

## IMPORTANCE & DEMAND OF EGG PRODUCTION IN TO SOCIETY

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ARTICLE INFO	ABSTRACT
<p><b>Corresponding Author:</b> Pro. Ramanjudar P<sup>1</sup> ; <sup>1</sup>faculty in Department of economics at University in Dhaka, Bangladesh. radu.udf@gmail.com</p>	<p>The attributes of egg production that elicit values-based responses include the worth and availability of eggs, environmental impacts, food safety or health concerns, and animal welfare. Different social groups have distinct interests regarding the sustainability of egg production that reflect these diverse values. Current scientifically based knowledge about how values and attitudes in these groups is characterized is uneven and must be derived from studies conducted at varying times and using incomplete study methods. In general, some producer and consumer interests are translated through markets and are mediated by market mechanisms, whereas others are poorly reflected by economic behavior. An array of survey and focus group research has been performed to elicit consumer and activist beliefs about performance goals they'd expect from an egg production system. These studies provide evidence that consumers' market behavior could also be at odds with their ethical and philosophy about performance goals.</p>
<p><b>KEYWORDS:</b></p>	<p>public opinion, animal welfare value, conflict ethics policy.</p>

### INTRODUCTION

This study both connects and augments material presented within the other papers commissioned for the Social Sustainability of Egg Production project. Previously published papers on environmental impact (Xin et al., 2011), economics (Sumner et al., 2011), food safety and human health (Holt et al., 2011), and animal health and welfare (Lay et al., 2011) provide detailed discussion regarding what's known about these dimensions for the key systems available for commercial egg production. These systems include caged (the most typically used system at present), floor (birds on deep litter), aviary, and enhanced or enriched cage. Floor and aviary systems may or might not include outdoor access as specified by the USDA (2000a) organic production standard. An integrated assessment of sustainability implies an approach that may draw upon the data presented in each of those areas to

develop a basis for creating comparative judgments of those systems (Swanson et al., 2011b). Each topic area implies underlying values; that's, environmental impact, economic structure, food safety, and human health, and animal health are important dimensions of sustainability because they encompass ends or goals that shape deciding. These ends and goals are themselves diverse and are subject to incompatible interpretations. Sustainability thus requires methods for identifying and weighing diverse styles of information in arriving at a comparative judgment.

What is more, any system of economic food production operates not only within a context of formal laws and policies that are imposed by the govt but also concerning informal expectations that reflect the attitudes of key interested parties in addition as society as a full (Mench et al., 2011). A given approach to production are

often understood to be socially unsustainable whenever formal policies or informal expectations are so unstable or uncertain that egg producers are unable to form decisions about facilities or management. Thus, to be sustainable a production system must even be socially acceptable within the sense that it both is, and is usually understood to be, in conformity with commonly accepted social norms. Whereas at just one occasion this acceptability might need been easily attained by virtually any feasible method of economic egg production, rapid cultural change publically attitudes and therefore the mobilization of civil society groups around environmental and animal-related causes has made social acceptability one in every of the foremost challenging aspects of sustainability.

### **PUBLIC ACCEPTABILITY, SUSTAINABILITY, AND EGG PRODUCTION**

The concept of public acceptability is often interpreted in multiple ways. Public acceptability often implies that a typical of ethical suitability or tolerability has been met. On this interpretation, to deem a practice acceptable implies that no compelling argument for changing the practice exists that may be advanced on moral grounds. In other contexts, public acceptability might imply compliance with social norms that don't rise to the amount of morality. as an example, acceptability might mean something more reminiscent of fashionable. In other contexts, the phrase public acceptability is employed to create an empirical claim about the prevalence of a phenomenon or the degree to which a given practice, product, or event exists within a bigger universe of social possibilities. Thus, to mention that a product has been socially accepted may simply mean that it maintains a distinct segment within the marketplace of all goods and services (Thompson, 2001).

