

# 2<sup>ND</sup> PLENARY MEETING OF THE INTERNATIONAL BIOECONOMY FORUM

**Vancouver, 27-28 May 2019**

Forest Sciences Centre, University of British Columbia (UBC), 2424 Main Mall, Vancouver,  
British Columbia (BC), Canada

## Minutes

### 1. Opening Remarks by IBF Co-Chairs

Natural Resource Canada (NRCan) - Canadian Forest Service (CFS) Assistant Deputy Minister (ADM) Beth MacNeil welcomed the participants of the 2<sup>nd</sup> plenary meeting of the International Bioeconomy Forum (IBF) to Vancouver. In her opening remarks, she reaffirmed that the bioeconomy is extremely important for Canada, the forest sector, and innovation, particularly in British Columbia (BC), which is home to pine forests and has experienced more wildfires and trade disputes in recent years. Canada has invested significantly in the Bioeconomy including \$251M to advance Canada's Bioeconomy Framework in which the federal government is working with provinces. Forest biomass will be important in the transition to a low carbon economy. ADM MacNeil defined successful outcomes for the meeting: 1) governance; 2) vision statement; and, 3) the Working Group (WG) roadmaps.

ADM MacNeil highlighted that the IBF is important to promote research and innovation, as well as to learn from each other in the spirit of inclusiveness and work together to address shared challenges. She reiterated the importance of open innovation and she reaffirmed that she would like to see concrete actions resulting from the meeting.

In order to progress with the IBF, ADM MacNeil outlined that her priorities are: advancing the forest-based bioeconomy for the next 18 months, promoting the circular economy, advancing action on environmental issues, and supporting the development of Canada's bioeconomy sector and expertise. Women in Science, Technology, Engineering and Mathematics (STEM) is an important priority for the Government of Canada and ADM MacNeil observed that she was pleased to see a number of women participating in the meeting.

John Bell, Director at the European Commission (EC), provided some additional remarks. John Bell noted that in October 2018, the EC published an updated Bioeconomy Strategy, focussing on sustainability and circularity. The strategy aims to deliver on sustainable economic development, decarbonisation, and disaster risk management with science that builds value chains. Some stakeholders felt excluded when previous strategies largely focussed on technologies and not sustainability, and the updated European Bioeconomy Strategy is working to integrate sustainability better and the IBF has an important part to play. John Bell noted that the contribution of the IBF to research and innovation, as well as to international cooperation, is very important, highlighting that the November 2018 Working Group meetings were a critical point in this regard. He posed a question to participants: How can we continue to support and sustain commitment among all members?

John Bell noted that Horizon Europe R&I program of 100B Euros could provide a substantial contribution in working towards bioeconomy solutions. He recognized that IBF members can do more together than just working alone, but he explained that we must identify the added value for us working together, clarify the ambition and access to the IBF, and how to address massive transitions such as climate change – and that commitment is needed from all IBF members in moving these forward. John Bell expressed satisfaction in seeing that EU member states are increasingly developing their own bioeconomy strategies, which is widening our collective thinking on the bioeconomy.

John Bell outlined his vision to further the IBF and working group roadmaps: 1) outline the purpose and ambition of the IBF; and 2) develop an element related to access in terms of inclusiveness based on gender, diversity, especially of young researchers, as we must involve more people in the climate transition framework.

ADM MacNeil then initiated a roundtable for participant introductions (refer to Appendix).

## 2. IBF Governance Session

ADM Beth MacNeil co-chaired the session on IBF governance.

The first discussion topic was new memberships and recruitment. The delegate from Japan, Dr. Yoshiyuki Fujishima, was welcomed to the meeting and he reaffirmed that he will consider Japan's membership on the IBF as an observer. Dr. Fujishima noted that for Japan, sustainability is an issue. There is a lack of understanding of sustainable, bio-based materials by the public. Additionally, he noted that Japan has heavy subsidies on oil, and bioeconomy research and innovation (R&I) is a great need. Japan's interest in participating in the IBF is to learn from the experiences of other countries in managing these issues.

- **Action item:** Japan to consider and confirm observer status on the IBF.

The next item was a discussion on IBF co-chairship. Roman Brenne, EC representative at the IBF Secretariat, presented on roles and responsibilities of the IBF co-chairs. He highlighted that this is a two-year mandate that would start at the end of 2019, that the co-chairs are the main administrative body (i.e., the Secretariat), and that this is not a substantial financial commitment. In 2020, the EC will organize the next IBF plenary meeting and in 2021, the new co-chair country will be responsible for organizing such an event.

To date, no co-chair application has been submitted to the Secretariat. Nominations will be accepted by the Secretariat until the end of September 2019. ***(Note: this deadline has been extended to end of December 2019)***

- **Action item:** Interested countries are asked to submit their co-chair applications to the Secretariat by the end of September 2019. ***(Note: this deadline has been extended to end of December 2019)***

- The third item of business was a discussion on potential types of organizations to consider for membership in the Plenary and in the Working Groups (WG) (e.g. industry associations).

