COMISIÓN DE LAS COMUNIDADES EUROPEAS

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COMUNICACIÓN DE LA COMISIÓN

Plan de acción sobre la biomasa

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1. INTRODUCCIÓN

La energía es fundamental para que Europa pueda lograr sus objetivos de crecimiento, empleo y sostenibilidad. El elevado precio de los crudos ha puesto de manifiesto la creciente dependencia de Europa respecto de la energía importada.

La Unión necesita responder de forma decidida a este desafío. En la cumbre informal de Hampton Court, en octubre de 2005, los Jefes de Estado y de gobierno de la Unión reiteraron la importancia crucial de la política energética para que Europa pueda alcanzar los ambiciosos objetivos de la globalización.

Teniendo esto presente, la Comisión está llevando a cabo una revisión de raíz de su política energética. Este será el asunto que abordará un Libro Verde que aparecerá en la primavera de 2006, con tres objetivos esenciales – competitividad, sostenibilidad y seguridad de suministro.

Entre los elementos fundamentales de esta política destacan, en el contexto de un crecimiento económico más sólido, la necesidad de reducir la demanda de energía[1]; incrementar la confianza en las fuentes de energía renovables, dado el potencial para producirlas a escala nacional y su sostenibilidad; diversificar las fuentes de energía; y promover la cooperación internacional. Estos elementos pueden ayudar a Europa a reducir parte de su dependencia de las importaciones de energía, incrementar la sostenibilidad y estimular el crecimiento y el empleo.

Para obtener resultados, es necesaria una gestión coherente de estos objetivos, con calendarios adecuados. El proceso incluirá mecanismos para que participen los Estados miembros, los representantes del Parlamento Europeo y las partes interesadas[2].

En este contexto más amplio de una política de energía integrada y coherente, y, en particular, de fomento de las fuentes de energía renovables, es en el que la Comisión lanza el presente plan de acción. Se trata solamente de un elemento más de las medidas necesarias para lograr los objetivos antes expuestos – pero un elemento importante, porque la biomasa actualmente representa cerca de la mitad de energía renovable utilizada en la UE[3].

En su Comunicación de 2004 sobre la cuota de las energías renovables en la Unión Europea, la Comisión Europea se comprometió a presentar un plan de acción en el que se hiciese

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1 Abordado en el reciente «Libro Verde sobre la eficiencia energética o cómo hacer más con menos», COM (2005) 265.

2 Entre estos mecanismos cabe destacar el Foro europeo de la energía y los transportes, el Foro de Ámsterdam de la Energía Sostenible, el Foro de Berlín de los combustibles fósiles, el Foro de Florencia de regulación de la electricidad y el Foro de Madrid de regulación del gas. Además, la Comisión recientemente decidió establecer un Grupo de Alto Nivel sobre Competitividad, Energía y Medio Ambiente.

3 El 44 % según el «enfoque de sustitución» y el 65 % según el «enfoque clásico» - véase la evaluación del impacto en la sección 2.

hincapié en la necesidad de un enfoque coordinado para la política en materia de biomasa. [4] El Consejo Europeo de la primavera de 2004 concluyó que un mayor uso de fuentes renovables de energía era esencial «por motivos medioambientales y de competitividad»[5], mientras que el Parlamento Europeo señaló recientemente que «la utilización de la biomasa ofrece múltiples ventajas con respecto a las fuentes de energía convencionales, así como en relación con otras fuentes de energía renovables, en particular unos costes relativamente bajos, una menor dependencia de las alteraciones climáticas a corto plazo, el fomento de las estructuras económicas regionales y la creación de fuentes de ingresos alternativas para los agricultores»[6].

El presente plan de acción establece medidas para incrementar el desarrollo de la energía de la biomasa a partir de madera, residuos y cultivos agrícolas, creando incentivos basados en el mercado para su utilización y eliminando obstáculos para el desarrollo del mercado. De esta forma Europa puede reducir su dependencia de los combustibles fósiles, disminuir sus emisiones de gases de efecto invernadero y estimular la actividad económica en las zonas rurales. En el Anexo 1 se presentan las medidas.

El presente plan de acción constituye una primera etapa de coordinación.
Establece medidas para fomentar la biomasa en la calefacción, la electricidad y el transporte, seguidas de medidas transversales que se refieren al suministro, financiación e investigación en materia de biomasa.
Se complementa con una evaluación general del impacto. En la segunda etapa se presentarán medidas por separado sujetas a una evaluación del impacto específico de acuerdo con las normas de la Comisión.

1.1. Potencial de biomasa

En la actualidad, la UE cubre el 4 % de sus necesidades energéticas con biomasa. Si se utilizase todo su potencial, en 2010 se llegaría a más del doble del uso actual de biomasa (de 69 mtep[7] en 2003 a cerca de 185 mtep en 2010) – y al mismo tiempo se respetarían las prácticas agrícolas correctas, protegiendo la producción sostenible de biomasa y sin afectar significativamente a la producción nacional de alimentos[8]. La adhesión de Bulgaria y Rumania incrementará la disponibilidad de biomasa[9], y las importaciones brindan posibilidades aún mayores.

En opinión de la Comisión, las medidas del presente plan de acción podrían producir un incremento en el uso de la biomasa de cerca de 150 mtep en 2010 o en los años siguientes[10]. Esto es menos que el potencial total, pero se ajusta a los objetivos indicativos para la energía renovable[11].

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4 «La cuota de las energías renovables en la UE», COM (2004) 366 final, apartado 4.3.1.

5 Consejo Europeo de Bruselas, 25 y 26 de marzo de 2004, Conclusiones de la Presidencia.

6 Resolución sobre las «Fuentes de energía renovables en la Unión», sesión plenaria de 28 de septiembre de 2005.

7 Millones de toneladas de equivalente de petróleo.

8 Agencia Europea de Medio Ambiente, «*How much biomass can Europe use without harming the environment*», informe 2/2005; véase el anexo 2.

