

# Bioenergy policy in Germany and social challenges

## Preliminary Remarks

Effective climate protection as part of a transformation to a sustainable economy can only be achieved permanently if it is possible to switch the global economy from a fossil-based to a renewable energy supply. With its pioneering energy transition project, Germany is a key player enjoying global acclaim. In theory at least, there is no shortage of energy in the world thanks to ample sunlight. There are also numerous ways to save energy. In addition to solar and wind power, it is also important to define the role of bioenergy carefully. Back in 2012, the Bioeconomy Council made recommendations for the “Sustainable use of bioenergy”. Under the changed framework conditions – energy transition, amendment of the Renewable Energy Sources Act (EEG), a currently low oil price and increasing observation of competitive relationships regarding food security – the Council is taking up the topic of bioenergy once more. As part of the energy transition, it is necessary to ensure that the renewable energy supply is sustainable for its part and that the benefits of biotechnology, wind and solar energy are used in the system in the best way possible. Bioenergy should be consistently geared to areas of use in which it can demonstrate its advantages. They are constant availability, storage capacity and the ability to partially compensate for the high volatility of wind and solar power in the generation of electricity and heat.

## Further development of the bioenergy policy

From an ecological perspective, what matters is preserving the limited resources of soil and water as well as nutrients and the diversity of plants, animals and microorganisms. As a result of further developing certificates and standards, consideration should also be given to social criteria along the process chain. Further development of the bioenergy market should be based on long-term goals and should aim for a fair distribution of the added value. The previous promotion of bioenergy achieved unique technological features that are linked to market opportunities. It is important to protect them and to expand them in terms of added value potential. From these it is possible to derive the following approaches for developing national and global policy:

› **Primacy of sustainability:** For the production, provision and processing of biomass, the three dimensions of the sustainability concept must be considered on an equal footing. The primary use of biomass should always be a combination of material and energy-related use and should take into account systemic embedding in cascade utilization. The direct energy-related use of biomass can only be justified in developed countries in exceptional cases – for example, in areas where solar energy does not presently represent an alternative (shipping and aviation) or where byproducts arise that can be used in other industries (e.g. glycerol).

› **System Stability:** Concepts for power generation promoted so far, which go beyond the direct combustion of biomass (biomass gasification), should be given a clear perspective. From an environmental policy point of view, the Council welcomes the introduction of GHG-based crediting of biofuels and the priority use of waste and residual materials. However, this represents only one component of a comprehensive biofuels strategy which needs to be developed. Likewise, the position on research into new types of fuel in Germany should be stepped up in view of the overarching objectives of sustainably transforming economic systems, while respecting global interdependencies.

› **External Effects:** The Council generally recommends measuring completely the external effects of using biomass and in this way obtaining comprehensive footprint records. This includes the entire process chain in addition to different forms of use (food, material, energy). The possibility of introducing certificates must be checked out. Specifications in procurement and voluntary obligations could help here. Only in this way it is possible to evaluate biobased products and processes and to illustrate their advantages compared with other forms. These principles should be used in further work to develop an economically optimized development path for renewable energies. It is necessary from the outset to give significant consideration to the question of how best to divide the work up globally in this energy economy of the future.

› **Bioenergy innovations in developing countries:** The energy-related use of biomass (combustion) is very important particularly in developing and emerging countries. However, the traditional use of wood and charcoal is often inefficient here and leads to health problems due to open hearths in dwellings. Full access to energy is a global development goal. In developing countries that produce a large proportion of their primary energy by burning biomass, a different energy transition should be implemented which Germany should participate in to a greater extent with research and technology partnerships. One example of this is more efficient household stoves. Local power grids which are partly based on biomass waste can also be used as



Three goals of sustainable bioenergy policy: Climate and nature conservation, resolution of conflicting aims, unique technological features.

further steps towards an improved energy supply. Sustainable biomass cultivation and production methods should also be mentioned here. Training and transferring the technology of sustainable methods to the real lives of (small) farmers will play an important role in quickly preventing the adverse impacts of traditional bioenergy use and its harmful health effects.

› **System Stability:** In the future electricity market supplied to a greater extent by renewables, the production of electricity from biomass should be examined mainly to see whether it can provide system-stabilizing contributions in an economically efficient way. The Council referred to this in its report on bioenergy in 2012 and welcomes the initiatives for increasingly flexible provision of electricity from biomass. Here it is important to examine how best to achieve and implement the provision of electricity in line with demand for balancing energy and residual load with increasingly competitive incentive systems.

› **Timber Industry:** In the timber industry, checks must be made to ascertain the impacts of switching bioenergy promotion in the electricity and fuel sectors. There is a need for further development of new cascaded used between material and energy use.

› **Conflicting aims:** Measures to promote bioenergy should be designed on principle so that they do not compromise global and local food security. Under this premise, the measures should be designed so that the objectives (e.g. climate protection) pursued by promoting bioenergy are achieved as efficiently as possible. The specific implementation of these two guidelines would probably lead to a market-oriented pricing system for biofuels which does not require rigid quotas for individual bioenergy sources. Current subsidies often lead to local producers being unilaterally favored. This happens to the detriment of poor countries and the international division of labor, and in this respect would need critical reconsideration. In terms of food security, it would also be necessary to consider designing the bioenergy policy countercyclically, by suspending subsidies and quotas for example, when there are particular shortages on the food markets.

› **Dealing with losses:** To improve food security, losses would have to be reduced with the help of innovative and integrated production systems along the added value chain: This applies to both the production side – high pre- and post-harvest losses exist in developing countries – and also to the huge waste of food in industrialized countries. Innovative integrated production systems must facilitate efficient food production. The dual and cascaded use of residues arising should be designed so that it comprehensively promotes both the reduction of losses and also the establishment of integrated production systems. Optimal approaches and possible incentives for reducing losses and wastage should be explored more extensively, both with regard to food production and with regard to recovering material and energy.

› **Certificates:** The certification of bioenergy is already at an advanced stage. Globally coordinated biomass certification should take into account social standards and ecological footprints, water consumption and sustainability in the handling of soils which are fundamental to long-term food security. The transferability of existing standards and certification schemes for biofuels to other energy-related and material uses of biomass should be checked out. It should be determined to what extent environmental sustainability standards can be linked to tools that are aimed at social sustainability.