

Summary: greater understanding of bioenergy's role in easing versus exacerbating environmental damages will influence European policy in the future. As the European Union moves forward to achieving its renewable energy and biofuels targets for 2020, and consumption of biomass thus increases, a policy framework that encourages the sustainable development of the bioenergy sector will become increasingly indispensable.

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## European Union Policy on Bioenergy

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### Bioenergy in the context of European energy policy

The European Community has undertaken an ambitious program aimed at improving the sustainability of energy use across Europe. At the heart of this program are efforts by the European Union (EU) and its Member States to encourage the use of renewable sources of energy and to improve energy efficiency across the board, and bioenergy has become a focal point in efforts to increase the use of renewable energy.<sup>1</sup> Unlike other renewable energy sources, biomass is equally suited for electricity generation, heating and cooling, and fuels for transport.

The policy framework for encouraging bioenergy has several underlying objectives. First and foremost, the EU aims to reduce greenhouse gas emissions, reduce its dependence on imported fossil fuels, and diversify its sources of energy supply. However, bioenergy policies are also directed toward generating employment in agricultural and rural

areas and promoting innovation and technological development.

Renewable energy has a long history as a central focus of European energy policy. As early as 1986, the European Council listed the promotion of renewable energy sources among its energy objectives.<sup>2</sup> In 1997, the Commission established a target to increase the overall share of renewable energy to 12 percent by 2010. The Commission's most recent initiative, the energy and climate-change package<sup>3</sup> of January 10, 2007, updated this target: 20 percent of all EU energy consumption is to come from renewable sources by 2020. It also established a "minimum target" of 10 percent of the petrol and diesel market to be represented by biofuels by 2020. At the spring meeting of the European Council in Brussels on March 8–9, 2007, the EU heads of state and government endorsed both targets as binding.

<sup>2</sup>OJ C 241 of 25.9.1986, p.1

<sup>3</sup>COM (2007) 1 final: Communication from the Commission to the European Council and the European Parliament: An Energy Policy for Europe, Brussels, 10.1.2007, SEC(2007) 12; COM(2006) 848 final, Communication from the Commission to the European Council and the European Parliament: Renewable Energy Road Map. Renewable energies in the 21st century: building a more sustainable future, Brussels, 10.1.2007

<sup>1</sup>As recently outlined in the EU's energy efficiency action plan, COM(2006)545 final, Action Plan for Energy Efficiency: Realising the Potential, 19.10.2006, and within the context of the need to reduce energy demand as addressed in the energy efficiency Green Paper "Doing more with less" – COM(2005) 265.

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Over the 10 years since the original renewable energy target was set, a great deal of supporting legislation has been passed. The most important legislative developments are the 2001 Directive on the promotion of electricity produced from renewable energy sources<sup>4</sup> and the 2003 Biofuels Directive.<sup>5</sup>

The Biofuels Directive went beyond previous legislation on renewable energy to establish a specific target for the use of biofuels. Biofuels have received particular attention in the EU because they represent a promising alternative outlet for agricultural production and they are currently the only available renewable fuels for transport. After all, the transport sector is responsible for more than a quarter of all EU greenhouse gas emissions, and cars generate about 80 percent of the transport sector's emissions.<sup>6</sup>

Given that biofuels are currently more costly than pure petrol and diesel, the Commission concluded that a specific biofuels target was necessary to encourage renewable transport fuel use.<sup>7</sup> The Biofuels Directive set an indicative target for 2 percent of transport fuels to be made up of biofuels by the end of 2005 and 5.75 percent by the end of 2010. The 2005 goal was not achieved; in fact, it appears that very few Member States were able to come close to the 2 percent goal. In 2005, the Commission adopted the Biomass Action Plan<sup>8</sup>, and in 2006 the Strategy for Biofuels<sup>9</sup>, both of which aimed to improve both the supply and demand for biomass.

Renewable energy policy in the EU is not wholly comprised of targets but is complemented by a set of policies outlined

in the Renewable Energy Road Map.<sup>10</sup> These policies aim to create incentives and support the development and increased use of renewable energy technologies as well as eliminate any unnecessary legislative or regulatory barriers within the EU and its Member States.

Bioenergy support has also been introduced in the Common Agricultural Policy (CAP). The CAP offers an energy crop premium payment on top of a producer's decoupled farm payments for biomass if it is to be processed on the farm or if it is produced under contract with a processor. The CAP also now allows producers to raise energy crops on set-aside land.<sup>11</sup> Rural Development policy has also addressed bioenergy issues: investments in bioenergy on or near farms — which may include capital costs for setting up biomass production — are eligible for support from the European Union.

