

## Summary of Act!ion Agriculture: 10-12 December 2018

Act!on Agriculture took place during the Katowice Climate Change Conference from 10-12 December 2018. This event, organized by New Zealand, France, Australia, Ireland and the Netherlands, explored how governments, agriculture businesses and others are pushing the frontier of agricultural transformation towards low emissions. Using real-world examples from developed and developing countries, the event highlighted specific opportunities, proven best practices and realistic possibilities for increasing agricultural productivity, mitigating agricultural greenhouse gas (GHG) emissions, and strengthening agricultural resilience in cost-effective ways.

Act!on Agriculture aimed to catalyze action on sustainable agriculture to achieve the ‘triple win’ of:

- increased agricultural productivity;
- reduced GHG emissions; and
- strengthened resilience to climate change impacts.

On Monday, the event featured a ministerial discussion, followed by technical sessions that ran through Wednesday evening on diverse topics including:

- resilience, productivity and efficiency of agriculture under the Paris Agreement;
- agriculture development for climate benefit;
- scaling up of agroecology;
- market demand for sustainable food production; and
- capacity building for monitoring emissions.

The event also included the sharing of experiences on how to raise ambition in Nationally Determined Contributions (NDCs), and participants heard experiences from farmers working towards lower emissions.

### Ministerial Opening

During Monday’s opening session, ministers from the Netherlands, New Zealand, Vanuatu, Uganda and Australia addressed the importance of reducing agricultural GHG emissions and the challenge of achieving this while promoting food production and food security. Hayden Montgomery, Global Research Alliance on Agricultural Greenhouse Gases (GRA), moderated the session, noting that it was fitting that the event is being held in the Pacific and Koronivia Pavillion, since Koronivia refers to an agricultural research center in Fiji.

James Shaw, Minister for Climate Change, New Zealand, shared the example of a family of New Zealand farmers, the

MacKenzies, who, with precision agriculture, managed to reduce both their GHG emissions and input costs. He emphasized three points in his remarks.

- Agriculture has a huge role to play in meeting the long-term temperature goal of the Paris Agreement.
- A “triple win” of producing more food more sustainability, reducing agricultural emissions, and improving the climate resilience of agriculture is possible.
- We need to remember the scale of the challenge: that agriculture must reduce its emissions by 1 Gt per year and is on track to become the greatest source of global GHG emissions once other sectors decarbonize.

Shaw stressed that transformational change is required and called for farmers and governments to be ambitious in enhancing NDCs and the place of agriculture within them in 2020. He called for governments and farmers to collaborate, and emphasized that although we do not have all the answers now, transforming agriculture is possible.

Theo de Jager, President, World Farmers’ Organisation (WFO), emphasized that although farmers produce a significant amount of GHG emissions, agriculture is essential to feed the growing global population and achieving the goals of the Paris Agreement. He shared his belief that farmers globally can become GHG emission-neutral or even negative but stressed that this will only happen through a plan hatched by farmers, rather than one

### In This Issue

Ministerial Opening .....	1
Ministerial Discussions .....	2
Farmers Working Towards Lower Emissions .....	2
Resilient, Productive, Efficient: Pacific Agriculture under the Paris Agreement .....	3
Agriculture Development for Climate Benefit .....	4
Building Capacity in Agricultural Measurement, Reporting and Verification (MRV) .....	8
Raising the Ambition of Agriculture in NDCs: 2020 and Beyond .....	9

hatched solely in parliaments or international conferences. De Jager said that such a plan must be multidimensional and cannot take a one-size-fits-all approach, noting the wide diversity in farm types and farmer needs. He introduced the WFO's Climakers initiative, which will engage farmers around the world to determine feasible emission reduction strategies. In closing, he called on governments to listen to farmers, including those that are uneducated or poor.

### **Ministerial Discussions**

Hayden Montgomery, GRA moderated the ministerial discussion. Melissa Price, Minister for Environment, Australia, said 58% of her country's landmass is under agriculture. She explained that even though in the past Australia's agriculture "rode on a sheep's back," her country is recognized today for quality production of beef, wine and dairy products achieved through efficient and resilient practices. She shared lessons on climate-smart agriculture that have led to efficient production systems, increased income and environmental protection. Price cited a report that showing that it has been possible to reduce fertilizer use without affecting crop yields in her country.

Marjolijn Sonnema, Vice Minister for Agriculture and Nature, the Netherlands, emphasized the need to reduce food losses, saying 30-40% of farm produce globally does not reach consumers. She also noted the need to encourage more sustainable consumption, saying her country is cooperating with researchers, farmers, civil society and the private sector to find sustainable agriculture solutions and reduce food losses.