Sara Sarkar, Canada's (AAFC) representative at the IBF Secretariat, presented on the context for this discussion. She posed the question: "Should private corporations, industry associations or non-profit organizations be accepted as members, and if so, what type?" As a real-world example, Syngenta, a Swiss agrochemical and seed producer, expressed interest in becoming a member of the Plant Health WG. Dr Sarkar noted that, on the one hand, this could lead to the perception that the IBF is favouring some companies over others, while, on the other hand, having industry input in the WGs could encourage bioeconomy commercialization. She presented several options for membership: keeping the IBF plenary membership limited to government organizations, allowing individual WGs to decide on their members, and allowing industry associations to join as IBF plenary members.

ADM MacNeil opened the floor for discussion on potential IBF membership. Participants noted:

- The IBF should broaden its membership, allowing different types of organizations (e.g. observer status to private companies). However, the issue of fairness among large and small/medium companies was raised as a concern. (P. Bilodeau)
- When private companies come in, research and innovation (R&I) would become short-termed and perception could suffer; depends on what the aims of the group are; if looking at private companies than IP issues may arise; it is important to have the voice of the end user (M. Kennedy)
- The IBF needs a long-term strategy (15-20 years); input from industry would be valuable at WG level (P. Chitnis)
- Industry participation is risky, but the IBF needs industry for implementation; fairness is an issue – an option would be industry associations as they involve both industry and end users (Y. Fujishima)
- Individual companies risky, associations could be an option. Other organizations like the Ellen MacArthur Foundation would be a better fit. (E. MacRae)
- Good balance of different stakeholders is important (A. Sessitsch)
- Commercialization important, but the role of the industry should be defined first (B. Mkhize)
- Associations better than individual companies (K. Rashamuse)
- The IBF is in a formative stage, we need to define an IBF Vision to provide clarity on the role each of these players and we should be cautious on making a blanket statement (B. Girard)
- How many members do we want to have? Need committed members, too many members can make it difficult (G. Saindon)
- Industry associations have significant value as end-users (M. Kennedy)

- Scientific societies should participate, we should look at involving academic institutes and networks (M. Mishkind)
- Industry participation a risk, especially individual organizations, NGOs would suit better (A. Houde)
- To keep a balance between representation, we should consider having a portfolio of different stakeholders (A. Sessitsch)
- The IBF needs to convene the right people, open up knowledge and make it accessible. Membership should be based on the principles of inclusiveness, transparency and commitment (J. Bell)

Dr. Sarkar then posed a question to participants: “Should the IBF Governance Note be updated to include a code of ethics or diversity code?” Participants voted unanimously in favour.

To close the session on governance, John Bell remarked that the IBF is evolving, and we have to make sure to convene the main players to be effective. He also summarized the discussions, noting that it is vital to make connections with industry, though Europe strongly prioritizes independent research and evaluation. Every time industry is involved in decision-making, questions arise as to the independence of the research and potential conflicts of interest. On the other hand, companies are vital for information transfer and innovation, and scoping a realistic vision. The IBF must consider various types of membership and their added benefits, such as industry, scientific societies, and others, from diverse perspectives and regions. He noted that good governance within the IBF framework includes the principles of inclusiveness, transparency and commitment.

ADM MacNeil tasked the Secretariat to draft a document summarizing the various potential members, their value, and mechanisms for participation (e.g. IBF vs. WGs, observers vs. members).

- **Action items:**
  - Secretariat to draft a document summarizing the various options for IBF membership, September 2019;
  - Dr. Sarkar to respond to Syngenta;
  - Secretariat to draft a code of ethics / diversity code for feedback, September 2019.

### **3. IBF Working Group Proposal: Bioeconomy Indicators**

Anne Katrin Bogdanski, representative of the United Nation’s Food and Agriculture Organization (FAO), made a video presentation on the importance of working on bioeconomy indicators. The FAO received a mandate to work on “food-first sustainable bioeconomy“, given by 62 ministers at the Global Forum for Food and Agriculture in 2015 in Berlin. This underlined the need to develop a sustainable bioeconomy, including having clear and consistent indicators. The FAO recently embarked on a study regarding the potential of the bioeconomy and microbiome to address pressing issues such as malnutrition, obesity, and non-communicable diseases.

The FAO is currently working on sustainable bioeconomy guidelines (April 2017-August 2021). This work is being undertaken in partnership with the International Sustainable Bioeconomy Working Group, funded by the German Ministry for Food and Agriculture. Their work is in accordance with 10 aspirational principles and criteria, covering three dimensions: economic, social and environmental.

The FAO noted that many countries currently have bioeconomy strategies that both differ significantly, and agree on common elements, such as the need for indicators to monitor progress and sustainability, evaluate and adjust efforts, communicate results, and share information. One example is the Italian Bioeconomy Strategy, recently released, which includes a core set of performance indicators: biomass availability, the economy, employment, sustainability, energy consumption, job creation, etc.

The FAO is [conducting a review](#) of existing bioeconomy sustainability indicators, which would extract and analyse what is feasible, re-tailor a framework, avoid replication, etc. For example, Germany defined 15 bioeconomy indicators, 13 out of those derived from the sustainable development goal framework.