Public acceptability becomes linked to sustainability because activities or events that spark social and political movements for reform or change are interchangeably observed as unsustainable and socially unacceptable. Recent literature on sustainability often identifies social conflict and resistance actions (such as

work stoppages, public demonstrations, and campaigns for change) as indicating unsustainable elements in social practice (Barkin, 1998; Power, 1999; Buttel, 2000; Epstein and Wisner, 2001). This approach to social sustainability differs from 2 other theoretical ways of interpreting sustainability. Resource sufficiency presumes that a practice is sustainable if and on condition that the resources needed to hold out the practice are for eseeably available. Models of resource sufficiency were developed in response to the 1987 Brundt land report, which defined sustainable development as that which “meets the requirements of this without compromising the flexibility of future generations to satisfy their own needs” (World Commission on Environment and Development, 1987). In contrast, ecological integrity is an approach that interprets sustainability in terms of the resilience exhibited in systemic interaction. Systems of equations developed to model the soundness of ecosystems are often generalized to a broader notion of functional integrity by adding factors intended to model fundamental institutions (such as education or government) or cultural norms (such as truth-telling and cooperation) that has to be continuously reproduced so as for society to exist (Thompson, 2007a, 2010). Although it would be possible to link indicators of social conflict and resistance to functional integrity, social scientists working within the area of sustainability haven't typically done so. the stress on social acceptability during this paper thus differs from economic and accounting-oriented resource sufficiency and systemic or ecological models of functional integrity.

Social sustainability builds on the thought of social stability: societies tormented by war, rebellion, and upheaval, and social practices that cause economic or political instability are said to be unsustainable (O'Conner, 1993; Remmer, 1996). Social stability has itself been the topic of competing analyses dating back to the time of the traditional Greeks (Dahl, 1958). Some analyses specialize in a society's capacity for maintaining economic activities like production and trade, whereas others emphasize the continuity of institutions like the family or religion. Studies of stability often think about the continuance of a selected type

of government or a regimen. Any analysis of social stability involves subtle interrelationships between instrumental advice (what can leaders or policymakers do to extend stability) and normative ideals (what makes the soundness of a given society an honest thing). statesman, for instance, is remembered as an excellent theorist of political stability who advised leaders that they ought to pursue the interests of the people over their own personal interests (the normative ideal) but also that their hold on power are stronger if they're feared instead of loved (the instrumental advice; de Grazia, 1989). Recent science research on sustainability illustrates the same tension, with some authors attempting to specify social sustainability as a state of affairs within which the protest or conflict has been addressed fairly and responsively (Agyeman and Evans, 2004), others emphasizing sustainability as the way of manipulating public response (Marcuse, 1998; Laufer, 2003), et al combining the two (McKay and Bjornlund, 2001). the paradox inherent within the very idea of social acceptability is thus replicated within the literature on sustainability.

In summary, a state of affairs that's unstable is first said to be unsustainable and is then described as something to be avoided. during this manner, a factual statement about social conditions is well translated into a press release expressing a price judgment. Within the present case, social conflict or resistance movements will be understood as something to be avoided for several reasons. From the attitude of the egg industry, conflicts and resistance movements complicate their ability to conduct business. Responses that alleviate these complications can then be understood to boost sustainability, and that they may do so by manipulating vox populi and therefore the influence of advocates instead of changing production practice. From another perspective, however, the presence of conflict may indicate some feature of either current or expected future egg production that's considered something that ought to not be allowed to continue (or something that ought to be avoided within the future). From this attitude, a response to conflict that doesn't address the underlying problem doesn't improve sustainability. The approach

taken during this paper doesn't follow the Machiavellian practice of offering advice on the way to achieve sustainability. Instead, the approach simply examines how circumstances within or perceptions of the egg industry can generate social conflict or be the source of actions intended to affect egg production methods. Thus, the approach is according to scientific discipline that sees conflict and resistance actions as indicators of un sustainability, without making presumptions about the moral, legal, or political legitimacy of those actions.

### EGG PRODUCTION AND COMPETING VALUES

Current opinion and unaddressed sources of dissatisfaction is measured by social scientists, and such measurements are one amongst the most sources of insight into the potential for conflict and movements for change. Issues addressed within the studies conducted by the Socially Sustainable Egg Production project include the economic viability of egg production, animal health and welfare, food safety and nutrition, and environmental impact (Swanson et al., 2011b). Each of those topics contains a dual relating the question of sustainability. On one hand, each affects the viability of egg production from a strictly objective standpoint. On the opposite hand, each has the potential to be a source of dissatisfaction among various sectors of the general public. As such, social protests, conflict, and concerns political change can occur when dissatisfaction is mobilized into collective action. This study interprets the potential for collective actions geared toward changing practices within the egg industry as an indicator that those practices don't seem to be socially sustainable. The rationale for choosing this indicator could easily become a lengthy treatise in itself, and some brief remarks must suffice during this context.