Ralph Regenvanu, Minister for Foreign Affairs, Vanuatu, said the "game changer" for his country is the application of indigenous knowledge for adapting agriculture to climate change. Indigenous agricultural systems, he emphasized, have adapted to extreme climate change events over thousands of years and can inform appropriate adaptation strategies. He reported that his government is encouraging farming of traditional plants as a means of combating non-communicable diseases such as diabetes in urban populations.

Kitutu Mary Goretti, Minister of State for Environment, Uganda, reported that her country is implementing measures to achieve co-benefits across agriculture-based value chains. She

said that the young and growing population of Uganda creates pressure on agriculture to increase production. She cited country-level GHG mitigation plans that include climate-smart agriculture programmes, and investments to improve livestock breeds, fodder, animal health, and livestock value chains.

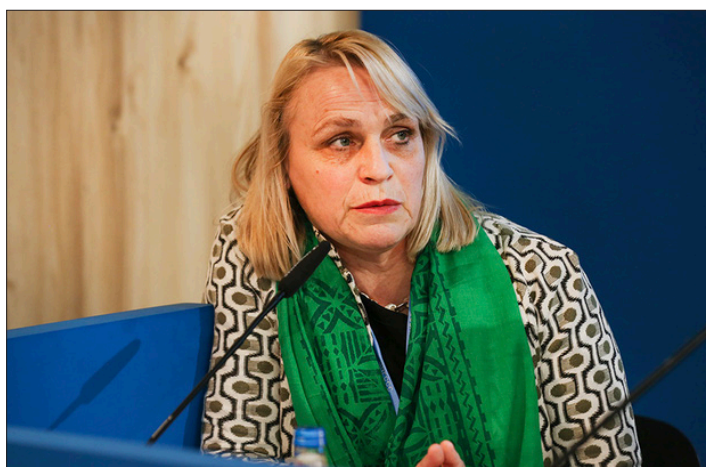
### **Farmers Working Towards Lower Emissions**

This session, held on Monday and Tuesday, brought together farmers, industry representatives and scientists to discuss technologies, techniques and practices that help build productive, resilient agricultural systems while reducing emissions.

On Monday, David Burger, DairyNZ, moderated the session. Ben O'Brien, Beef + Lamb New Zealand, shared information about the transformation of New Zealand's sheep farming industry, focusing on the changes that occurred after 1984 when the government removed farm subsidies and price supports. He said that farmers adjusted by becoming more efficient through reducing pesticide use, overstocking, land clearing and soil erosion, and by focusing on production driven by consumer demand. He noted that while total sheep numbers have declined significantly, overall production has remained largely constant due to increased reproductive efficiency, faster lamb growth rate, and improved feed management. All of these, he highlighted, have contributed to decreased CO<sub>2</sub> and N<sub>2</sub>O emissions from the agriculture sector.

Christopher Brankin, Te Rūnanga o Ngāi Tahu, New Zealand, discussed how indigenous history and knowledge can infuse modern, large-scale farming. He said that Ngāi Tahu's hunter-gatherer history feeds their cultural beliefs that humans are an integrated part of ecosystems, rather than a separate component. He also said this history and culture informs Te Rūnanga o Ngāi Tahu's holistic approach to farming, which includes considering bottom lines relating to environmental, biodiversity, cultural, social and economic outcomes. These, he added, also give them an impetus to think intergenerationally and make future-focused investments, including dedicating portions of their farms to crop and land-use experiments.

Turi McFarlane, Nuffield Scholar, New Zealand, presented ways to optimize farming for sustainable productivity. He reported on farm environmental planning tools that allow for



Marjolijn Sonnema, Vice Minister for Agriculture, the Netherlands



Christopher Brankin, Te Rūnanga o Ngāi Tahu



Turi McFarlane, Nuffield Scholar, New Zealand

predicting and managing farm environmental risks. These tools, he noted, previously focused on soil erosion management, are now also including native biodiversity enhancement and GHG emission reductions. Nutrient budgeting, he said, is also critical to avoid losses from nutrient leaching.

Katie Milne, President, Federated Farmers of New Zealand, said farmers in her country are raising their environmental standards, including through the protection of riparian areas, optimizing fertilizer use, and using low-emissions fodder. She also reported on the significant role played by rural women in reducing environmental footprints and adapting to climate change. Milne emphasized that policies should not villainize agriculture, saying “carrots are more effective than sticks.”

