



# BIOMASS – THE STUFF OF THE FUTURE?

Energy change and bio-economy must help overcome hunger and poverty!

Down with oil, up with biomass – to put it briefly, that's the goal of the bio-based economy as practiced today. Grow as much biomass as possible on the world's shrinking land resources. This practice takes its toll on the environment and on people. In the development and implementation of biomass strategies, industrialized nations close their eyes to the global consequences. The most serious of these is the endangerment of the slowly progressing struggle against hunger. If no social minimum standards for biomass are set today, the projects of international institutions, governments and businesses could lead to violations of the human right to food. But that doesn't have to happen: Careful planning and implementation of the German energy transition as well as European bio-economic strategies can contribute significantly to the reduction of poverty and global inequality.

Rising energy prices, climate change, dependence on oil-producing countries – these are just a few of the buzzwords linked to the use of fossil fuels. Renewable resources – on the other hand – are mostly associated with environmental protection, sustainability and security of supply. This is why we are seeing more and more sectors of production pushing hard to increase their ratios of biomass to fossil fuels. Biomass refers to renewable resources obtained from plants, animals and microorganisms. The most prominent example of the modern use of biomass is biofuel, which is made of starchy and oleaginous plants such as corn, wheat, rapeseed or palm oil. In addition, heat energy increasingly is derived from biomass, such as through pellet heating systems. There are many other areas in which biomass proves useful today, since its range of possibilities is quite broad: In-

creasingly, it delivers the basic materials for chemicals, for construction products or for materials such as bioplastics.

## Reinventing the bio-economy

The bio-economy is all about sustainable production of biomass and its efficient application to all economic sectors. It isn't just about procuring energy but rather applies to many areas of the economy, such as chemistry and pharmaceuticals, the food industry as well as the cosmetics, paper and textile industries. Many industrial nations are in the process of promoting and designing their transition from the era of dependency on fossil fuels to a more environmentally friendly, bio-based economy. This approach is not really new. For thousands of years, life and work revolved around renewable raw materials. To this day, more than two billion people have no access to modern energy. Wood and charcoal are their main sources of energy and their incomes come from non-processed or only slightly processed agricultural products. For developing countries, the modern use of biomass offers the opportunity to largely skip over the fossil-based economy phase. And for industrial nations, it's about finding appropriate substitutes for fossil raw material. Whether on the EU or national level, research programs have been established and bio-economy strategies developed.

## Mounting pressure on agricultural land

The future will see increasing amounts of renewable raw materials used for transport, for generating heat and electricity and for processing materials. This steps up

pressure worldwide on land for agriculture and forestry, land that also is needed to produce sufficient food and fodder for a still-growing world population.

Today, at the start of the 21st century, every 8<sup>th</sup> person is suffering from hunger – that amounts to 842 million people worldwide. At least 70 per cent of them live in rural areas of developing countries and depend on agriculture. With the transfer from a fossil-based economy to a bio-economy, these regions – so profoundly affected by poverty and hunger – are becoming enormously important: Their fertile soil, their water, warm climates and cheap labour provide ideal conditions for the production of biomass. The implementation of the European and German bio-economy strategies depends to a large extent on these resources. Already in 2008, in other words before the big boom in bio-fuels, Europe required 35 million additional hectares of agricultural land abroad in order to meet its needs for agricultural products (Witzke and Noleppa, 2010). Given the fact that Germany uses only about 17 million hectares for agricultural purposes, the outsourcing of agricultural production has already reached enormous proportions.

Through the transfer to a bio-economy, the demand for agricultural land will rise faster than ever and will have a massive impact on agricultural production, particularly in developing countries.

It is well known that the uncontrolled use of renewable raw materials can also lead to the exploitation of the natural environment. This is why environmental organizations are increasingly calling for protection of forests, animals and water, and governmental organizations tend to respond positively. Regulations, certification systems and quality assurance for environmental protection are booming. But the rapid rise in use of renewable resources has an impact beyond the environment. Small farmers in developing countries are being driven out by large plantations: For poor people, rising food prices and the loss of their land can quickly lead to hunger. True, the serious consequences of uncontrolled use of biomass are well known due to the debate over “food or fuel,” but the political points for a socially sustainable use of biomass have not yet been provided.

The estimates for current and future use of biomass capacities are not consistent. Whether for transportation, for electricity-production or for heat-production, all supposedly “unused” capacities (fallow, underused land, recycling material) are included to achieve these objectives. Therefore the “biomass cake” is used at least three times, in German as well as European planning – usually without taking into account additional acreage needed for global food security. It goes without saying

that this already leads to competition for land, water and labour.