### Economics, Consumer Prices, and Availability

Adjustments to egg production systems are one factor that may contribute to production costs and hence will affect the worth at which producers are willing to provide eggs to grocery stores and other stores (Sumner et al., 2011). Prices emerge from basic relationships between supply and demand. Fundamental assumptions of economics dictate that

as prices increase, demand (i.e., consumption) decreases whereas supply increases. Prices thus represent an equilibrium point in neoclassical theory, reflecting the exchange value of the commodity instead of the use-value to consumers.

General principles of social science (Smith, 1937; Coase, 1960) suggest that regulatory or maybe informal cultural changes (such as a change in consumer tastes) that increase the prices of egg production are resisted by egg producers, especially when potential competitors don't seem to be full of these changes. the identical principles imply that when increases in cost cause the retail price of eggs to extend, one can expect some protest from egg buyers and groups who place special value on the contribution that eggs make to nutrition and healthy diets, especially among resource-challenged consumers. Studies have identified a link between price and availability of fresh foods products in urban centers and obesity and poor nutrition among low-income urban residents (Wrigley, 2002; Hamm, 2008). These studies, however, don't target eggs. They demonstrate the rational basis for nutrition- and income-based advocacy of affordable eggs, but no evidence suggests that nutrition advocates or low-income residents themselves would answer a rise in egg prices during this manner.

Food Safety, Nutrition, and Human Health Significant value is attached to the security of egg consumption. like several nutrient, eggs are potential sources of known food safety problems, especially Salmonella (Holt et al., 2011). Animal production can even create opportunities for the spread of diseases that affect human populations. Thus, some pressure to cut back these risks always exists from public health agencies and groups advocating for nutrition and health. However, unlike price changes, the target effects of a change within the safety, nutrition, or health aspects of egg production are difficult for the common person to perceive. As such, advocacy for such values is mediated by perceptions formed supported scientific studies (studies that will have significant gaps) and on impressions formed supported media coverage or word of mouth (Miller and Reilly, 1995).

Attempts to check or represent effects within the domain of

human health can affect popular opinion. Avoidance of human illness is among the smallest amount controversial of all values related to any activity. Although there are attempts to quantify harms from illness and death for policy purposes, they're inherently controversial because they either place dollar values on life and health or express acceptable trade-offs to life and health (Hapgood, 1979; Schwarz and Thompson, 1990). Thus, approaches to food safety and human health that try to use a trade-off approach may run into opposition from groups who either find such quantification offensive or are willing to use the actual fact that others find it offensive. it should be more realistic to presume that food safety and human health impacts must meet a de minimus standard to be ethically and politically acceptable which the industry must simply reduce such risks to very cheap level that's practically achievable (Young, 1987; Thompson, 2007b). For a special view see Scheuplein (1987).

#### **Animal Health and Welfare**

The welfare of all agricultural animals and, within the present case, laying hens, represents a valuable perspective from which a production system may be assessed. Lay et al. (2011) discuss science-based approaches to assessing welfare concerning the animals' own interests. From the standpoint of social sustainability, animal welfare attains significance because it motivates producer behavior and has the potential to motivate coordinated actions dedicated to promoting animal interests (Jasper and Nelkin, 1992). Although scientific assessment of hen welfare can inform assessments of production systems, the particular welfare interests of laying hens are less relevant to social conflict and protest than perceptions or opinions about animal welfare that are held throughout various segments of the broader public. Public attitudes toward stock production are the target of the many studies over the past decade. As discussed at more length below, a number of these studies have derived estimates of acceptability either from actual consumer behavior or from studies of potential willingness to pay money for increased welfare. Others are drawn from various varieties of survey methodologies, whereas still others are drawn from

observation of protest movements or more detailed qualitative interviews with people already involved in conflict situations. In general, methods appropriate for the prediction of consumer behavior (i.e., how price and welfare attributes affect the acquisition of eggs) might not yield valid predictions of political behavior (i.e., how people would choose a ballot initiative) and the other way around.

### **Environmental Impact**

As documented by Xin et al. (2011), key environmental impacts from egg production are related to animal wastes, whereas less direct impacts are connected with lands used for feed production, infrastructure development, and construction facilities. Manure may be related to both air and pollution. Both varieties of pollution are nuisances and may have significant effects on human health. additionally, air and pollution will be understood as insults to ecosystem functioning that end in harm to wild flora and fauna. Direct measurement of those effects will inform assessments of the environmental sustainability of egg production. However, like animal welfare, how environmental impacts motivate social conflict and advocacy for political change may have little positive correlation with scientific measures of such impacts (McCarthy and Zald, 1977). like human health, the try and quantify or represent environmental values can itself be controversial. Environmental values are often quantified in terms of economic measures derived from land and housing values or the measure of recreational activities like hunting and fishing. Some environmentalists reject such approaches as anthropocentric, arguing that the bottom all environmental values in human use of the environment. As another, they suggest that wild species and ecosystems have an intrinsic value that transcends these human use values (Hargrove, 1989). what's more, localized environmental impact is well known to stimulate political activism through the NIMBY (not in my backyard) syndrome (Inhaber, 1998). The interaction of environmental impacts from livestock production and social sustainability has been studied for no poultry species (Flora, 2001; Mayda,