Craige MacKenzie, Founder & Director, Agri Optics, New Zealand, highlighted the problem-nexus of growing populations, decreasing arable land and food waste, stressing that farming must become more efficient and sustainable. Identifying the importance of good data for reducing agricultural emissions, he said that “if you can’t measure you can’t model, and if you can’t model, you can’t mitigate.” He underscored that the most sustainable and the most profitable farming practices go hand-in-hand, as farmers cannot deploy sustainable technologies if they cannot afford to invest in them. MacKenzie also shared how electromagnetic mapping can help develop irrigation maps and plans for fertilizer use and seed planting.

During the discussion, Milne noted the importance of getting young people and urban populations interested in agriculture. She cited programmes that remind school children in New Zealand how food is grown, and supported programmes that encourage farm visits as leisure activities. Panelists said that farmers’ voices should contribute to agriculture policies, and noted that since most farmers are small-scale, many do not qualify for carbon benefit schemes.

On Tuesday, Ben O’Brien, Beef + Lamb, New Zealand, moderated a second session on Farmers Working Towards Lower Emissions. Christian Feldkamp, Executive Director,



Ben O'Brien, Beef + Lamb New Zealand

Argentinian Association of Experimental Regional Agricultural Consortium, said in the last 10 years farmers have gradually changed their perspectives on climate change from mistrust to realization. He emphasized that agriculture, while responsible for 39% of emissions, contributes to 10% of GDP and that there is, therefore, a need to ensure solutions do not undermine the sector. He highlighted on-farm assessments that enabled quantification of the carbon footprint from agriculture. Feldkamp reported that a data mining model database from these assessments is providing tools for crop selection and other carbon sinks. He clarified that farms are reducing pesticide use and, thus, the chemical load in soils and water.

Conor Mulvihill, Director, Dairy Industry Ireland, said his country has a high number of sustainable dairy schemes, is the lowest GHG emitter in Europe, and has some of the cleanest water. Dairy Industry Ireland, he reported, is leading the way in providing a forum for the dairy industry to help farmers meet environmental targets, boost profitability, and improve the country’s reputation as a world leader in grass-fed dairy production.

During discussions, participants said climate action targeting both soil and water are key to holistically addressing both GHG and nutrient issues.

### ***Resilient, Productive, Efficient: Pacific Agriculture under the Paris Agreement***

On Monday, Margarita Astralaga, International Fund for Agricultural Development (IFAD), moderated a panel of scientists and farmers to discuss how Pacific agricultural systems can thrive in an emissions-constrained world. She opened by stressing the importance of supporting agriculture in the Pacific, and highlighting the various threats that climate change poses to the region, including the increasing frequency and duration of tropical storms, sea-level rise and water availability.

Iwona Piechowiak, Pacific Community, emphasized the need to apply landscape approaches to managing climate impacts on agriculture in the Pacific. She noted that atolls are particularly vulnerable to climate change because sea surface warming,



Iwona Piechowiak, Pacific Community

sea-level rise and extreme weather events, which all threaten soil fertility, already precarious in the region. Piechowiak also discussed agroforestry's potential to support climate resilience by stabilizing riverbanks and providing flood protection, and the need to promote gender equality in the region.

Ulamila Lutu, Centre for Pacific Crops and Trees (CePaCT), described her organization's role as the Pacific's only regional gene bank and its main functions of improving nutritional security and adapting to climate change through sharing resilient crops, such as banana, taro, cassava, swamp taro, sweet potato and yam. Lutu also shared two case studies of CePaCT's work on: breeding efforts to confront Taro Leaf Blight, which decimated Samoa's taro industry in 1993; and responding to cyclones in Vanuatu by distributing drought and salt tolerant crops that could be planted in their aftermath.

Minoru Nishi Jr., Managing Director, Nishi Trading Company Limited, Tonga, described how Cyclone Gita in 2017-18 destroyed infrastructure, homes and farms leading to losses of USD 356 million, 50% of which was in agriculture. His company, he reported, has supported farmers' recovery by providing credit for agriculture inputs and financing to a tune of USD 55,000. He said the "never say die attitude" of the island people keeps agriculture going but noted the need to create resilience in the sector.

Jabujka Aikne, Farmer, the Marshall Islands, said his island has suffered from devastating floods leading to soil erosion and water contamination. He also reported crop losses, particularly of staple crops such as grapefruit, coconut, sweet potato and arrowroot. Noting that soils of the Marshall Islands are generally unfertile, he said organic farming is helping farmers become more resilient and improve soil quality by providing nutrients, lowering alkalinity and improving water retention.

