasing the difference between domestic and international prices by up to 30 per cent, leading to pressure to import cheaper and more competitive food. This situation led to what has been described in domestic policy discussions as the ‘triple high’,⁸¹ i.e. high and growing domestic production, high and increasing imports, and high levels of domestic stocks. While this contributed to achieving food self-sufficiency targets set by the government, the exponential growth in costs associated with this policy and the breaching of China’s WTO limit on trade-distorting subsidies⁸² have become the main drivers for recent reform.

4.3.2 Recent reforms and the path forward In response to these developments, the government policy of purchase and storage at fixed prices was discontinued in 2014–15 for cotton, soybeans and rapeseed, and in 2016 for maize. The scheme was replaced in 2014–15 by a system of compensation payments covering the difference between pre-determined target prices and actual market prices, and by direct payments based on area planted for soybeans and maize from 2016–17.⁸³ For rice and wheat, minimum procurement prices were reduced, combined with efforts to

⁷⁸ Yu, W. (2017), *How China’s Farm Policy Reforms Could Affect Trade and Markets: A Focus on Grains and Cotton*, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2MF0mgl> (accessed 4 Jun. 2019).

⁷⁹ OECD (2019), Producer and Consumer Support Estimates database.

⁸⁰ Yu (2017), *How China’s Farm Policy Reforms Could Affect Trade and Markets: A Focus on Grains and Cotton*.

⁸¹ Ibid.

⁸² In its latest WTO notifications covering 2011–16, China recognizes that the maximum amount of support allowed under its WTO commitments had been breached for certain products, while affirming that this situation has since been corrected.

⁸³ OECD (2019), Producer and Consumer Support Estimates database.

Overall, China's recourse to government interventions in the form of market price support and stockpiling has proved costly and incompatible with the country's international commitments under the WTO.

achieve a higher utilization of import quotas.⁸⁴ Another notable change has been the consolidation of the three input support schemes into a uniform 'agricultural support payment'. While payments remain roughly equivalent, the consolidation under a single programme, with disbursements calculated per unit of land, seems to indicate a willingness to gradually move towards a system of increasingly decoupled payments, under which farmers may decide which crop to grow and what type of inputs they want to use. On the environmental front, China aims to achieve a zero increase in the usage of pesticides and fertilizers, combined with vigorous water usage control in the sector and with enhanced R&D spending. The reform also aims to refine the quality supervision and standards system for farm produce, to control soil pollution, and to encourage agricultural businesses to gain international voluntary certifications.⁸⁵

Overall, China's recourse to government interventions in the form of market price support and stockpiling has proved costly and incompatible with the country's international commitments under the WTO. Given China's size and importance on global markets, these policies have resulted in negative effects on third countries. The pursuit of high food-grain self-sufficiency targets supported by intensive use of chemical inputs and land and water resources has resulted in significant threats to environmental sustainability in rural areas. From this perspective, the shift away from costly and trade-distorting instruments constitutes a step in the right direction, even if significant market price support remains. The consolidated 'agricultural support programme' can also constitute a major positive step if payments are gradually delinked from production and provided uniformly across the different regions and provinces. As labour costs in China continue to rise, the sector is expected to undergo a further decline in competitive advantage, particularly for land-intensive products such as cereals. This will probably generate further tensions with the objective of self-sufficiency and increase the need for some form of income support.⁸⁶ A move towards decoupled income support linked to good environmental practices and the delivery of public goods may offer a possible avenue to be explored in this respect.

4.4 India

Over recent decades, India has achieved remarkable progress in agricultural production, sustained by improved access to inputs such as fertilizers, seeds, irrigation and credit. In the late 1980s and early 1990s, the country moved from being a food-deficit country to a food-surplus country, and it has since remained a net exporter of

⁸⁴ Yu (2017), *How China's Farm Policy Reforms Could Affect Trade and Markets: A Focus on Grains and Cotton*.

⁸⁵ WTO (2016), *Trade Policy Review of China, Report by the Secretariat*, Geneva: World Trade Organization, <https://cht.hm/2PFTI2c> (accessed 4 Jun. 2019).

⁸⁶ Yu (2017), *How China's Farm Policy Reforms Could Affect Trade and Markets: A Focus on Grains and Cotton*.

agricultural products. Today, India is a significant player in global markets for cotton, sugar and beef (buffalo meat), and is the world's largest exporter of rice. In parallel, India has managed to reduce the prevalence of undernourishment from around 24 per cent of the population in 1990–92 to 15 per cent in 2014–16.⁸⁷

Despite these areas of progress, the agricultural sector remains dominated by low-productivity smallholder farmers relying on agricultural production as their main source of livelihood. Another challenge relates to the high incidence of poverty in India, with a significant proportion of the population at risk of becoming food-insecure if they cannot access affordable food.⁸⁸ For these reasons, making food available at affordable prices for consumers while guaranteeing remunerative prices for producers and maintaining self-sufficiency – at least for critical crops – has been at the heart of India's agricultural policy. This has been pursued through a combination of policy measures, including export controls to keep domestic prices low, and a large public distribution system backed by public stockpiling programmes for commodities such as rice and wheat. To support producers, India has traditionally used a combination of import duties, input subsidies, and minimum guaranteed prices for commodities such as rice or wheat.

4.4.1 Existing support measures As highlighted in previous sections and as illustrated in Figure 10, government spending in the form of input subsidies, general services or support to consumers through the food distribution system contrasts starkly with the negative price support – or implicit taxation – affecting producers. Between 2004 and 2014, this negative price support even offset government disbursements in absolute terms, resulting in a negative amount of total support. This negative support reflects the fact that, for several commodities, producer prices in India remain below international prices. This is the result of policy measures but also of broader inefficiencies in the marketing chain, which affect the road network, the electricity supply, and cold storage and transport facilities.⁸⁹

Export restrictions and prohibitions have been implemented mostly at times of price surges (e.g. as occurred with rice and wheat during 2007–11), and have contributed directly to depressing domestic prices. Another factor contributing to the latter relates to the minimum support price (MSP) implemented for the principal crops, backed by government purchases for public stockholding purposes. The Food Corporation of India (FCI) is responsible for the procurement of food grains at administered prices, their distribution to consumers at subsidized prices, and the maintenance of buffer stocks for food security and price stabilization. While the system covers 24 crops, it only involves significant purchases at guaranteed prices for rice, wheat and cotton. In practice, the MSP has not been

⁸⁷ OECD and Indian Council for Research on International Economic Relations (2018), *Agricultural Policies in India*.