9 Por ejemplo, Bulgaria y Rumania cuentan cada una con 0,7 hectáreas de suelo agrícola per cápita, frente a las 0,4 de EU25.

10 Véanse el anexo 3 y la evaluación del impacto.

11 Estos objetivos son un 12 % de la cuota global para las energías renovables, una cuota del 21 % en el sector de la electricidad y del 5,75 % para los biocarburantes en 2010. A través de las medidas del plan

1.2. Costes y ventajas

De varios estudios científicos y económicos se desprende que este incremento en el uso de la biomasa podría producir las siguientes ventajas en 2010:

- diversificación del suministro de energía en Europa, incrementado la cuota de la energía de fuentes renovables en un 5 % y reduciendo la dependencia de la energía importada del 48 % al 42 %[12];

- reducción de las emisiones de gases de efecto invernadero de 209 millones de toneladas de CO_{2eq} al año[13];

- empleo directo para hasta 250 000 o 300 000 personas, sobre todo en zonas rurales. Los distintos estudios arrojan cifran ampliamente divergentes[14];

- la posible presión a la baja en el precio del petróleo como consecuencia de la menor demanda de crudo.

Suponiendo unos precios de los combustibles fósiles casi un 10 % inferiores a los actuales, el coste que puede medirse directamente podría estimarse en 9 mil millones de euros al año – 6 mil millones de euros para biocarburantes para transportes y 3 mil millones de euros para la biomasa en la generación de electricidad (la biomasa de la calefacción suele tener precios competitivos)[15]. Esto equivale a un incremento de cerca de 1,5 céntimos por litro de gasolina o gasóleo y de 0,1 céntimos por kWh de electricidad[16].

También pueden obtenerse beneficios de la extensión del liderazgo tecnológico de la UE a estos sectores.

Cabe prever que dichos beneficios se obtendrían sin contaminación adicional ni otras formas de daños medioambientales[17].

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de acción, la Comisión estima que podrán alcanzarse estos porcentajes – en el caso de la cuota global, si no en el año 2010, sí dentro de un plazo de uno o dos años a partir de dicha fecha.

12 Véase el apartado 5 de la evaluación del impacto.

13 Véase el apartado 5 de la evaluación del impacto.

14 Esta cifra parte del supuesto de que el 70-90 % de la biomasa se produce en la UE. Por lo que respecta al empleo directo, los biocarburantes suelen ser entre 50 y 100 veces más generadores de empleo en la UE que las alternativas de combustibles fósiles; la electricidad de biomasa entre 10 y 20 veces más generadora de empleo; y la calefacción de biomasa el doble de generadora de empleo. Los estudios están divididos en cuanto a los efectos indirectos. Algunos apuntan a factores multiplicadores u oportunidades de exportación que podrían doblar en importancia el efecto directo. Otros argumentan que los puestos de trabajo en bio-energía sustituirán a otros puestos de trabajo, y que el efecto neto sobre el empleo será igual a cero. (Véase el apartado 5 de la evaluación del impacto).

15 Véase el apartado 5 de la evaluación del impacto.

16 El petróleo cuesta unos 60 dólares por barril o (a los tipos de cambio actuales) 48 euros por barril. Para ser competitivo, el biodiésel necesita que el precio del petróleo se sitúe en torno a los 75 euros por barril, mientras que el bioetanol necesita un precio de casi 95 euros por barril. Si el precio de los combustibles fósiles reflejase sus costes externos, habría más formas de biomasa competitivas desde el punto de vista del precio.

17 Véase el anexo 4.

La Comisión está evaluando la contribución que podría aportar la energía renovable a la mezcla energética para 2020. El presente plan de acción podría afianzar un incremento en la contribución de la energía renovable para 2020.

1.3. Uso de la biomasa en transporte, electricidad y calefacción

Los precios del petróleo se han triplicado en los últimos cuatro años. El transporte es un sector clave de la economía; casi toda la energía que emplea procede del petróleo. Los biocarburantes líquidos, como únicos sustitutos directos del petróleo en el transporte, tienen una elevada prioridad política bien justificada.

Además, el crecimiento constante en el sector del transporte no ha permitido aún la estabilización de las emisiones de gases de efecto invernadero, a pesar de los considerables esfuerzos realizados por la industria. Los biocarburantes son una forma cara de reducir las emisiones de gases de efecto invernadero, pero, dentro del transporte, son una de las dos únicas medidas que tienen posibilidades razonables de lograrlo en un grado significativo en el futuro inmediato (la otra sería el acuerdo de los fabricantes de automóviles para reducir las emisiones de CO_2 de los automóviles nuevos – véase el apartado 4.2).

A principios de 2006, la Comisión presentará una Comunicación que abordará específicamente el tema de los biocarburantes.

Mientras que los biocarburantes para transporte son los máximos generadores de empleo y presentan los mayores beneficios en cuanto a la seguridad del suministro, la biomasa de electricidad registra los mayores beneficios respecto a los gases de efecto invernadero y la biomasa de calefacción es la más económica. La biomasa debería fomentarse en estos tres sectores. Al menos hasta 2010, no habrá una competencia importante en lo relativo a la materia prima: los biocarburantes dependen principalmente de los cultivos agrícolas, mientras que la electricidad y la calefacción dependen sobre todo de la madera y los residuos.

2. GENERACIÓN DE CALOR POR BIOMASA

La tecnología para el empleo de la biomasa en la calefacción residencial e industrial es sencilla y barata. El uso de la biomasa tiene una sólida tradición y éste es el sector en que se usa la mayor parte de la biomasa. Se dispone de nuevas técnicas para convertir la madera y los residuos limpios en «pellets» normalizados que no dañan el medio ambiente y son fáciles de manejar.

Sin embargo, el crecimiento del uso de biomasa para la producción de calor es el más lento.