Susana Yalikanacea, Farmer, Fiji, said the experience of Cicia Island in becoming the first fully organic certified island in the Pacific has brought recognition of the resilience of organic farming. She explained that since certification in 2013, farmers are now more confident to remain on the island to farm, adding that the establishment of a high school has also helped keep young people on the island.

Gibson Susumu, Pacific Community, emphasized the need to understand the factors contributing to the vulnerability of farming systems. He described the Pacific Community's work in developing tools to help Pacific countries assess this vulnerability and said the major threats to farming in the Pacific are: tropical cyclones; drought; sea-level rise, which is leading to increased flooding and salt intrusion that renders agricultural land unproductive; pests and disease, noting the dangerous spread of the coconut rhinoceros beetle; and the general decline of soil fertility.

Lee Nelson, Australian Centre for International Agricultural Research (ACIAR), described ACIAR's work on promoting adaptation through improved agricultural production, protecting natural resource bases, and building community capacity. He cited specific examples, including programmes to help farmers grow more crops below ground, diversifying farming systems through the incorporation of livestock and aquaculture, and moving from subsistence farming to income-generation through agriculture.

In the discussion that followed, participants addressed: how agricultural insurance remains "massively underdeveloped" in the Pacific; assisting coconut farmers to process their own product; building resilience into entire farm systems; increasing the involvement of women and youth; and how policymakers need capacity building to work across silos to pursue landscape approaches effectively.

### ***Agriculture Development for Climate Benefit***

On Tuesday, the event commenced with a session on studies of agriculture development projects, focusing on analyzing their impact on GHG emissions and farmer livelihoods. Bruce Campbell, CGIAR, facilitated the session, noting the importance of considering how agriculture development funding can help achieve agricultural targets in NDCs.

Fekadu Beyene, Commissioner for Environment, Forests and Climate Change, Ethiopia, gave opening remarks, highlighting the immense challenge posed by climate change, particularly for agriculture. He noted that agriculture is a dominant sector in Ethiopia, accounting for approximately 40% of GDP, which makes the country highly vulnerable to climate change. Beyene outlined Ethiopia's green economy strategy that has guided the



Fekadu Beyene, Commissioner for Environment, Forests and Climate Change, Ethiopia



Liz Wedderburn, AgResearch, New Zealand

country's development plan since 2011, saying that it has led to huge investment and community mobilization for agriculture. He also said the involvement of international partners is important for their strategy and shared his appreciation for the technical and knowledge support provided by New Zealand.

Liz Wedderburn, AgResearch, shared examples of beef and dairy development projects supported by New Zealand's Ministry of Foreign Affairs and Trade and Ministry for the Environment in Colombia, Zambia, Fiji, Myanmar, Indonesia and Uruguay. She described how the projects involved retrospective lifecycle assessments of farms to account for farm inputs and their connection to local supply chains. She noted the projects' successes in increasing farm productivity and profitability and reducing the GHG intensity per unit of product, even though no decrease in total emissions was observed.

Justin Kosoris, AgResults, showed how his company is helping farmers in Vietnam reduce emissions through prize competitions. He presented results from a pilot project with rice paddy farmers aimed at scaling up good practices, such as effective technologies for water draining and reduced fertilizer use. He reported emission reductions of up to five tons CO<sub>2</sub>e alongside a 16-20% increased yield. Prizewinners, he said, included farmers that have utilized multiple drains to reduce methane production and fertilizer use.

Lini Wollenberg, CGIAR, discussed the impacts of multi-sectoral agriculture development programmes in lowering emissions. The US Agency for International Development's sustainable agriculture portfolio, she reported, has achieved net reductions of emissions from sustainable livestock projects and reductions in fertilizer use. The IFAD's ninth replenishment, she reported, has equally achieved carbon sequestration from promoting agroforestry and using organic fertilizers. She further showed emission reductions from Ethiopia's Productive Safety Nets Programme through agroforestry and improved cropping. She said that even though these projects have contributed significantly to lower emissions from the sector, impacts are short term. She emphasized that in the long term, emissions will intensify as long as yields continue to increase. She also

highlighted the need for efficient nutrient input, reduction of food loss and waste, and transformative options such as meat alternatives, and cattle and biological nitrification inhibitors.

During the panel session, Juan Lucas Restrepo, Chief Executive, AGROSAVIA, Colombia, spoke via video link, about work carried out in collaboration with New Zealand to increase livestock profitability, while reducing environmental impacts. He described AGROSAVIA's work to develop a platform to help Colombia meet its climate change commitments via agriculture and work to promote climate resilience through helping farmers develop risk maps. The impetus for this, he noted, came after devastating flooding associated with a strong La Niña phenomenon in 2011-12.