Through this process, the FAO identified several lessons-learned:

- Indicator setting needs a participatory approach – needs national and international exchange and stakeholder/expert engagement.
- Monitoring should not be set in stone, as this is a rapidly evolving field. Flexibility is needed.
- Selected indicators should match existing data sets where possible.
- A common set of core indicators vs. flexibility to reflect national circumstances and specific needs of the stakeholders.
- Can we provide some general guidance of how to develop frameworks for bioeconomy in a coherent way within and across countries? Transparency? Comparability?

Following the presentation, the FAO proposed the creation of an IBF Indicator WG. The vision of this group would be to improve international cooperation on monitoring around the world and set a basis for agreement on common principles, criteria and indicators. Its aim would be to synchronize national bioeconomy monitoring activities across countries to ensure a degree of comparability of bioeconomy progress. Specific objectives include: seeking agreement on commonly accepted principles, criteria and indicators; exchanging information about practices related to monitoring; and, increasing public knowledge.

Following this proposal, participants were asked if they would support formation of such a working group and identified several items for consideration:

- The JRC is responsible for the monitoring system and coordination of the EU bioeconomy framework; as a result, this topic is very important for the JRC, and they are very interested to be involved and coordinating approaches (L. Marelli)
- Indicators are very important, but should this be an overarching activity for all WGs as it is relevant to them all? (P. Bilodeau)

- Recommendation is that this could be the centre of expertise to develop indicators for members to use (AH Mathey)
- The next phase of the bioeconomy strategy (Canadian industry developed bioeconomy strategy) is implementation and participation in the WG would be useful to inform the Canadian perspective (MF McLaughlin)
- WG could give guidelines (P. Chitnis)
- South Africa launched bioeconomy strategy in 2013, difficult to measure the progress. Indicators would be welcomed (K. Rashamuse)
- Monitoring is useful but the decision makers may do something different (M. Kennedy)
- Alignment in the intent across countries is needed, but is it critical? (G. Saindon)
- Our job is not to be prescriptive but to give guidance on a fit-for-purpose Bioeconomy monitoring system. So the goal could be a blueprint/guidance note for monitoring the Bioeconomy and countries can pick and choose what suits them because it could be political (e.g. What is biomass, what is sustainability, are biofuels part of this or not?) We can assist in advising on the best knowledge to date of monitoring systems, as a tool where people can find info to set up a monitoring approach and that countries can use to set up their own principles and criteria (e.g. if the objective is to develop microbiome, then we can use a specific sets of indicators) (J. Bell)
- FAO can help countries to set up an indicator and monitoring framework, no general strategy because bioeconomy is too diverse (A. Bogdanski)
- **Decision point:**
  - Participants decided against a separate WG on bioeconomy indicators at this time. IBF members can provide advice to the existing FAO/JRC working group to review and develop a guidance document, which could be endorsed by IBF.
- **Action item:**
  - The FAO and JRC will jointly draft a guidance note to be prepared by February 2020. Do check-ins in ISPRES in September 2019 and/or secretariats by October 2019. Following member consultations, a final document will be released in 2020 in time for the next IBF Plenary.

#### **4. IBF Working Groups - Roadmap Presentations and Action Statements**

Under this agenda point, each WG lead was asked to give a brief presentation of the roadmaps, developed since the meetings in November 2018 in Ottawa, Canada. Gilles Saindon, Associate Assistant Deputy Minister (A/ADM), AAFC, moderated the WG roadmap presentations, as well as the presentation of the MicrobiomeSupport CSA.

## **Plant Health WG**

Christine Bissonnette, Canadian Sherpa for the Plant Health WG and AAFC representative, gave a presentation on the Plant Health roadmap. She noted that the WG was formed in July 2018 to facilitate collaborative research across the spectrum of needs and accelerate the improvement of global plant health. The Plant Health WG is co-led by AAFC and the USDA-NIFA and NSF. In their concept note, Canada and the US identified plant health research areas and common challenges, and discussed cross-cutting research areas (e.g. plant health in a changing climate, changing trade and tourism, spread of invasive species). They held their inaugural workshop in November 2018 in Ottawa, Canada, which resulted in a draft roadmap outlining their vision and objectives. Members include the EC (RTD and JRC), New Zealand, South Africa, Eupresco, and ETP Plants. The workshop was an opportunity to discuss plant health priorities and hold breakout sessions to share ideas about international collaboration, including overarching themes such as biovigilance, biosecurity, and invasive alien species.

The roadmap outlines the Plant Health WG mission, focus areas and planned activities.

**Mission:** to facilitate the creation of a network of networks that will share information and increase our capacity to respond to plant health threads in a changing environment.

**Focus areas:** biovigilance / agricultural biosecurity; tools, technologies and best practices; data knowledge and information exchange; and, discovery and information.

### **Action Items and Deliverables:**

- Members will conduct an internal mapping exercise on existing plant health networks, and an expert workshop – establish governance of the network
- Identify key questions of the network, including basic biological questions up to operational goals
- Identify funding opportunities and implement a workshop of experts - white paper on International Plant Health Networks

As part of their presentation, the Plant Health WG welcomed country leads to provide additional input into the roadmap and suggest representatives that may benefit from participating in the WG. At the next plenary meeting, the WG would like to cooperate with other WGs, particularly on microbiomes and ICT, in order to identify common goals or gaps that may lead to collaboration (Rubella Goswami).