Además de seguir de cerca la aplicación de la legislación comunitaria en materia de cogeneración[18] – una salida comercial importante para la biomasa –, la Comisión va a abordar este punto a través de las siguientes medidas:

[18] Directiva 2004/8/CE, relativa al fomento de la cogeneración sobre la base de la demanda de calor útil en el mercado interior de la energía y por la que se modifica la Directiva 92/42/CEE, DO L 52 de 11.02.2004.

2.1. Legislación relativa a la energía renovable en la producción de calor

Esta es la pieza que falta en el puzzle, junto con las directivas existentes relativas a la electricidad y el transporte. La Comisión trabajará en esta legislación en 2006. Necesita adoptar un enfoque distinto al de anteriores directivas, porque los problemas principales son la confianza y actitudes del mercado y no los costes. Entre los elementos que habrá que analizar destacan:

- La nueva legislación específica sobre energía renovable en la calefacción, basada en una revisión crítica de la contribución potencial de:
    - las medidas para garantizar que los suministradores de carburantes ponen a disposición los carburantes de biomasa;
    - la fijación de criterios de eficiencia para la biomasa y las instalaciones en las que ha de ser utilizada;
    - el etiquetado de los equipos que permita al consumidor comprar aparatos «limpios» y eficientes;
    - otras medidas técnicas;
    - la conveniencia de fijar objetivos;
    - los acuerdos voluntarios con la industria.
- La modificación de la Directiva relativa a la eficiencia energética de los edificios para incrementar los incentivos para la energía renovable[19].
- Un estudio sobre el modo de mejorar el rendimiento de las calderas de biomasa de los hogares y reducir la contaminación[20], con vistas a fijar los requisitos en el marco de la Directiva sobre diseño ecológico[21].

2.2. Renovación de la calefacción urbana

La calefacción urbana (calefacción colectiva) puede gestionar el uso de combustibles renovables más fácilmente y realizar la combustión de más tipos de combustibles con menos emisiones. Es más fácil desarrollar el uso de la biomasa en la calefacción urbana que en la calefacción individual.

En la UE, 56 millones de ciudadanos disfrutan de calefacción urbana, de los cuales el 61 % viven en los nuevos Estados miembros. La adhesión de Bulgaria y Rumania incrementará estas cifras. La calefacción urbana se enfrenta con problemas para competir con la calefacción

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19 Directiva 2002/91/CE, relativa a la eficiencia energética de los edificios, DO L 1 de 4.1.2003; véase el anexo 5.

20 Si la combustión de la biomasa se realiza sin los controles adecuados, puede convertirse en una fuente importante de contaminación. Esto puede deberse a la incineración ilegal de residuos o al uso de calderas de biomasa sin control de combustión y prevención de contaminación adecuados. Las calderas modernas de «pellets» y las instalaciones para calefacción urbana contaminan mucho menos.

21 Directiva 2005/32/CE, por la que se instaura un marco para el establecimiento de requisitos de diseño ecológico aplicables a los productos que utilizan energía, DO L 191 de 22.7.2005.

individual. Muchos sistemas necesitan instalaciones, infraestructuras y una gestión modernas para mejorar el uso de los combustibles y su rentabilidad, y para que sean más sencillos de usar. Algunos sistemas han de transformarse para poder usar como combustible la biomasa. La Comisión anima a que los sistemas de calefacción urbana evolucionen en este sentido.

La Comisión insta al Consejo a que acepte su propuesta de añadir el suministro de calefacción urbana a la lista de bienes y servicios a los que los Estados miembros pueden aplicar un tipo reducido de IVA[22]. Después recomendaría a los Estados miembros que hicieran extensible a la calefacción urbana cualquier tipo reducido de IVA aplicado ya al gas natural o a la electricidad.

La Comisión podría presentar también una propuesta legislativa sobre cuestiones fiscales que afecten a la calefacción urbana y examinará si deben proponerse otras medidas al mismo tiempo.

3. ELECTRICIDAD A PARTIR DE LA BIOMASA

La electricidad puede generarse a partir de todos los tipos de biomasa utilizando varias tecnologías (véase el anexo 6). La Comisión anima a los Estados miembros a que exploten el potencial de todas las formas rentables de generación de energía a partir de la biomasa.

La Directiva sobre la electricidad generada a partir de fuentes de energía renovables constituye el marco para la electricidad obtenida de la biomasa[23]. Los Estados miembros se han comprometido a alcanzar unos objetivos en lo tocante a la electricidad procedente de fuentes de energía renovables. En la mayoría de los casos, parece imposible lograrlos sin utilizar más biomasa[24]. Por lo tanto, la aplicación de la Directiva es la clave para el desarrollo del uso de la biomasa en electricidad. La Comisión seguirá prestando mucha atención a este aspecto[25].

En las instalaciones de cogeneración, la biomasa puede producir calor y electricidad al mismo tiempo. La Comisión anima a los Estados miembros a que tengan en cuenta este doble dividendo en sus sistemas de apoyo.

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22 Véase COM (2003) 397 de 23.7.2003.

23 Directiva 2001/77/CE, de 27 de septiembre de 2001, relativa a la promoción de la electricidad generada a partir de fuentes de energía renovables en el mercado interior de la electricidad, DO L 283 de 27.10.2001.

24 En su Comunicación del año pasado sobre la cuota de energía renovable, la Comisión señalaba que, entre las tres principales fuentes de energía renovable utilizadas para producir electricidad, la cuota de la energía hidráulica está prácticamente estática, la de la biomasa crece lentamente y la de la energía eólica crece con rapidez. Los objetivos de la Directiva no podrán cumplirse a menos que la biomasa comience a crecer más deprisa.

