

## Conceptualizing Multifunctional Agriculture from a Global Perspective:

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### Abstract

The notion of multifunctional agriculture has been actively researched from diverse disciplines including economics, ecology, sociology, and geography since emerged out of the Uruguay Round in the 1990s. In particular, the economics approach represents an attempt to tailor the concept of multifunctional agriculture to market-oriented WTO trade regime. The economics approach has been fundamentally troubled by the lack of concord among WTO member countries on the question of what constitutes multifunctional agriculture. Upon examining how differently the notion of multifunctional agriculture is perceived across the US, the EU, the Cairns group, the LDCs, and the developed food-importing countries (the G10), this article theorizes that multifunctional agriculture connotes different contents in different countries/regions that are determined by their particular agricultural problems, which are in turn shaped by the cultural, ecological and economic characteristics unique to each country. The theorizing undertakes to overcome the Euro-centrism that has dictated the discourse of multifunctional agriculture since the Uruguay Round Agreement on Agriculture (URAA). This article fills an important gap in the literature of social sciences concerning the concept of multifunctional agriculture by explicitly recognizing the wide diversity of contemporary agricultural problems across countries.

Key Words: multifunctional agriculture, global governance of agriculture, WTO, agricultural trade

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# Conceptualizing Multifunctional Agriculture from a Global Perspective:

## 1. Introduction

Since emerged out of the Uruguay Round multilateral trade talks during the early 1990s, the concept of multifunctional agriculture has drawn considerable research attention from diverse disciplines such as economics, sociology, geography, ecology, and international law (e.g., Smith, 2000; Batie, 2004; Vatn, 2003; Potter, 2006; Wilson, 2008). In particular, the OECD held a series of workshops in an attempt to identify issues of pertinence from the economics and farm policy perspective (OECD, 2001; 2003). The workshops have stimulated further research among agricultural economists and elucidated a sequence of economic issues of importance in operationalizing the concept of multifunctional agriculture to the design of WTO trade rules.<sup>1</sup>

While conceptually straightened out in an elegant manner, the economics/policy-oriented approach is far from being ready for practical implementation to WTO trade-rule making procedures. Indeed, not many researchers are overly optimistic about the prospect that the economics approach could be put into operation as an analytical framework (Wilson, 2007; Renting et al, 2009). At the most fundamental level, there is an unresolved question over what types of functions are accepted universally across the world as the components of multifunctional agriculture.

The question arises because WTO member countries do not necessarily agree on what constitutes multifunctional agriculture. Indeed, there are vast differences in the way the notion

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<sup>1</sup> The economics approach begins with the identification of particular types of multifunctional goods and services on specific geographic scopes (Lee, Paarlberg, and Bredahl, 2005), followed by subsequent steps including (i) measuring their economic values based on either local, regional or national preferences (Randall, 2002; Hall et al 2004; Moon and Griffith, 2011), (ii) evaluating the degree of joint production relationship with either market commodities or farm/rural lands (Abler, 2001), (iii) assessing whether market failures are involved (i.e., whether underprovided), and (iv) choosing the most appropriate policies in promoting the provision of multifunctional outputs in consideration of the transaction costs associated with the policies specifically targeted at multifunctional goods (Romstad et al, 2000; Vatn, 2001; Vatn, 2002).

of multifunctional agriculture is conceived across countries/regions, as has been glaringly manifested in the debate of whether or not multifunctional agriculture is a disguised protectionism (Smith, 2000; Potter and Burney, 2004). Such differences in the conception of multifunctional agriculture are suspected to arise from the fact that countries widely differ in their needs with respect to diverse components of multifunctional agriculture.<sup>2</sup> Indeed, the major sticking point of the Doha agricultural negotiations has been closely related to the question of how to effectively incorporate such diverse functions of agriculture into the design of trade rules. The lack of concord on the concept of multifunctional agriculture, therefore, directly underlies the inability of the Doha Round to advance agricultural trade negotiations forward.

Despite such importance in designing effective global trade rules, the issue of transnational differences in the conception of multifunctional agriculture has received adequate consideration neither from trade negotiators nor from agricultural economists.<sup>3</sup> A body of literature, however, has been emergent in recent years from rural sociology and geography viewing multifunctional agriculture from the developing world perspective (e.g., Losch, 2004; Wilson, 2007; and Wilson, 2009). Building on such budding literature and classic development models highlighting the evolving roles of agriculture in the process of economic development (Lewis, 1954; Rostow, 1961; Timmer, 1988), the main objective of this article is to conceptualize multifunctional agriculture from a global perspective that encompasses diverse groups of WTO member countries at various developmental stages with differing economic, ecological, historical and cultural backgrounds. The following countries/groups are considered in this article: the US, the EU, developed net food-importing countries (G10), the Cairns Group

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<sup>2</sup> Multifunctional agriculture is defined in this article to include food security, rural livelihoods, poverty/hunger reduction, contribution to economic growth, environmental sustainability, recreational opportunity, farmland amenity, cultural heritage, and nonuse value.

<sup>3</sup> The notable exception includes the Roles of Agriculture (ROA) project initiated by the Food and Agriculture Organization (FAO) that attempt to interpret multifunctional agriculture from a developing country perspective.

(large agricultural exporting countries) and the least developed countries (LDCs). In light of the above conceptualization, multifunctional agriculture is defined in this article to include: (i) the management of environmental and natural resources, farmlands amenities, and rural vitality that are highly valued particularly in developed countries; (ii) food security, economic growth/development and poverty reduction functions of agriculture that are important in developing and least developed countries; (iii) preservation of rainforests that is needed in large agriculture-exporting countries (the Cairns group); and (iv) maintaining a minimum level of domestic agricultural production that are pertinent in developed net food-importing countries (the G10).

In essence, multifunctional agriculture is theorized in this article to be intrinsically connected with the different roles that agriculture plays across distinctive groups of countries. There has been lacking in the literature a coherent theory viewing multifunctional agriculture from a global perspective involving diverse groups of countries. This article makes an important contribution to the discourse of multifunctional agriculture by explicitly considering the wide diversity of contemporary agricultural problems across extremely heterogeneous groups of countries.

## **2. The Rise of the Concept of Multifunctional Agriculture**

The concept of multifunctional agriculture originated from the Uruguay Round (UR) multilateral trade talks that have lasted from 1986 to 1994. The UR was the first major multilateral effort devoted to dismantling agricultural protectionism that has been prevalent across developed countries since the Second World War. The UR produced Agreement on Agriculture (AoA) that spells out how reform would proceed in relation to three pillars including market access,

domestic support, and export subsidies (Ingco and Croome, 2004). The AoA is assessed to be a half-success toward the goal of liberalizing agricultural trade: while failing to substantially reduce trade barriers (domestic subsidies and import tariffs), it laid a solid framework for future progresses in liberalizing agricultural trade. The concept of multifunctional agriculture (NTC, nontrade concerns) was clearly but broadly noted in the Preamble to the AoA stating,

“Commitments under the reform programme should be made in an equitable way among all Members, having regard to NTC, including food security and the need to protect the environment; having regard to the agreement that special and differential treatment for developing countries is an integral element of the negotiations.”

The emergence of the notion of multifunctional agriculture prompted the WTO to institute an innovative mechanism so called ‘traffic light box system’ (green, blue, and amber boxes) that categorizes agricultural policies and subsidies based on two criteria: (i) whether or not they distort trade patterns and (ii) whether or not they are targeted at supporting the multifunctional roles of agriculture. Designed to permit countries to foster the supply of multifunctional goods of agriculture while ensuring that such support is decoupled from production decisions, this creative device enabled developed countries to transfer trade-distorting subsidies to the green box and allow them to maintain the overall size of farm subsidies (OECD, 2001).