⁸⁸ *Ibid.*

⁸⁹ *Ibid.*, p. 40.

divorced from international prices. In fact, the minimum prices for commodities like rice, wheat or cotton were set below international prices most of the time, implying that the scheme did not result in trade distortions, but rather contributed to negative price support.⁹⁰ Beyond their price effect, critics of the public stockholding programmes point to the fact that the MSP essentially benefits large producers, with less than six per cent of farmers actually participating in the schemes and most other farmers selling their products in the market at prices that are below the level of the MSP.⁹¹

The second pillar of India's domestic support focuses on input subsidies. These constitute the largest category of government disbursements, with roughly Rs 2 trillion being thus spent in 2016. The largest input subsidies are provided for fertilizers, electricity and irrigation, and, to a lesser extent, for seeds, machinery, credit and crop insurance. While these transfers have played a critical role in increasing production, critics point to the overuse of fertilizers and their high contribution to the fiscal deficit of the government.⁹² Electricity subsidies are used primarily to power water pumps for irrigation purposes, often leading to the overuse of groundwater reserves. These types of support have further exacerbated pressures on natural resources, notably water.

The third pillar of India's domestic support policies relates to consumer subsidies. In practice, the purchase of food grains by the government under the public stockholding schemes is closely related to the accumulation of public stocks. These stocks are then used to run the public distribution system, which is managed jointly by the central and state governments. Its main objective is to distribute food grains at concessional prices to the poorer segments of society. While this provides a means to strengthen consumers' purchasing power, the main weakness of the system relates to the high level of 'leakage' of food grains – due to poor targeting, wasteful management of stocks or, in certain cases, outright corruption. Purchases made to support the MSP have also tended to overshoot requirements, leading to the accumulation of stocks far in excess of the norms established by the government.

4.4.2 The challenges of reforming India's domestic support policies

Part of the challenge in reforming domestic support in India relates to the complex system of institutions responsible for the design and implementation of agricultural policies. While the states are responsible for many aspects of agriculture, the central government plays an equally important role in the definition and implementation of national policies – including through subsidies. The situation is further complicated by the fact that several ministries at the

⁹⁰ Hoda, A. and Gulati, A. (2013), *India's Agricultural Trade Policy and Sustainable Development*, Research Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2PgNleS> (accessed 4 Jun. 2019).

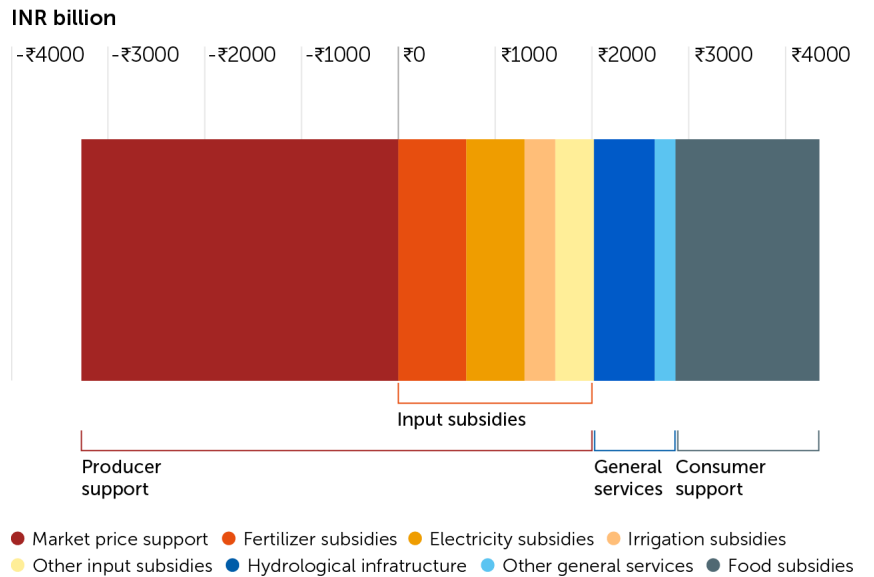
⁹¹ High Level Committee on Reorienting the Role and Restructuring of Food Corporation of India (2015), *Reorienting the Role and Restructuring of Food Corporation of India*.

⁹² Hoda and Gulati (2013), *India's Agricultural Trade Policy and Sustainable Development*.

central level are involved in various aspects of agricultural policies, leading to significant risks of fragmentation, and overlapping and sometimes unclear attributions and responsibilities.⁹³ From a policy perspective, correcting the critical inefficiencies that contribute to depressing producer prices remains a priority.

In this respect, the objectives of achieving simultaneously affordable food for poor consumers and remunerative prices for producers may pose a challenge to the government. A possible way forward might consist in moving from output and input subsidies towards less trade- and production-distorting forms of support, including direct payments to producers. As far as consumer support is concerned, a possible option would consist in moving from an in-kind food distribution to cash transfers, in order to enhance the purchasing power of the target group in the market. This could help reduce the costs of stockpiling and food distribution, while at the same time addressing the problem of leakage and waste. The Unique Identity Card system being established currently in India could make this approach possible over time. The funds saved could in turn be invested in physical infrastructure, research and extension services, or other general services.⁹⁴

Figure 10: Total support estimate in India, 2016



Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates database*, <https://cht.hm/2ZvtvFP> (accessed 4 Jun. 2019).

4.5 Brazil

Brazil has moved from being a net food importer in the 1990s to currently ranking as the third largest agricultural exporter, after the US and the EU. According to the WTO, it is the world's biggest supplier of soybeans, poultry meat, sugar, orange juice and coffee, with these commodities

⁹³ OECD and Indian Council for Research on International Economic Relations (2018), *Agricultural Policies in India*.

⁹⁴ Hoda and Gulati (2013), *India's Agricultural Trade Policy and Sustainable Development*.

accounting for nearly 30 per cent of total Brazilian exports.⁹⁵ Besides tropical products, Brazil is also increasingly focusing on processed foodstuffs, which now account for about three-fifths of total agricultural exports. Overall, the entire agribusiness sector, including inputs, processing and distribution activities, contributed 21.5 per cent of GDP in 2015. Finally, the sector contributes significantly to the country's energy supply, with sugar cane providing over one-third of the country's renewable energy output.

Brazilian agricultural research entity Embrapa's long-term investment in the sector has arguably played a critical role in the country's systematic increases in agricultural productivity. By combining productivity-enhancing investments, land tenure reform and a targeted procurement programme with social protection, Brazil has managed to virtually eradicate food insecurity throughout the country. This impressive success should not, however, mask the vast disparities remaining in the sector, where capital-intensive and large-scale production coexists with numerous small and relatively unproductive farms producing for self-consumption or for local markets.⁹⁶ Overall, family units account for 84.4 per cent of the total number of agricultural establishments.⁹⁷ Another challenge consists in maintaining productivity to respond to increases in global demand, while addressing adverse effects associated with climate change. The sector is currently the second largest source of Brazil's greenhouse gas emissions, after the energy sector.