25 Véase la Comunicación sobre el apoyo para la electricidad obtenida de fuentes de energía renovables (COM (2005) 627).

4. BIOCARBURANTES PARA TRANSPORTE

4.1. Aplicación de la Directiva sobre biocarburantes

Al igual que en la generación de electricidad, el marco es el establecido por la legislación comunitaria: la Directiva sobre biocarburantes[26], que establece como valores de referencia una cuota de mercado del 2 % para los biocarburantes en 2005 y una cuota del 5,75 % en 2010[27].

El valor de referencia de 2005 ya no se alcanzará. Existe una variación sustancial en los esfuerzos de los Estados miembros[28]; si todos los Estados miembros alcanzan los objetivos que se han fijado, los biocarburantes llegarán a una cuota de sólo el 1,4 %.

Para aplicar la Directiva, muchos Estados miembros recurren a exenciones fiscales para los carburantes[29]. Éstas están sujetas al control de las ayudas estatales. De conformidad con las Directrices comunitarias sobre ayudas estatales en favor del medio ambiente, la Comisión ha adoptado una actitud general favorable a las notificaciones recibidas. Sin embargo, han surgido una serie de problemas de tipo práctico. Varios Estados miembros han pasado últimamente a utilizar las «obligaciones de biocarburantes», sistema mediante el cual exigen a las empresas suministradoras de combustibles que incorporen un determinado porcentaje de biocarburantes en los combustibles que ponen en el mercado. En el anexo 9 figuran más datos sobre estos dos enfoques. Las «obligaciones de biocarburantes» parecen ser un medio prometedor de superar las dificultades experimentadas con las exenciones fiscales y garantizar que los objetivos se alcanzan de forma rentable. También facilitan la concesión de un trato favorable a los biocarburantes de segunda generación, promovidos por la Comisión.

De conformidad con la Directiva sobre biocarburantes, la Comisión presentará un informe en 2006 sobre la aplicación de la Directiva, con vistas a una posible revisión. Abordará los siguientes temas:

- objetivos nacionales para la cuota de mercado de los biocarburantes;
- uso de las «obligaciones de biocarburantes»;
- exigencia de que, a través de un sistema de certificados, sólo los biocarburantes cuyo cultivo respete las normas mínimas de sostenibilidad serán contabilizados a efectos del logro de los objetivos[30].

El sistema de certificados deberá aplicarse de forma no discriminatoria a los biocarburantes producidos en el ámbito nacional y a las importaciones.

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26 Directiva 2003/30/CE, de 8 de mayo de 2003, relativa al fomento del uso de biocarburantes u otros combustibles renovables en el transporte, DO L 123 de 17.5.2003.

27 Véase el anexo 7.

28 Véase el anexo 8.

29 Estas se ven facilitadas por la Directiva 2003/96/CE, de 27 de octubre de 2003, por la que se reestructura el régimen comunitario de imposición de los productos energéticos y de la electricidad, DO L 283 de 31.10.2003.

30 La Comisión estudiará también cómo pueden aplicarse normas mínimas de sostenibilidad para la biomasa utilizada para otros fines energéticos.

4.2. Mercado automovilístico

La Comisión presentará en breve una propuesta legislativa para fomentar la adquisición pública de vehículos no contaminantes («vehículos limpios»), que podría incluir a los que utilizan mezclas con elevado contenido de biocarburantes[31].

La Comisión está estudiando la posibilidad de que el uso de los combustibles alternativos, incluidos los biocarburantes, sea contabilizado para el logro de los objetivos de reducción de CO_2 para los vehículos industriales ligeros, como parte de su revisión sobre el modo de avanzar hacia el objetivo comunitario de una media de emisiones de 120 g/km. La futura estrategia, que se propondrá en 2006, estará basada en un «enfoque integrado». Esto significa que medidas como el uso de los biocarburantes, los incentivos fiscales, la información del consumidor y la prevención de la congestión serán tenidas en cuenta conjuntamente con los esfuerzos de los fabricantes de automóviles en lo relativo a la tecnología de los vehículos de automoción. Esta estrategia tendrá en cuenta la estrategia para el futuro de la industria automovilística, que también se propondrá en 2006.

4.3. Equilibrio entre la producción nacional y las importaciones

Los biocarburantes y sus materias primas se compran y venden en los mercados mundiales. Para cubrir las necesidades de la UE no es posible ni es deseable adoptar un enfoque de autosuficiencia. Sin embargo, la Unión tiene un cierto margen de maniobra sobre hasta dónde fomentar la producción interna o las importaciones. El anexo 10 describe la situación actual en lo relativo al comercio del bioetanol. El anexo 11 evalúa tres vías para llegar a la cuota de mercado del 5,75 % para los biocarburantes:

- cuota mínima para importaciones
- cuota máxima para importaciones
- enfoque equilibrado.

La Comisión prefiere el enfoque equilibrado. Por lo tanto, la Comisión:

- propondrá la modificación de la norma EN14214 para facilitar el uso de una mayor variedad de aceites vegetales para el biodiésel, hasta donde sea viable sin efectos negativos significativos en los resultados de los combustibles;
- abordará la cuestión de modificar la Directiva sobre biocarburantes para que sólo los biocarburantes cuyo cultivo respete unas normas mínimas de sostenibilidad sean contabilizados a efectos del logro de sus objetivos;
- mantendrá condiciones de acceso al mercado para el bioetanol de importación que no sean menos favorables que las que figuran en los acuerdos comerciales actualmente en vigor;
- seguirá aplicando un enfoque equilibrado en las negociaciones en curso sobre el acuerdo de libre comercio con países/regiones productores de etanol. La UE debe respetar los intereses

[31] Los contratos públicos también desempeñan un papel importante en el fomento de otras formas de biomasa, en particular en lo tocante a la calefacción.

de los productores nacionales y de los interlocutores comerciales de la UE, dentro del contexto de la creciente demanda de biocarburantes.

- apoyará a los países en desarrollo que deseen producir biocarburantes y desarrollar sus mercados nacionales. Este hecho reviste especial importancia en el contexto de las reformas del azúcar[32].

