Towards a sustainable bio-based economy

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To ensure that the expanding production and processing of biomass is sustainable and delivers on its promises, the Roundtable on Sustainable Biomaterials (RSB) has created a global standard for sustainable production of biomass and biofuels. It is implemented through a voluntary certification system, recognized as a means to demonstrate compliance with the sustainability provisions of the European Renewable Energy Directive (2009/28/EC).

In the early 90s, the global awareness of environmental issues culminated with the United Nations Conference on Environment and Development in Rio (1992), also called the Earth Summit, which triggered the adoption of major international conventions such as the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC). These international conventions played an important role in creating a consistent framework for environmental protection and remediation. But more than twenty years after the Rio Earth Summit and Rio+20 last year, in spite of strenuous efforts from scientists, industries and the civil society to raise awareness on climate and environment issues, the expectations have fallen short regarding the necessary pivot towards a sustainable mode of economic growth – the sustainable development of mankind is still to come. With the emergence of new economic powers, and overall consumption of fossil resources continuing to rise, the modest results achieved through the Kyoto protocol (1997), the action plan adopted after Johannesburg's Summit (2002) or the EU's Climate-Energy Package (2012)[1] have been swamped.

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Thus, much is still needed in order to protect our environment, decrease the greenhouse gas intensity of our economies and avoid the worst climate change scenarios depicted by experts. A significant component of the solution, besides energy efficiency, is to decrease the relative share of products derived from petroleum in goods and services. While the substitution of fossil energy by biomass-derived energy is now being actively promoted in most countries as an immediate step towards a more sustainable energy mix, a much larger range of products derived from petroleum (e.g. plastics, chemicals, building materials) can also be substituted by biomass-derived equivalents, thus bringing the society closer to a bio-based economy.

But what if biomass-derived fuels and materials were no better or even worse than petroleum-derived products? What if greenhouse gas reductions of bio-based products were illusory? What if increased energy access were offset by important environmental and social damages, such as deforestation, water exhaustion or human rights infringement caused by these emerging supply chains?

With the ever-growing global hunger for energy and goods consumption, the uncontrolled and unregulated boom in biomass-derived products might add to the existing conflicts over land and pressure on natural resources to a point where the potential benefits of using biomass would be offset by negative effects on the planet and the people. This threat is perfectly illustrated by the retreat that followed the initial enthusiasm for biofuels at the beginning of the 21st century. Indirect and direct consequences of some biofuel projects can include unfair land deals, competition for land and resources with food production, increased deforestation and limited greenhouse gas benefits due to land-use change and massive use of fertilizers. These possible consequences contributed to the suspicion and sometimes hostility of the civil society against biofuels.

In reaction to this threat, the Roundtable on Sustainable Biomaterials (RSB – formerly the Roundtable on Sustainable Biofuels) was initiated in 2007 by the Swiss Federal Institute of Technology in Lausanne (EPFL) on the model of successful initiatives such as the Forest Stewardship Council and Fairtrade Standards.

Sustainability standards are being increasingly used by economic operators to demonstrate in a credible and objective way that their production chains bring about real benefits to the environment and to people. Thus, the RSB set out to create the global standard for sustainable production of biomass and biofuels, based on a multi-stakeholder consensus-building process. In 2013, it decided to expand the scope of its standard to all products derived from biomass, including bio-chemicals and intermediaries used to manufacture cosmetics, textiles or plastics. From its early years, the RSB strengthened its governance structure and is now counting more than 100 members, including leading industry players, non-governmental organisations, governmental agencies and UN bodies such as UNCTAD, UNEP and the UN FAO. As an official recognition of the openness and transparency of the RSB process, the ISEAL Alliance [2] accepted the RSB as Full Member in 2011.

As technologies and industries change, the RSB works to keep improving the definition and description of what sustainable biomass production and processing into bioenergy and biomaterials should look like, covering the entire supply chain from the farm/plantation/producer down to the final user. The RSB Standard therefore covers all direct environmental and social impacts of biomass production and processing, in particular the need to consult local stakeholders and obtain their free prior and informed consent; significantly reduce life-cycle greenhouse gas emissions; respect human rights (land, water and labor); enhance socio-economic development and food security where needed; conserve biodiversity and ecosystem services; protect and maintain soil, water and air quality; and make a responsible use of technologies. In March 2013, RSB Members also agreed to implement the *Low Indirect Impact Biofuels (LIIB)* [3] approach in the RSB certification process, in order to address indirect impacts of biofuels and biomaterials.

The RSB sustainability requirements are meant to achieve concrete and measurable impacts on supply chains and ensure that biomass-derived products deliver on their promises. Thus, the RSB sustainability standard is being implemented through a voluntary certification system, which gives economic operators a chance to differentiate themselves in the market place by demonstrating sustainable practices in a credible and globally recognized fashion. The RSB certification system was recognized by the European Commission in July 2011, as a means to demonstrate compliance with the sustainability provisions of the Renewable Energy Directive (2009/28/EC).

In parallel, several governments are consulting the RSB to develop national regulations or build and implement national/regional roadmaps aiming at an increased use of sustainable bio-fuels, in particular in the aviation sector.