### **Other Indirect Values**

Like all economic activities, egg production may be tied to many broader social values including economic opportunity, rights and treatment of workers, and effects (good and ill) on local quality of life. As a type of animal use, egg production also factors into a posh array of attitudes about the acceptable use of animals and of human-animal relationships. Constituencies for every of those values exist among the general public at large, though they will be less specifically attuned to egg production as a personality's activity than are constituencies related to values already surveyed. These additional values are largely ignored during this study. One shouldn't, however, neglect the likelihood that such constituencies could also be mobilized when potential changes in law, policy, or industry practice become general knowledge. as an example, if mandated changes in egg production resulted in important deviations from existing land use patterns in rural areas, it might not be surprising to search out groups dedicated to rural development, farmland preservation, or conservation efforts suddenly taking an interest. Whereas public expectations concerning broader land use issues are the main target of some limited studies in Europe (Hermansen, 2003), they need not received detailed studies in an exceedingly US context.

### **INVESTIGATION OF VALUES**

An outline Traditional problem-solving research in agricultural science presumes a given end seeable and undertakes the analysis of the foremost efficient means for reaching that end. as an example, once control of a selected food safety hazard, like Salmonella, becomes defined because the problem to be solved, technical research is undertaken to know the hazard better additionally on devise responses thereto. during this research model, the worth of the control is taken as a right. because the above section shows, however, sustainability involves multiple values, not all of which can be fully understood and controlled. what's more, social acceptability depends heavily on human perception furthermore as on the way that perceived values motivate stasis, change, or instability in an exceedingly political and cultural environment. Thus, a

necessity exists for research methods that may identify and characterize values further as integrate and compare diverse values.

Below, we describe a number of the challenges of any investigation of values that attempts to reflect and integrate both the evidence on environmental, health, or economic variables typically gleaned through applied agricultural science and studies that assess the way that impacts are perceived, conceptualized, and valued by groups whose participation during a political process affects the social acceptability of egg production. These challenges become particularly difficult in concert attempts to integrate the total range of sustainability values that are identified within the papers discussed above. Different methods adapted from diverse science disciplines can provide insight into how goods are valued and may form the premise for predicting behaviors that affect sustainability. As noted above, however, behavior in one context, like the retail market, is also quite inconsistent with behavior within the cubicle, and both may differ from opinions that might be voiced publicly. it's thus important for multiple methods to be applied to the valuation of egg production and its various attributes. a quick review of some key methods that give insight into these domains of social behavior illustrates why it's not only difficult but potentially misleading for social scientists to attain a homogenous picture of public attitudes.

Applied economics provides many tools for the investigation of values related to supply and demand for eggs. the foremost important is also the speculation of consumer behavior itself (Friedman, 1957). From the angle of consumers, a rise within the price of eggs represents a discount in their overall buying power, though this seemingly simple observation is conditioned by an infinite array of variables that affect consumer incomes and also the price of varied goods that compete for the consumer's dollar. Generally, a rise in food prices is presumed to be of greater significance to the poor than to consumers with significant discretionary income. Expenditures on staple foods like eggs are particularly

significant because they're now viewed as necessities. As income increases, increases in food costs may require fewer adjustments in another spending than would be the case for low-income households. it's possible to enhance this theoretical tool with empirical studies on actual consumer expenditures. However, household expenditure on raw foods represents such a comparatively small proportion of average household budgets for US consumers that the effect on spending power has become increasingly insignificant (Adrian and Daniel, 1976). This wasn't always the case. Angela's Ashes (McCourt, 2000) notes how within the mid-1930s the author was scolded for eating a whole egg. Indeed, it's large-scale conventional cage production that made eggs a reasonable source of protein. From 1920 to 1924, the common price of eggs within the u. s. was \$0.406/dozen (1 dozen = 12 eggs; Michell, 1935). Clearly, a \$0.40 carton of eggs represented a far greater relative household outlay within the 1920s than does \$1.20 today. Shortfalls within the availability of eggs are exceedingly rare in US retail markets since war II. As such, comparatively little recent empirical evidence exists on which to base an estimate of the worth that customers attach to a stable and reliable supply of eggs.