Despite the suite of policies to encourage domestic production of biomass, the EU recognizes that increasing the use of bioenergy must be achieved through a combination of domestic production and imports. Therefore, policy will be designed so that both European producers and third countries benefit from the growing market for biofuels.<sup>12</sup>

## Implementation of the EU's objectives within Member State policies

Meeting the targets of 20 percent of renewable energy consumption and at least 10 percent of transport fuels from biofuels will require substantial growth in the energetic use of biomass. However, the European Union is currently not on track to meet these ambitious targets. Renewable energy resources are growing, but not as fast as envisaged.

Recent estimates put renewable energy consumption at only 9-10 percent of total energy consumption in 2010, compared

<sup>4</sup>Directive 2001/77/EC of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal electricity market (OJ L 283, 27.10.2001), increasing the production from 14.0 % in 1997 up to 21.0 % by 2010 for the 25 Member States of the European Union

<sup>5</sup>Directive 2003/30 EC

<sup>6</sup>Rabobank (2005): Biofuels in the EU: Changing Up Gears.

<sup>7</sup>Piebalgs, Andris - Energy Commissioner of the European Commission 2007: Speech at the eBio General Assembly, Brussels, 25 January 2007

<sup>8</sup>COM(2005) 628 final, Brussels, 7.12.2005. The measures provided for by the Action Plan shall lead to an increase in the use of biomass that should reach approx. 150 Mtoe in 2010 (55 Mtoe intended for electricity production, 75 Mtoe intended for production of heat and 19 Mtoe intended for transport).

<sup>9</sup>COM(2006) 34 final. Communication from the Commission: An EU Strategy for Biofuels, Brussels, 8.2.2006.

<sup>10</sup>see Renewable Energy Road Map COM(2006) 848 final

<sup>11</sup>Rabobank (2005): Biofuels in the EU: Changing Up Gears. There are restrictions on the former for sugar beet production and restrictions on the latter for oilseeds production.

<sup>12</sup>For example, the Commission will ensure that measures for ACP Sugar Protocol countries affected by the EU sugar reform can be used to support the development of bioethanol production; develop a coherent Biofuels Assistance Package for developing countries; and examine how best to assist national and regional biofuel platforms. (See EU Strategy for Biofuels (COM(2006) 34) and EU's Biomass Action Plan (COM(2005) 628))

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to the target of 12 percent that the Community has been working toward since 1997. Likewise, the Commission's biofuels progress report<sup>13</sup> indicates that while biofuels have doubled their market share from 0.5 percent in 2003 to 1 percent in 2005, it is unlikely that the goal of 5.75 percent by 2010 will be met.

To this point, the growth in the use of biofuels has been concentrated in only a few countries. Only Sweden and Germany achieved the goal of 2 percent by 2005, and only Austria, France and Lithuania achieved as much as 0.7 percent. Moreover, the growth in the use of biofuels mainly consisted of increased use of biodiesel. Biodiesel represented 1.6 percent of the diesel market in 2005, while ethanol only achieved 0.4 percent of the petrol market.

This situation is likely to change as a result of recent policy measures in Member States. Several Member States have introduced tax exemptions for biofuels. Eight have introduced biofuel obligations, and many others are considering them. Nevertheless, estimates show that given the present policy environment, biofuels' share of the transport fuel market will not be much higher than 4 percent by 2010. This does not bode well for the 2020 "minimum target" of 10 percent biofuels.

Member States are expected to establish national renewable energy targets in upcoming EU legislation. The target each country chooses will reflect its potential for expanding renewable energy as well as its current use of renewable technologies. After establishing a target, each Member State will submit a National Action Plan that divides their renewable

energy target among electricity, heating and cooling, and biofuels. In general, Member States will be free to allocate their target among the three sectors, but given the recent legislation, each Member State's biofuels target will have to be at least 10 percent.<sup>14</sup>

### Current debate on sustainability of bioenergy

The production and use of biomass can offer environmental benefits, but it can also present increased environmental pressures. Air pollution and greenhouse gas emissions can often be mitigated by using bioenergy alternatives to fossil fuels. However, a substantial increase in the use of biomass from agriculture, forestry, and waste for producing energy could put additional pressure on farmland and forest biodiversity as well as on soil and water resources. Increased pesticide and fertilizer use, increased pressure on water resources and further overall intensification of European agriculture are some of the potentially negative side effects from an increased reliance on biomass for energy.

