## United States Department of State



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Intergovernmental Preparatory Meeting UN Commission on Sustainable Development -17 Thematic Discussion: Interlinkages Intervention for February 27, Morning Session Extended Remarks Upon Which Intervention Is Based

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#### Introduction and overview

Progress on the current sustainability themes of UN Commission on Sustainable Development – to increase agricultural productivity, stimulate rural development, use land within ecological capacity, prevent drought and combat desertification, and promote sustainable development in Africa – will require a substantial effort by government and civil society. In addition to the specific actions needed for each thematic area, investments in cross-cutting action areas will result in progress on multiple themes. Finding those leverage points that cut across the individual themes will help guide governmental action, and can also help major groups and other stakeholders build local and global capacity.

As CSD considers policy options and actions, the United States proposes six areas for focused attention as cross-cutting issues:

- A more unified approach to research, education and extension Increase development capacity by linking knowledge to action in two ways: Work across scientific disciplines to understand human-ecosystem interactions, and deploy new global, user-friendly models of extension.
- New communication technologies to connect users to experts and information -- Expand the use of the world-wide web for sharing information and education across national boundaries including geospatial imagery, global earth observation systems and small holder education.
- **Participatory land-use planning aimed at managing land within ecological capacity** -- Use new scientific tools and information to preserve the highest quality soil for food production to serve future generations.
- Simple economic tools for creating vibrant markets -- Create greater access to (and links between) local, regional and global food markets through microfinance, and private and public cooperatives.

- Workforce development that includes women and youth -- Increase current and future workforce capacity by granting land rights to women and preparing young people with 21<sup>st</sup> century skills and competencies.
- Sustainable consumption and production tools to guide decision-making Encourage science-based (life-cycle analysis) approaches that support voluntary sustainability standards for private production and new indexes for consumer choices.

### 1. A more unified approach to research, education and extension

The translation of research findings into practical, appropriate and affordable management technologies and technologies can be accelerated by linking research with instruction in schools and universities, and the diffusion of knowledge by user-friendly extension services. The use of information and communication technologies for sharing knowledge across the globe is an opportunity yet to be fully realized. Provided below are opportunities to advance CSD-17 thematic areas through a more unified approach to research, education and extension. All of these actions will require us to initiate and support partnerships across sectors, nations, and cultures. Our knowledge-based actions can assure that agriculture is a positive factor in sustainable development. What follows are specific ways to unify research, education and extension and extension and extension activities.

*Invest in cross-disciplinary, user-focused research* – Research investments offer significant payback. For example, the U.S. Economic Research Service estimates agricultural research returns at 7 to 30 percent, and funds are highly leveraged across partners. For example, in the U.S. state governments match federal extension investments by a ratio of 3 to 1. CSD should encourage new approaches to research on sustainability. The traditional discipline-based approach to research, when applied to sustainability issues, ignores the interactions between humans, ecosystems, and economics.

The US National Academy of Sciences cites that science to address sustainability calls for trans-disciplinary approaches and integration of basic and applied research activities. Research should be undertaken on multiple spatial scales -- ranging from site-level to watershed and landscape scales -- and knowledge linked to action that in turn informs the research community of the next step in the research problem. Grant-making institutions like national governments and foundations should chart the course for research on science for sustainability. Investments in such programs have an extraordinary rate of return.

Set clear priorities for sustainability R&D -- Sustainability research and development programs should focus on a small set of understudied questions that are central to a deeper understanding of interactions between society and the environment. For example, expanded and ongoing efforts are needed to understand the consequences of producing biofuels from agricultural crops. Critical to life-cycle assessment, for example, is the understanding of how land-use patterns change -- directly and indirectly -- as the biofuel and conventional energy sectors change. We don't yet have adequate data or models to reliably estimate likely changes with accuracy. Sustainability requires better utilization of existing tools and processes for linking knowledge to action in pursuit of the transition to sustainability.

Critical issues for agriculture research include: land management practices and changes in land use; improved sustainability and management, including alternative tillage practices; animal manure management; forest and rangeland fuel management; agroforestry systems; conservation corridors and buffer strips; invasive species; landscape scale changes, such as fire, wind, and urban development; harvesting; pathogen and disease infestations; drought and flooding; climate change; waters hed and air shed protection; landscape fragmentation; endangered species; and, emerging issues like the decline of pollinators.

