Question 1- Are you satisfied the outlined Pillars represent the structure of the Irish bioeconomy?

- Yes, I am satisfied that the pillars outlined by the Irish government represents the Irish bioeconomy as it touches on each and every part of our bioeconomy which is more relevant than ever as we look to move to a more green and sustainable way of living and also looked to move to zero carbon emissions by 2050. These pillars have to cover every inch of our bio economy because they all interlink with each other and cannot move forward without the other pillars moving forward also. I agree that governance should be at the centre of them all as governance refers to the systems, processes and institutions that can be put in place to allow growth in these pillars, regulations, policies, and laws can also be implemented for the good of each pillar to help reach their targets.

Question 2- Are there specific key performance indicators and/or targets the bioeconomy should be setting out to achieve to measure its implementation?

- Yes, there must be some sort of targets/ indicators to be put in place for each of the pillars as each sector needs a target to hit within a timeframe as it will put pressure on that sector to act quick to meet its target. I also think sanctions should be put in place for companies in sectors that don't reach their targets. If there are no targets set out or evidence that new implementations are working then we don't know if the new implementations are working. For example, the agricultural sector has a target of 250,000 Ha of land turn into organic farming by 2025.

Question 3- What other key issues should the Governance Pillar deal with?

- The Governance Pillar should mainly be helping as much as possible to get the right funding, implement the right systems, processes and institutions that can be set up in order to aid as much as possible the different sectors. Funding is a huge part of trying to have a successful bioeconomy and by giving the right funding to each sector, it will slowly benefit the overall bioeconomy in Ireland.

Question 4- What key issues should the Research, Development, and Innovation Pillar deal with?

Some key issues include:

Finding fresh prospects for innovation and expansion entails looking at new trends and technology as well as spotting possible regions for growth and diversification.

Setting priorities, assigning resources, and controlling the flow of ideas and information are all parts of managing the research and development process.

Building contacts with other organizations, academic institutions, and governmental organizations is part of developing partnerships and collaborations, which will aid improve research and development.

ensuring standards and regulations are followed: This includes making sure that technology, procedures, and products adhere to all applicable rules, laws, and norms.

Managing intellectual property entails safeguarding and making use of the company's patents, trademarks, and copyrights for financial gain.

Question 5- How could the RD&I bioeconomy approach been structured to support the enhancement, application and scaling-up of biological knowledge and bioeconomy solutions?

Creating a solid research foundation entails funding fundamental research and expanding our understanding of the big bioeconomy sectors including biotechnology, bioenergy, and bioprocessing.

Creating a trained workforce entails offering education and training programs to assist in preparing the next generation of bioeconomy workers.

Monitoring and evaluating progress entails keeping tabs on developments, assessing performance, and making appropriate modifications to make sure the bioeconomy strategy is accomplishing its aims and objectives.

Question 6-What key issues should the Nature, Climate & circular pillar deal with?

Climate change: This entails lowering greenhouse gas emissions, preparing for its effects, and supporting renewable energy sources.

Loss of biodiversity: This involves maintaining and protecting threatened and endangered species, safeguarding natural ecosystems, and encouraging environmentally friendly land use techniques.

Reducing the use of non-renewable resources, supporting circular economy principles, and adopting sustainable waste management are all examples of resource depletion.

Pollution of the air and water entails limiting the discharge of contaminants into these areas and fostering clean and healthy habitats.

Sustainable food systems: This entails encouraging environmentally friendly fishing and farming methods as well as lowering food waste.

Question 7- What key issues concerning consumption patterns need to be examined to close the gap between sustainable supply of biological resources and demand?

Overconsumption: This refers to cutting back on total use of natural resources, especially those that are non-renewable or derived from ecosystems that are in danger or endangered.

Unsustainable production practices: This entails recognizing and minimizing the use of production techniques that are detrimental to the environment and biodiversity, such as deforestation, overfishing, and excessive pesticide usage.

Consumer behaviour: This entails supporting consumer decisions that support sustainable manufacturing methods and fostering sustainable consumption habits, such as via education and awareness campaigns.