4.5.1 Brazil's overall support structure Reflecting the dualistic structure of the farm sector in Brazil, domestic agricultural policies are defined both in the Agricultural and Livestock Plan administered by the Ministry of Agriculture, Livestock and Food Supply (MAPA), which is solely responsible for commercial agriculture, and in the Family Agriculture Plan, which supports the development of small-scale family agriculture under the responsibility of the Special Secretariat for Family Farming and Agrarian Development of the Office of the Chief of Staff (SEAD). The Ministry of Social and Agrarian Development (MDSA) also supports the most vulnerable family farmers and promotes food and nutrition security through its programmes, which are aimed especially at families in extreme poverty.⁹⁸

While all these agencies have their own resources and programmes, overall Brazil provides a relatively low level of support to agriculture, reflecting its position as a competitive exporter. The total support to the sector was equivalent to around 0.4 per cent of GDP in 2017, while support specifically targeting producers accounted for two per cent of farm income – well below the average of most of the countries covered in this paper. As illustrated in

⁹⁵ WTO (2017), *Trade Policy Review of Brazil, Report by the Secretariat*, Geneva: World Trade Organization, <https://cht.hm/2MI1908> (accessed 4 Jun. 2019).

⁹⁶ International Centre for Trade and Sustainable Development (2015), *National Agricultural Policies, Trade, and the New Multilateral Agenda*.

⁹⁷ Perissé, C. (2017), 'Organic family farming in Rio de Janeiro highlights healthy food', 4 December 2017, <https://cht.hm/34437x2> (accessed 4 Jun. 2019).

⁹⁸ WTO (2017), *Trade Policy Review of Brazil, Report by the Secretariat*.

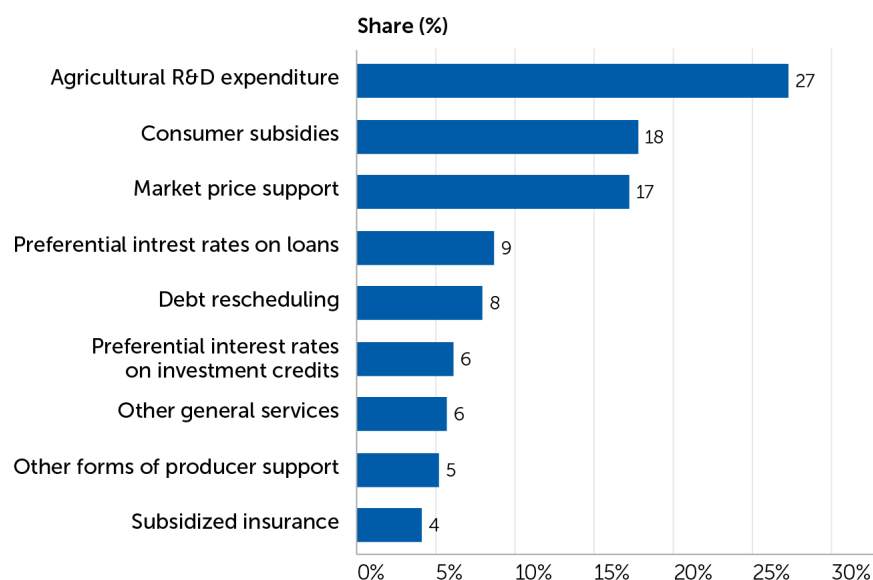
Figure 11, subsidies mainly focus on four areas: market price support (e.g. through minimum guaranteed prices for wheat, rice, beef and cotton); input subsidies (including preferential interest rates for rural credit, debt rescheduling and subsidized crop insurance); spending for agricultural R&D; and food distribution systems. In a number of programmes, support is conditioned by environmental criteria (see Box 7).

The production of biofuels through ethanol remains a significant feature of Brazil's agriculture. In terms of government support, however, since the abolition of price control, the Regional Producer Subsidy is the only direct subsidy paid by the government: this specifically targets sugarcane producers in the poorer North and North-Eastern states. Besides that, the government can still influence ethanol production and price setting through the ethanol-use mandate, currently set at 27 per cent, and tax incentive measures, currently providing preferential treatment for ethanol compared with gasoline.⁹⁹

Market price support is provided through guaranteed prices set at the regional level and, covering a wide range of crops. Guaranteed prices for small-scale farmers are based on average regional production costs for family farms.¹⁰⁰ The products purchased from family farmers are stocked or distributed to vulnerable people under different food distribution programmes. While domestic prices were well below world prices in the mid-1990s, today prices are largely aligned with the international markets, resulting in only minimal trade distortions.

Agricultural or rural credit, provided at subsidized interest rates, constitutes the main policy instrument for the sector, and is

Figure 11: Distribution of total support estimates for Brazil by type of support, 2017



Source: Author's calculation based on OECD (2019), *Producer and Consumer Support Estimates database*, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

⁹⁹ Barros, S. (2018), *Brazil Biofuels Annual Report*, Washington: United States Department of Agricultural Global Agricultural Information Network, <https://cht.hm/2U5B9MM> (accessed 4 Jun. 2019).

¹⁰⁰ OECD (2018), *Agricultural Policy Monitoring and Evaluation 2018*, Paris: OECD Publishing, https://doi.org/10.1787/agr_pol-2018-en (accessed 28 Aug. 2019).

considered as an input subsidy under the OECD classification. These measures are aimed at offsetting high interest rates prevailing on the market, and at promoting access to credit for small farmers.¹⁰¹ Such concessional credits are funded through banks which are required to hold a share of their sight deposits as obligatory reserves at the Central Bank, or to allocate the same proportion in loans to agricultural activities at below market interest rates.¹⁰² The difference between market rates and the rates applied to rural credit is covered by the National Treasury.

Box 7: Combining input subsidies with environmental requirements

Since 2008, all support based on input use in Brazil has been conditional on environmental criteria. For example, in order to access subsidized credit in the Amazon, producers have to comply with a set of environmental regulations and, in particular, with land use regulations set out in the Forestry Code. Several programmes also promote sustainable agricultural practices.¹⁰³ For example Brazil's Low-Carbon Agriculture (ABC) Plan, provides low-interest loans for sustainable agricultural practices, including no-till agriculture; restoration of degraded pasture; integration of crops, livestock and forest; planting of commercial forests; biological nitrogen fixation; and treatment of animal wastes. It also provides preferential interest rates and longer repayment periods for investments and adoption of green technologies. Overall, the programme aims at rehabilitating 15 million hectares of degraded pastures and increasing the area under zero tillage from 25 million hectares to 33 million hectares by 2020. It also aims to reduce greenhouse gas emissions by 160 million tons of carbon dioxide (CO₂) equivalent per year.¹⁰⁴

Besides the provision of credit at preferential rates, input subsidies also include subsidized insurance premium, by covering the difference with the market rates, or by compensating farmers for production losses as a result of natural disasters. In recent years, the subsidy rates for insurance ranged from 35 per cent to 55 per cent of the premium, with the main crops insured being soybeans, wheat, maize, grapes and apples.¹⁰⁵ Finally, the government provides expenditure on general services, essentially focused on agricultural knowledge and innovation through R&D spending.