Applied economists also use a mixture of indirect economic indicators and surveys to estimate the worth consumers go along with goods that can't be directly purchased in markets. Indirect indicators are especially useful within the context of valuing environmental amenities. the worth of fresh air or water and comparatively unspoiled environments could also be estimated by sophisticated analyses of land values that disaggregate multiple factors contributing to property prices. Such studies are conducted to estimate an environmental value related to livestock production (Subak, 1999; Coelli et al., 2007), although we didn't find research that compares alternative methods of egg production. Contingent valuation surveys ask consumers what they might be willing to pay if they may be assured that amenities or attributes that aren't available in markets might be guaranteed. Both environmental and animal welfare attributes are amenable to the present method of study. In their research, Bennett and

Blaney (2003) found that customers had ethical concerns about the treatment of animals and recognize animals as capable of experiencing pain and pleasure. They report that 79% of UK respondents supported a eu Union ban on cages. The action then into account by the eu Union was to ban housing systems lacking certain enrichments, and also the possibility of replacing existing cages with enriched cages might not are widely understood. The study also reports that 86% of UK respondents were very concerned that domestic animals may suffer or be mistreated, and 61% reported that they acted on their concerns in their purchasing choices. Their first concern was the assembly of veal, and their second most significant concern was cage egg production (Bennett and Blaney, 2003).

Recent studies within the u.s. are conducted using experimental methods to live consumer willingness to obtain egg products from different production systems. quite 100 individuals from diverse backgrounds and three cities participated in an egg auction where they submitted bids for the eggs. The auction allowed participants within the experiment to form bids for various levels of hen welfare, and subjects paid money out of their own pockets for the eggs. On average, participants during this experiment were willing to pay 53 to 66% higher prices for eggs raised during a barn or aviary system compared with a standard cage (Norwood and Lusk, 2011). Although this finding provides useful information on consumer preferences for animal welfare, it's impossible to live true preferences except in large-scale test markets. The mere act of asking survey or experimental questions influences subjects' preferences (Morwitz and Fitzsimons, 2004), and even economic experiments entailing real purchases can overestimate values for public goods thanks to social desirability bias (Lusk and Norwood, 2009).

Americans' willingness to pay higher prices for perceived increases in animal welfare has also been measured in recent telephone surveys by applied economists. Given the selection of strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, and don't know in response to the prompt "low meat prices are more important than the

well-being of livestock," 76% of american citizens state that they disagree. However, when asked how the typical American feels, the proportion falls to 24% (Lusk and Norwood, 2008). That is, respondents report believing themselves to value animal welfare over price far more frequently than they report the common American to carry this value. However, other results from scientific discipline make it difficult to interpret the importance of this finding. it's commonly observed that subjects misrepresent their true beliefs, likely to present observers with what they believe to be a positive impression. Asking subjects what they think people would do can correct for this social desirability bias by providing a more accurate assessment of the values presumably to see the behavior of the person being asked (Vazire and Mehlam, 2008). The report of what others think would be a more accurate indicator of a subject's own values when social desirability bias is distorting the findings of research on values. However, a phenomenon referred to as the person effect can suggest the alternative. People consistently overestimate the extent to which others are influenced by misinformation, effectively underestimating others' ability to critically evaluate information (Perloff, 1999). If a third-person effect is influencing a subject's response, the various relative values placed on animal welfare within the studies cited above wouldn't be indicative of the subject's true values.

Economic research adapting survey methods developed in politics has also provided some detailed data on how consumers prefer animals to be raised. These methods seek for statistical patterns within the way that respondents answer unrelated questions, and that they are utilized in sociology and government to work out how individuals with opinions on one issue would be inclined to vote or act concerning another issue. in a very nationwide survey of the US public, responses were clustered into 3 groups, which the research team refers to as naturalists, price seekers, and basic welfarists (Prickett et al., 2010). Naturalists composed 46% of the population and placed a good emphasis on allowing sheep to exercise outdoors and exhibit normal behaviors, like nest building. A smaller portion of the population, 14%, cared mostly about price, and would

willingly sacrifice animal welfare in exchange for lower prices. The second-largest group, basic welfarists, composed 40% of the population, and although they were willing to pay higher prices to confirm animal well-being, they believed adequate animal welfare may well be obtained just by providing ample food, water, and health care. Thus, it appears that conventional cages meet the preferences of about 54% of consumers, as they're adept at providing the animals' necessities (e.g., food, water) at low prices. However, such facilities raise animals in a very manner not per the preferences of the naturalists (Prickett et al., 2010). 1994 random sample people adults used an identical methodology to spot statistically significant correlations between attitudes toward animals and other political values. The researchers identified an altruistic values cluster during which respondents believed that dietary choice could prevent cruelty to sheep (in addition to benefiting the environment and easing world hunger); those classified as holding traditional values were less likely to believe that their dietary choice had any impact on the environment (Kalof et al., 1999).