The UR was apparently a multilateral talk devoted to reversing the trend of agricultural protectionism. Yet, the real underlying cause of the talk was the escalating agricultural subsidy war (particularly export subsidy) between the U.S. and the EU (Josling, 1997).<sup>4</sup> The two sides used the UR as a medium to end the subsidy war, curb growing budgetary burdens, and mollify other countries’ criticisms of the disarray in international agricultural markets. Reluctantly involved in the talks, other developed countries such as Norway, Switzerland, Japan, Korea and

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<sup>4</sup> Although the transatlantic conflict between the US and the EU due to agricultural subsidies started upon the inception of the CAP in 1960s, it was sharply heightened in the 1980s with the EU emerging as a major exporter in temperate-zone markets in third countries by means of subsidies rather than fair competition (Josling, 1997).

others so called “Friends of Multifunctional Agriculture” (now called the G10) were in need of a mechanism that would protect their agriculture from the forces of globalization and liberalized trade. In collaboration with the EU, they concocted the term ‘non-trade concerns (NTC; multifunctionality)’ that integrate various positive externalities associated with agricultural outputs and farmlands.<sup>5</sup> The EU and Friends of Multifunctional Agriculture banded together in the Uruguay Round to put forth the concept of multifunctional agriculture and succeeded in developing a formal institution (box system) in support of it.<sup>6</sup> Although the apparent mandate of the Uruguay Round was to reduce agricultural protectionism, the AoA legitimized it in the form of green payment and direct income subsidy that are intended to support the multifunctional outputs of agriculture.

In brief, the emergence of the concept of multifunctional agriculture represents a pivotal juncture in coping with agricultural trade issues. Neither did it abolish agricultural protectionism nor did it reject the prospect of achieving freer trade. It was a subtle compromise among WTO member countries that sustained the capacity to accommodate political, historical, economic, environmental and ideological dimensions of agricultural trade negotiations. The concept of multifunctional agriculture as invented in the UR was hardly meant to be determinate, but signified a fluid plot that was waiting to be fully developed by future negotiations. The birth of the concept was followed up by new jargons such as decoupling, targeting, cross-compliance, and direct payment, which played a perceptible role in the Doha Round trade negotiations as well

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<sup>5</sup> See Swinbank (2001), Losch (2004) and Sakuyama (2005) for a detailed delineation of the process how the concept has gained legitimacy during the Uruguay Round talks and subsequent international conferences hosted by FAO, WTO, and OECD in the late 1990s and early 2000s.

<sup>6</sup> On one hand, the EU had an internal incentive to be proactive in the negotiation in order to push the reform of the CAP and stop the subsidy war with the U.S. It needed on the other hand to continue to protect its farmers and agriculture to preserve the European Model of Agriculture (EMA).

as in domestic policy discourses in developed countries (Josling, 2004; Baffes and Gorter, 2005; Zahrant, 2009).

### **3. Research Approaches to Multifunctional Agriculture**

The UR spawned the concept of multifunctional agriculture in very general terms. As noted earlier, the preamble to the AoA mentions of three kinds of nontrade concerns (NTCs) including food security, the environment, special and differential treatment for developing countries'. Country proposals submitted to the 1999 Geneva Ministerial Declaration procedure offer some insights into how some of the members envisioned multifunctional agriculture in their own contexts. For example, the EU proposal argued that agricultural support measures should be legitimate insofar as they foster the preservation of the environment and the viability of rural communities. The Japanese proposal insisted that the country needs a minimum level of agricultural support to sustain agriculture's positive effects on other sectors. In addition to such expressed positions/opinions on multifunctional agriculture by WTO member countries, academic researchers offered various definitions useful in better understanding the concept. The following attempts to define/interpret multifunctional agriculture from the economics and broader social science perspectives.

#### *3.1 Defining Multifunctional Agriculture From the Economics Perspective*

Blandford and Boisvert (2005) offer a definition of multifunctional agriculture that covers two distinctive types: (i) technical externalities and/or public goods, and (ii) pecuniary externalities. The first type includes wildlife habitat, recreational benefits, farm landscapes amenities. These goods and services have either joint production relationships between market and nonmarket outputs through either interdependencies of production or sharing inputs. Some

nonmarket outputs produced through such technical interdependencies exhibit public good properties (nonrivalry and nonexcludability) such as landscape amenities and cultural heritages, while others exhibiting rivalry or excludability (e.g., carbon sequestration). These technical externalities can be addressed by internalizing them via Pigouvian taxes/subsidies. The second type involves food security, food safety and quality, animal welfare, and rural development. They are classified as pecuniary externalities distinctive from technical externalities in the sense that they do not involve missing markets or inefficiencies in resource allocations (market failures), hence not requiring collective actions: mechanisms independent from agricultural market system may be instituted to address the pecuniary externalities out of political motivations.

Van Huylenbroeck et al (2007) conceptualize agriculture as performing four types of multiple functions: (i) green functions referring to various environmental and ecosystem services such as wildlife habitat, biodiversity, nutrient recycling, carbon sink; (ii) blue functions referring to water-related services such as water management, groundwater purification, flood control; (iii) yellow services encompassing rural cohesion and vitality, agro-tourism, cultural and historical heritages; and (iv) white functions including food security, food safety and quality. Romstad et al (2000) define multifunctional agriculture as a set of public goods interlinked with market outputs: (i) landscape-related values inclusive of biodiversity, cultural heritage, amenity value, recreation, scientific/educational value, (ii) Food related aspects referring to food security, food safety, and food quality, and (iii) Rural activity including rural settlement and economic activity. In addition to a range of ecosystem services, Batie (2003) encompasses agro-entertainment opportunities such as hunting and agro-tourism and more abstract values such as regional identity, heritage values, and rural vitality. Abler (2004) defines multifunctional agriculture as a



set of positive and negative externalities and public goods associated with agriculture as presented in Table 1.

Table 1 Multifunctional Goods (Bads) and Services

<b>Positive Externalities/Public Goods</b>	<b>Negative Externalities</b>
Landscape & Open-space amenities	Eutrophication
Cultural heritage	Sedimentation and turbidity
Rural economic viability	Drinking water contamination
Domestic food security	Odors from livestock operations
Prevention of natural hazards	Animal welfare
Groundwater resource recharge	Irrigation-overuse, salinization
Preservation of biodiversity	Loss of biodiversity
Greenhouse gas sinks	Greenhouse gas emissions

Source: Abler (2004)

In sum, the definitions above essentially represent the economics approach which reduces multifunctional agriculture either to particular types of externalities that can be internalized via the Pigouvian subsidies/taxes or to public goods that can be optimized by collective actions. The primary goal of the economic approach is to operationalize the notion of multifunctional agriculture to the neoliberal WTO framework that is mandated to promote market-oriented trading regime. Researchers have attempted to advance the economics approach by using nonmarket valuation techniques to assign monetary values on the individual components of multifunctional agriculture at the local and national levels. In particular, Randall (2002) recognizes potentially harmful effects of putting wrong prices on them in terms of misguided domestic policies and their adverse effects on trade and welfare loss at the global level. Although he was cautiously hopeful of the research community's ability to advance the economics approach in view of the advancements of nonmarket valuation methods in recent years<sup>7</sup>, there has been little progress thus far keeping the hope alive.

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<sup>7</sup> He suggested a strategy combining contingent valuation, hedonic price, and choice model methods in an effort to deal with potential biases typically associated with the process of valuing nonmarket goods and services at a national

### *3.2 Viewing Multifunctional Agriculture from Social Sciences Perspective*

In contrast to the economics approach, social scientists (political economy, sociology, geography) view the concept as a much broader socio-political ideology that sets the tone for a holistic discourse on the interrelationships among farm management, environmental conservation, economic development, and rural community development. For example, Renting et al (2009) indicate that market regulation (policy-oriented economics) approach does not exploit the full potential of the concept of multifunctional agriculture and offer an integrative framework combining it with three other approaches (i) Land-Use approach focusing on spatial issues related to rural areas, (ii) Actor-oriented approaches referring to a set of approaches highlighting the multifunctionality issues at the farm level and farmers' decision making process with respect to the practices of multifunctional agriculture, and (iii) Public Regulation approaches underscoring the role of public institutions in promoting multifunctional agriculture.

More broadly, the social science literature contrasts the notion of multifunctional agriculture to other ideologies such as productivism, post-productivism, neoliberalism, and the European Model of Agriculture (EMA).<sup>8</sup> Productivism is an agricultural ideology that describes two tendencies in the second half of the 20<sup>th</sup> century including (i) the mode of production that is characterized by ever-increasing application of modern inputs (agri-chemicals, machinery, and high-yielding varieties) and Fordist-type management practices that reduce labor inputs and lock producers into a treadmill of production that is geared toward increases of production and profit

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level. In particular, the strategy was designed to reduce biases associated with valuing multifunctional outputs at local levels and aggregating them, known as the individual valuation and summation (IVS) bias.

<sup>8</sup> Rooted deep in European culture and politics, the European Model of Agriculture (EMA) is a particular way of viewing the relationship among agriculture, environment, and rural society (Potter, 2006). From the moment of the creation of the CAP in Europe, there has been an implicit recognition that European agriculture is unique in terms of its socio-cultural contribution and in terms of the vulnerability of its constituent operating units to unfettered market forces (Potter, 2006).