On the consumer side, Brazil has become a pioneer of government procurement programmes, intended to provide a stable and reliable market for family farms. The food purchased at

¹⁰¹ WTO (2017), *Trade Policy Review of Brazil, Report by the Secretariat*.

¹⁰² OECD (2018), *Agricultural Policy Monitoring and Evaluation 2018*.

¹⁰³ Ibid.

¹⁰⁴ Marques de Magalhães, M. and Lunas Lima, D. A. L. (2014), *Low-Carbon Agriculture in Brazil: The Environmental and Trade Impact of Current Farm Policies*, Research Paper, Geneva: International Centre for Trade and Sustainable Development, <https://cht.hm/2USCfYU> (accessed 4 Jun. 2019).

¹⁰⁵ Ibid.



Workers cultivate corn on a family farm in Minas Gerais State, Brazil. Brazil's government procurement programmes, such as the Food Purchase Programme provides a sustainable and reliable market for family farms. Image: J R Ripper/Brazil Photos/LightRocket via Getty Images.

market prices by the government through Brazil's Food Purchase Programme is used partly for strategic reserves and partly in public distribution programmes.¹⁰⁶ It benefits approximately 200,000 farmers and distributes food to 15 million people each year. Similarly, at least 30 per cent of the food purchased to supply school lunches must come directly from family farmers. This scheme (known as the National School Feeding Programme) covers one-quarter of the Brazilian population.¹⁰⁷

4.5.2 Challenges ahead Overall, Brazil's long-term investment in R&D has resulted in significant achievements in enhancing agricultural productivity and eradicating hunger. For the past 30 years, the agricultural research entity Embrapa has succeeded in adapting, creating, and transferring technologies to Brazilian farmers, helping to transform the country into one of the world's largest food exporters. As in many emerging economies, the Brazilian government has expanded its support to farmers over time, partly to reduce disparities between large commercial agribusiness enterprises and small farmers. Yet, overall, total support has

¹⁰⁶ WTO (2017), *Trade Policy Review of Brazil, Report by the Secretariat*.

¹⁰⁷ Bellmann, et al. (2013), *G-33 proposal: early agreement on elements of the draft Doha accord to address food security*.

remained relatively low, and growth has been at best stable – at worst, levels of support have actually declined.

Taking the next step and escaping what some observers have called the ‘middle income trap’¹⁰⁸ remains a critical challenge for the country as a whole, prompting calls for further economic reforms and enhanced investment in infrastructure – including hard infrastructure, such as roads, to complement the almost exclusive focus on R&D under general services spending. Others argue that the fiscal burden of the social agenda addressing the large income disparities is likely to be difficult to bear in the near future, with relatively high rural per capita spending in a country where 85 per cent of the population lives in urban areas. Debt as a share of GDP is climbing, leading to inflationary pressure, driving up the cost of food and leading the government to spend more to achieve food security targets.

On rural credit, the multiplicity of funding sources and programmes, together with a complex set of eligibility criteria and financial conditions for each credit line, make it hard for both producers and local lenders to establish which loan contract is most suitable for them.¹⁰⁹ While this form of support is intended to address market failures in financial markets, critics also point to the fact that most of the credit is concentrated on short-term borrowing for commercial farmers.¹¹⁰ With a recent decline in market interest rates, agricultural credits could be better targeted to those that need them most and towards technological innovation, farm management and environmental practices. Finally, on the environmental front, the critical challenge will be to ensure that the environmental conditionalities attached to credit schemes, for example, under the ABC plan, effectively generate changes in production methods; they also need to achieve the specific long-term sustainability objectives and meet Brazil’s Intended Nationally Determined Contributions commitments under the 2015 Paris Agreement on Climate Change.

¹⁰⁸ The concept of the ‘middle income trap’ refers to countries that have lost their competitive edge in the export of manufactured goods because of rising wages, but which are still unable to compete with more developed economies in the high-value-added market.

¹⁰⁹ Assunção, J. and Souza, P. (2018), *The Fragmented Rules of Brazilian Rural Credit*, Policy Briefing, Rio de Janeiro: Climate Policy Initiative, <https://cht.hm/2KXHnLK> (accessed 4 Jun. 2019).

¹¹⁰ OECD (2018), *Agricultural Policy Monitoring and Evaluation 2018*.

5. The way forward

Subsidies and other indirect forms of support to agriculture have been a central instrument in the pursuit of national policy objectives, and are likely to remain so in the near future. The policy goals pursued vary greatly from one country to another, reflecting differences in natural resource endowments, socio-economic conditions, political considerations or, more broadly, societal preferences. For example, addressing price and harvest risks while enabling poorer segments of society to purchase food at affordable prices is at the heart of the US approach. In the EU, by contrast, the main rationale for supporting agriculture is to support the income of a fragmented farm sector with relatively small farms, while moving to address some of the environmental challenges associated with intensive agriculture. At the other end of the spectrum, reducing income disparities between rural and urban areas and meeting a growing demand for food remain China's main objectives, whereas India focuses on supporting the livelihood of small farmers while ensuring access to cheap food for consumers.¹¹¹ Brazil's main priority consists of reducing disparities between smallholders and large commercial farmers, while keeping productivity high and protecting poor consumers. Other countries, such as Japan, have focused on maintaining farmers' income levels, improving rates of food self-sufficiency, and preserving the role of agriculture in environmental conservation. Objectives not only vary from one country to another, they also evolve over time as the agricultural sector – and society at large – go through different economic transformations. As policy goals, they are largely legitimate and can hardly be questioned.

The instruments chosen to achieve policy objectives need to be efficient and effective. Agricultural support can variously target producers, through income support or payments based on what they produce or the inputs they use; the sector in general, through irrigation infrastructure or R&D spending, for instance; or consumers, for example through food stamps or school feeding programmes. Overall, subsidies targeting producers are more likely to have trade-distorting effects, and to enhance production. In the absence of strong environmental regulations or requirements associated with the granting of support measures, they tend to exacerbate the negative environmental impacts associated with agricultural production or consumption, including soil degradation, biodiversity erosion or greenhouse gas emissions.