Chu Van Chuong, Ministry of Agriculture and Rural Development, Vietnam, described his country's efforts to improve agricultural productivity through increasing efficiency, reducing pesticide and fertilizer use, and cutting post-harvest losses. He noted that rice production accounts for the bulk of Vietnam's agricultural emissions, but emphasized its importance for local food security. He also said that efforts are underway to help farmers substitute other crops for rice and suggested that providing financial incentives could be an effective way of achieving this at scale.

Jessica Bensemann, New Zealand Ministry of Foreign Affairs and Trade, said that New Zealand plans to spend NZD 140 million on overseas agriculture development projects in the next three years, 25% of which will go to the livestock sector. She noted that livestock has the potential to improve livelihoods in rural areas, but stressed that this must be part of a broader strategy to reduce overall GHG emissions. Bensemann also outlined how New Zealand is mainstreaming climate change into its development assistance, including through aligning projects with host country NDCs and building GHG emission assessments into all new projects.

Lee Nelson, ACIAR, said that the intensification of livestock systems can help reduce GHG emission intensity and pointed



Jessica Bensemann, Ministry of Foreign Affairs and Trade, New Zealand



**Paxina Chileshe-Toe**, Intenational Fund for Agricultural Development

to significant scope for countries to reduce N<sub>2</sub>O emissions with more efficient fertilizer use. While noting success in reducing methane emission intensity, he said there has been little success in reducing overall methane emissions. He mentioned technological potential for this, stressing the need to advance this in the next ten years, as the current approach of improving efficiency and using offsets will not suffice over the long term. Nelson also emphasized the need to develop accounting methods and local capacity in low-income countries.

Paxina Chileshe-Toe, IFAD, said IFAD's 11th replenishment will focus on mainstreaming climate change in all its projects to capture benefits during project implementation. She said her institution is looking for ways of ensuring agriculture projects funded by IFAD are helping achieve countries' NDCs, and noted that IFAD is monitoring and evaluating adaptation impacts of projects. She drew attention to the Adaptation for Smallholder Agriculture Programme (ASAP), which is helping 43 countries cope with the impacts of climate change and build more resilient livelihoods.

During the discussion, participants said soil carbon has been over emphasized, and noted the need for more focus on the effects of nutrient leaching on water quality. They also urged for more work on reducing emissions from livestock rather than efforts to eliminate the sector entirely. Panelists noted the cultural importance of livestock for many communities and thus the need to ensure their needs are considered. They also said technological solutions for livestock sector emissions are advancing, including emissions inhibitors and vaccines that target dominant methanogenes.

### ***Scaling-up Agroecology: Its Performance and Potential***

This session focused on sharing the environmental, social and economic benefits of agroecology and discussing key challenges and opportunities for bringing it to scale. Valérie Dermaux, Ministry of Agriculture, Agrifood and Forestry, France, moderated the session and noted that agroecology is a good climate solution because of how it merges both mitigation and adaptation with positive social and environmental outcomes.

Via video message, Didier Guillaume, Minister of Agriculture and Food, France, said that agroecology is at the center of sustainable development. He said that in France, agroecology has enabled the integration of natural resource conservation and the reduction of pollution, including GHGs. The principles of agroecology, he noted, are founded on concrete practices that farmers can easily adapt, such as use of organic fertilizer, planting legumes to improve soil fertility and agroforestry. He said French actors are mobilizing to scale agroecology through research carried out by among others: the Agricultural Research Centre for International Development, the National Institute for Agricultural Research, and the Institute of Research for Development. He urged governments to go down the agroecology road to catalyze the sector's emission reductions.

Alain Peeters, Secretary of Agroecology Europe, said the objective of the EU's agroforestry strategy is to increase the amount of energy crops to substitute fossil energy use. He said implementation involves integrating cropping and livestock while relying on local resources and endogenous soil fertility, avoiding entirely the use of synthetic pesticides and fertilizers and the purchase of commercial feed. It also, he noted, avoids ploughing and the associated use of fossil fuels. Peeters presented research demonstrating that the economic performance of agroecology can match or exceed that of conventional farming, particularly in developing countries, largely due to reduced input costs, the production of higher-value products, and increased resilience to climate-related disasters.