La Comisión hará avanzar estos objetivos en las negociaciones bilaterales (p. ej. con Mercosur) y multilaterales (p. ej. en la Ronda de Doha de la Organización Mundial del Comercio y las conversaciones sobre el comercio de bienes y servicios ecológicos).

4.4. Normas

La Directiva sobre la calidad de la gasolina y del gasóleo[33] establece límites para el contenido del etanol, éter y otros compuestos oxigenados de estos combustibles. Asimismo, limita la presión de vapor de la gasolina. La norma EN590 determina que el gasóleo debe contener como máximo una fracción volumétrica del 5 % de biodiésel (4,6 % en términos de energía). Estos límites reducen las formas posibles de lograr un mayor uso de los biocarburantes.

La Comisión está revisando la Directiva sobre la calidad de la gasolina y del gasóleo y evaluará el impacto de las opciones para abordar las cuestiones antes citadas. La Comisión está estudiando una serie de factores, teniendo en cuenta los costes y beneficios de los sectores afectados. Al revisar dichas opciones, la Comisión considerará, entre otras cosas:

- los impactos sobre la salud y el medio ambiente (incluidas las emisiones contaminantes y las emisiones de gases con efecto invernadero);

- los impactos en el logro de los objetivos de la Directiva de los biocarburantes y el coste de lograrlos.

4.5. Eliminación de los obstáculos técnicos

Existen barreras técnicas para la introducción de biocarburantes. Por ejemplo, la industria ha argumentado que:

- la gasolina mezclada con etanol no puede transportarse a través de oleoductos de petróleo;

- no resulta práctico ofrecer un aceite de base de gasolina, con una presión de vapor más baja, adecuada para mezclar directamente con etanol.

La Comisión pedirá a las industrias afectadas que expliquen la justificación técnica de estos obstáculos y también intentará conocer la opinión de otras partes interesadas. Seguirá de cerca el comportamiento de las industrias correspondientes para asegurarse de que no existe discriminación contra los biocarburantes.

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[32] Este aspecto será abordado de nuevo en la futura Comunicación sobre biocarburantes.

[33] Directiva 98/70/CE, de 13 de octubre de 1998, relativa a la calidad de la gasolina y el gasóleo (DO L 350 de 28.12.1998), modificada por la Directiva 2003/17/CE, de 3 de marzo de 2003 (DO L 76 de 22.3.2003).

4.6. Uso del etanol para reducir la demanda de gasóleo

La flota europea de vehículos muestra una predisposición hacia los vehículos de gasóleo. Sin embargo, Europa tiene una mayor capacidad de producción de bioetanol que de biodiésel, usando menos suelo y con más margen para reducir costes a través de las economías de escala. También hay margen para más importaciones de etanol de terceros países.

La Comisión favorecerá el uso de etanol para reducir la demanda de gasóleo, incluyendo el uso del 95 % de etanol en motores diesel modificados. A partir de la revisión de la norma EN14214, propondrá la evaluación de un cambio que permita que el etanol sustituya al metanol en la producción de biodiésel.

5. CUESTIONES TRANSVERSALES

5.1. Suministro de biomasa

Las medidas que acabamos de describir dependen de la disponibilidad de un suministro adecuado de biomasa. El presente apartado define medidas para fomentarlo.

Política agrícola común (PAC)

La reforma de la PAC de 2003 significa que la ayuda a la renta de los agricultores ya no está vinculada a la producción de los cultivos. Como consecuencia, los agricultores pueden responder libremente a la creciente demanda de cultivos energéticos. Esta reforma también introdujo una «ayuda especial para los cultivos energéticos»[34] y se mantuvo la posibilidad de utilizar las tierras obligatoriamente «retiradas de la producción» para la producción de cultivos no alimentarios (incluidos los cultivos energéticos). En 2006, la Comisión presentará al Consejo un informe sobre la aplicación de la ayuda para los cultivos energéticos, acompañado, si procede, de propuestas que tengan en cuenta los objetivos de la Unión en materia de biocarburantes.

En el pasado, solo una serie limitada de cultivos energéticos podían beneficiarse, a través del régimen de retirada de tierras, de la ayuda. La reforma ha allanado el camino para aquellos agricultores que quieran producir más cultivos energéticos, incluidos el monte bajo de ciclo corto y otros cultivos perennes. Las decisiones sobre cuáles son los cultivos energéticos más adecuados deben adoptarse preferiblemente a nivel regional o local. La Comisión financiará una campaña de información sobre las propiedades de los cultivos energéticos y las posibilidades que ofrecen[35]. El bosque de crecimiento rápido, en particular, necesita un cambio de enfoque porque los agricultores tienen que inutilizar para otros usos la tierra durante varios años y al menos deben transcurrir 4 años antes de la primera cosecha.

Silvicultura

Cerca del 35 % de la madera que crece anualmente en los bosques de la UE no se utiliza[36]. En muchos países existe sólo un mercado limitado para la madera pequeña procedente de las

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34 La "ayuda a los cultivos energéticos", en virtud de la cual se puede optar a una prima de 45 € por hectárea, con una superficie máxima garantizada de 1,5 millones de hectáreas como límite máximo presupuestario, para la producción de cultivos energéticos.

35 La campaña incluirá también la silvicultura.

36 (Sin contar los bosques de zonas protegidas, como las zonas de Natura 2000).

claras, que pueden utilizarse para producir calor y electricidad. La mayoría de los recursos sin utilizar se encuentran en pequeñas explotaciones particulares, lo que dificulta su movilización. Algunos países han abordado este problema estableciendo cadenas de suministro asociadas a las instalaciones existentes y apoyando la organización de sistemas logísticos, la cooperación entre propietarios forestales y el transporte. La Comisión intentará divulgar las lecciones aprendidas de esta experiencia y apoyará iniciativas semejantes en otros países.

La Comisión está preparando un plan de acción forestal, que será adoptado en 2006; en él se abordarán los usos energéticos de la madera.