In practice, different countries have opted for different policy measures. Price support, input subsidies or investment aids, for example, remain the central pillars of programmes in large developing countries such as Brazil, China, India or Indonesia. This is chiefly because such instruments are perceived as yielding quick returns in terms of production, and are relatively easy to operate compared with other – less distorting – instruments such as direct payments to producers. In contrast, while the EU member states and Japan still maintain price support schemes for certain commodities, they increasingly rely on direct payments, support for general services and set-aside schemes, while maintaining significant border protection particularly for sensitive

¹¹¹ International Centre for Trade and Sustainable Development (2015), *National Agricultural Policies, Trade, and the New Multilateral Agenda*.

products. In the US, the Farm Bill focuses on providing support to farmers through subsidized insurance schemes and other measures, combined with expenditure on food programmes for poorer consumers and other vulnerable groups.

When considering policy reforms, a first question to ask is whether subsidies are the best instrument to achieve a given policy goal. For example, one of the reasons governments provide support to farmers is to pay for the environmental services that agriculture generates, in terms of landscape and biodiversity conservation or soil carbon sequestration. These are typically public goods that the wider society values but which have no 'market value'. In the absence of government intervention, this results in market failure through which suboptimal levels of these public goods are delivered. This does not, however, mean that providing subsidies is the best policy response. Economists would argue that a tax on products whose price fails to internalize negative externalities associated with certain agricultural practices may be a more efficient way to address the problem. Others might argue that, to achieve these goals, governments ought to introduce regulations that economic actors must comply with: for example, requiring producers to protect certain biodiverse habitats such as woodlands or marshes, or to maintain pasture stocking densities below predefined maximum levels. Similarly, instead of guaranteeing a minimum price to producers through government purchases at administered prices, governments may prefer to remove export restrictions and taxes that depress domestic prices and discourage investment. In certain circumstances, reducing greenhouse gas emissions from agriculture may be more efficiently achieved by removing fossil fuel subsidies.

Second, if subsidies are indeed the appropriate instrument, it is critical to articulate clearly the rationale for support, and to ensure that their design and implementation are as closely related as possible to the policy objective. For example, if subsidies are designed to help move towards a more market-oriented, competitive and resilient system of agriculture, support should be conditional on achieving progress towards this objective, targeting the right beneficiaries and – as with any adjustment mechanism – being limited in duration. In current practice, however, many schemes seem to be completely delinked from any performance indicator, are often skewed in favour of a subset of already efficient producers, and are implicitly considered to be permanent support mechanisms rather than time-limited, transitory mechanisms. Similarly, if support is linked to the delivery of specific public goods like biodiversity conservation or reduction of greenhouse gas emissions, the amount of payments should be commensurate with the cost of 'greening' production methods, at most with a small surplus to provide incentives to farmers to adopt such practices. In this respect, it would be worth further exploring the approach currently under consideration by the European Commission, which envisages moving towards a more results-based performance assessment based on objective indicators.

Third, the question of where and how to promote policy reform should be addressed carefully and strategically. Given the potential 'beggar-thy-neighbour' effect of domestic support policies in agriculture, the natural mechanism to foster reform is international cooperation. Past experience, however, suggests that multilateral talks – in the WTO context – have a

■
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poor track record in promoting domestic reforms. While they can play a critical role in locking in unilateral policy changes, there is limited evidence of governments agreeing to change their domestic policies as a result of a multilateral negotiation. This is not to say that international pressures have no impact. The case can certainly be made that the EU's successive CAP reforms were driven in part by the desire to conclude the Uruguay Round of multilateral trade negotiations (including the objective of obtaining trade concessions for other economic sectors). The case could also be made that awareness of international criticism was a factor in China's recent reforms of policies resulting in the mass stockpiling of key commodities – although clearly domestic considerations, such as fiscal sustainability, must also have been a factor. All the same, the main point is that governments (and particularly those regarded as large players) will only agree to binding international disciplines on subsidies once they have implemented domestic reforms. This largely explains why it was possible in 2015 for the members of the WTO to achieve agreement on the abolition of export subsidies – an instrument that had gradually been abandoned by governments in all the major economies – while it remains extremely difficult to make progress on other forms of support more widely used by WTO members. The focus should therefore be on enhancing the readiness of large players to engage in international cooperative action – and this starts by fostering domestic reform.

The overall direction that such reform should take is fairly clear. While there may be a case for some production-enhancing support, through output- or input-based subsidies, at an early stage of agricultural development, delinking support from production in the longer term will reduce both its trade-distorting effect and the negative spillover effects for third countries. It also significantly reduces the risk of exacerbating the negative environmental effects associated with certain agricultural practices.

If the main rationale for policy intervention is to address nutrition or food insecurity, consumer subsidies – preferably delivered by means of cash transfers or food stamps, as opposed to in-kind food distribution – remain the preferred option. In other words, transfers should target people, not commodities. Not only does this limit the risk of creating distortions; it also allows governments to specifically target those consumers who need support, instead of encouraging production with the hope that this would address the problem. If the goal is to enhance productivity and make the sector more competitive, support in the form of general services tends to be the most efficient way to achieve such results without generating distortions. Finally, if the objective is to promote a transition towards more environmentally friendly production systems or to promote the delivery of public goods, then payments for environmental services, as well as other types of payments delinked from production, may be the best approach. However, these payments should be related clearly to the cost of delivering such public goods, under a performance-based approach, with clear and measurable targets supported by objective indicators of success. While this poses a number of practical and conceptual challenges (e.g. the challenge of measuring progress in increasing biodiversity, or in reducing greenhouse gas emissions) the experience of the CAP in the EU tends to show that such an approach may be more flexible and practical than a set of uniform rules defining how subsidies should be applied. In other words,

emphasis should be put on results, rather than on the way support is being provided.

The critical challenge is how to induce reform, given both the considerable resistance that is likely to occur once support has been provided and the variety of interests involved. While environmentalists would tend to favour a performance-based approach to payment for environmental services, some farmers might fear that this would result in lower payments and higher bureaucratic requirements. Differences may also exist among farmers when it comes to policy reform, particularly among large-scale farmers and smallholders, with the latter often pushing for more equity in the payments (e.g. through caps on payments for rich farmers). Some NGOs and other interest groups tend to focus on the negative externalities and distortions affecting poor countries. Others are concerned about the environment and conservation, or nutrition and obesity, or reducing government waste. In the case of the EU, an additional tension occurs between existing and new member states, with the latter usually concerned about receiving a 'fair share' of EU payments. Obtaining consensus among all these players has proved particularly difficult in practice.