More conventional survey methods developed by social psychologists are intended to reflect the views held by a proportional sample of the overall population. These methods use sophisticated sampling techniques to make sure that those questioned provide a statistically valid representation of the entire population, controlling for normal demographic characteristics like age, gender, income, and race. Such studies are accustomed elicit opinions and attitudes about food and food production. They show dietary choice is decided by social psychological factors, like beliefs, attitudes, norms, and values (Guseman et al., 1987; Briedenstein, 1988). Survey research also indicates that food choice is heavily influenced by the composition and dynamics of a person's social framework. the standard assumption underpinning survey research on attitudes about food is that food consumers are primarily concerned with price and perceived quality or taste. Annual surveys by the International Food Information Council (IFIC) still probe expressed consumer motivation, and most respondents in these studies confirm that price and quality are their top criteria, though significant percentages

of respondents also report a priority with the healthfulness of foods. The IFIC surveys suggest that customers are generally satisfied with the protection of the US food supply which they have an inclination to take food safety as a private responsibility to be discharged during food preparation (International Food Information Council, 2008). However, whereas these IFIC surveys provide a basis for concluding that food safety is, in fact, of serious interest to consumers, they weren't designed to live consumer attitudes toward animals or environmental concerns. Intrinsically they are doing not provide a basis for comparing the importance of those distinct concerns. Recent survey research on food consumption has involved several new approaches that do reflect attitudes beyond price and quality. Economists have undertaken studies indicating that buyers can express a measurable willingness to get hold of perceived food safety qualities (Lusk and Fox, 2002) which they are doing after all adjust consumption behavior following a good sort of personal values (Lusk and Briggeman, 2009). during a similar vein, new studies focused on consumer food safety concerns document relatively lower levels of satisfaction with food safety than have IFIC studies (Knight et al., 2008).

The Eurobarometer could be a series of enormous surveys commissioned by the eu Commission's Health and Consumer Protection Directorate-General. it's conducted regularly and produces reports of opinion representative of the eu public on certain issues referring to the eu Union across its member states. A 2005 survey on the attitudes of consumers regarding the welfare and protection of farmed animals focused on 3 main themes: 1) the relative importance of stock welfare, 2) purchasing behavior and also the welfare of cattle, and 3) this status of placental welfare within Europe. This was followed by a second survey in 2006 that probed these questions further and provided a basis for determining whether the opinion was trending in one direction or another. The surveys demonstrated 2 major findings: 1) "distinct realities" exist within the consideration of animal welfare in various member states, and 2) an excellent deal of interest exists in animal welfare and animal welfare standards. the



info clearly show that values and concerns about animal welfare vary across countries and cultures (European Commission, 2005).

The surveys discussed above are peer-reviewed studies intended to characterize robust trends publicly opinion. Similar survey methods are employed by marketing firms that are commissioned by clients to establish vox populi on points of interest to client groups. Several of those commissioned surveys are conducted to elicit measures of opinion on animal welfare and livestock production. Surveys commissioned by the Animal Industry Foundation (now the Animal Agriculture Alliance) in 1993 and 1998 asked respondents whether or not they believed farmers and ranchers treated their animals humanely; 77 and 80%, respectively, answered yes (Swanson and Mench, 2000). Other surveys are commissioned by animal protection groups like Compassion Over Killing and other people for the moral Treatment of Animals. Compassion Over Killing has reported results from a nationwide Zogby poll in 2000 showing that 86% folks adults consider the crowding of hens in commercial egg production unacceptable. The question was as follows: “please tell me if you discover the practice totally acceptable, somewhat acceptable, somewhat unacceptable, or totally unacceptable: crowding 8 to 10 chickens in cages, about the scale of an open newspaper, so tightly that they can’t stretch their wings?” In summary, by over 8 to 1 (86.2% unacceptable to 10.2% acceptable), adults nationwide found the practice of overcrowding chickens into cages where they can not spread their wings to be an unacceptable practice, with 69.8% saying it’s totally unacceptable; alienating a part of the beaks of chickens to stop injury to other birds was unacceptable to 60.4% (Compassion Over Killing, 2010).