There are many other areas where targeted research programs could yield substantial benefits. We need to accommodate an expected doubling to tripling of the urban system in a habitable, efficient, and environmentally friendly manner; reverse declining trends in agricultural production in Africa and sustain historic trends elsewhere; accelerate improvement in the use of energy and bio-based materials; restore degraded ecosystems while conserving biodiversity elsewhere; and integrate approaches to research and actions at the regional scale related to water, atmosphere and climate, species and ecosystems, and desertification. An example of a grand challenge for all countries is management of nitrogen in agriculture. Nitrogen has provided a bountiful food supply around the world, but the inputs have to be more carefully managed by every nation if we are to keep our waterways and ocean ecosystems functioning for food production and health.

*Target agricultural extension to help smallholders* -- Agricultural extension is now back on the development agenda. There is excitement about innovative approaches to extension services for smallholders around the world. This is especially important in developing nations where more evaluation, learning, and knowledge sharing is needed.

The World Bank notes several useful extension models with features that, when implemented in a flexible and participatory manner, meet the unique conditions of different countries and farming systems. Models include the farmer field school approach, market-driven approaches (like ATMA developed in India), and pluralistic, demand-driven models that use information and communication technologies with different combinations of public and private extension.

*Implement agro-ecosystem management techniques that balance production and protection of valuable ecosystem goods and services* – Human well-being is inextricably linked to sustainable use and management of agro-ecosystems. The fundamental challenge for agriculture is to manage ecological systems in ways that produce the goods and services demanded by human society, while sustaining the ability of the ecological system to continue to meet future needs. The concept of "agro-ecosystem management" allows for achieving the traditional agricultural goal of production while balancing the goals of conservation and protection of natural resources, mitigation of environmental impacts, maintenance of ecosystem services, and rural community viability.

The Methane to Markets Partnership is a successful international partnership that helps farmers and also reduces green house gases. This partnership provides a framework for international cooperation to advance the recovery and use of methane as a valuable clean energy source. These efforts improve livestock and dairy operations through improved manure management. Local water quality is protected and clean energy is produced from the captured methane.

Sustainability research should continue to assume humans are an integral part of the ecosystem -- not only as agents of change, but as consumers of ecosystem goods and services (i.e., from providing food, fuel, fiber, and fresh water to the regulation of processes that affect air quality, climate, erosion control, and human diseases).

*Focus sustainable agricultural research and education on "place"--* Research and education on sustainable development can help establish frameworks to integrate global and local perspectives with a "place-based" understanding of the interactions between environment and society. Almost 20 years ago, the United States initiated the Sustainable Agricultural Research and Education (SARE) program to support farm-based research and demonstration projects that encourage peer learning and technology use and improvement.

*Pursue research and innovation for African agriculture -- Add Value to Agriculture Initiative (AVTA)* -- Agriculture provides a livelihood for the majority of the world's poor. To increase the incomes of subsistence producers, decrease the pressure on shrinking arable lands, and minimize the vulnerability of commodity exports to global price shocks, the U.S. government is considering a new initiative aimed at Africa -- Add Value to Agriculture Initiative (AVTA). The initiative would spur research and innovation aimed at enhancing African agriculture, by partnering with land grant institutions, private philanthropies and business. The goal is to improve agricultural processing through increased investment in research and development on seeds, irrigation methods, and affordable and safe fertilizers.

AVTA investments would provide a package of tools needed to allow poor farmers to succeed in the agricultural market, including training in regulation and quality control standards, finance and financing instruments for rural enterprises, as well as access to markets, higher yield seeds, better irrigation methods and affordable and safe fertilizers.

# 2. New information and communication technologies to connect users to experts and information

CSD-17 should encourage expanded use of the world-wide web to share information, cooperate on available geospatial imagery, and provide education across national boundaries. The declining costs of information and communication technologies (ICT) are giving farmers and rural people in developing countries much greater access to information. In Africa, about 9 % of the population has cell phones in networks that could reach 60% of the population. For example, a group of Kenyan farmers are receiving commodity price information through a low cost Short Message Service (SMS)

provider. Farmers could also use ICTs for extension advice from a global range of sources via the Internet. An even greater role for ICT may be realized with the advent of low-cost computers.