A first step might be to differentiate between payments targeted at low-income consumers (which essentially constitute social safety nets) and support targeting the agricultural sector. Consumer support mechanisms – in the form of food distribution systems implemented in school feeding programmes, as provided in Brazil, or food stamps, following the US model – have little to do with agricultural support. If designed in a non-discriminatory way, such interventions probably serve as one of the less trade-distorting forms of support and one of the most efficient ways to address food insecurity. This type of support is also an efficient tool at governments' disposal to promote healthier diets. The rationale for even notifying this type of support in the WTO is questionable.¹¹² It is also questionable whether there are benefits in discussing those programmes together with others aimed at supporting the agricultural sector: doing so may present an obstacle to deeper policy reform of agriculture support measures.

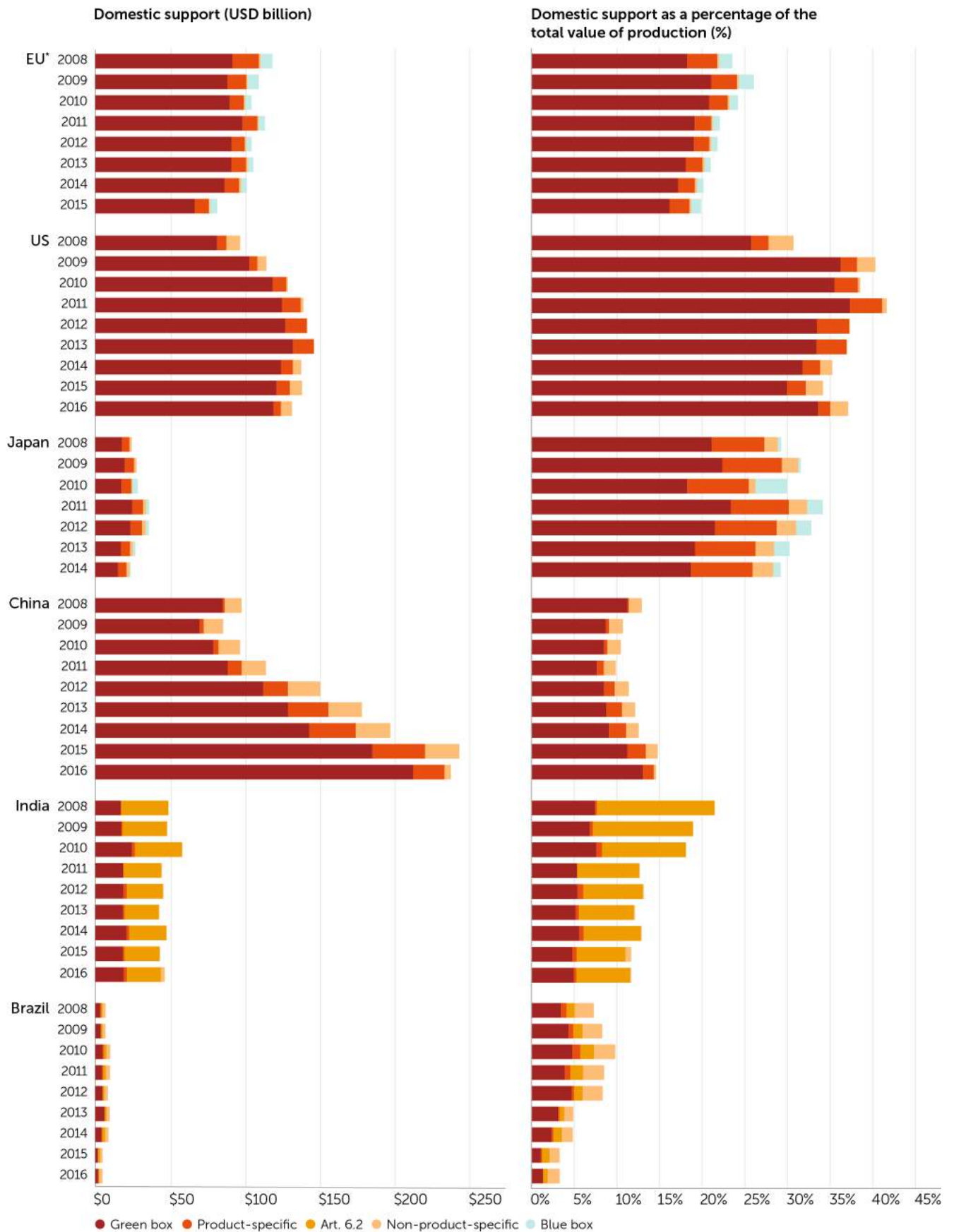
Second, there is a case for generating more objective, results-based assessments of existing support schemes. As highlighted above, there tends to be a fair amount of discrepancy between the stated objectives – or the rationale for support – and the way that transfers are effectively operated. Income support or subsidized insurance programmes tend to be poorly targeted, with most of the support benefiting a handful of often large or wealthier farmers. Environmental payments are not commensurate with the cost of adopting environmental practices, and no assessment of environmental benefit is usually conducted. Input subsidies tend to result in the overuse of fertilizers. Government purchases at administered prices only support a proportion of farmers, with the poorest often selling their production at lower prices. Stories in

¹¹² It should be noted, however, that if there is an income transfer in the form of food stamps, it would be necessary to specify the range of foods that could be purchased. Thus, the efficiency and effectiveness of this type of approach in terms of promoting healthy eating depends critically on programme design.

the media highlighting those inefficiencies or outright inconsistencies have helped to build popular support for reforms, with some groups subsequently pushing for the establishment of a cap on maximum amounts to be received per farm, enhanced mechanisms for targeting beneficiaries, or time-limited arrangements. At a time when fiscal austerity remains a key preoccupation, ensuring that public money is well spent should not be controversial. More consistent and evidence-based assessments of existing programmes, particularly from a sustainability perspective, may, therefore, help build a stronger case for reform where it is needed. They may also help in designing schemes that are truly result- and performance-based. This requires the development of sound methodological approaches, supported by objective and robust indicators.

Third, domestic stakeholders are unlikely to push for deep reforms if they perceive that their farmers are subject to unfair international competition. Expecting domestic producers to move towards more environmentally friendly production methods when they are competing with imports that do not face such constraints is difficult to accept. This constitutes one of the main arguments in favour of support in the EU, for example. Engaging producers and processors in leading exporting and importing countries in an informal dialogue focused on identifying possible solutions may help address this concern. This process should focus on some of the key commodities highlighted in this report as receiving the highest level of support. Given the specificities of each commodity and its related value chain, the process may need to be commodity-specific, bringing together multi-stakeholder coalitions involved at different stages of the value chain (from traders to transporters to agro-industry) to determine parameters on which international commodity-specific arrangements may be crafted – for example by looking at sustainability or land use parameters and thresholds.