The roadmap identified a number of potential funding opportunities to organize a workshop of experts including conference grants/workshops and Research Coordination Networks offered by USDA-NIFA and NSF, and funding through NSF's program Accelerating Research through International Network-to-Network Collaborations.

In the discussion, Gilles Saindon suggested that they examine the OECD CRP funding programme, which is particularly interesting for linking research and policy, and may provide funding or co-funding opportunities for exchange of staff, and joint conferences.

## **ICT in Precision Food Systems**

Dr. Max Kennedy, New Zealand Sherpa for the WG and representative of the New Zealand Ministry of Business, Innovation and Employment, presented the WG roadmap. The presentation outlined the WG's vision:

“to foster collaboration in pre-competitive science across multi-scale, cross disciplines, challenges, barriers, and gaps related to the development, adoption, and implications of digital technology to all aspects of the food system from production to consumption. This will ensure that the power of digital technologies has been harnessed to transform food and bio-based product systems to support a sustainable production system.”

His presentation also identified the WG's research outcome targets:

- Influence in the redesigning of food production systems
- Cutting edge innovation & technology
- Harnessing the power of big data and digital technologies
- Transparency
- Accelerating the adoption of technology

As well as key research questions:

- How can ICT assist in emerging disruption in agri-food system, optimize post-harvest resource efficiency, enable transparency and traceability along the value chain, and improve production efficiency and quality of human-machine interactions?
- What ICT technologies are required to achieve transition?
- What are the barriers to the adoption of ICT adoption?
- How can ICT adoption be increased?
- How can we measure and identify important variables?

The presentation outlined action items moving forwards:

- ERA-NET proposal: *Digital Technologies for a Sustainable AgriFood System: A strategic R&I agenda*
  - Specific co-fund call: ICT-AGRI-3; Outcome June 2019
- Considerations for National Big Data Strategy: “Big data in Agriculture in Canada and Australia”
- University of New England (Australia) Centre of Excellence in Applied Agricultural Remote Sensing
- Canadian and New Zealand Space Agencies
- New Zealand Bioeconomy in the Digital Age (AgResearch)

Later in 2019, the ICT WG will hold their technical meeting. The goal of this meeting will be to increase knowledge and participation in the group from a wider range of researchers.

In the discussion, participants identified a number of considerations:

- ICT vs. AI? – AI is at the decision level, ICT provides data (unknown)
- Linkage to industry? Part of the conversation? – not yet, but needed (P. Bilodeau)
- EU is working on the future of food systems, big partnerships will be built. (J. Bell)
- Collaboration with space agencies, e.g. observation needs from Galileo? (J. Bell)
- We need business models that affect farmers, e.g. farmers as tenants of data being leased by companies. (J. Bell)
- What about large cooperation regarding the treatment of data? New business models? (J. Bell)
- Canada will launch three satellites to collect new data, large calculator in Vancouver. Canada also has two superclusters: Canada's Digital Technology Supercluster (based in British Columbia with UBC as a founding member) and AI-Powered Supply Chains Supercluster (based in Quebec). (G. Saindon)
- SCAR made a positive evaluation of ICT AGRI. The coordinator for the ERA-NET would like to see topics raised during the workshop be included as additional topics. There is a need for additional funds from countries participating in the WG to support additional research, as well as for additional funds to invest in the technology, for US support by IAR and USDA. (B. Kovacs)

### **Forest Bioeconomy WG**

Dr. Anne-Hélène Mathey, Natural Resources Canada and Dr. Elspeth MacRae, New Zealand's Scion Research Institute, co-leads of the Forest Bioeconomy WG, presented their roadmap. They highlighted that the bioeconomy offers new opportunities:

- Companies are re-thinking residue use from forests, opportunities to move up the value chain or take a new brand position, diversification of products, services and markets
- The bioeconomy promotes environmentally effective alternatives to non-renewables, solutions to mitigate GHGs, rural economic development, while encouraging new entrants into the new value chain

They noted that the WG aims to build a consistent direction, thereby aiming to facilitate science-informed market development for emerging forest-based bioproducts. It also focuses on policy alignment and horizontal initiatives addressing forest biomass sustainability, forest value chains, forest bioproducts, and outreach and education.

The Forest Bioeconomy WG roadmap outlined:

- Vision: WG aims to be a credible and globally recognized resource group that facilitates collaboration and coordinated actions among members to support the contribution of the forest sector to the bioeconomy, facilitates outreach and communication, and informs policies

- Focus areas: communication strategies, data and monitoring, identifying and addressing bottlenecks, opportunities and risks
- Potential projects:
  - Compendium of member country's forest contributions to the UN SDGs, highlighting the forest bioeconomy contribution
  - Compendium of communication practises and strategies by governments in member countries, with accompanying analysis, highlighting opportunities and gaps
  - National inventories of data, identifying clear indicators to report on the status in each member countries
  - Case studies with lessons learned by member countries, addressing how to overcome identified bottlenecks and risks to bioeconomy deployment and development

In the discussion, participants noted the UBC initiative on Boreal Forest 1<sup>st</sup> Workshop, which is an opportunity to foster collaborations internationally.