Resource waste: This also involves minimizing waste and improving resource efficiency, such as by putting circular economy concepts into practice.

In general, bridging the gap between sustainable supply and demand for biological resources will call for a multifaceted strategy that tackles the underlying factors behind unsustainable consumption patterns and promotes the adoption of sustainable practices all along the supply chain.

Question 8- What key issues should the Agricultural, Food & the marine pillar deal with?

The Agricultural, Food, and Marine pillar is responsible for ensuring the sustainable production of food and other agricultural products, as well as the conservation and management of marine resources. Some key issues include;

Climate change: Due to variations in temperature, precipitation, and sea level, the agricultural and marine industries are especially susceptible to its impacts.

Biodiversity loss: It's critical to develop solutions to reduce the impact that agriculture and fishing can have on biodiversity.

Food security: The Agricultural, Food, and Marine pillar's main objective is to make sure that everyone has access to adequate wholesome food.

Water management: It's critical to ensure that water is handled responsibly because it's a resource that is essential to both fishing and agriculture.

For sustainable agriculture, soil health is crucial, thus it's critical to identify strategies to preserve and enhance it.

Agri-food trade: The Agricultural, Food and Marine pillar should work to ensure the farmers, fishers, and processors in their countries have access to domestic and international markets.

Question 9- What key issues should the communities pillar deal with?

Affordable housing: A key objective of the Communities pillar is to guarantee that everyone has access to secure and affordable housing.

Income inequality: Since income disparity may have a detrimental effect on communities, it's critical to discover strategies for reducing it while fostering social inclusion.

Promoting the health and well-being of people and communities is a major objective of the Communities pillar.

Access to high-quality education is crucial for the growth of both people and communities.

Employment: It's crucial for the health of communities to guarantee that individuals have access to well-paying work.

Community engagement: Encouraging residents' active involvement in reshaping their neighbourhoods and cultivating a sense of belonging.

Working to guarantee that every person of a community is included and treated equitably, regardless of race, ethnicity, religion, age, gender, sexual orientation, or ability.

Infrastructure: Investing in the facilities—such as transportation networks, public parks, and community centres—necessary to sustain sustainable communities.

Question 10- Are local and regional policies ensuring the consideration of bioeconomy opportunities are in scope, and are coordinated approaches on such services in place at regional assembly and local authority with?

I found this question very hard to answer from an engineering point of view as it is hard to measure if local and regional policies have the bioeconomy's best interests at heart.

Question 11- What key issues should the Industry & Enterprise pillar deal with?

A bioeconomy strategy's Industry & Enterprise pillar should address several important concerns to promote the development and expansion of the bioeconomy. These may consist of:

Promoting investment in the bioeconomy: By fostering an environment that is conducive to business development and entrepreneurship, the industry and enterprise pillar should aim to promote investment in the bioeconomy.

Fostering innovation and R&D: The pillar should promote innovation and R&D in the bioeconomy by supporting bioeconomy initiatives and investing in research and development.

Facilitating the commercialization of bioeconomy goods and services: The pillar should assist in the creation and marketing of bioeconomy goods and services by giving financial assistance and other resources to firms.

Building and bolstering supply chains: To boost the availability of sustainable and renewable raw materials, the pillar should seek to establish and bolster the supply networks for bioeconomy goods and services.

International collaboration should be encouraged in the bioeconomy to exchange information, technology, and best practices, stimulate commerce, and create uniform standards.

Question 12-What lead market initiates could support entrepreneurship, development, innovation and the commercialisation of bio-based products, processes, information, and services.

Public procurement, Governments can use their purchasing power to create demand for bio-based products, processes, and service by specifying them in the public procurement contracts

Research and development funding: Governments can provide funding for research and development of bio-based products and processes, and services to support innovation and commercialization.

Networking and collaboration opportunities: Governments can support the development of networks and collaboration opportunities for entrepreneurs and businesses in the bioeconomy to promote the sharing of knowledge, technology, and best practices.

Governments can examine and change laws and regulations to encourage the creation and marketing of goods, procedures, and services made from biological materials.