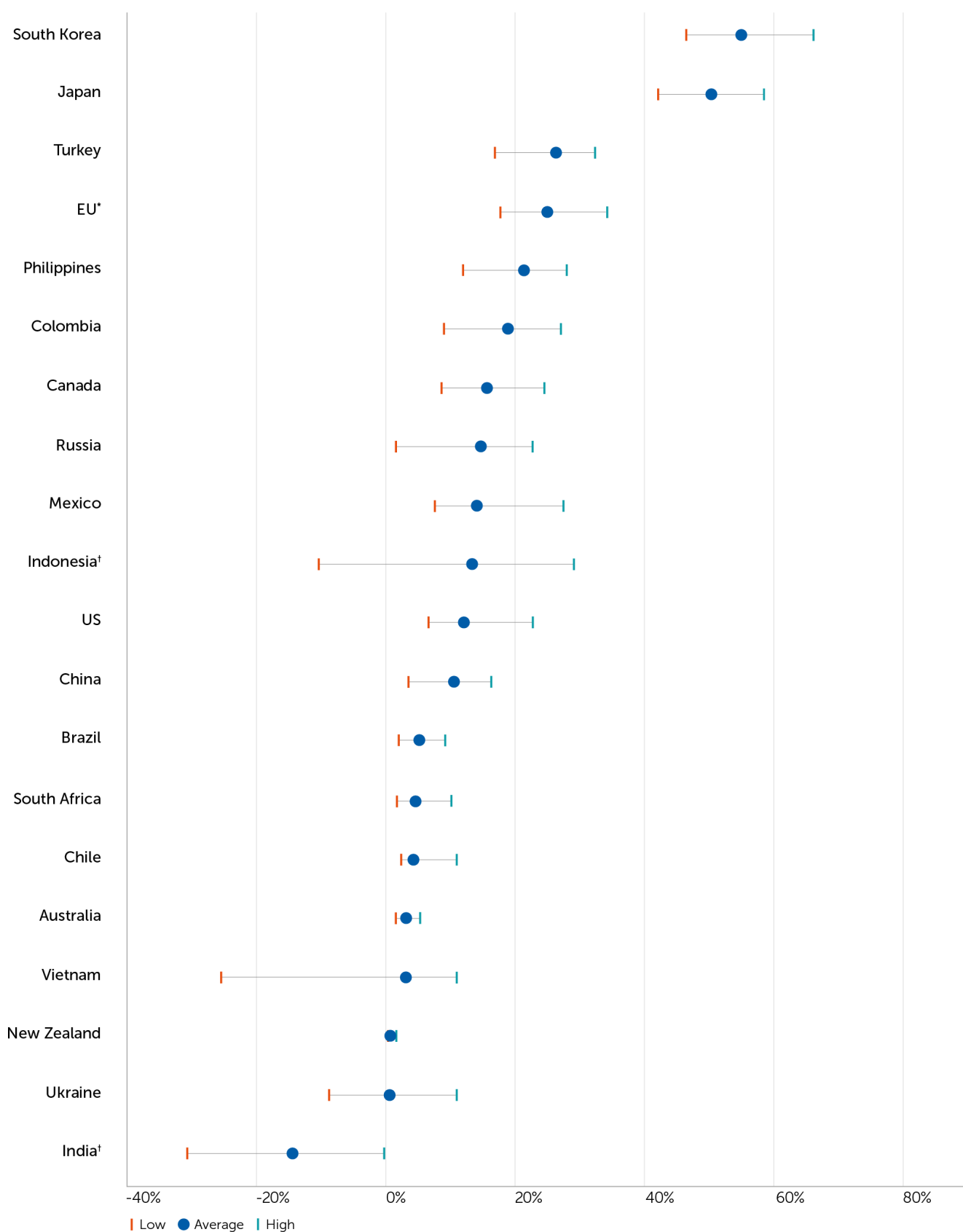
Appendix I: Domestic agricultural support notifications of selected WTO members



Source: Author's calculation based on WTO notifications. See Box 2 for description of the different categories and 'boxes' in which subsidies are organized.

* For the EU, see explanatory note on p. 11.

Appendix II: Producer support estimate as a percentage of gross farm income, 2000–2017