The transfer from the fossil age to a sustainable economy largely based on the use of agricultural products will only succeed if everyone benefits from it – in rich regions but especially in poor regions.

### Involving small farmers in developing countries

Despite all the risks involved, the switch to a bio-economy can be an important contribution towards the global common good. The demand for biomass can have a positive impact on developing countries. For one thing, the EU accrues fewer agricultural surpluses that, when sold at dumping prices in poorer countries, make small-scale agriculture unprofitable. For another, the associated contribution to climate protection benefits the poor: Because they live in regions that, through no fault of their own, are particularly hard hit by the consequences of climate change.

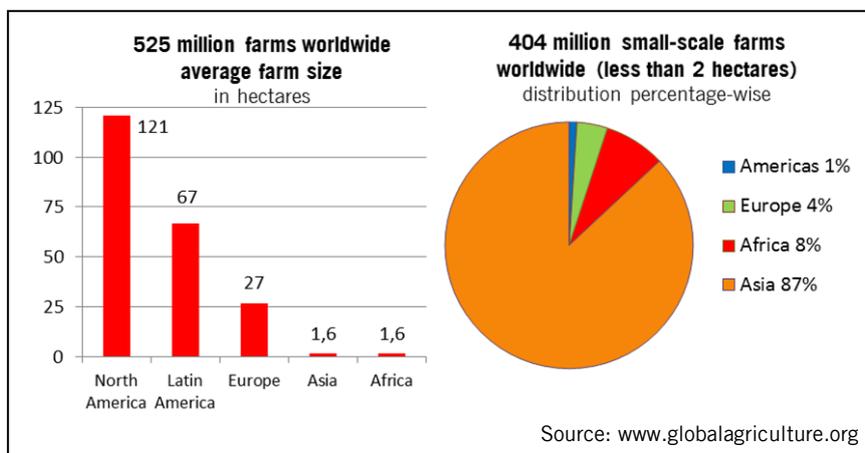
The transition to a bio-economy can also be used to help reduce poverty in developing countries and thus contribute to food security. If small farmers are included in the production of biomass,

receive appropriate salaries and are guaranteed social security, important elements of a socially sustainable bio-economy are provided. But the prerequisite is that they also have enough affordable and healthy food for a balanced diet – a basic human right.

In order to protect this right to food, it must be guaranteed that developing countries can use biomass for themselves first and foremost (to ensure a healthy diet and for local energy production); only after these needs are met should available agricultural resources be used for export-oriented biomass production. A bio-based, sustainable economy must not be a privilege available to “rich” countries. On the contrary – industrial nations must help developing countries through technology transfer, if possible skipping over some stages of the fossil age (so-called leap-frogging). This will not only contribute toward global climate protection but also toward overcoming social inequity.

### Political coherence needed

These positive effects can only be achieved if we learn our lessons from the earlier, seriously flawed bio-energy policies and apply them toward efficient and sustainable biomass production and use. There are both social and planetary limits to biomass production. The efficient ranking order of “Food, Feed, Fibre, Fuel” is generally accepted today. Accordingly, biomass should first meet the nutritional needs of humans and animals (food,



feed). Once these needs are met, the needs for industrial raw material (fibre) may be addressed, followed by energy production (fuel). In reality, these priorities are still barely heeded today: Decisions about whether available biomass should be used for food or material/energy production are far more likely to be influenced by purchasing power. So, for example, new palm oil plantations are being established in Sierra Leone without any benefit to the local population in the form of new income opportunities and the like. Just the opposite: Small farmers are losing their fields and thus their means of livelihood, while industrial nations import cheap palm oil for fuel, food and chemical products.

### **The bio-economy must be socially sustainable - world-wide!**

Both Germany and the EU often stress the importance of environmental issues – particularly climate protection – when defining their biomass strategies. But they pay little or no attention to questions of social responsibility outside their own territory.

In Germany, the new government coalition agreement reflects political ambivalence and lack of coherency when it comes to the issue of biomass: On one hand, the stated goal of development policy is to “overcome hunger and poverty worldwide“, giving the “right to food” a central importance. And the use of bio-fuels, too, should be “oriented towards the principles of sustainability“. Clearly, the lessons of the “food or fuel” debate have been applied here. But when it comes to setting bio-economic objectives, no consideration is given to social issues in a global context. This is extremely questionable from the development policy standpoint, as the coalition plans to promote the “transfer from an economy largely based on fossil raw materials to a resource-efficient economy based on renewable resources.”

Since this change to the bio-economy requires the same resources needed to ensure food security, it is essential to assess the compatibility of strategic objectives and political projects with the human right to adequate food. As early as 2004, the United Nations agreed on guidelines on the right to adequate food, which contain a section on “International cooperation and unilateral measures”.