La Comisión volverá a examinar el impacto del uso energético de la madera y de los residuos de madera en las industrias forestales.

Residuos

Los residuos son un recurso energético infrautilizado. La Comisión está desarrollando una estratégica temática sobre la prevención y reciclado de los residuos y está elaborando una propuesta sobre la revisión de la legislación marco en materia de residuos. Entre las opciones que se están estudiando destacan:

- fomento de técnicas de gestión de residuos que reducen el impacto medioambiental del uso de residuos como combustible;

- adopción de un enfoque de mercado para las actividades de reciclado y recuperación;

- desarrollo de normas técnicas que permitan que los materiales recuperados se consideren bienes (lo que haría más fácil su uso para fines energéticos);

- fomento de la inversión en técnicas de eficiencia energética para el uso de los residuos como combustible.

Subproductos animales

Los subproductos de origen animal no destinados al consumo humano se recuperan cada vez más para fines energéticos, en particular en el biogás y el biodiésel. El progreso tecnológico y científico da lugar al desarrollo constante de nuevos procesos de producción. La Comisión volverá a estudiar el marco reglamentario para la autorización de este tipo de procesos, para que puedan ser accesibles nuevas fuentes de energía, al tiempo que se mantiene un elevado nivel de protección de la salud pública y animal.

Normas

Son necesarias normas europeas para los combustibles de biomasa sólida que faciliten el comercio, desarrollen mercados e incrementen la confianza del consumidor. En ellas trabaja el Comité Europeo de Normalización (CEN). La Comisión le animará a que conceda la máxima prioridad a este trabajo.

Mejora de la cadena de suministro

Con el apoyo del programa comunitario «Energía inteligente para Europa» se ha puesto en marcha una Bolsa europea para los «pellets» y menudos de madera. Los volúmenes son bajos.

La Comisión estudiará la forma de mejorar los resultados, con la mira puesta en un sistema de intercambios comerciales a escala de la UE (si resultase técnica y económicamente viable).

Planes nacionales de acción sobre la biomasa

Los planes nacionales de acción sobre la biomasa pueden reducir la incertidumbre del inversor mediante la evaluación de la disponibilidad física y económica de los diferentes tipos de biomasa, incluida la madera y los residuos de madera, así como los residuos y los cultivos agrícolas, identificando prioridades para los tipos de biomasa que han de ser utilizados y para las formas en que pueden desarrollarse los recursos de la biomasa, e indicando las medidas que se pueden adoptar a nivel nacional para promover este proceso. También pueden estar asociados a campañas de información al consumidor sobre los beneficios de la biomasa. Las regiones también pueden tener un papel relevante en este sentido. La Comisión fomenta el desarrollo de planes de acción nacionales para la biomasa.

5.2. Ayuda económica de la UE para la energía obtenida a partir de la biomasa

Muchas de las regiones beneficiarias de los Fondos de Cohesión y de los Fondos Estructurales presentan un elevado potencial de crecimiento económico y creación o estabilización de empleo a través de la biomasa. En este caso se encuentran en particular las regiones rurales de Europa Central y Oriental. Los bajos costes de la mano de obra y la elevada disponibilidad de recursos pueden brindar a estas regiones una ventaja comparativa en la producción de biomasa. Por consiguiente, el apoyo al desarrollo de fuentes de energía renovables y alternativas, como la producción de biomasa, es un importante objetivo para los Fondos Estructurales y de Cohesión, tal como establece la propuesta de la Comisión sobre Directrices estratégicas comunitarias para la política de cohesión[37]. Dichos fondos pueden financiar la reconversión profesional de los agricultores; el suministro de equipos para los productores de biomasa; la inversión en instalaciones de producción de biocarburantes y otros materiales; y el cambio del combustible a la biomasa por parte de los productores de electricidad y calefacción urbana.

La Comisión hace un llamamiento a los Estados miembros y a las regiones para que, cuando preparen sus marcos estratégicos nacionales de referencia y sus programas operativos, garanticen que se han tenido íntegramente en cuenta las ventajas potenciales de la biomasa.

La inversión en explotaciones agrícolas o cerca de ellas, por ejemplo para la transformación de biomasa, puede apoyarse a través de la política de desarrollo rural, al igual que la movilización de la biomasa no utilizada por los propietarios de explotaciones forestales. La Comisión ha propuesto unas Directrices estratégicas comunitarias de desarrollo rural que hacen hincapié en las energías renovables en general y en las cadenas de suministro de la biomasa en particular[38]. La Comisión insta a los Estados miembros a que aprovechen estas oportunidades para el desarrollo y la diversificación de la economía rural a través de sus programas nacionales de desarrollo rural. La Comisión propone un grupo *ad hoc* específico para estudiar las posibilidades de la biomasa dentro de estos programas.

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37 COM (2005) 299 de 5.7.2005.

38 COM (2005) 304.

5.3. Ayudas estatales

La ayuda oficial para la producción y uso de la biomasa debe respetar la política comunitaria en materia de ayudas estatales. La Comisión puede autorizar la ayuda a la inversión y la ayuda de funcionamiento basándose en las Directrices comunitarias sobre ayudas estatales en favor del medio ambiente[39]. Las normas de las citadas Directrices tienen en cuenta los efectos positivos que puede tener la energía producida a partir de la biomasa en comparación con la producción de energía a partir de combustibles fósiles. La ayuda para las inversiones en las zonas asistidas puede ser considerada compatible con el mercado común con arreglo a las Directrices sobre las ayudas de Estado de finalidad regional[40]. No deberán producirse falseamientos indebidos de la competencia. Véase también el anexo 9.