During the roundtable discussions, panelists presented examples of the performance of agroecology on the ground. Martial Bernoux, Food and Agriculture Organization of the UN (FAO), reported on the Second International Symposium on Agroecology: Scaling Up Agroecology, held in April 2018, to discuss policies and actions that can support achieving the SDGs. The symposium, he said, included 700 participants from 72 governments, including five Ministers of Agriculture. He reported that 45 cases studies were presented, featuring successful, evidence-based agroecological experiences from different



**Alain Peeters**, Secretary of Agroecology Europe



**Bertrand Mathieu**, Agronomes et Vétérinaires Sans Frontières

countries. He reported on outcomes from the symposium, including:

- 10 elements of agroecology;
- the launch of the Scaling Up Agroecology Initiative; and
- a chair's summary addressing current challenges and opportunities to make agriculture more sustainable through agroecology.

Bertrand Mathieu, Agronomes et Vétérinaires Sans Frontières, presented two agroecological projects from West Africa. He reported that the CALAO project, which is an assessment of the development of agroecology in Senegal, Burkina Faso and Togo, carried out a diagnosis of agrarian systems of these countries. He reported that farms where crops and livestock were integrated had more yield since they used manure and fodder within food crops. He also presented a programme of the Economic Community of West African States that supports agro-ecological transition in West Africa, which sought to evolve policies to scale up agroecology. He reported that additional funding from the EU is facilitating networking among agroecology actors and expanding to involve all countries of the region.

Pierre Rousseau, BNP Paribas, presented a video highlighting the need for businesses to fundamentally transform in response to climate change, with the risk of stranded assets as one primary motivation. He introduced the world's first landscape bond, which is being launched by the Tropical Landscapes Finance Facility in Indonesia. Rousseau also described an initiative being undertaken by the state of Andhra Pradesh, India, to convert its six million farmers to agroecological practices. This, he said, would be financed through USD 1 billion in avoided fertilizer subsidies and collaboration between the state government and international partners.

In the discussion that followed, participants focused on public policy barriers to the expansion of agroecology. Points of emphasis included the need to remove inefficient

agricultural subsidies and using incentives to support the development of agroecological infrastructure.

### **Market Demand for Sustainably Produced Food**

This session moderated by Bill Callahan, Department of Agriculture, Food and the Marine, Ireland, addressed changes in consumer behavior, and evolving trends towards sustainable living. Participants also heard about Ireland's experience in promoting sustainable food sourcing through developing charters with farmers, food companies and retailers.

In a keynote presentation, Grace Binchy, Bord Bia, Ireland, noted macro forces driving changes in consumer lifestyle trends, including: rapid urbanization; the rise of protectionism; environmental pressure; and new pressures on packaging, such as bans on single-use plastics. She reported that technology has enabled transparency, and that surveys have shown consumers are willing to pay more for products that promise it. She also noted that shifting perceptions about meat have led to greater production of alternatives, such as vegan products, sales of which have increased by 250% since 2010. Presenting the report of a survey by PricewaterhouseCoopers, titled 'Global Consumer Survey on Sustainability,' she reported:

- the three top consumer perceptions of sustainability are: "protecting the environment," "renewable energy" and "reuse, reduce and recycle";
- 66% of consumers agree that it is easier to adopt sustainable behavior when shopping for food;
- purchasing behavior is governed by quality, price, taste and trust of brands; and
- 50% of consumers recognize certifications as sustainability indicators.

Binchy stressed that innovating against waste is also an important consideration, noting a lot of change and challenges regarding plastics. She said technology will be a big driver of this transformation and cited emerging technologies, such as a recent discovery of a plastic-eating enzyme by scientists



**Grace Binchy**, Bord Bia, Ireland

in Japan. She also said many companies are responding to these needs, mentioning, for example, Amazon engaging suppliers to reduce packaging material and Coca-Cola moving from 100% recycling to plant-based bottles. She also spoke about local actions that are becoming more popular among centennials and millennials to support smaller brands. Another local action, she noted, was the Refugee Food Festival, which allows refugees to cook in local restaurants and share their cuisine.

Michael Maloney, Bord Bia, Ireland, discussed 'Origin Green,' an Irish Government sustainability initiative that aims to raise the environmental standard of food production, thereby reinforcing the green image of Irish exports. He noted that this initiative came out of a 2009 study that revealed Ireland is viewed as green and natural internationally, but that it must live up to this reputation. Origin Green, he explained, uses sustainability audits and charters to engage three groups of actors: farmers, food and drink companies, and retailers and food service operators. He said that farm audits, among other things, calculate the carbon footprint of every farm, and that farmers receive tools to help them model the impact that potential changes in practice would have on both environmental indicators and profitability. Food and drink companies, he said, sign on to a sustainability charter requiring them to set targets for raw material source, manufacturing and social sustainability. The charter for retailers and food service operators, he added, focuses on sustainable sourcing, operations, health and nutrition, and social sustainability. Maloney stressed that Origin Green is a long-term process that will continually try to enhance Ireland's thought leadership, drive sustainability improvements and

deepen participant engagement, with the ultimate aim of increasing consumer preferences for Origin Green suppliers.