(Gray and Lawrence, 2001) and (ii) stable government support for maximization of production through subsidization, price guarantees, and protectionist policies (Bjorkhaug and Richards, 2008). The consequences include the remarkable increases in agricultural productivity; the increased exploitation of natural resources and detrimental effect on the environment, likely compromised sustainability of agricultural production (Bjorkhaug and Richards, 2008). In contrast, post-productivism refers to a mode of production that is more keen in reducing the impacts of intensified production practices on the environment and rural societies, and in fostering other values/services (e.g., agrotourism, hunting, ecosystem services) associated with farmlands than simply increasing crop productivity (Bergstrom, 2001).

It appears that productivistic and post-productivistic modes exist side by side in Europe with two forces in play simultaneously: (i) growing resistance against intensified production practices from consumer and environmental advocates groups, and (ii) predominant neoliberal trend impacting agricultural policy process across Europe. While post-productivism has much utility to offer in helping us better understand the changes that has been taking place in some parts of the developed world in terms of rural land use management from material production to the provision of environmental services and amenities, the transition to the post-productivism has not taken place yet (Mather, Hill, and Nijnik, 2006).

It is generally accepted that multifunctional agriculture is a term that better conceptualizes contemporary changes in agricultural policies and rural societies than post-productivism because it does not discount the importance of the production and profitability of market commodities (Wilson, 2001). In particular, McCarthy (2005) views that multifunctionality replaced post-productivism as a framework with which to inquire about changes taking place in contemporary rural areas. In addition, Josling (2003) identifies

multifunctionality of agriculture as one of four paradigms that shapes agricultural policies in the OECD along with Dependent, Competitive (market-oriented), and Global paradigms.<sup>9</sup> Under this categorization, the WTO trade liberalization talks are understood as a forum for multifunctional and competitive paradigms to collide with the Cairns and the US pushing for continued reform of trade rules and proponents of multifunctionality attempting to secure enough scope in the Green Box to foster the non-commodity functions of agriculture.

Given that neoliberalism has been the major force for liberalizing agricultural trade, researchers have attempted to contrast it with multifunctionality and post-productivism in the context of their relative influences on agricultural and rural policies largely in a European context (Potter, 2006; Evans, Morris, and Winter, 2002; Potter and Tilzey, 2005; Marsden and Sonnino, 2008). They generally concur that, while far from being universally accepted as a model for the future governance of European agriculture, neoliberalism has been the leading paradigm shaping it. Yet, the trend of market-oriented reforms has been challenged and altered to some extent by agrarian policies in support of multifunctional roles of agriculture within the EU. The upshot is that most researchers recognize that agricultural policies in some parts of the developed world have evidently started to emphasize the intimate connection between intensified agricultural production practices and environmental/ecological degradation, representing the beginning of a transition to post-productivism and multifunctionality. They converge to the conclusion that the globalization trend supported by the WTO and neoliberalism is the mainstream force that few countries can evade, but it is reshaped differentially in accordance

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<sup>9</sup> Dependent agriculture paradigm is the old view of agriculture where farmers are allowed to focus on production, then government would take care of remaining tasks such as finding markets, border protection, buying surplus and assist with export if needed; competitive agriculture paradigm views agriculture as having the capability to stand on its own two feet; global agriculture paradigm sees agriculture as one stage in a global supply chain stretching from chemical and biological input suppliers to retail stores and niche markets (Josling, 2003).

with the relative strengths of the demand for multifunctional outputs across countries. The implication is that a productivist (neoliberal) agriculture will exist side by side with multifunctionality and public discourses about the future of European countryside will be determined by their interactions that will be in turn influenced by the WTO trade negotiation process involving the dynamics of the competition among developed countries, the Cairns group, the G20, and the G10 countries.

Theorizing from a normative perspective, Wilson (2007) views multifunctional agriculture as a spectrum bounded by productivist and non-productivist actions. This normative view conceptualizes transitions taking place among weak, moderate, and strong multifunctional pathways at the farm level. In this framework, multifunctionality is assessed by a multitude of dimensions such as social, economic, cultural, moral and environmental capital, farming intensity, productivity, food quality, and enlightened vision for health. The strongest form of multifunctional agriculture is manifested when all of the above conditions are met. In particular, environmental sustainability constitutes its most central feature. The study considers the strongest form of multifunctionality as a theoretical ideal rather than an achievable goal.

#### **4. Cross-Country Divergences in the Conception of Multifunctional Agriculture**

This section attempts to show how differently the concept of multifunctional agriculture is received across countries/regions. As noted earlier, the notion of multifunctional agriculture has surfaced from complex international trade environments that involve problems associated with agricultural subsidies in developed countries and neoliberal/globalization forces that have been sweeping the world economy since the 1980s. The emergence of multifunctional agriculture was a direct outcome of the collision (compromise) between agricultural protectionism and trade

liberalization forces where the US and the EU were the main actors while other groups of countries (the Cairns, developed food-importing countries, developing countries) playing a supporting role. Therefore, the notion of multifunctional agriculture as conceived in the Uruguay Round was not a consensus agreed upon by all WTO member countries and was inherently open to varying interpretations and positions by them. The following delineates the positions of the EU, the US, the G10, the Cairns group, and the least developed countries (LDCs).

#### *4.1. The European Union*

The EU has been at the center of the debate on multifunctional agriculture. They have consistently supported the concept since its inception in the early 1990s, highlighting the need to enhance environmental sustainability and promote rural development. Even prior to that, they have embraced the notion of the European Model of Agriculture (EMA) as an ideology that backs up agricultural subsidies in the region. The main idea of the EMA is that agriculture is special in Europe in the sense that it plays a crucial role in managing rural landscapes that occupy more than 70 percent of the total land areas. Hence, marginal lands in terms of agricultural productivity receive particular policy attention and various income-boosting policies are in place for such marginal farmers accountable for managing European country sides. They argue that production-linked government interventions (border protection, and farm subsidies) are needed to promote the provision of some multifunctional outputs.

Having observed that the EU is in full support of the notion of multifunctional agriculture, it is worthwhile to note that there are measurable differences within the EU as demonstrated by nascent research. For example, noting that the CAP reform has reoriented agricultural policies more toward rural development and multifunctionality, Daniel and Perraud

(2009) compare the content and implementation of these policies between French and the Netherlands. They show that the two countries reveal two divergent models of multifunctionality: the Netherlands restricted the application of multifunctionality to nature and landscape protection (liberal environmentalist model) while France still maintains a highly institutionalized relationship between farmers' organizations and the state (state-farmers co-management model). Dibden, Potter, and Cocklin (2009) analyze the EU and Australia in the context of how the neoliberal agenda have been affecting agricultural discourse in the region. Characterizing the EU's dealing with the WTO's push for trade liberalization as "anticipatory and risk-averting" and Australia's as "compensatory and harm-minimizing", they argue that neoliberalization as a policy agenda is reshaped in different states and regions through processes of resistance and accommodation arising from particular geographical, historical, political, and institutional contexts, and as a response to crises.

#### *4.2 The United States*

Although the US created the box system in cooperation with the EU in the Uruguay Round and took full advantage of the box system to keep major portions of farm subsidies in the forms of green and direct payment that is supposedly decoupled from production decisions, the US has taken a very ambiguous position officially on the concept of multifunctional agriculture (Losch, 2004). The US has barely endorsed the concept of multifunctional agriculture officially in the process of WTO multilateral trade negotiations, yet spending considerable amounts of farm subsidies to promote the multifunctional aspects of US agriculture with a particular focus on agri-environmental programs, wildlife habitat, wetland preservation/restoration programs, and soil conservation programs. In addition, the US has a diverse set of programs targeted at preserving farmlands at the local, state, and federal levels. Hellerstein et al (2001) demonstrated

that public demand for open space and rural amenities were a main motivation behind the legislation leading to the farmland conservation programs in most states in the US. Indeed, research valuing nonmarket benefits of agriculture in the US has been conducted under the label of ‘farmland preservation programs’ rather than ‘multifunctional agriculture’ (Bergstrom and Ready, 2009; Dorfman et al, 2009). Together, extant agri-environmental public programs and farmland valuation research indicate that, while the US does not use the term multifunctionality officially, in practice it recognizes the notion that agriculture produces certain benefits that are not traded in markets. It places high value on the environmental function of agriculture and the provision of wildlife habitat, farmland amenities, and recreational opportunities (Libby, 2002; Blandford and Boisvert, 2007).