Biomass and the infinity of its bio-based derivatives undoubtedly represent a significant opportunity to bring our society closer to the sustainable functioning of the world which the Earth Summit and Rio+20 have aimed at for these last decades. But building upon initial mistakes, the civil society, the private sector and decision-makers need to set the necessary safeguards in place to ensure that the potential benefits provided by biomass-derived products to mitigate climate change and reduce our dependence on petrol are not offset by environmental and social damages. Credible standards and certification systems such as the RSB are an efficient and valuable tool to make sure that the expanding production and processing of biomass is sustainable and delivers on its promises ◁

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Jatropha plants in Mexico (courtesy of Global Clean Energy Holding)

End Notes

1 http://ec.europa.eu/clima/policies/package/index_en.htm

2 www.isealalliance.org

3 www.liib.org

About the authors

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* Additional contributions:

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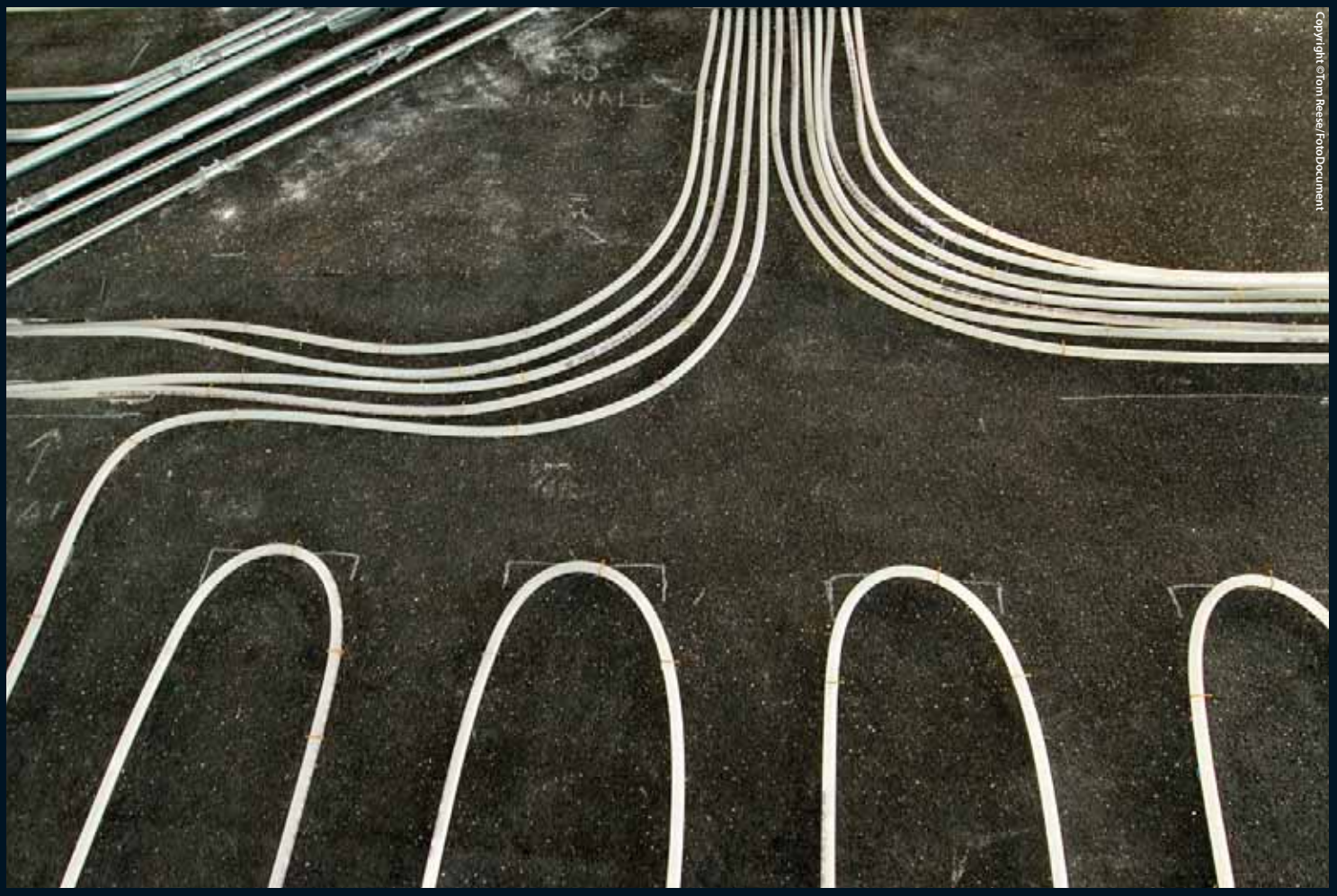
Helena Kennedy has 15 years of experience and manages RSB Services Foundation's marketing and communications activities, including advertising, business development strategy, content management, communications, events and website.

Rolf Hogan is the Executive Secretary of the RSB. With and academic background in both natural and social sciences, he has been working at the international level for more than 15 years in policy, project management, fundraising and communications. He held various positions with the International Union for the Conservation of Nature (IUCN) including the coordination of technical and policy work on the UNESCO World Heritage Convention from 1995 to 2002.



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Rooted and Flowing: Like branching roots, the mechanical heating system carries fluid though a series of tubes. Left: The plastic tubes are now sealed within cement floors and transport heat through a water and glycol mixture. Right: Tree roots transport what they need from within the soil in a water and nutrient mixture.

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