During the discussion, panelists noted that studies on consumer sustainability preferences tend to focus on the middle class. Maloney said that the trends observed in consumer behavior change will drive sustainability worldwide and bring benefits across a broad section of society. Panelists also discussed the need to ensure developing countries can develop value chains for organic foods.

### ***Building Capacity in Agricultural Measurement, Reporting and Verification (MRV)***

This session held on the Wednesday focused on demonstrating the importance of improved MRV of agricultural emissions, including for soil organic carbon. Hayden Montgomery, GRA, moderated the event, noting the importance of improving MRV of agricultural emissions for effectively including the sector in NDCs and raising the sector's mitigation ambition over time.

Karl Richards, Teagasc, Ireland, described a multi-year study undertaken in Ireland to review emission factors for agricultural GHG emissions. He noted that 32% of Ireland's emissions come from agriculture, 40% of which are N<sub>2</sub>O. The study, he said, considered the emission factors from grassland and spring barley farming, finding that, for grasslands, a greater share of N<sub>2</sub>O emissions was from fertilizer use and less from cattle dung and urine than previously thought. This is important, he noted, because emissions from fertilizer use can be more easily reduced than those from dung and urine, thus pointing to a clear mitigation strategy. Richards also said that the revised emission factors from the study led to an



Karl Richards, Teagasc, Ireland





**Hugh Martineau**, Ricardo Energy & Environment

overall reduction in reported national GHG emissions and are being used for reporting to the Intergovernmental Panel on Climate Change (IPCC).

Hugh Martineau, Ricardo Energy & Environment, discussed a European Commission project to assess the performance of emissions reduction tools in the region. He said the actions of countries reviewed were categorized according to: GHG emissions abatement and removing, accountability and verification, costs, technological constraints, co-benefits, risks and socioeconomic factors. The project, he said, identified 22 mitigation actions grouped according to interventions in land-use, crop production, livestock production, or nutrient and soil management. Presenting outcomes, he said impacts of countries' actions were both measurable and effective, or difficult to measure, yet likely to have an impact, while others were not effective at all.

Montgomery, presenting on behalf of Lini Wollenberg, CGIAR, reported that many countries are not able to document livestock emission reductions due to the lack of simple reporting systems and insufficient data. He highlighted the development of a report titled, "Measurement, Reporting and Verification of Livestock GHG emissions by Developing Countries in the UNFCCC," aimed at providing solutions for MRV in developing countries. Montgomery also drew attention to the Climate, Food and Farming and Global Research Alliance Development Scholarships (CLIFF-GRADS) programme. He said the programme provides scholarships to budding agricultural scientists from developing countries for PhD and short-term scientific training and research on topics related to measurement and management of GHG emissions and carbon storage in agricultural systems. He reported that 33 fellows from 18 countries will be partnering with research organizations through this programme by 2019.

In the discussion, participants posed questions about the robustness of emission factors to climatic change and how to manage inventories in light of diverse farm systems. Panelists also discussed the importance of having an integrated land policy that connects agriculture to water and biodiversity management,

understanding that different land types are best suited to different activities, and nutrient management optimization.

### ***Raising the Ambition of Agriculture in NDCs: 2020 and Beyond***

Act!on Agriculture's final session, moderated by John Carnegie, Executive Director Energy & Infrastructure, BusinessNZ, focused on the role of the agriculture sector in raising ambition for mitigating emissions ahead of the 2020 NDC review period.

In a keynote address, Sigrid Kaag, Minister for Foreign Trade and Development Cooperation, the Netherlands, stressed the importance of access to relevant technology to ensure GHG emission reductions and meeting NDCs. Her country, she said, is promoting reductions in raw material use and efficiency to reduce emissions from agriculture. She underscored her country's commitment to helping developing countries build climate resilience through the Dutch Diamond Approach of promoting public-private partnerships. She stressed that, to achieve adaptation, agricultural productivity in developing countries must be increased to enhance the competitiveness of smallholder farmers and achieve the SDGs, particularly those related to food security and poverty eradication.