Freshwater (2002) offers seven reasons rationalizing why the U.S. is dubious about the concept.<sup>10</sup> He indicates that the US is concerned about countries abusing it as a veiled protectionism and therefore hesitant to fully accept the concept. The US position is to ensure that policies promoting multifunctional agriculture are detached from incentives for greater production, thereby minimizing trade-distorting effects (Bohman et al, 1999). According to the US position, farm subsidies would be permitted when they are targeted at specific multifunctional outputs: otherwise they are criticized as disguised protectionism. This position is based on the principle of efficient economic policy (known as Tinbergen’s principle) design dictating that the number of policy objectives should be equal to the number of policy instruments. Hence, if policies intended to promote environmental performances of agricultural

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<sup>10</sup> The seven reasons include: (i) there is a tendency in the U.S. not to overuse federal authority to manage private property rights, (ii) U.S. policy already has been dealing with agriculture-related environmental issues, (iii) land-use management in the U.S. is generally considered a local issue, (iv) given the huge size of the U.S., most agricultural production is detached from urban areas where most people live, (v) incorporating the concept of multifunctionality requires a major renovation in the philosophy underlying the U.S. farm policy process, (vi) multifunctionality gives rise to conflicts for those countries seeking more open and transparent agricultural policy, and lastly (vii) the difficulties associated with valuing nonmarket outputs makes it hard to gain broad support.



production motivates farmers at the same time to increase production, they cause inefficient resource allocations.

#### *4.3 The Cairns Group*

The Cairns group represents large-scale exporting countries that have natural comparative advantages in agricultural production. They advocate for a full liberalization of agricultural trade and take the most disapproving stance on the concept of multifunctional agriculture because of their suspicion that developed countries can abuse the concept purposefully to sustain agricultural protectionism. Indeed, they believe that developed countries were able to retain much of the agricultural protection thanks to the box system that allowed unlimited amounts of subsidies insofar as they are classified as the green box policies (Losch, 2004). Hence, dissimilar to the US position approving the box system, the Cairns group takes a distrustful position on the box system. Some countries in this group are encroaching into tropical rainforests in an alarming speed to expand agricultural production, posing problems in conserving ecosystem services of global significance. Each year over the last decade, 13 million hectares was lost largely due to agricultural expansion compared to 16 million hectares in the 1990s. During the last six decades, over 60 percent of the tropical rainforests were destroyed and two-thirds of the remaining forests are fragmented, making them vulnerable to further deforestations (Economist, 2010).

Considering that the benefits of not developing rainforests are shared by every country in the world, the global community is accountable to a large extent for financing such conservation activities (Gullison et al, 2007).

#### *4.4 The G10 countries*

This group includes the East Asian countries (Japan, Korea, Taiwan), Switzerland, and Norway. They have most swiftly endorsed the notion that agriculture performs multiple

functions in addition to the production of food and fiber and favored the box system of the URAA as a formal institution that incorporates the notion of multifunctional agriculture. The US and EU played a pivotal role in the birth of the URAA because they needed the institution more than any other countries to earn time in reforming their farm policies. The G10 countries became the strongest proponents of multifunctional agriculture because of their inherently uncompetitive agricultural sectors in the world markets. While it is inevitable for them to import a significant share of their food demand from international markets, they want to maintain a minimum level of domestic production. A full-blown market-oriented reform in WTO trade rules (that require drastic reductions in border protection and domestic subsidies) will signify a drastic restructuring or phase-out of agricultural sectors in many countries in the group. Hence, they desired to use the concept to slow down the pace of trade liberalization reform and make efforts to convince other groups of countries that multifunctional agriculture is not a disguised protectionism but valid issues confronted particularly by countries with agricultural comparative disadvantages.

They accept the most far-reaching definition of multifunctional agriculture including food security (Lim, 2005; Simpson, 2005), landscape management, ecosystem services (Porter et al, 2009), water management, social, agrarian cultural heritage (Daugstad et al, 2006) and rural development functions. Given that such functions have varying degrees of joint production relationship with market outputs or farmlands, they contend that it is necessary to use production-linked policies to ensure an appropriate provision of such multifunctional outputs. Opponents of production-linked support argue that those goods and services can be produced most efficiently through targeted policies that are decoupled from agricultural production. For example, food security may be enhanced by developing domestic or international storage

programs (Sumner, 2002); rural employment can be enhanced by boosting nonfarm employment opportunities, not by expanding agricultural production; flood mitigation can be achieved by means other than paddy fields. However, proponents of multifunctional agriculture argue that the truly distinguishing feature of multifunctional agriculture is that agriculture performs so diverse tasks and there are considerable cost complementarities (or economies of scope) in producing them all jointly with agricultural market commodities. For example, rice production in Korea or Japan contributes to enhancing food security while generating rice paddy amenities, maintaining agrarian cultural heritages, and reducing the risks of floods (managing water resources). : i.e., protection of domestic rice production produces five types of nonmarket benefits along with market outputs (rice). From the production (supply) perspective, a country can produce them all together cost-effectively taking advantage of cost complementarities.

Of particularly important function of domestic agriculture to the G10 countries is food security. Food security in these developed food-importing countries (DFIC) differs from that of developing countries. Food security in developing countries is intimately connected with poverty and lack of sufficient incomes to access to food, while food security in DFIC refers to the ability to meet their food demand in the events of international emergencies/crises. The notion of food security in DFIC is contested by many economists (Runge and Senauer, 2000; Tweeten, 1999; Sumner, 2003). They argue that conventional notion of food security as the ability to feed one's population from domestic sources should be reframed in terms of the ability to buy imports. Other economists contend that an appropriate level of domestic production can contribute to fostering fuller food security in conjunction with other means such as stockholding, enhancing potential productive capacity, and diversifying import lines (Lee, 2004; Lim, 2005; Kako, 2000; Simpson, 2005). Food self-sufficiency rates in the G10 are among the lowest in the

world with Korea (27 percent), Japan (40 percent), Norway (52 percent) and Switzerland (50 percent). Given such low self-sufficiency rates, they have been concerned that the gradually shrinking agriculture under the neoliberal WTO regime might be accompanied with the disappearance of agrarian cultural heritage, farmland amenities, ecosystem services, and more importantly, psychological comfort that one can gain when feeling secure about food availability now and in the future (Chern, Carter, and Shei, 2000; Simpson, 2005).

#### *4.5 Food-Importing Developing and Least Developed Countries*

This group includes largely net food-importing countries in Sub-Saharan Africa and South Asia. Over the last few decades, they neglected agriculture as part of a development strategy concentrating on quicker industrialization. This strategy was guided by the structural adjustments programs imposed by the international financial organizations (World Bank and IMF) promoting liberal economic system in African countries. As a consequence, African countries have turned themselves during the 1980s from net food-exporters to net food-importers and have become increasingly specialized in the production of cash crops such as cotton, coffee, cocoa, or sugar (UN, 2009). The dependence on food imports was exacerbated by growing depletion of soil nutrients: i.e., in some countries, the lack of investments and productivity growth has driven farmers to attempt to increase food production by reducing fallow times, thereby depleting soil nutrients and decreasing total production for the sub-Saharan Africa as a whole (Koning and Smaling, 2005; Savadogo, 2007; Paarlberg, 2010). The most important functions of agriculture to these countries involve improving productivity, food security, and rural livelihoods, thereby promoting pro-poor growth and laying the foundation for sustained economic development. Green functions such as farmland amenities or recreational opportunities are less valued in such countries. As a consequence, they are in favor of notions

such as ‘Development Box’ and ‘Food Security Box’ that would help them protect their agriculture from foreign competition and gain the opportunity to nurture their agricultural growth and development.

## **5. Conceptualizing Multifunctional Agriculture from a Global Perspective**

The prior section shows that WTO member countries hold radically diverging positions on the concept of multifunctional agriculture. What are giving rise to such divergences in the conception of multifunctional agriculture among WTO member countries? Pascal Lamy (2010), the WTO Director General, indicates that about half of WTO member countries (out of 153 countries) are in support of the concept of multifunctional agriculture while the remaining half is opposed to it. He notes that whether or not a country has a competitive agricultural sector determines its position on the concept of multifunctional agriculture: the more the agricultural sector is competitive, the less favorable to the concept of multifunctionality. While Lamy’s criterion appears intuitively perceptive, it masks a number of characteristics unique to each country that underlie the true nature of multifunctional agriculture. We attempt to develop below a general theory of multifunctional agriculture that is capable of encompassing various regions across the world. The attempt will be built on nascent research that has been emerging to surmount the developed world- or Europe-centrism in the discourse of multifunctional agriculture, thereby incorporating the perspectives of other parts of the world including developing countries, least developed countries, and developed food-importing countries (Bresciani et al, 2004).