6. INVESTIGACIÓN

La propuesta de la Comisión para el Séptimo Programa Marco concede gran prioridad a la investigación sobre la biomasa. Incluye varias acciones con un elemento de biomasa:

- «Biomasa para combustibles, electricidad, calefacción y refrigeración», con la finalidad de desarrollar y demostrar una cartera de tecnologías;

- «Redes de energía inteligentes», incluida la integración de instalaciones de biomasa en las redes de electricidad y la alimentación de la red del gas natural con biogás y gas sintético;

- «Ciencias de la vida y biotecnología para los productos y procesos no alimentarios sostenibles», incluido el uso de biotecnología para mejorar la productividad, la sostenibilidad y la composición de materias primas de biomasa y el desarrollo de nuevos bioprocesos.

Algunos de los ámbitos de trabajo más importantes serán:

- El desarrollo de una «plataforma tecnológica de los biocarburantes» encabezada por el sector;

- El concepto de «biorefinería», para obtener el máximo rendimiento de todas las partes de las plantas;

- La investigación en biocarburantes de segunda generación, en la que se espera un incremento sustancial de la financiación comunitaria.

La Comisión estudiará cuál es la mejor manera de hacer progresar la investigación hacia la optimización de los cultivos agrícolas y forestales para fines energéticos y hacia los procesos de transformación.

Por medio del programa «Energía inteligente para Europa», la Comisión apoyará la divulgación de técnicas que hayan demostrado su interés en la fase de la investigación.

En el Anexo 12 se proporcionan más detalles.

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[39] DO C 37 de 3.2.2001, p. 3.
[40] DO C 74 de 10.3.1998, p. 9.

7. CONCLUSIÓN

Europa necesita reducir su dependencia de los combustibles fósiles. La biomasa es una de las principales alternativas. Es preciso desarrollar a nivel europeo medidas rentables en favor de la biomasa para:

- obtener el máximo provecho de la innovación nacional y local;
- proporcionar un claro camino a seguir a las principales industrias, organizadas a escala europea;
- compartir las cargas de forma equitativa.

La presente Comunicación establece un programa coordinado de acción comunitaria, que incluye medidas para mejorar la demanda de biomasa; mejorar el suministro; superar los obstáculos técnicos; y desarrollar la investigación.

El plan de acción ha tardado casi un año en elaborarse. Para ello se ha recurrido a amplias consultas con las partes interesadas[41]. Su respaldo a la idea de un enfoque firme de la Comunidad en este ámbito ha sido ampliamente, y a veces apasionadamente, positivo. El siguiente paso es poner en práctica el programa. En la próxima primavera, el Libro Verde sobre una política energética europea coherente abordará el progreso y la evolución futura.

[41] Véase el anexo 13.

ANEXO 1 – Biomass action plan: summary of measures

Biomass for heating and electricity

The Commission will:

- work towards a proposal for Community legislation in 2006 to encourage the use of renewable energy, including biomass, for heating and cooling;
- examine how the directive on energy performance of buildings could be amended to increase incentives for the use of renewable energy;
- study how to improve the performance of household biomass boilers and reduce pollution, with a view to setting requirements in the framework of the eco-design directive;
- encourage district heating scheme owners to modernise them and convert them to biomass fuel;
- encourage Member States that apply a reduced VAT rate to gas and electricity to apply such a rate to district heating too;
- pay close attention to the implementation of the directive on electricity from renewable energy sources;
- encourage Member States to harness the potential of all cost-effective forms of biomass electricity generation;
- encourage Member States to take into account, in their support systems, the fact that, in combined heat and power plants, biomass can provide heat and electricity at the same time.

Transport biofuels

The Commission will:

- Bring forward a report in 2006 in view of a possible revision of the biofuels directive. This report will address the issues of:
  - setting national targets for the share of biofuels;
  - using biofuels obligations on fuel suppliers;
  - ensuring, through certification schemes, that the biofuels used to meet the targets satisfy minimum sustainability requirements.
- Encourage Member States to give favourable treatment to second-generation biofuels in biofuels obligations.
- Bring forward a legislative proposal promoting public procurement of clean and efficient vehicles, including those using high blends of biofuels.

- Examine how biofuel use can count towards the CO_2 emission reduction targets for car fleets.

- Pursue a balanced approach in ongoing free trade agreement negotiations with ethanol-producing countries/regions. The EU must respect the interests of domestic producers and EU trading partners, within the context of rising demand for biofuels.

- Propose amendments to the "biodiesel standard" to facilitate the use of a wider range of oils, including imported oils, to produce biodiesel, and allow ethanol to replace methanol in biodiesel production.

- Assess the impact of options to address the issues of limits on the content of ethanol, ether and other oxygenates in petrol; limits on the vapour content of petrol; and limits on the biodiesel content of diesel.

- Ask the relevant industries to explain the technical justification for practices that act as barriers to the introduction of biofuels and monitor the behaviour of these industries to ensure that there is no discrimination against biofuels.

- Support developing countries by helping them to produce biofuels and by maintaining market access conditions that are no less favourable than those provided by the trade agreements currently in force.

- Bring forward a communication dealing specifically with biofuels early in 2006.

Cross-cutting issues

The Commission will:

- Assess the implementation of the energy crop scheme.

- Finance a campaign to inform farmers and forest holders about the properties of energy crops and the opportunities they offer.

- Bring forward a forestry action plan in which energy use of forest material will play an important part.

- Review the impact of the energy use of wood and wood residues on forest based industries.

- Consider how the waste framework legislation could be amended to facilitate the use of clean wastes as fuel.

- Review how the animal by-products legislation could be amended in order to facilitate the authorisation and approval of alternative processes for the production of biogas and other biofuels

- Encourage the European Committee for Standardisation to speed up work on standards for the quality of biomass fuels.

- Explore how to develop a European spot market in pellets and chips.

- Encourage Member States to establish national biomass action plans.

Encourage Member States and regions to ensure that the benefits of biomass are taken into account when preparing their national reference frameworks and operational plans under the cohesion policy and the rural development policy.