A 2003 Zogby Poll commissioned by the Animal Welfare Trust found 82% of respondents in favor of federal legislation to safeguard cattle, and a 1995 Caravan Opinion Research Corporation poll conducted for an undisclosed client found that approximately 90% of respondents disapproved of the quality practices of confining hens, veal calves, and pigs (Matheny and Leahy, 2007).

Data generated by these privately commissioned surveys should be treated carefully but mustn’t be disregarded. Although these specific results of the polls cited above haven’t been subjected to look review, populations sampled by private firms are representative of the US public and their methods were statistically sound (Welch, 2002; Martin et al., 2005). The methods used provide valid data on response rates at the time of the survey for those questions or items that a response was solicited. However, the conflicting results from these surveys show that these percentages are often sensitive to changes within the context and wording of questions. The extent to which any of those survey results indicate the general public acceptability of existing housing systems or possible alternatives remains receptive debate.

In addition to the quantitative measures generated by economic analysis and surveys, qualitative methods may be applied to values assessment. Sociologists have developed research approaches that interpret consumer food choice as a sort of politics. in line with this view, consumers consciously participate within the formation of industry practices both through purchase behavior and thru activities like letter writing, actions at stockholder meetings, and public protests. Consumers’ trust within the industry and advertising is a necessary motivating consider their desire to affect industry practice. Individuals who participate in these actions evince low confidence in industry representatives’ representation of the consequences of industry practices (DuPuis, 2000). Some studies during this research tradition emphasize attitudes toward animals in dietary choices. They show that people’s attitudes toward animals and dietary choices are multilayered and infrequently in conflict, and animals are commonly recognized as subjects with office (Kalof, 2000; Blecha, 2007).

Recent research approaches have applied multiple methods to perceptions and attitudes with studies that combine assessments of animal welfare (such as those discussed by Lay et al., 2011) with studies on consumer attitudes to

develop industry standards. Over the previous few years, the eu Union Welfare Quality project has developed animal-based welfare assessment protocols for sheep, derived from scientific findings from several European research groups (Blokhuis et al., 2003). a spread of mechanisms were built into the project for distilling the opinion of the general public regarding the development of animal welfare standards and promoting a sustained dialog between animal scientists and social scientists (Miele et al., 2011).

The European Union Welfare Quality project used a research method that combined an oversized telephone survey in 7 EU countries (Kjaernes et al., 2007), detailed conversations with focus groups (Evans and Miele, 2007), and an outsized number of in-depth interviews with farmers, retailers, certifying bodies, and non-governmental organizations (Roe and Murdoch, 2006). Finally, within the last stage of the project, a replacement research method was adopted to determine the opinion of the general public about the quality developed by the Welfare Quality scientist: citizen juries. A citizen jury convenes a comparatively small sample of the general public for an extended period during which they need a chance to ask questions of experts, then deliberate among each other on their findings (Hamlett, 2003). during this case, the juries highlighted interesting similarities and differences between scientific and societal understandings of the standard of lifetime of livestock and explored how jurors' lay opinions about placental mammal welfare changed overtime after they were exposed to different expert input. This task was designed by the social scientists within the project but was executed by both social and animal scientists. A parallel investigation, the farmer's workshop, was conducted with farmers. To date, no similar studies or activities are conducted within the us.

In summary, the methods discussed above represent only a fraction of the research methodologies that are accustomed study features relevant to egg production sustainability. However, as noted at the outset, sustainability encompasses multiple dimensions. jointly attempts to mix studies on the economic

viability of the industry, consumers' willingness to pay, survey respondents' expressed preferences, and results from public health, animal behavior, or biological science, the normal model of problem-solving research become untenable. One source of the issue is solely complexity, but a more intractable problem for applying the linear quite problem-solving research model is that when such a lot of diverse styles of values formulate an issue, there are guaranteed to be inconsistencies that time to very different and incompatible styles of solutions.

### INCOMPATIBLE VALUES

Several sources of incompatibility can exist within the values that articulate ends to be sought or that determine why a situation is viewed as problematic. One source is that different parties have different interests, and it's not always possible to satisfy all interests with one solution. In effect, each of the key values relevant to egg production is related to a collection of people, commercial enterprises, and social groups (henceforth "publics") which will be expected to hunt a task in influencing changes in egg production. The second source of incompatibility can arise from the way that values are conceptualized. Different individuals within publics organized around a given interest may view what's important this interest (or how it's to be pursued) in incompatible ways.