It states, among other things:

“States are strongly urged to ... refrain from, any unilateral measure... that impedes the full achievement of economic and social development by the populations of the affected countries and that hinders their progressive realization of the right to adequate food.”

This call to action, agreed upon by all UN members, generates the responsibility to examine the possible impact of biomass use for non-food purposes, both nationally and on other countries. The introduction of a “policy impact assessment on global food security” would ensure that potential impacts of policies on global food security – whether intentional or not – are discussed explicitly in political-parliamentary advisory and decision-making processes, before decisions are made.

### **A minimum standard for all biomass products**

The transfer to a bio-economy contributes to the blurring of the lines between biomass-use for food, fodder and energy and industrial use, since the markets increasingly are overlapping.

Therefore, the goal should be to develop a global biomass standard that regulates the production of all types of biomass for various uses (food, fodder, energy and material production) across international boundaries and across sectors (WBGU, 2010). Here, not only ecological but also economic and especially social-sustainability criteria should be taken into consideration. Only then can one ensure that the non-food use of biomass does not endanger the human right to food. So far, biomass has only been certified for fuel purposes; in other words, certified palm oil goes into the fuel tank while non-certified palm oil goes on the table (as in margarine) or on the skin (as in cosmetics). Nor do the biofuel criteria take social aspects into account. Currently, there is no related statutory regulation planned, either at the national or European level.

This is where the “Initiative Sustainable Provision of Raw Materials for the Material Use of Biomass (INRO)” comes in. It was founded in 2011 with the goal of reaching an agreement with industrial firms for the voluntary certification of renewable raw materials from cultivation to primary processing. INRO includes companies from the chemistry and automotive sectors, as well as those producing packaging, consumer products, materials, hydraulic and lubricating oils, varnish and paints. Also represented are business organizations and associations, German governmental ministries and subordinate authorities, scientists, environmental and development organizations as well as German certification systems.

In 2013, a catalogue of sustainability criteria was created upon which all participants agreed. It refers to all industrially applied agricultural commodities, including vegetable oils as well as sugar, starches, fats and fibres. Only wood and animal fats remain off the list for now. In the medium term, these criteria should be applicable to all sectors of biomass use. The agreed-upon criteria include – in addition to environmental protection and economic aspects (such as anti-corruption measures, transparency) – social aspects (such as a ban on child labour and forced labour, as well as commitments to ensure decent working conditions and protect the rights of indigenous people). INRO members also agree that a criterion for food security is essential. But there are still no applicable and verifiable indicators. These indicators should be developed in an auxiliary project in dialogue with representatives of civil society, research, industry and certification service providers.

### **Establish food security as a mandatory criterion for sustainability**

So far, very few initiatives and certification systems have included proposals for a review of food security issues related to the use of biomass. The Roundtable of Sustainable Biomaterials (RSB) has proposed a guideline for food security risk assessment as well as criteria to im-

prove the local food situation. This proposal is to be applauded, though it remains untested due to the complex process of application. And certification also involves two additional risks:

1. If certification is granted to firms that on one hand uphold strict sustainability criterion but on the other hand make no contribution to local development, this accepts the status quo of poverty and hunger. In the worst-case scenario, this amounts to tolerance and certification of poverty.
2. If environmental and social standards are set too high, small farmers will be systematically excluded due to their limited investment possibilities.

Therefore, lists of overly ambitious criteria can end up thwarting development goals. What we need are sustainability criteria that

- contribute to a continual improvement of the local food situation. This can be accomplished especially through an improved income situation in agricultural regions;
- give small farmers and medium-sized enterprises the chance to gradually meet the increasing standards;
- encourage large enterprises to fulfil their potential as drivers of development;
- are flexible enough to act in a manner appropriate for the location, without compromising on their standards; and
- generate progress and social development.

In order to meet these demands, criteria must be developed in an interdisciplinary context, taking into account the requirements of science, civil society, politics and industry. It's not about rash implementation of the most demanding criteria possible, but rather about agreement on interim goals. The production of biomass must be in accord with the priorities of the people in the growing regions, and in the medium term must contribute to ensuring an adequate standard of living.

### **Take action for a sustainable bio-economy**

- Non-food use of biomass can lead to violations of the human right to food. International institutions, governments, politicians and business leaders share the responsibility to guarantee that their use of biomass protects the human right to food and upholds the associated guidelines beyond their own national boundaries.
- The political promotion of bio-economies must be preceded by a policy impact assessment on global food security.
- Mandatory sustainability criteria must be applied for each use of biomass and compliance must be required by law.
- Sustainability criteria must be supplemented by social development criteria.

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Cover image: Production of palm oil in Liberia  
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Status: December 2013