*Define new IT-facilitated extension models* -- Without science and technological innovation, many countries will continue to lose the ability to adopt new knowledge and technology that ensures competitiveness. New extension models are evolving in response to higher value markets that offer new opportunities in the private sector to foster innovation along the value chain. These models involve better cooperation among the public sector, private sector, farmers, and civil society organizations. What is needed now is to understand what works well in which context – followed by scale up of emerging successes.

Last year the US Department of Agriculture and its university partners launched "eXtension" a web-based educational system designed to speed research-based guidance on an expanding range of issues (from managing pests to using geospatial technologies). The Internet can make resources assembled in one country available to others and our new eXtension programs could facilitate the use of extension information from the entire US land grant university system to users around the world. The U.S. also has other sources of information through the National Sustainable Agriculture Information Service (ATTRA), which answers questions on sustainable agriculture throughout the country. In regions with limited resources, the program uses radio and cell phone technology to answer basic questions on agriculture.

*Focus on local content needs for extension services* – Defining local needs and understanding local concerns and questions is essential to operating farmer-responsive extension services. It is just as important to focus on content as the ICT infrastructure. Education has to be viewed as just as important as electricity, roads, and business models.

*Use geospatial technology to inform decisions* -- Geospatial technologies such as geographic information systems (GIS), global positioning systems (GPS), and remote sensing (RS) are necessary tools for imaging different components of sustainable development related to agriculture, land management, rural development, and drought/desertification. These tools are useful for addressing: landscape change, watershed restoration, impervious surface analysis, monitoring range vegetation dynamics, precision agriculture, vegetative cover, land use, ecological forecasting, invasive species, water management, and disaster management.

Geospatial technologies allow multi-variant considerations during decision-making through overlays of human activities with natural resource and agro-economic variables. This approach allows for simultaneous consideration of economic, environmental, and social data. The Geospatial Extension Specialist Network, part of the US Cooperative Extension System, trains extension agents and local elected officials on how to use innovative decision-support systems and make decisions using geospatial technology. International interest in geospatial technology is substantial. For example, the US initiative on "Geospatial Information for Sustainable Development," in support of the World Summit for Sustainable Development in Johannesburg, recently sponsored a science and technology exchange program with field visits to eight countries and a conference in Cape Town, South Africa – to consider applications of geo-spatial science and technology to regional challenges, and to explore access and distribution of geo-spatial data. Key findings include: there is considerable geospatial capability in Africa; that a collaborative approach is called for, with African partners playing critical roles in the conception, design and implementation of activities; and, the need to focus on local user needs, build local capacity, and engage universities.

The US also actively contributes to the Global Earth Observation System of Systems (GEOSS), which was launched in response to the 2002 World Summit on Sustainable Development. The goal of this international partnership is to provide timely long-term global information that can support decision making, including areas relevant to CSD-17, such as sustainable agriculture and combating desertification.

**Define common technology specifications for geospatial imagery to enhance global utility** -- To facilitate the global sharing of geospatial imagery for research, education, and extension, common technology specifications need to be developed. The US-based international Open GIS Consortium of companies, government agencies and universities is developing publicly available interface specifications. Open GIS enables geoprocessing technologies to inter-operate and empower technology developers to make complex spatial information and services accessible and useful with many kinds of applications across the globe.

The United States promotes the widespread accessibility and use of open source geospatial software. Geospatial technologies are most useful for conducting research to address important issues on a local, regional, national, international, and global scale.

# **3.** Participatory land-use planning aimed at managing land within ecological capacity

Sustainable land management is necessary condition for sustainable solutions to challenges in CSD-17 thematic areas. The success of policies and management practices to sustain agricultural productivity or manage drought and desertification often depends on planning appropriate land uses based on scientific understanding of the ecological capacity of different landscapes. CSD-17 should encourage inclusive land-use planning processes, and promote land management practices and policies that are based on the long-term ecological capacity of specific areas. Listed below are some key opportunities for CSD-17.

**Protect productive farm land from urbanization** -- The world is experiencing growing urbanization with significant implications for sustainable agriculture, rural development, land use, and other resources. Growing populations and migration to urban areas have a

significant effect on agricultural systems. For the first time ever, according to UN sources, more people now live in urban areas than rural areas.