### **Microbiome WG**

Marios Markakis, Microbiome Sherpa and European Commission representative, presented on the Microbiome WG roadmap.

He noted that:

- The EC currently has 535 microbiome projects, €1.4 billion investment in FP7 and H2020, 50% of this to human microbiome
- A Global Microbiome Initiative was called for within the scientific community
- Draft of Scoping Paper in progress
- Possible Food System Wheat-Pasture Microbiome International R&I Initiative: Canada and New Zealand are active, but further commitment required, including money for events (e.g. conferences, meetings, workshops, international R&I, joint newsletters, brochures, etc.)
- Global Crop Microbiome and Sustainable Agriculture Initiative (Braj Singh) – under the IBF umbrella?
- R&I Days in 24-26 September 2019 in Brussels
- Coordinators' Day in Brussels (6 June 2019)
- SFS-01-2018: Biodiversity in Action – SoildiverAgro, Excalibur
- Trends in Biotechnology paper on microbiomes by A. Malyska et al.
- Nature or Science publication as an aim to convince that we are a focal point of the microbiome topic
- Train the next generation of scientists by MSCA Actions

- How can microbiomes provide a healthy diet? Microbiomes for prevention and/or treatment of NCD? Microbiomes for less pesticide and fertilizer input in agriculture? Microbiomes for climate change?

He also showed a video from the EC's Food 2030 initiative on disseminating the definition of microbiomes.

In the discussion, participants noted:

- How does the coordination actually work? - Coordination in EU e.g. through international associations; Horizon Europe Missions, e.g. on soil, here we can create partnerships; China has a very active work group (P. Bilodeau)
- New commission in October 2019 could use microbiomes as a flagship for Europe; food systems microbiomes very important topic in the next 5 years - "partners" (supporters) are needed (J. Bell)
- Connection between soil, plants and food, could be a good area to align priorities (P. Chitnis)

### **Microbiome CSA**

Angela Sessitsch, AIT Austrian Institute of Technology, presented on Microbiome CSA Support Group activities.

She noted the aims of the project, which currently has 29 partners, including most IBF countries:

- Identification and mapping of microbiome activities in the EU and worldwide, including programs and facilities, along the food chain and beyond
- Creating a platform for scientists, regulatory experts, industry, funding and policy organizations
- Improve use of existing data, to allow comparability and improved mining of microbiome data (microbiome standards and best practices)
- Define strategic agendas to enable microbiome applications in the food sector and beyond
- Collaboration and coordination in support of a sustainable bioeconomy
- Raising awareness and exchange of knowledge across scientific and political communities, including the International Bioeconomy Forum (IBF) and the general public

She also noted their major activities to date:

- Kick-off Meeting linked with IBF Meeting in Ottawa, Nov 2018
- Common Ground Workshop kicking off mapping exercise, March 2019, November 2019, in Vienna (app. 110 participants including different stakeholders)
- Microbiome Definition Workshop, March 2019, Tulln, Austria

- Biobanking Workshop, March 2019, Tulln, Austria
- Dissemination activities, MicrobiomeAmbassador initiative
- **Decision point:**
  - All WG roadmaps were unanimously passed by participants.

## 5. Bioeconomy Poster Session

During lunch, 11 graduate and postgraduate students presented posters on their cutting-edge bioeconomy research. This session was opened by remarks from John Innes, UBC Dean of the Faculty of Forestry, and David Kitts, Dean of the Faculty of Land and Food Systems.

John Innes remarked that UBC has several bioeconomy initiatives, such as the Clean Energy Centre, the BC Bioproduct Alliance, a brand new program on bioeconomy science and technologies, and a strong and increasing faculty team, expected to make a difference in this area, and to put Canada on a bioeconomy trajectory.

David Kitts discussed pest and plant interactions and the evolution of food systems. He identified key points, including climate control and GHG emissions, food processing, safety, quality and nutrition. Dr. Kitts identified two pillars for his faculty's bioeconomy activities:

- Pillar 1: Climate change and water soil interaction, management of resources, Bboproducts, plant-animal production systems, and biotechnology (fertility and reproductive science) animal welfare programme
- Pillar 2: Food security (food choices, nutriments requirements, health), nutrient content of food, nutritional quality and density, process engineering and gaps on plant and animal interactions

The Food security faculty is comprised of 47 members and 11 graduate programmes.

## 6. Implementing the IBF Roadmaps

This agenda item focused on identifying best practices for supporting the implementation of the IBF WG roadmaps. John Bell, Director of the Healthy Planet Directorate at the European Commission, chaired this item.

### Survey Results

The first item was a presentation by Nicole Halseth, Canadian Forest Service representative and support for the IBF Secretariat, on the results of a recent IBF WG survey. The survey aimed to identify the key risks and challenges, as perceived by WG members, which could influence their ability to implement the roadmaps.