Manish Bapna, World Resources Institute (WRI), said the key question is, "How can the world adequately feed nearly 10 billion people by 2050 in a manner that advances economic development while reducing pressure on the climate, water and ecosystems?" He shared findings from a WRI report on this issue, noting its finding that to feed the world in 2050, 56% more food must be produced without expanding agricultural land and while lowering agricultural emissions by 67%. The key levers for achieving this, he said, include: reducing food loss and waste; shifting to healthier and more sustainable diets, noting that lamb and beef require far more land and produce far more GHG emissions than other food sources; increasing agricultural productivity; restoring natural ecosystems, especially peatlands; improving wild fisheries management; and reducing GHG emissions from agriculture. He



**Manish Bapna**, World Resources Institute

closed by highlighting the lack of specificity regarding agriculture in NDCs and called on the agriculture community to help raise sectoral ambition as part of revising NDCs in 2020.

Ben O'Brien, Beef + Lamb New Zealand, began by highlighting how New Zealand's lamb and beef sector has increased its efficiency, and reduced its animal numbers and GHG emissions, while improving the value of production. He noted that after achieving major efficiency gains, future reductions in GHG emissions will be harder to achieve. O'Brien described Beef + Lamb New Zealand's environmental strategy, noting specific components, such as developing a farmer-friendly GHG calculator, holding carbon workshops for farmers, and working towards carbon-zero certification schemes. He closed by outlining recent research suggesting the need to interrogate methodologies for calculating the warming potential of short-lived climate pollutants.

During the panel, moderated by Kristen Ann Hite, Oxfam International, Martien van Nieuwkoop, Director of Global Agriculture, World Bank, said public and private support for food systems should be redirected towards ensuring positive environmental outcomes. He highlighted the 'Maximizing Finance for Development' approach, which maximizes development resources by establishing a systematic framework to identify opportunities to facilitate private sector investment. He cited the 'Cocoa and Forests Initiative' as an example saying this public-private partnership, aimed at preventing further deforestation and illegal cocoa production, will play a crucial role in sequestering carbon stocks. He said that incentives from prize competitions for rice paddy farmers in Vietnam is not only leading to higher yields but also producing co-benefits in carbon emission reductions.

Kimaren Stanley Riamit, Indigenous Livelihoods Enhancement Partners, said pastoralism is a lesser-known form of livestock production, defining it as a production system practiced by indigenous communities in drylands. He said this sector sequesters 34% of global carbon stocks, and has a low carbon footprint since pastoralism is founded on sustaining landscapes through principles of living in harmony with nature. Pastoralism, he reported, is threatened by 'green growth,' which drives land grabs and the loss of pastureland. Raising ambition for these communities, he said, means ensuring security of collective land

tenure, slowing land fragmentation, accessing technologies for early warning systems, and building on indigenous knowledge systems to ensure continued carbon sequestration.

In the discussion, panelists considered: how to effectively integrate scientific and traditional knowledge, with disaster early warning systems highlighted as an area where this works well; how small-holder farmers can access World Bank funds by engaging in supported government initiatives; the value of farmer-to-farmer collaboration, both within and across countries; the need to remove ineffective government agricultural expenditures; the need to continue investing in science and research; and the importance of honestly confronting the tradeoffs that will be required to meet the 1.5°C temperature target and supporting a just transition for those who might be adversely affected.

Hayden Montgomery, GRA, stressed that while we treat agriculture as a 'sector,' it is a biological system that is leaky, diverse and emits a range of GHGs based on the activities of billions of people around the world. "There is no silver bullet, and no single solution," he underscored. He also highlighted the need to address the "low-hanging fruit" of food loss and wastage, promote research and development, and remain cognizant of farmers' incentives.

Michael Creed, Minister for Agriculture, Food and the Marine, Ireland, offered remarks to close the Act!on Agriculture event. He stressed that agriculture plays a key role in achieving the goals of the Paris Agreement and reducing hunger to help achieve the SDGs. He also noted the vulnerability of food production systems to climate change and the relative difficulty of achieving emission reductions in the sector. Creed also shared an update of Ireland's efforts towards achieving carbon-neutrality in the agriculture sector through reducing emissions, increasing carbon sequestration, and displacing fossil fuels and energy intensive practices. Reflecting on the overall state of agriculture in light of climate change, he concluded by saying "the future is bright and promising, but does not promise to be easy." He closed the event at 6:01 pm.



L-R: **Manish Bapna**, World Resources Institute; **Ben O'Brien**, Beef + Lamb New Zealand; **Martien Van Nieuwkoop**, World Bank; **Stanley Kimaren Riamit**, ILEPA; and **Kristen Ann Hite**, Oxfam International