Question 13- Due to the requirement for capital and operational investment what innovations aimed at financing infrastructures and technical and economic evaluation of innovation are necessary to scale up to the bioeconomy?

Innovative financing mechanisms, developing new financing mechanisms, such as crowdfunding, green bonds, and project finance, can help to attract investment for bioeconomy projects and infrastructure.

Risk reduction: Creating risk reduction tools like insurance, credit enhancement, and guarantees can assist to lower the risk of bioeconomy projects and draw in additional investors.

Life cycle assessment (LCA) and life cycle costing (LCC): These tools may be used to assess the economic and environmental performance of bioeconomy goods, processes, and services as well as to aid with investment decisions.

Innovation management: Developing innovation management frameworks can help to identify and support the most promising opportunities for innovation in the bioeconomy, and to manage the risk associated with innovation.

Question 14-What key issues should the knowledge & Skills Pillar deal with?

Education and training: The pillar should ensure that education and training programs are available to develop the knowledge and skills required for the bioeconomy.

Research and development: The pillar should finance initiatives related to the bioeconomy and invest in research and development to support this field.

Growth of human resources: The pillar should encourage the hiring, keeping, and educating of qualified personnel to promote the development of human resources in the bioeconomy.

Standardization and certification: To boost consumer trust and market acceptability, the pillar should support the creation and use of standards and certifications for bioeconomy goods, processes, and services.

International cooperation: The pillar should promote global information, technology, and best practices exchange as well as the creation of universal standards in the bioeconomy.

Question 15- Can the regional skills and regional enterprise approaches better support bioeconomy development?

The growth of the bioeconomy can be significantly aided by regional entrepreneurship strategies and expertise. These methods can aid in the development of a more focused and successful bioeconomy plan by concentrating on the unique requirements and resources of a given area. Following are some examples of how regional expertise and regional business strategies might help the growth of the bioeconomy:

Programs of education and training that are specifically adapted to the demands of the bioeconomy in each region can be found via the use of regional skills and entrepreneurial techniques.

Regional research and development: By providing funds and other resources for bioeconomy initiatives in a particular region, regional skills and enterprise methods can assist regional research and development in the bioeconomy.

Fostering innovation: By assisting the creation of novel, regionally-specific goods, procedures, and services, regional skills and entrepreneurial techniques may stimulate innovation in the bioeconomy.

Question 16-An important part of developing the bioeconomy is to determine `the most appropriate practices, treatments, technologies, logistics and business models to valorise ecosystem services, primary and secondary biomass resources. What role do advisory systems play in addressing this challenge?

Some ways advisory systems can address this challenge are:

Giving technical support: Advisory systems may give technical support to company owners, organizations, and other individuals to help them find and use the best procedures, methods, technologies, logistics, and economic models for valuing ecosystem services and biomass resources.

Finding possibilities: By examining resource availability and determining the most potential development regions, advisory systems can find chances for valorising environmental services and biomass resources.

Monitoring and evaluating the efficacy of various procedures, methods, tools, logistics, and economic models for valuing ecological services are capabilities of advisory systems.

Question 17- Are there any further pillars/issues which this action plan should address?

For now I the pillars for bioeconomy and their issues that entail cover a wide range of problems and ways on which we can improve our bioeconomy. Of course as time goes on, year after year there will be new developments in processes and technologies that will alter our pillars and their issues, hopefully for the better.

Question 18- Indicate what the top five priorities for action in the bioeconomy over the next three years should be?

1. Creating efficient and sustainable biofuel production is necessary for biofuels to have the potential to replace fossil fuels and cut greenhouse gas emissions.

2. Increasing the use of bioplastics: Bioplastics are a more environmentally friendly substitute for conventional plastics, and their usage should be increased to help minimize plastic waste and pollution.
3. Promoting the development of bio-based goods can help lessen the environmental effect of conventional products and encourage a circular economy. Examples of these products include bio paints, biofertilizers, and biopesticides.

4. Crop yields and food security can be increased because to developments in biotechnology and precision agriculture, especially in underdeveloped nations.

5. Supporting research and development: In order for the bioeconomy to reach its full potential, it is necessary to maintain financing fundamental, applied, and commercial research and development.