The survey identified:

- Key risks: adequate resources, time, funding, personnel, lack of clarity – significant challenges

- Potential tools and solutions for success: commitment, targeted outcomes, clear & consistent communication
- Benefits and opportunities: global awareness (increased international awareness, best practices, building momentum, strong participation), collective action (better data and knowledge, best practises, pooling capacity and resources, model for international and development in the bioeconomy), other benefits (sustainability, economic returns, environmental benefits, progress towards bioeconomy)

The survey identified several challenges, which could affect the roadmap implementation. However, there remains available a suite of possible solutions and tools which could mitigate these risks, and the benefits of doing so could be substantial.

During the discussion, participants noted:

- Roadmaps require a level of consistent support (unknown)
- Should we continue to create WGs or stick to the existing ones? The IBF should keep this level of flexibility since WGs work at different levels (B. Girard)
- One of the opportunities is to look at our existing mechanisms and to see how to connect them and connect initiatives; how can we influence the whole community and stakeholders? (M. Kennedy)
- We do not look for cash, but for influence and alignment (J. Bell)
- Ministries & Scientists should discuss, what are the priorities? Commitment of states, ministries required (B. Kovacs)
- For AAFC, we align our internal call for proposals with international priorities to leverage our funding and international expertise; alignment of agendas important to benefit from the pool of knowledge (G. Saindon)
- Product and market diversification - how competitive are we? Canada wants to be a leader internationally on natural resource utilization. (B. MacNeil)
- What are we doing already? What can we do in the future? (unknown)
- **Action item:**
  - Beth MacNeil tasked each WG to review the survey results and the information presented today and come up with one recommendation on how they could collaborate and align their funding for presentation at the IBF 2020.

### **Best Practices**

Benoit Girard, Director General of Coastal Region, AAFC, presented on best practices for roadmap implementation. The presentation shared AAFC's experience with international cooperation, e.g. H2020, and provided examples of best practices in international collaboration.

International partnerships support agricultural innovation, research and development that help build common understanding of issues and solutions, bring more expertise and resources to address complex problems, leverage science investments, and strengthen country to country relations. International partnerships operate on various scales:

- Bilateral cooperation, global multilateral cooperation, regional science cooperation

AAFC science collaborations are delivered through multiple science cooperation mechanisms:

- Science workshops, personnel exchange, science networks, twinned science projects, joint laboratories, targeted joint calls, “Linked” calls for proposals
- For example, AAFC participates in ERA-NETs (SusCrop ERA-NET) and Horizon 2020 projects (Mycokey, Feed-a-Gene)

The desired outcomes of this meeting are clear roadmaps for science and policy cooperation that can be implemented with tangible deliverables. Our success will be determined through our ability in identifying a key funding mechanism model that will be inclusive and flexible to allow all IBF member countries to participate. Examples of best practices of international collaboration includes:

- BELMONT Forum – partnership of funding organisations, environmental sciences;
- GACD – global alliance of health research funders to fight against chronic diseases
- AORA – Atlantic Ocean Research Alliance
- Flagships H2020

The IBF Governance Note specifically names the Belmont Forum as a body with a similar structure. The AORA was created in 2013 when the Galway Statement on Atlantic Ocean Cooperation was signed by Canada, the US, and the EU. Flagships are partnering models for long-term European co-operative research. These are models which we can further explore which constitute large scale multilateral platforms.

How do we ensure alignment between current and future activities?

### **Success Story: Galway Statement on Atlantic Ocean Cooperation**

Jyrki Suominen, European Commission and Karen Davison, Department of Fisheries and Oceans of Canada, gave a joint presentation on the Galway Statement on Atlantic Ocean Cooperation, widely regarded as a success in international science cooperation.

The presentation identified several items:

- Galway Statement signed 2013 in Galway, Ireland
- Resulted in the AORA: Atlantic Ocean Research Alliance
- Membership: EU, CAN, US
- Objectives: Improve ocean health and stewardship; promote sustainable management of resources; improved ecosystem assessments and forecasts and deeper understanding of vulnerabilities and risks, including climate change

- Governance:
  - Arran McPherson, Acting Assistant Deputy Minister, Ecosystems and Oceans Science, Fisheries and Oceans Canada
  - John Bell, Director at DG RTD, EC
  - Craig McLean, NOAA Assistant Administrator for Oceans and Atmospheric Research

It further elaborated on several items:

- Vision and strong governance, and continuous guidance and support at the political level are needed
- Priority areas of cooperation – “The What” – Atlantic seabed mapping and characterization, aquaculture, ocean literacy, ocean health and stressors, ocean observation and prediction
- Different WGs and task groups; stakeholder input will be key
- Priority areas of cooperation – “The How” – organizing, aligning and leveraging research; better coordination of data sharing, interoperability and coordination of observing infrastructure; promoting researcher mobility; better coordination and planning for better alignment of activities and resources
- Galway Implementation – constant evaluation, crucial to provide guidance to the projects that are funded
- Major H2020 contributions, AORA CSA for the implementation

The success of the implementation of the Galway Statement relied on a shared vision of the Atlantic and a strong political mandate to support and implement it.

At the end of the presentation, a video advertising the group was shown as an example of successful outreach and education: <https://www.youtube.com/watch?v=EMnCytZcErA>.

South Africa, a partner on the Belém Statement with the EU and Brazil, noted that there is a need for support at a high political level to make cooperation easier. The Belém Statement, under the AORA, is a South-South Framework for Scientific and Technical Cooperation in the South and Tropical Atlantic and Southern Oceans. South Africa reiterated that when you have political support from the highest level and a mandate to support the initiative, it is easier to leverage resources.