### *5.1. Redefining Multifunctional Agriculture from the Perspectives of Diverse Groups of Countries*

Timmer (1995) developed a conceptual framework useful in interpreting the notion of multifunctional agriculture from the perspective of the developing world. The framework delineated five reasons why markets may fail to generate incentives for the production of positive externalities of agriculture particularly pertinent to developing countries: (i) undervaluation of the role of agriculture as the initiator of economic growth; (ii) depressed world market prices that is detrimental to developing agricultural production foundation in developing countries; (iii) underestimation of agriculture in reducing poverty; (iv) deprivation of the opportunity for a developing country to learn managing a market economy by handling the growth and transformation of the agricultural sector. Building on Timmer's framework, the FAO (2004) initiated a project endeavoring to interpret the notion of multifunctional agriculture from the perspective of the developing world. The FAO project identified six types of positive externalities that agriculture produces in developing countries: (i) environmental/ecosystem goods and services, (ii) food security and contribution to economic growth/development, (iii) reduction of poverty/hunger/malnutrition, (iv) social welfare infrastructure, (v) social viability and rural-urban population balance, and (vi) maintenance of agrarian cultural heritages. Emphasizing that the current discourse of multifunctional agriculture focuses on the agriculture of developed countries, Losch (2004) recognizes that the concept has the potential to be used by the developing world in its efforts to recover from the harms of the structural adjustments programs in the 1980s and 1990s and to regain the control on its agriculture.

In view of the literature reviewed above attempting to overcome the developed world-centered research of multifunctional agriculture, this article redefines multifunctional agriculture as multiple functions (producing positive externalities and public goods) that agriculture performs as consequences of combining human, natural resources including land and water, and

other man-made resources to produce primary agricultural commodities. The definition encompasses diverse types of functions not only pertinent in developed countries but also in countries at disparate developmental stages and they can be categorized into six broad groups including poverty reduction/food security, economic growth/developmental, environmental/ecological, social, amenity/aesthetics, and nonuse functions.

Poverty reduction function refers to the particularly high impact of agricultural growth in reducing rural poverty/hunger, thereby laying the foundation for agricultural development (Thirtle, Lin, and Piesse, 2002; Ravallion and Datt, 1999; Fan, Hazell and Thorat, 2000; Christiaensen et al, 2006). In fact, Timmer (2005) asserts that “no country has been able to sustain a rapid transition out of poverty without raising productivity in its agricultural sector. Pingali (2010) highlighted the renewed interest in the role of agriculture in poverty reduction with the expression “agriculture renaissance”. Economic growth/development function inclusive of producing food, fibre, feed, and fuel contributes to the promotion of rural livelihoods and economic growth/development that is absolutely needed in least developed countries. Nascent research demonstrating that agricultural growth is indispensable for overall economic growth offers a firm endorsement for such a function (Thirtle, Lin, and Piesse, 2003; Gollin, Parente, and Rogerson, 2002; Tiffin and Irz, 2006; Gollin, Parente, and Rogerson, 2007; Self and Grabowski, 2007, and Awokuse, 2009). The studies concur generally that lack of improvement in agricultural productivity results in poor performances in economic growth. In short, agriculture produces positive externalities of critical importance to countries at early stages of economic development particularly in the forms of reducing poverty/hunger/malnutrition and laying the groundwork for industrialization.

As has been well documented in the literature of multifunctional agriculture, environmental/ecological function covers soil/water conservations (sustainability) and a wide range of ecosystem services such as water management, flood control, nutrient recycling, groundwater recharge, biodiversity, wildlife habitat, atmospheric carbon dioxide sequestration. Social function includes regional identity, social cohesion, cultural/historic heritage, and rural vitality. Amenity function refers to recreational opportunities (hunting, fish, agro-tourism), and aesthetics associated with farmlands. Nonuse function includes existence, bequest or option values associated with agriculture. Since the seminal paper by Krutilla (1961), the notion of nonuse value has been widely used in the literature of environmental economics, primarily referring to the value derived from two sources: (i) the simple knowledge/awareness that a certain nonmarket good or service exists (existence value) and (ii) the knowledge that a nonmarket good or service will be passed on to future generations (bequest value). Hence, when it comes to the nonmarket value of agriculture, it refers to the values that people derive from knowing that a socially desirable level of agriculture exists within their country and from the assurance that agriculture will be passed on to next generations.

### *5.2. Theorizing Multifunctional Agriculture from the Perspectives of Diverse Countries*

Consistent with the new definition above, we theorize that multifunctional agriculture connotes different contents in different countries/regions that are determined by their particular agricultural problems shaped by their unique cultural, natural resources endowment and economic development conditions. The theorizing indicates that the differences in the way the concept of multifunctional agriculture is received across countries/regions are intrinsically connected with the different roles that agriculture plays across diverse groups of countries at various stages of economic development.



Classic economic development models support such theorizing in the sense that they vividly illustrate sharply differing roles of agriculture in the process of economic transformation over time from an agrarian to an industrialized society (e.g., Lewis, 1954; Jorgenson, 1961; Rostow, 1956). Timmer (1988) continued the tradition of such classic literature by developing a theory of agricultural development process highlighting how agricultural role evolves as an economy transforms from an agrarian to a fully industrialized country. His theory consists of four evolving stages: (i) Mosher Environment where the primary concern is to get agriculture moving and to extract investable resources by taxing agriculture; (ii) Johnston-Mellor Environment where the agricultural sector makes a significant contribution to the growth of the overall economy through the five main functions of agriculture outlined in Johnston and Mellor (1961); (iii) Schultz-Ruttan Environment where the agricultural sector is integrated into the rest of the economy through the development of more efficient labor and credit markets which links rural and urban economies; and (iv) D. G. Johnson Environment where the agricultural sector receives massive subsidies from the government given the two characteristics (low share of labor force engaged in agriculture and low share of food expenditures from household budgets).

In addition to such dynamic transformations of agriculture over time, development economists noted different roles of agriculture based on cross-sectional observations across distinctive groups of countries. For example, Hayami and Godo (2005) depict widely varying nature of agricultural problems across countries and analyze the disequilibrium of the world agriculture from three perspectives: (i) the food shortage problem in Low-Income Countries, (ii) the protection problem in High-Income Countries, and (iii) the disparity problem between farm and nonfarm sectors in Middle-Income Countries. In a similar vein, Pingali (2010) contends that for least developed countries, agriculture is the primary engine of economic growth; for

emerging economies, agricultural sector requires government efforts to sustain productivity gains; for developed countries, it is important to promote agriculture's multifunctional roles such as rural amenities and ecosystem services. Most recently, Moon (2011) put forth a view of global agriculture consisting of four groups of countries distinctive in terms of agricultural needs: (i) developed countries (US and EU) needs to promote the multifunctional roles of agriculture and sustainable farming practices, while reducing the portion of agricultural protection that has been irrationally inflated due to rent-seeking behaviors of farm organizations; (ii) Sub-Saharan African countries are in a desperate need of constructing agricultural infrastructure (government support system and research/extension capacities) in order to foster agricultural and economic development; (iii) large agricultural exporting countries (the Cairns group) need to strike a careful balance between agricultural expansion and conservation of ecosystem functions of critical importance for the global community; and (iv) net food-importing developed countries need to secure a minimum level of domestic agricultural production required to promote the multifunctional roles of agriculture and develop a sound portfolio of food security along with the diversification of import lines and public stockholding.