By 2050 the world's farmers must feed nine billion people – three billion more that the current population – without much expansion in the amount of land and water devoted to agriculture. Agricultural productivity needs to improve to meet this steadily growing global food demand. As the global population increases along with growth of urban populations, great pressure will be placed on dwindling natural resources such as arable land, water, and energy to provide an adequate supply of food.

The challenge is how we accommodate increasing urbanization sustainably, protect arable land from urban sprawl, and build sustainable relationships between cities and their outskirts. Our universities and agro-processors will need to reorient agricultural research and extension programs to "peri-urban" agriculture, the practice of cultivating, processing and distributing food in, or around a village, town, or city. Food and agricultural value chains may need to be spatially reconfigured to meet growing food demand from urban areas. Because urban agriculture can promote energy-saving local food production, peri-urban agriculture is generally viewed as sustainable practices.

*Plan land uses based on ecological potential* -- The migration of people to cities and demand for more foods calls for new approaches to land-use and watershed planning. Such approaches should be based on the land's long-term potential to support ecosystem services (as reflected by soil and watershed maps and local knowledge), and on the current status of the land relative to its long-term potential (soil quality). Land use planning processes can be improved by increasing access to soil information and integrating scientific and indigenous knowledge. The Global Soils Map currently in development can be used to assess the long term potential of the land – for use in land use planning decisions.

Knowledge of the land's long-term potential and current status relative to potential can be used to prioritize areas for conservation and restoration in the land use planning, identify areas at risk of desertification and with the greatest potential for recovery, and predict changes in future potential as the result of climate change. Governments at the appropriate level, with the support of the relevant international and regional organizations, should be encouraged to:

- Develop databases and geographical information systems -- to store and display physical, social and economic information pertaining to agriculture, and the definition of ecological zones and development areas;
- Select land uses and production systems appropriate to land capability -- by using multiple goal optimization procedures and strengthening local community participation; and
- Adopt integrated planning at the watershed and landscape level -- to reduce soil loss and protect surface and groundwater resources from chemical pollution.

*Use current scientific information tools, such as the Global Soil Map* -- Knowledge of the world soil resources is fragmented and dated. Land use decisions can be improved with accurate soil information (i.e., up-to-date and spatially referenced) that is easily accessible by farmers and land users, policy and decision makers, and the modeling community. The recent launch of the Global Digital Soil Map coincides with an enormous leap in technologies that allow for accurately collecting and predicting soil properties as demonstrated through the "Ecological Site Descriptions" currently applied to US rangelands. These descriptions provide a process for integrating and documenting scientific and indigenous (local) knowledge of the land's potential.

The Global Digital Soil Map proposes to make a new digital soil map of the world using state-of-the-art and emerging technologies for soil mapping and predicting soil properties. The proposal calls for about 80 percent of the global land surface to be mapped in 5 years. It will be freely available, web accessible, and widely distributed and used. The maps will be produced by a global consortium with centers in each of the continents.

*Incorporate green infrastructure in land-use planning* -- In the United States, a green infrastructure approach is helping communities identify which lands to conserve and which lands would best accommodate development. Partners such as The Conservation Fund and USDA are working together to deliver training on using such technologies as geospatial imagery to promote integrated and sustainable land-use systems.

# 4. Simple economic tools for creating vibrant markets – such as microfinance and cooperatives

CSD-17 should foster greater access to (and links between) local, regional and global food markets through application of effective policy tools such as microfinance and private and public cooperatives.

**Build strong farm-city linkages** – The increasing overlap between urban and rural interests in agriculture can contribute to sustainable development. Promoting "vibrant markets" in cities and towns can provide assured income streams to rural-based farmers who use sustainable methods to grow and raise their crops and livestock. In every country, cities are linked to outlying farms in increasingly important ways, especially centered on food and agriculture. Urban food markets are often one of the largest, most reliable markets for farm produce, and those markets often shape not only prices, but what is grown, how it is grown, and how it is processed and delivered.