### **Discussion on Best Practices**

Benoit Girard further led a discussion on best practices to support roadmap implementation. The WGs are at various stages of maturity, however examples of activities that could be undertaken by leads to ensure advancement of the WGs and successful implementation of the roadmap include:

- Monitoring progress: check-in with members through teleconference meetings between in person workshops; updating the roadmap as action items and deliverables are completed.

- Communicating results: yearly reporting to IBF Plenary members; yearly reporting to the IBF Secretariat on current state of working group.
- Leveraging opportunities: bilateral collaboration on scientific projects; personnel exchange and scientific networking.

During the discussion, participants identified several items:

- Should the IBF explore developing a statement similar to the Galway Statement or a flagship that would mitigate some of the challenges and build commitment? (S. Sarkar)
- What is the IBF target group? What do we want to say in such a statement and who do we want to say it to?
- Microbiome would be an area to evolve like AORA, bringing the importance of microbiomes to a higher political level. Potential to work more with Microbiome CSA/other flagship initiatives
- Must ensure political ownership and delivery in an expression of international and political interest. We should work with the goal in mind to have our political masters present once we have deliverables. For example, Ministers want to know how is microbiome helping science. It would be important to bring political leaders together to present our work for example on microbiome. Politicians go to GBS. Important to have a good story to tell. Dinner with politicians at GBS to discuss a possible statement.
- May want to work first on determining who we are and where we want to go, start with developing communications products as recruitment tool for other countries
- Ensure vision statements by all working groups are reflected
- Could consider a potential future declaration, much like the Galway Statement.
- There is a need for more press at the higher governmental levels for IBF.
- **Action item:**
  - The EC will get in contact with the GBS organisation team, in order to organise the third IBF plenary meeting as side event to the next GBS, taking place in November 2020 in Berlin.
  - Explore opportunities for senior level meetings, press releases, joint statement, etc. regarding IBF at GBS/next plenary.

## 7. Networking Reception

At the end of Day 1, participants were invited to attend a networking reception at UBC's Sage Bistro, hosted by FPInnovations. The reception included a Welcome on behalf of the Musqueam Nation, given by Elder Kwes' kwestin Jim Kew.

## 8. IBF in the Global Bioeconomy

Day 2 of the plenary meeting began with an overview on the European bioeconomy landscape, by Jyrki Suominen. He also noted that Horizon 2020's public consultation process was launched in June 2019. This agenda item was chaired by ADM Beth MacNeil.

*(See presentation)*

Chanchoura Schmoll, representative from the Canadian Forest Service at the IBF Secretariat, gave an overview presentation on the global bioeconomy landscape, highlighting the IBF's position and potential niche role.

*(See presentation)*

## 9. Break-Out Sessions

Angela Sessitsch, coordinator of the MicrobiomeSupport project, facilitated break-out sessions to discuss the role and vision of the IBF for the future.

Break-Out Session 1: Role of the IBF in the Global Bioeconomy, asked participants to consider:

- What is similar between IBF and other groups? What is different?
- What should the role of the IBF be in the global landscape? (e.g. Facilitator, information broker, research / knowledge creator)
- Which type of contribution could come from IBF?
- Alignment with other global bioeconomy organizations? How should we work with others?
- How can the IBF continue to be relevant for global partners to collaborate and engage?

Break-Out Session 2: A Vision for the Future of the IBF, asked participants to consider:

- Where will the IBF be in three years?
- What will other people say about the IBF?
- How will we feel about it?
- What is your vision?

Participants then reconvened to report on the results of these break-out sessions to the group.

A full report of the breakout sessions is available upon request from the IBF Secretariat.

## 9. Wrap-up and Closing Remarks

Co-chairs ADM MacNeil and A/ADM Saindon provided closing remarks and thanked participants for their engagement.

The IBF Secretariat then summarized all key deliverables and next steps from the meeting:

### **Governance**

1. Deadline is end of September 2019 to submit applications for IBF co-chairship to the IBF Secretariat. (**Note: this deadline has been extend to end of December 2019**)
2. Interested new members or observers are requested to confirm their status to the IBF Secretariat.
3. An options paper on potential new categories of membership will be developed and circulated for consideration (September 2019, IBF Secretariat).
4. A Statement on Ethics and a Statement on Diversity and Inclusion will be adopted in the Governance Note. Draft text to be shared for feedback (September 2019, IBF Secretariat).

### **Vision**

1. The vision exercise identified several common ideas for the role and future of the IBF. These ideas will be consolidated into a few options for vision statements, circulated for review and feedback September 2019 (IBF Secretariat).

### **Working Group Activities**

1. All working group roadmaps were approved. Working Groups may now move forward with implementing proposed projects and actions.
2. The Joint Research Centre of the European Commission and the UN Food and Agriculture Organization will lead the bioeconomy indicators activities. In cooperation with further interested members, they will develop a draft bioeconomy indicators guidance note by February 2020 for members to review, with a product finalized by the third IBF plenary meeting in 2020. This document would serve as a tool for countries as they develop bioeconomy-monitoring approaches to set up principles, criteria and indicators, and it would be based on best knowledge and practices to date.