The recognition of such diverse agricultural problems across different development stages (income levels) is pivotal in properly understanding the notion of multifunctional agriculture at the global scale. Further, multifunctional agriculture may be conceived differently according to whether or not a country is agriculturally competitive. Hence, two characteristics (development stage and agricultural competitiveness) can give rise to different conception of multifunctional agriculture across countries. Figure 1 incorporates such a possibility and postulates that economic, natural resources, and other conditions unique to a country determine the stages of economic and agricultural development in a country, which in turn shapes the

pattern of social demand for various components of multifunctional agriculture. Figures 2 and 3 together depict the conceptualization of multifunctional agriculture from the perspectives of diverse groups of countries. Figure 2 shows the categorization of WTO member countries into four groups based on their exporter/importer (agricultural competitiveness/natural resource endowments) and economic development status with the arrowed lines representing possible variations within a group with respect to the two criteria; (i) the US and the EU are positioned on the upper-right hand corner, indicating that they are industrialized countries and agricultural exporters, (ii) the Cairns group are located on the upper-left hand side, showing that they are agricultural exporters in the process of industrialization, (iii) the G10 is located on the lower-right hand corner, indicating that they are developed countries and agricultural importers, and (iv) the LDCs are located on the lower-left hand corner, indicating that they are the least developed countries while being agricultural importers.

Figure 3 illustrates how the demand for various components of multifunctional agriculture may differ across such distinctive groups of countries. The horizontal axis represents the individual components of multifunctional agriculture in six subcategories with the vertical axis denoting the strength of a country's social demand expressed on a scale ranging from 'weak' to 'moderate' to 'strong'. We order the six subcategories of multifunctional agriculture on the horizontal axis (from left to right) roughly in accordance with economic development stages (income levels) based on the presumption that food security/poverty reduction and economic growth/developmental functions are the roles of agriculture that low income countries need most; environmental/ecological function is demanded commonly by low and high-income countries, although low-income countries do not have the budgetary capability for developing public programs/policies to satisfy such demand; social function, amenity function, and nonuse function

are luxurious goods for low- and middle-income countries, therefore demanded largely by high income countries.

Each country is different not only in income levels but also in the degree of agricultural competitiveness/abundance and other social/cultural/historical conditions. Hence, it is conceivable for all WTO member countries to possess their own unique patterns of demand across the individual components of multifunctional agriculture. For the sake of simplicity, figure 3 considers the patterns of demand for multifunctional agriculture for the US, the EU, the Cairns group, the LDCs, and the G10 countries. As expected, figure 3 shows that the demand for food security, poverty reduction, and economic growth/development functions is weak commonly in the US and the EU. Yet, it conjectures that the demand for social, amenity, and nonuse functions would be modestly stronger in the EU than the US given that agriculture and open space is more abundant in the latter. The G10 (developed food-importing) countries follow a similar pattern of demand with that of the US and EU, yet exhibiting a stronger demand for social, amenity and nonuse functions in view of the fact that their agriculture is much scarcer than the EU or the US (they are major net agricultural importers) and may be at the risk of being phased out if agricultural trade is liberalized. The LDCs are conjectured to have the strongest demand for poverty reduction/food security and economic growth/development functions while their demand for environmental, social, amenity and nonuse functions of agriculture are the weakest. Representing countries with abundant agricultural resources and consequent comparative advantages in agricultural production, the Cairns group seeks to expand agricultural production and use it as a major promoter of their economies, hence placing considerable emphasis on production and economic growth functions. Given the abundance of agricultural

production and lands for agricultural use, they are conjectured to place little value on amenity and nonuse functions.

There have been some preceding efforts attempting to conceptualize multifunctional agriculture from nonEuropean perspective. In particular, Wilson (2008) developed a theoretical model focusing on the dynamic interactions between developed and developing countries that may arise in the process of their promotion of multifunctional agriculture. His model presents the notion of global multifunctionality as either a zero-sum game or as a win-win situation. The zero-sum game takes place when implementation of strongly multifunctional agricultural pathways in one region is predicated on weakening multifunctionality in others. The win-win situation requires a transition to strong multifunctionality on a global scale. According to him, such a transition is feasible only when each region and agricultural community is allowed to have “different governance structures with differing opportunities for policy to act as a trigger for strong multifunctionality and when accepting that not one specific transitional strategy can be developed that would suit all multi-layered actor spaces and power structures.” Extending the above model, Wilson (2009) viewed multifunctional agriculture as a “spatially complex nested hierarchy comprising different interlinked layers of multifunctional decision-making “ that encompasses farm, rural community, regional, national, and global levels. In particular, he considers global-level multifunctionality as ‘most challenging’ primarily due to the lack of political and ideological consistency across countries regarding what should be done to achieve strong multifunctionality pathway.

Wilson’s models (2008; 2009) presume the existence of an overall indicator of multifunctional agriculture encompassing all of its components that could be displayed on a single scale of weak, moderate, and strong multifunctionality. In contrast, our model (figure 3)

is based on the supposition that the components of multifunctional agriculture are quite heterogeneous especially between poverty reduction, food security, and economic growth/development functions on the one hand and environmental, social, amenity, and nonuse functions on the other hand. It may be therefore invalid to apply Wilson's indicator to every country universally as a measure of performance in accomplishing multifunctional agriculture. Indeed, Wilson's model tends to equate the notion of multifunctional agriculture with environmental sustainability, while assigning little weight to the roles of agriculture reducing poverty/hunger/malnutrition and promoting food security and economic growth/development.

It should be noted that figure 3 represents a static view of cross-country differences in the strength of demand for individual components of multifunctional agriculture. The paths shown in figure 4 are likely to shift/evolve over time as countries go through economic transformations from least developed to developing to developed countries. The conceptualization of multifunctional agriculture as a normative spectrum ranging from weak to strong multifunctionality by Wilson (2008) is intended to show how the quality of multifunctionality primarily in terms of environmental sustainability at a farm level may change over time. In contrast, our model represents a theorization of multifunctional agriculture that captures various contemporary characteristics of agricultural problems at the national level. The importance/relevance of such theorization lies in the fact that it is definitely required for developing countries to realize the poverty reduction and economic development functions of agriculture first before they could attain strong multifunctionality as envisioned by Wilson. Hence, this article fills an important gap in the literature of social sciences with respect to the conceptualization of multifunctional agriculture.

Two additional points should be raised of figure 3. First, it does not capture the type of food security relevant for the G10 countries (maintaining a minimum level of domestic agriculture as a part of national strategy to develop a sound portfolio of ensuring food security in the events of international emergencies/crises). Such food security is a function of agriculture unique to the G10 countries that import the bulk of what they eat from foreign countries. While not a major issue in other groups of countries, it is a vital policy problem of national importance for such countries (Simpson, 2005; Moon, 2011). Second, the major implication of viewing multifunctional agriculture from the perspectives of diverse groups of countries as represented in figure 4 is that every country in the world should be allowed to manage its agricultural sector at the national level in the manner that satisfies its unique pattern of demand for multifunctional agriculture. Nevertheless, some components of multifunctional agriculture such as biodiversity, carbon sequestrations and reductions in emission, or global food security represent externalities and public goods of importance at the global scale. Such externalities and public goods need to be managed from the standpoint of global public goods whose benefits transcend national boundaries. For example, the global public goods properties of ecosystem services (biodiversity, carbon sinks) associated with the rainforests in tropical regions require the global community to cooperate in managing agriculture in such regions and induce them to adopt rainforest conservation policies that would contribute to producing ecosystem services needed at the global scale. Such cooperation should involve a mechanism that would compensate the countries for foregoing the opportunity to develop rainforests and accelerate economic growth.

## **6. Summary, Conclusion and Implication**

The notion of multifunctional agriculture has emerged during the Uruguay Round multilateral trade talks of the early 1990s and has been researched extensively from diverse disciplines such as economics, geography, sociology, and ecology. The economics/policy-oriented approach represents a major analytical framework viewing multifunctional agriculture as particular types of externalities that can be corrected by Pigouvian subsidies/taxes or as public goods that can be optimized by collective actions. The major limitation of the economics/policy-oriented approach is the lack of concord among WTO member countries on the question of what constitutes multifunctional agriculture, posing a major obstacle to reaching an agreement on rules governing agricultural trade in the Doha Round. The limitation is inherently connected with the tendency that the concept of multifunctional agriculture has been discussed primarily from the context of European or developed countries' agriculture. The Euro-centrism has precluded a fruitful treatment of multifunctional agriculture from the perspectives of other groups such as the LDCs, developing countries, the Cairns group countries, or developed food-importing countries. In an effort to overcome such a narrow interpretation, this article undertook to conceptualize the relationship between WTO member countries' economic/agricultural characteristics and the social demand for specific components of multifunctional agriculture.