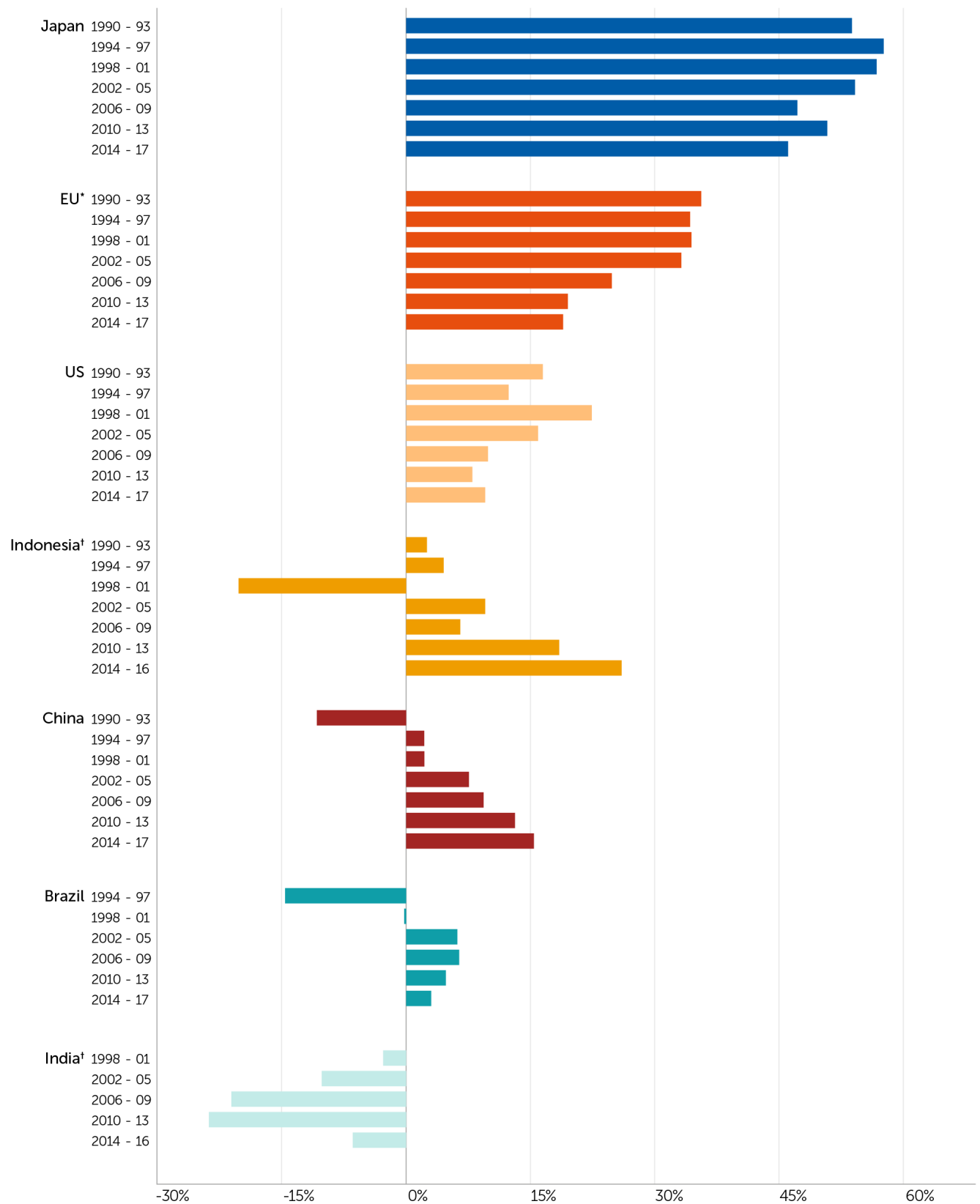


Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* For the EU, see explanatory note on p. 11.

† India and Indonesia data to 2016.

Appendix III: Average producer support estimate as a percentage of gross farm income, 1990–2017



Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* For the EU, see explanatory note on p. 11.

† India and Indonesia data to 2016.

Appendix IV: Single commodity transfers as a share of gross farm income, 1986-2015



Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtDFP> (accessed 4 Jun. 2019).

* For the EU, see explanatory note on p. 11.

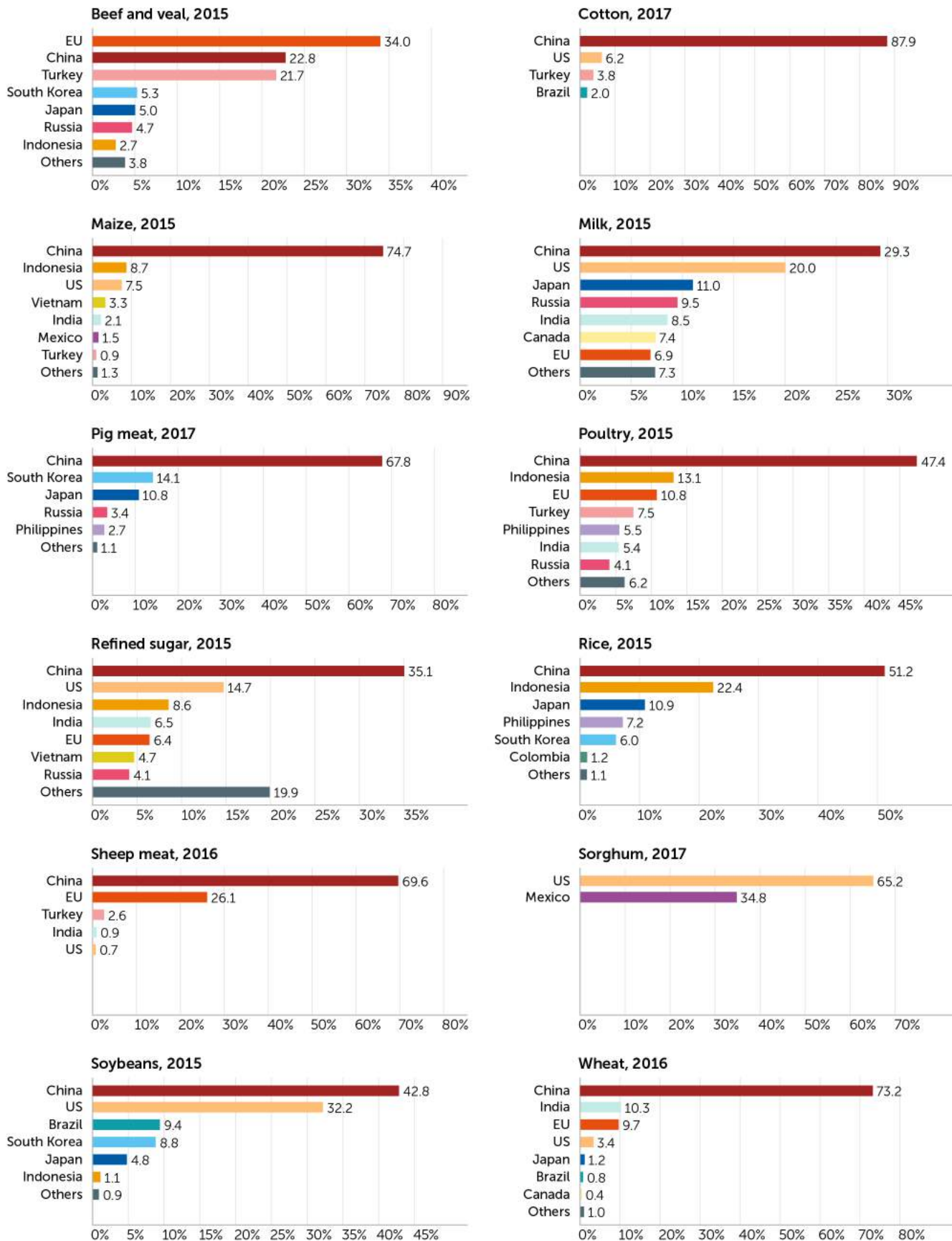
Appendix IV: Single commodity transfers as a share of gross farm income, 1986–2015 *continued*



Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtdFP> (accessed 4 Jun. 2019).

* For the EU, see explanatory note on p. 11.

Appendix V: Single commodity transfers by subsidizing countries, latest available year



Source: Author's calculation based on OECD (2019), Producer and Consumer Support Estimates database, <https://cht.hm/2ZvtvFP> (accessed 4 Jun. 2019).

Abbreviations and Acronyms

A/An/R/I	Area Planted, Animal Numbers, Farm Receipts or Income
AoA	Agreement on Agriculture
ARC	Agriculture Risk Coverage
ASCM	Agreement on Subsidies and Countervailing Measures
Avg.	Average
CAP	Common Agricultural Policy
FAO	Food and Agriculture Organisation of the United Nations
GHG	Greenhouse Gas
OECD	Organisation for Economic Co-operation and Development
Misc.	Miscellaneous
MSP	Minimum support price
PES	Payments for environmental services
PLC	Price Loss Coverage
PSE	Producer Support Estimate
R&D	Research and Development
SDGs	Sustainable Development Goals
SNAP	Supplementary Nutrition Assistance Program
TSE	Trade Support Estimate
WTO	World Trade Organization

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