### **Roadmap Implementation**

1. Implementation discussions identified several best practices that could be applied to support the working groups.
2. IBF Working Group representatives were asked to review the survey results on risks and challenges, and provide one recommendation or action to be implemented within their group (February 2020, IBF Secretariat).
3. Each Working Group is to come up with a deliverable for presentation at the IBF Plenary 2020 on how to align its members' national funding or initiatives to implement their roadmap.

## **9. Tours: UBC and the Port of Vancouver**

The plenary meeting concluded with tours of bioeconomy highlights at UBC and the Port of Vancouver.

The walking tour of UBC included:

- FPInnovations' Vancouver facilities, focusing on tall wood buildings, renewable fuels, and advanced bio-sourced products;
- The Bioenergy Research and Development Facility, focusing on the Nexterra combined heat and power system; and,
- The Michael Smith Research Labs, including two presentations on biotechnology research and education.

The Port of Vancouver Tour covered the Inner Harbour, which includes viewing examples of nearly all cargo handling capabilities at the Port, including:

- Containers, agricultural products, cruise ships, coal, liquid bulk, mineral concentrates, potash, petroleum products, forest products, steel, and project cargo.

## Appendix – Participant List

- Alain Houde, Director of Research, Development and Technology (Agroecosystem Resilience), Science and Technology Branch, Agriculture and Agri-food Canada (AAFC), Canada (remote participant)
- Angela Sessitsch, Unit Head, AIT Austrian Institute of Technology, Austria
- Anne Sylvester, Program Director, National Science Foundation, United States of America (USA) (remote participant)
- Anne-Helene Mathey, Director, Economic Analysis Division, Natural Resources Canada (NRCan), Canada
- Babongile Ntombenhle Joyce Mkhize, Deputy Director: Bilateral Relations (Americas & Asia) Department of Science and Technology, South Africa
- Barna Kovacs, Secretary General, BIOEAST, Belgium
- Benoit Girard, Director General, Coastal Region, Science and Technology Branch, AAFC, Canada
- Beth MacNeil, Assistant Deputy Minister, NRCan, Canada
- Bo Yu, Professor, CAS-TWAS Center of Excellence for Biotechnology, Institute of Microbiology, Chinese Academy of Sciences, China
- Chanchoura Schmoll, Senior Economist, Canadian Forest Service, NRCan, Canada
- Christine Bissonnette, Policy Analyst, Science and Technology Branch, AAFC, Canada
- Elspeth MacRae, Chief Innovation and Science Officer, Scion, New Zealand
- Emmanuelle Maguin, Director of Research, INRA, France
- François Eudes, Director of Research, Development and Technology (Alberta), Science and Technology Branch, AAFC, Canada (remote participant)
- Gilles Saindon, Associate Assistant Deputy Minister, Science and Technology Branch, AAFC, Canada
- James Sandland, Director, Innovation, Bioeconomy & Indigenous Opportunities Branch, BC Ministry of Forests, Lands & Natural Resource Operations, Canada
- Jinguang Hu, Assistant Professor, University of Calgary, Canada
- John, Bell, Director of Healthy Planet, European Commission (EC), Belgium
- Jack Saddler, Professor, UBC, Canada
- Jyrki Suominen, Deputy Head of Unit Healthy Oceans & Seas, EC, Belgium
- Konanani Rashamuse, Director Industrial Bio-Economy, Department of Science and Technology, South Africa

- Luisa Marelli, Deputy Head of Unit, EC, Joint Research Centre (JRC), Bioeconomy Unit, Italy
- Marios Nektarios Markakis, Policy Officer, EC, DG RTD, Belgium
- Max Kennedy, Manager of Contestable Investments, New Zealand Ministry of Business, Innovation & Employment, New Zealand
- Michael Mishkind, Program Director, National Science Foundation, USA (remote participant)
- Murray Frederic McLaughlin, Advisor, Forest Product Innovations and Bioindustrial Innovation Canada, Canada
- Nicole Halseth, Policy Analyst, Canadian Forest Service, NRCan, Canada
- Parag Chitnis, Deputy Director, USDA-National Institute of Food and Agriculture, USA
- Pierre Bilodeau, Executive Director, Canadian Food Inspection Agency, Canada
- Ranjana Sharma, Director of Research, Development and Technology (Nova Scotia, Newfoundland), Science and Technology Branch, AAFC, Canada (remote participant)
- Richard McDowell, Chief Scientist, Our Land and Water National Science Challenge, New Zealand
- Roman Brenne, Policy Assistant, EC, Belgium
- Rubella Goswami, National Program Leader, USDA-National Institute of Food and Agriculture, USA (remote participant)
- Sara Sarkar, Senior Analyst, Science and Technology Branch, AAFC, Canada
- Terra Jamieson, Policy Advisor (Clean Technologies), Science and Technology Branch, AAFC, Canada (remote participant)
- Timothy Caldecott, BC Provincial Leader, FPInnovations, Canada
- Yoshiyuki Fujishima, Senior Analyst, New Energy and Industrial Technology Development Organization, Japan