Indeed within the New York City region, we are increasingly aware of these links and how they can promote a focus on sustainable development of our farms while increasing the nutritional quality and variety of food within our cities. We acknowledge and support the innovations that are underway, and hope that others here at IPM will join us in promoting this important work. *Use microfinance to help small-scale farmers* -- The promotion of microfinance and cooperatives are proven strategies for development of vibrant food system markets. In 2008, USAID and Oikocredit, a socially responsible cooperative, entered into a ten-year partial credit guarantee that will leverage over \$35 million in private financing to support microfinance activities in under-served areas and populations in sub-Saharan Africa and other developing regions. This enables microfinance providers to link to global sources of capital, often for the first time. The U.S. guarantee is intended to increase private-sector financing to microenterprises and small-scale farmers to invest in new equipment or higher-grade inputs to increase their productivity and incomes.

*Encourage cooperatives that support rural development* -- The agricultural cooperative is a successful rural development model that allows for increased economic benefits and the ability for members to direct and control their own development. Cooperatives are member-owned, democratic, community-based businesses. The US AID Cooperative Development Program strengthens the development of cooperative systems in developing countries and emerging democracies by utilizing the expertise and resources of long-established U.S. cooperative organizations, their members, and volunteers. Current focus is on credit, housing, agribusiness, technology transfer, democratic institutions, rural telecommunications and electrification, private enterprise development, and insurance protection sectors.

Agricultural cooperatives are widespread in rural areas. In the United States, there are both marketing and supply cooperatives (some of which are government-sponsored) which promote and may actually distribute specific commodities. There are also agricultural supply cooperatives, which provide inputs into the agricultural process. Many emerging countries are developing agricultural cooperatives. The peer-to-peer approach between established cooperatives in the U.S. and those in developing countries ensures that practical solutions are found to on-the-ground implementation problems.

## 5. Workforce development that includes women and youth

CSD-17 should encourage all governments to strengthen current and future workforce capacity by granting land rights to women and preparing young people (including young women) with 21<sup>st</sup> century skills and competencies.

*Increase opportunities for women* -- It is estimated that women produce more than half of the food around the world. A fundamental sustainable practice empowers women to improve their social and economic standing by ensuring equitable access to land and increase the security of their rights to land and natural resources.

Government leadership is needed to:

- Reform inheritance laws and other policies including legislation and practices towards the goal of gender equality as a rule of law.
- Promote inclusive land formalization that recognizes and increases security of land right for women.

- Increase institutional and public awareness of land tenure rights for women and expand and improve access to and control of land-based production assets and resources management policies regarding gender within the agriculture and natural resource management sectors.
- Remove organizational barriers that obstruct women from realizing position of leadership and influence.
- Establish and support platforms and partnerships for women to build alliances so that they may achieve higher levels of energy and commitment for the dual causes of rural women empowerment and environmental sustainability.
- Transform programs and organizations by strengthening the position of women professionals engaged in agriculture, forestry, and other relevant sectors within their organizations and increasing their effectiveness and service to rural women.
- Increase access to educational opportunities for women and remove barriers that prevent women from participating in government and becoming literate and participants in the professions including farming and related food industries.

Support youth programs that benefit individuals and communities -- Young people will shape the future of every country by the skills and competencies they acquire through education. They are the workforce of the future and represent the human capital infrastructure for sustainable development. Youth deserve special attention in terms of development since they will provide the sustainable development solutions for the future.

Youth development is encouraged in the United States in both formal (school) and informal (out-of-school) settings. The 4-H programs (the four "H's" stand for Head, Heart, Hands, and Health) seek to promote positive youth development, facilitate learning, and enhance quality of life by encouraging youth to work in their communities. Though a major focus has historically been on agriculture, modern 4-H today encourages members in rural and urban areas to learn about many topics, such as youth leadership, youth-adult partnership, geographic information systems, and public speaking. The 4-H program in the US has helped develop citizenship, leadership, and life skills of youth through mostly experiential learning programs. The 4-H program model, run by the US Department of Agriculture, can be adapted to different countries to fit to unique and specific goals of their youth and culture. The 4-H International Toolkit is a global education resource designed to be a "start up" tool for countries wishing to begin youth development programs in their own communities, towns, cities or countries.

#### 6. Sustainable consumption and production tools to guide decision-making

The current world-wide economic situation creates opportunity to shift to more sustainable patterns of consumption and production (SCP). As we discuss issues like food security, agricultural productivity, and an agricultural renaissance in Africa, CSD should consciously frame our policy choices in ways that advance sustainable agriculture and achieves environmental health, economic profitability and social and economic equity. CSD-17 should encourage voluntary science-based (life-cycle analysis) sustainability standards for private production and new indexes for consumer choices – to help inform choices about sustainability.