The conceptualization builds on several strands of prior research: (i) classic economic development models that highlight different roles of agriculture in the process of economic transformation over time from an agrarian to an industrialized society, (ii) contemporary agricultural development research underscoring differences in the types of agricultural problems faced across distinctive groups of countries, and (iii) nascent social sciences research that attempts to view multifunctional agriculture from nonEuropean perspectives. The conceptualization of multifunctional agriculture from a global perspective in this article



postulates that distinctive agricultural problems across countries at varying stages of economic development shape the pattern of demand for the six subgroups of multifunctional agriculture (food security/economic/ developmental function; environmental/ecological function; social/cultural function; amenity/aesthetic function; and nonuse function). Specifically, the social demand for food security/poverty reduction/economic developmental functions would be the strongest in the least developed countries, while they would be considered irrelevant in developed countries. The amenity/aesthetics and nonuse functions would be considered luxurious goods in developing and least developed countries.

The major implication of the differing patterns of demand for multifunctional agriculture across countries is that our world is in need of a system of governance for agricultural trade that could accommodate such a divergence. Currently, the WTO is the central global institution governing agricultural trade with the mandate of creating a liberal economic order. The system of governance under the WTO consists of three major mechanisms including the traffic light box system, the special and differential treatment (SDT), and the dispute settlement mechanism. The box system allows unlimited amounts of direct subsidies from taxpayers' money insofar as they are decoupled from production and targeted at specific multifunctional components. While developed countries have taken a full advantage of the box system to minimize the portion of farm subsidies they have to reduce in observance of the AoA, most developing countries and the LDCs are not likely to be capable of providing subsidies out of budgetary outlays. Hence, the box system is biased toward environmental/ecological and amenity functions that are important in developed countries. Ideally, the special and differential treatment (SDT) provisions are desired to offset such a bias and assist developing countries and the LDCs to gain opportunities to advance their agricultural development and overcome the uneven playing field in international

competition. However, they are transitory, concessionary, and subordinate to the principle of free trade, therefore of limited use in promoting poverty reduction/food security and economic development function which requires medium to long-range plans for the construction of public agricultural infrastructure and support systems. Further, developed countries do not have legal obligations to abide by the SDT provisions. Such an asymmetry in the international rules governing multifunctional outputs of importance between developed and developing countries has been the major stumbling block for the Doha round and underlies the proposals for 'Development Box' and 'Food Security Box' by the developing world.

In sum, the WTO system of governance for agricultural trade should be reformed so as to explicitly consider the needs of meeting the social demand for multifunctional agriculture pertinent to developing countries and the LDCs. Specifically, food security, rural livelihoods, and economic development functions of agriculture in such countries should be allowed to be promoted as important as environmental sustainability or farm amenities in developed countries. Likewise, the new/improved system needs to incorporate the types of multifunctional agriculture of importance to other groups of countries such as maintaining a minimum level of domestic agricultural production to promote a sound portfolio of food security in the G10 countries; and the preservation of tropical rainforests relevant in large agricultural exporting countries. While the food security in the context of the G10 countries has been barely addressed in WTO multilateral negotiations, it is a valid issue that deserves considerations in the process of designing trade rules. As widely acknowledged, tropical rainforests play an invaluable role in ensuring the flow of ecosystem services (biodiversity and carbon sinks) that are critically important for the entire global community. The preservation of tropical rainforests represents global public goods that require transnational cooperation at the global scale for an appropriate

level of provision. Managing/controlling the expansion of agricultural production into the rainforests should be an issue of central importance for a global cooperative mechanism designed to preserve tropical rainforests. Agricultural trade rules should be aligned with such a mechanism to ensure that they do not trigger agricultural sectors to further encroach into rainforests.

Steered by the mandate of creating a liberal order in international commerce, the current WTO system of agricultural trade governance attempts to phase out nontariff barriers to trade by converting them into tariffs with the eventual goal of eliminating them, while allowing countries to use unlimited amounts of decoupled direct subsidies. The WTO liberalization effort is based on the belief that market-oriented reform in agricultural trade will contribute to the growth of the global economy and maximize global welfare. It is contended, however, that the ability of different groups of countries to achieve the types of multifunctional agriculture of their urgent need plays the most fundamental role in laying the foundation for an equitable growth of the global economy. Liberalized agricultural trade free of distortions will be beneficial only to the agricultural interests of a handful of the Cairns group countries, which are likely to exacerbate tropical deforestations. In consequence, the highest priority of the new/improved system should be to support various groups of countries to achieve the types of multifunctional agriculture pertinent to them rather than indiscriminately relying on the doctrine of liberalization in agricultural trade. The pursuit of multifunctional agriculture of importance to developing countries, the LDCs, large agricultural exporting countries, and the G10 should be neither restricted to the narrow set of policies that are decoupled from production nor secondary to the promotion of multifunctional agriculture of importance to the developed world. In short, the concept of multifunctional agriculture from a global perspective as envisaged in this article

should play the most central role in guiding trade negotiation in the future, a much larger role than the narrow concept of multifunctional agriculture that was centered on European agriculture did in the Uruguay and Doha Rounds.

In closing, the literature of multifunctional agriculture has been deficient of a coherent theory viewing multifunctional agriculture from diverse groups of countries that make up the global community. This article attempted to fill the gap by conceptualizing multifunctional agriculture from the perspectives of the Cairns group, the G10, developing countries, and the LDCs as well as traditional developed countries (the EU and the US). It will be fruitful for future research to empirically examine the theorized differences in the demand for multifunctional agriculture across distinctive groups of countries. Thus far, there have been few such empirical studies except for those within European countries with respect to a narrow set of multifunctional outputs focused on environmental and landscape maintenance functions of agriculture (e.g., Daniel and Perraud, 2009; Dibden, Potter, and Cocklin, 2009). Further research is needed to shed empirical lights on differences and similarities in the social demand for diverse components of multifunctional agriculture across countries.

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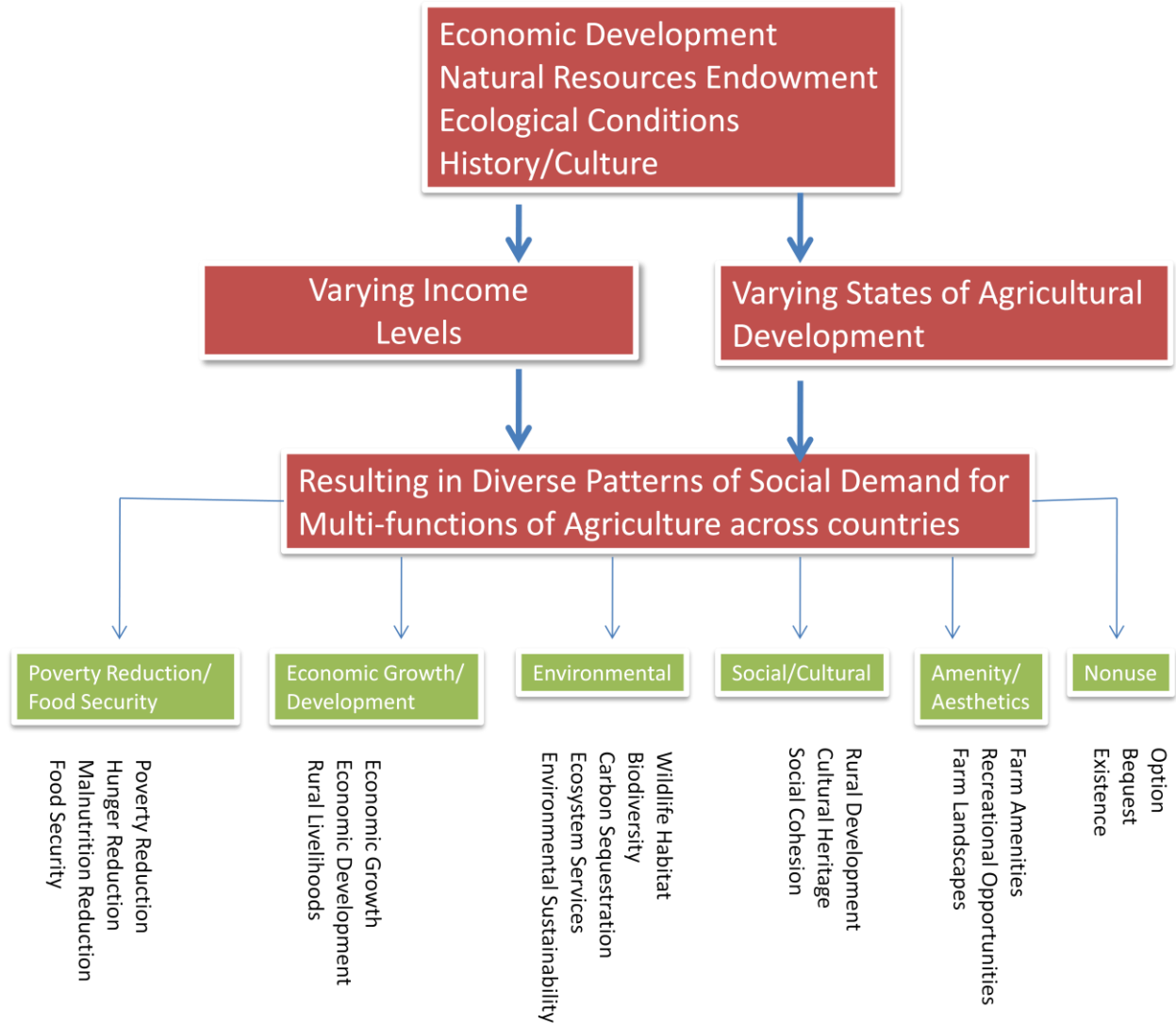


Figure 1. Theorization of the linkages among country-specific economic and social backgrounds, states of economic and agricultural development, and social demand for various components of multifunctional agriculture.