Encouraging the development of renewable energy from biomass might also counteract other environmental policies and objectives, such as waste minimization or environmentally-oriented farming. Moreover, it is likely that a large part of the biomass consumed in the EU will be imported because of lower production costs in third countries. This could entail a risk of even greater pressures on natural ecosystems and could lead to uncultivated land being brought into cultivation, including land with a high level of stored carbon or otherwise representing high environmental value.

A recent study by the European Environmental Agency<sup>15</sup> suggests that it is possible to meet EU targets using purely "environmentally compatible" bioenergy, but it warns that, without criteria to define environmentally compatible bioenergy, the energy could come from unsustainable sources and thereby erode the advantages of bio-energy. In response,

<sup>14</sup>Piebalgs, Andris - Energy Commissioner of the European Commission 2007: Speech at the eBio General Assembly, Brussels, 25 January 2007, data based on 2005 biofuels progress report, (COM (2006) 845 final)

<sup>15</sup>EEA (2006): How much bioenergy can Europe produce without harming the environment? EEA Report No 7/2006

<sup>13</sup>COM (2006) 845 final

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a number of European and international organizations<sup>16</sup> have proposed production criteria and certification systems to assure sustainable biomass production.

The debate surrounding EU bioenergy policies remains intense. At the March 2007 summit of EU leaders, a coalition of industry groups representing the oleochemicals, paper, wood-working, margarine, and pine chemicals sectors expressed opposition to binding targets for renewables in general, and for biofuels in particular, warning that these could lead to disproportionate subsidies and distort market access to raw materials. At the same time, opposition to such targets arose from environmental groups, which called on governments to reject any binding biofuels target, saying that it would result in “major environmental and social problems” and that the EU should instead introduce a target for “lifecycle greenhouse gas emission reductions” for transport fuels.<sup>17</sup>



From left to right: Demonstration of the Dutch NGO “Milieu Defensie” against power generation from palm oil by the Power Company Essent<sup>18</sup>, 2007 campaign “Food or Fuels — Food for People not for cars” of the European Parliament Greens<sup>19</sup>, Cover of the Regenwald report (report on rainforests) February 2006 “Clear-cut for biofuels”<sup>20</sup>

In response, the European Commission plans to introduce a legislative proposal aimed at discouraging the use of biofuel production systems that create more greenhouse gas emissions than they save. The proposal will include an incentive system to encourage the use of second-generation biofuels.<sup>21</sup>

Leaders are also discussing the development of a certification system. The European Parliament has recognized that further increasing palm oil production may affect natural forests and traditional food production, causing biodiversity loss, land disputes, and significant releases of greenhouse gases. It therefore called on the Commission to subject the importation of palm oil-based products into the EU to compliance with sustainable production criteria, defined within a comprehensive certification scheme.<sup>22</sup>

Most Member States have indirectly included some sustainability criteria in their bioenergy policies.<sup>23</sup> Some governments, including Belgium, the Netherlands, and the United Kingdom, have also begun to independently develop biomass certification systems or principles and criteria for sustainable biomass trade. Germany is also developing sustainability standards for the industry.

It is clear that greater understanding of bioenergy’s role in easing versus exacerbating environmental damages will influence European policy in the future. As the European Union moves forward to achieving its renewable energy and biofuels targets for 2020, and consumption of biomass thus increases, a policy framework that encourages the sustainable development of the bioenergy sector will become increasingly indispensable.

<sup>16</sup>as for Europe e.g. European Environmental Bureau, WWF, Birdlife International, European Federation for Transport and Environment

<sup>17</sup>ENDS Europe DAILY 2276, 06/03/07, ENDS Europe DAILY 2278, 08/03/07,

<sup>18</sup>Friends of the Earth Netherland, Picture by Michiel Wijnbergh, November 1, 2006

<sup>19</sup>The Greens in the European Parliament 2007: Food first. Sustainable agriculture can feed the world, it cannot fuel our cars. Position Paper on Food security and Plant fuels.

<sup>20</sup>RegenwaldReport 02/2006, issued by the German NGO “Rettet den Regenwald e.V.” (Save the Rainforest)

<sup>21</sup>Piebalgs, Andris 2007

<sup>22</sup>European Parliament 2006: Texts adopted at the sitting of Thursday, 14 December 2006: P6\_TA-PROV(2006)12-14, Provisional Edition, PE 381.941

<sup>23</sup>Van Dam et al 2006: Overview of recent developments in sustainable biomass certification, Paper written within the frame of IEA Bioenergy Task 40, draft for comments, December 2006