Showcase SCP policies and practices in CSD-17 -- The long-term policy goals of CSD-17 can be approached within a framework of sustainable production and consumption. National agricultural policies and farm-level management decisions can be guided by comprehensive thinking that links production and consumption of food and other agricultural products – from ecosystem-based management of land to increasing consumer awareness and choice and accelerating demand for green products.

Sustainable agriculture – both production and consumption – can address many environmental and social concerns, and offer innovative and economically viable opportunities for farmers, consumers, communities, and many others in the entire food system. Special emphasis should be on the developing country context, and how to respond to the pressing needs to expand agriculture production and encourage rural development while minimizing adverse environmental and social impacts.

CSD-17 can be a place to showcase policies and practices for sustainable consumption and production, and we anticipate and look forward to an expanded discussion in CSD 18 and 19.

*Use life-cycle analysis (LCA) to provide a scientific basis for sustainability decisions* -- A common definition of sustainable production and consumption is the creation of goods and services that responds to human needs and improve quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste over the life cycle. Life cycle approaches are a valuable analytical tool in development decisions made by government, business and communities. Life cycle approaches consider environmental and social impacts along the life cycle of products and services – from resource extraction to processing, use and maintenance, and finally eventual disposal or reuse.

The use of LCA can strengthen the scientific basis for policy and business decisions about sustainability (e.g., LCA can increase the sustainable quality of products such as food). Several of the largest U.S. food retail corporations are beginning to require their suppliers to deliver a certain quality of product that the consumer is demanding using standards and indicators. Life cycle approaches provide the science behind the discussion on voluntary standards, certification, indicators, and indexes. All governments should consider sharing LCA data development such as EcoInvent and assist developing countries in modifying the model to fit their particular in-country circumstances and needs.

*Encourage sustainable consumption and production in agriculture* -- Agriculture has changed dramatically over the past 50 years in the United States and around the world. Increased food and fiber productivity was a result of new technologies, mechanization, increased chemical use, and often government policies that favored maximizing production. Over time, the scale of some agricultural enterprises increased dramatically

while many smaller farmers went out of business. Although productivity has increased dramatically, there have also been some unintended negative environmental and social impacts of significant concern such as depletion of topsoil and soil quality, groundwater and surface water contamination, deterioration of economic and social conditions in rural communities, and, in some cases, the living and working conditions for farm laborers.

Another challenge is the need to find ways to maintain our most productive lands in agriculture, agroforestry, range, and forest. Inherently productive lands, such as prime farm land, not only have the highest yields, but also require a low level of management inputs (e.g., fertilizer), while simultaneously providing significant ecosystem services. To the extent that these working lands remain economically profitable, they are less likely to be converted to other uses like residential and commercial development.

Numerous sustainability and stewardship programs are provided by the U.S. government to address the economic, environmental and social sustainability issues in agricultural, agroforestry, forestry and rangeland systems that provide our food, fiber, and a wide array of other ecological goods and services. The American public is becoming more aware and supportive of sustainable agriculture approaches. There is growing interest in local agricultural production, a rise in demand for organically produced foods, development of voluntary certification programs, private-sector attention to supply chains, and community interest in better managing the rural-urban interface. The challenge is to encourage bigger and bolder improvements in sustainable consumption and production in agriculture. Pursuing sustainable agriculture practices and systems exemplifies how a life-cycle approach can help guide agricultural development – from production through processing to consumption of food and other agricultural products.

*Use results of North American SCP regional workshop to inform global priorities and actions* -- The United States and Canada recently organized a workshop to define a regional approach to advance sustainable consumption and production in North America and contribute to the global Marrakech Process. The meeting was attended by over 60 experts from government, the United Nations, academia, non-governmental organizations, business and industry. The workshop focused on a unifying vision, concepts and principles for North America; current status of activities in the region; and strategies to advance a regional framework. The workshop's discussions and outcomes will feed into the 10-year SCP framework which will be considered by CSD-18 next year. The goal is to assist governments at all levels to green their economies, to help businesses develop greener business models, and to encourage consumers to adopt more sustainable lifestyles.