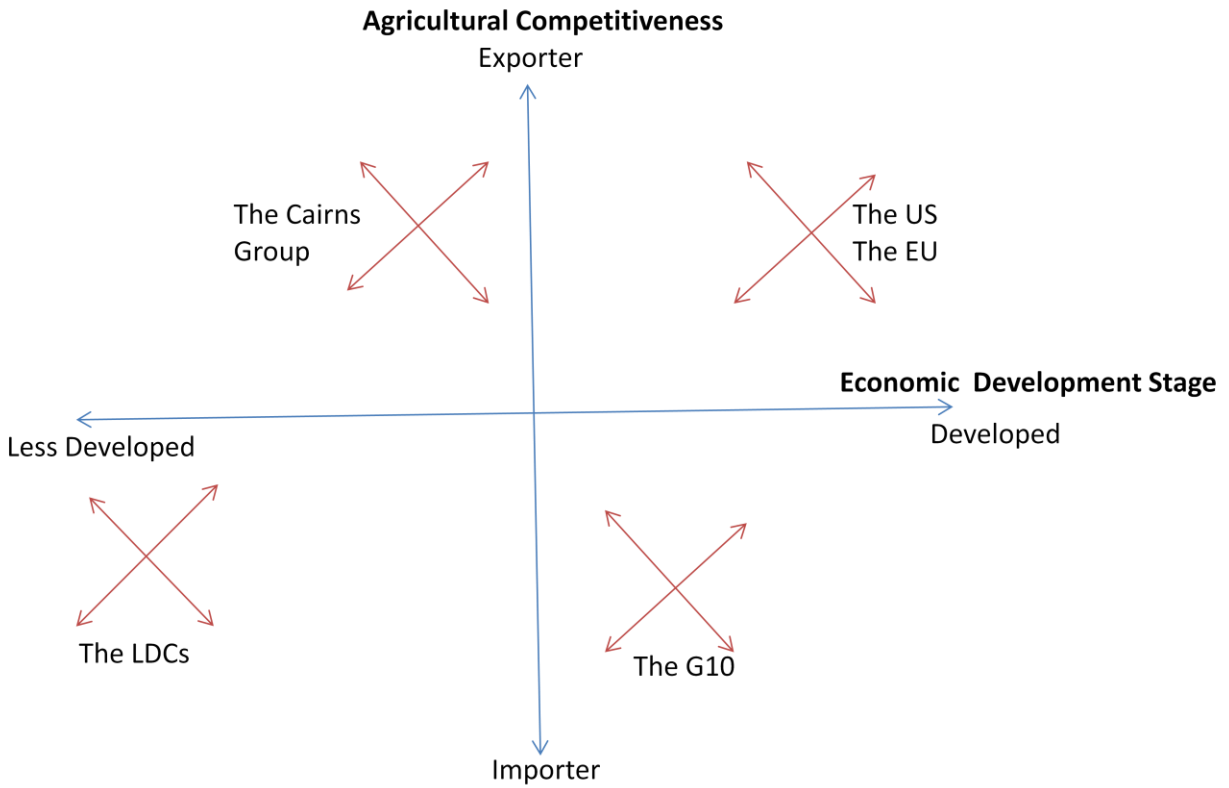


Figure 2. Division of the world into four groups of countries based on economic development stage and the status of net agricultural exporter/importer

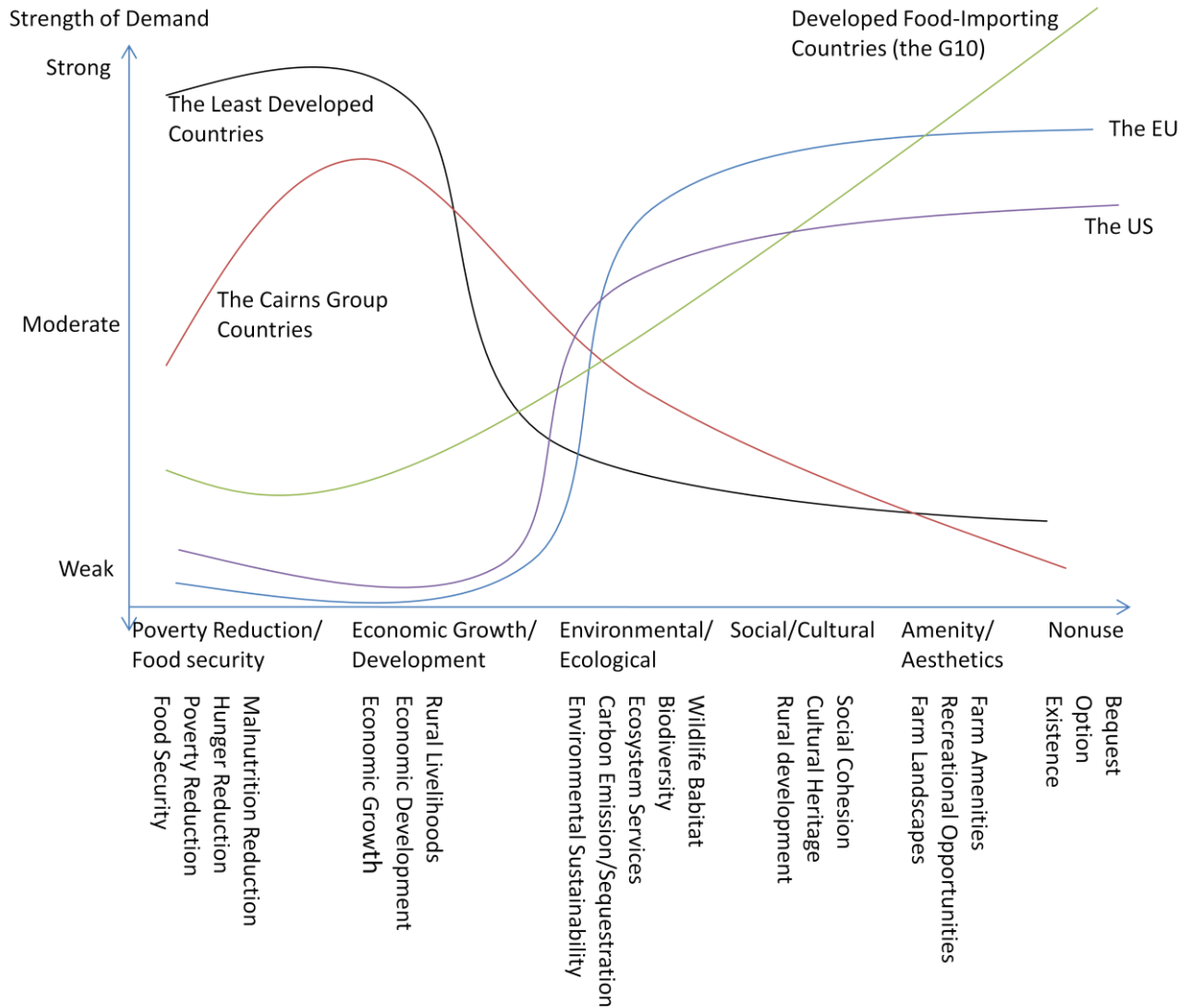


Figure 3. Hypothetical patterns of divergent social demand for various components of multifunctional agriculture across different groups of countries