### Multiple Publics

It is obvious that inherent conflicts exist among the interests of the multiple publics currently or potentially advocating action on egg production, but the way that these conflicts are structured may be subtle. the fundamental structure of economic exchange dictates conflicts of interest between each economic actor within the supply chain: low prices are good for a few, bad for others. As Smith (1937) argued, the tensions created when each pursues their own interest can in some cases result in spontaneous changes that will be understood as a bargain where all parties' interests are reflected. as an example, food retailers currently provide little information regarding environmental impact or the well-being of animals raised for food, making it difficult for consumers to demonstrate their preferences

for animal welfare through their purchases. However, new markets are emerging, like the Humane Certified label, and a spread of food labels differentiated by animal treatment (Mench, 2003). These changes within the retail supply chain are undertaken without significant government encouragement or support. they'll be seen jointly component of a bigger trend toward nonstate governance mechanisms that are developed to produce consumer assurance of food attributes that relate to the assembly process instead of to the ultimate product. Organic, fair trade and regional labels is also a response to similar shifts in market structure (Thompson et al., 2007). A more extensive discussion of the standards underlying these sorts of public assurance programs follows below.

Some standards are employed globally, whereas others are more local in nature (World Trade Organization, 2005). Some are publicly available for open markets, whereas others are designed for particular value chains (Ponte and Gibbon, 2005) and should even be proprietary. Some standards are even designed to manipulate the utilization and enforcement of other standards (International Organization for Standardization, 2004). Of direct relevance to egg production is that the international organization for Animal Health (OIE), which was initially created in 1924 and included 28 countries. Its main mission was to develop standards to combat the outbreak of animal diseases. Over its history, the OIE has grown to 172 member countries. Recognizing the link between animal diseases and also the welfare of animals, the OIE received a mandate to develop animal welfare standards in 2002. The OIE aims to supply animal welfare standards which will be used for international trade and function a foundation for legislation in countries that currently don't have legislation in animal welfare. The OIE insists that their guidelines are science-based and their efforts are guided by certain principles, including the 5 freedoms (freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury, and disease; freedom to specific normal behavior; and freedom from fear and distress), the popularity that value assumptions are inherent to the very idea of animal welfare, and therefore the belief that animal-based criteria instead of standard should be the idea for comparing

standards. To date, the OIE has developed codes coping with land and sea transport moreover because the humane killing of animals for disease control and human consumption. the longer term activities of the OIE include developing standards for the housing and production of domestic animals. Given the scope of the OIE standards, significant discussion and compromise are required. At a 2008 meeting in Cairo, the expression important positions of varied member countries was a key component to the meeting's success.

Eventually, standards must necessarily involve a compromise, perhaps one that's frequently revisited, among competing values. Standards for cage size, as an example, represent a compromise among values intended to supply an optimal balance among market values related to the price of the cage and therefore the cost of production per egg, the values related to easy use by workers in layer facilities, and values related to the welfare of the laying hens. Attempts to optimize or maximize any of those values at the expense of others are likely to fail. Such a compromise has never been easy to achieve (Warne, 1967).

Put differently, standards are located at the interface between facts and values. Standards form a form of ethical economy defining what's good and what's bad (Busch, 2000). Standards simultaneously prescribe and describe; that's, they tell us what should be the case, and, once in widespread use, they tell us what's the case. Hence, one can verbalize organic agriculture only to the extent that organic standards exist that simultaneously define what's organic and describe what's within the fields and supermarkets. Similarly, when standards for cages for layers were developed, they were recommended because the desired approach for producing eggs; once established and in widespread use, they tell us what the case is. this try and incorporate consumer concerns about the welfare of layer hens adds another set of values to the compromise among values central to standards development.

## CONCLUSIONS

An integrated assessment tool for developing sustainability

standards will eventually require some method for combining or a minimum of in a way reflecting all the values discussed above. Because each dimension of sustainability represents one or more varieties of value determination, taking values that reflect distinct scales and classes useful under consideration becomes one amongst the most challenges for deciding. Traditional quantitative methods don't permit the optimization of over one variable at a time. Although a awfully large body of literature discusses alternative theoretical proposals for integrating diverse value scales in an exceedingly decision-making process, only a few attempts are made to validate or apply these methods to the comparison of different livestock production methods. Several approaches to the present problem are discussed within the Swanson et al. (2011a) study focused on synthesizing research results that pertain to every domain of sustainability.

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