Research

The Commission will:

- Continue to encourage the development of an industry-led "Biofuel technology platform".
- Consider how best to take forward research into the optimisation of agricultural and woody crops for energy purposes, and biomass to energy conversion processes.
- Give a high priority to research into the "bio-refinery" concept, finding valuable uses for all parts of the plant.
- Give a high priority to research into second-generation biofuels, with an aim of improving their efficiency and cost-effectiveness; a substantial increase in Community funding is expected.

ANEXO 2 – EU biomass production potential

The table assesses the EU's potential to produce biomass for energy use. These estimates are conservative because they are based on the following assumptions:

- no effect on domestic food production for domestic use;
- no increase in pressure on farmland and forest biodiversity;
- no increase in environmental pressure on soil and water resources;
- no ploughing of previously unploughed permanent grassland;
- a shift towards more environmentally friendly farming, with some areas set aside as ecological stepping stones;
- the rate of biomass extraction from forests adapted to local soil nutrient balance and erosion risks.

The first column of the table shows the quantities of EU-produced biomass used for energy purposes today. The following columns show the potential contribution in 2010, 2020 and 2030. The potential for 2010 is 2½ times the contribution today. The potential for 2020 is 3 to 3½ times the contribution today, and the potential for 2030 is 3½ to 4½ times that of today. Forests, wastes and agriculture all make a big contribution to this potential for growth. The increase from forestry comes from an increase both in fellings and in the use of residues. The increase from agriculture is driven by the reform of the common agricultural policy.

EU biomass production potential[42]

Mtoe	**Biomass consumption, 2003**	**Potential, 2010**	**Potential, 2020**	**Potential, 2030**
Wood direct from forest (increment and residues)	67[43]	43	39-45	39-72
Organic wastes, wood industry residues, agricultural and food processing residues, manure		100	100	102
Energy crops from agriculture	2	43-46	76-94	102-142
TOTAL	**69**	**186-189**	**215-239**	**243-316**

[42] Sources: 2003 data from Eurostat; projections for 2010, 2020 and 2030 from European Environmental Agency, "How much biomass can Europe use without harming the environment", briefing 2/2005

[43] This figure includes 59 Mtoe of wood and wood wastes; 3 Mtoe of biogas; and 5 Mtoe of municipal solid waste.

It should be underlined that due to lack of data, this table only covers the EU25. It does not include the contribution of Bulgaria and Romania. These countries will be EU members by 2010, and have high biomass production potential. Nor does the table include imports. Most regions of the world have higher potential to produce biomass, relative to their energy consumption, than the EU. Potential EU consumption is therefore significantly higher than these figures would suggest.

ANEXO 3 – A scenario to increase biomass energy using current technologies

mtoe	**Current (2003)**	**Future (2010)**	**Difference**
Electricity	20	55	35
Heat	48	75	27
Transport	1	19	18
TOTAL	69	149	80

This scenario is drawn from the 2004 communication "The share of renewable energy", expanded to the EU25. It is compatible with achievement of the Community's targets of: a 12% overall share of renewable energy; a 21% share of renewable energy in electricity generation; and a 5.75% market share for biofuels.

The Commission believes this scenario can be achieved in the three sectors sectors – electricity, heat and transport – through the measures in this action plan – if not in 2010, the year for which these targets were set, then within a year or two of that date.

This is the scenario that serves as the basis for the impact assessment on this communication.

ANEXO 4 – Environmental impacts

Biomass has three main environmental impacts:

- Avoidance of greenhouse gas emissions

  The Commission estimates that the scenario in Annex 3, if achieved, would reduce greenhouse gas emissions by 209 million tonnes of $CO_{2\text{-eq}}$ per year.

- Environmental impact of the production of raw materials

  Agriculture can have significant effects on the environment, positive and negative. In general, the level of harmful effects varies with the intensity of the agriculture. This is true whether crops are used for food or energy purposes. It can be particularly harmful to bring previously uncultivated land (permanent grassland) into agricultural use.

  On the other hand, using grass cuttings from such land for biomass production can help to prevent the decline of biodiversity on species-rich grasslands due to land abandonment.

  Energy crop cultivation can help to improve the overall profitability of the farm business, contributing to the maintenance of farming in areas where this may be useful from an environmental (or wider sustainable development) perspective. This is important in a number of regions to improve soil stability and prevent irreversible landslide damage. Another potential positive aspect of energy crop production is its contribution to the establishment of new crop rotation systems that are more advantageous from a wider environmental point of view (for example, alternatives to the monoculture of maize).

  If energy crops are grown on agricultural land that was previously used for food production, the change in environmental pressure depends on which biomass crops are cultivated.

  The plantation of tree crops to enhance soil cover on degraded land can also have a globally positive impact. However this should not take place on steppic or mountain habitats that have a high biodiversity value.

  The use of wastes and residues for energy purposes often gives an environmental bonus compared with other means of disposal. For forest residues, the environmental impact depends on the local soil nutrient balance and the risk of erosion, which may require a certain amount of the residues (especially foliage) to be left on site. In some regions, however, their extraction help to reduce the risk of fire.

- Environmental impact of the use of biomass

  Like fossil fuels, biomass emits pollutants. Advanced emission control equipment can virtually eliminate this, however. Such equipment is already standard in transport and, increasingly, in electricity generation. The situation is less favourable with heating, particularly home heating.

This analysis points to two priorities:

- the need to guarantee that site-specific environmental requirements are observed when producing biomass – this will be addressed in the Commission's 2006 report on the implementation of the biofuels directive

- improving the pollution performance of household biomass burning – this will be addressed as part of the measures proposed in this action plan to develop biomass heating.

The Commission will also take steps to improve understanding of the costs and environmental impacts of all transport fuels, including conventional biofuels.

ANEXO 5 – Renewable energy and the directive on the energy performance of buildings

The directive on the energy performance of buildings[44] requires Member States, when calculating the energy performance of buildings, to take into account the positive influence of "heating and electricity systems based on renewable energy sources". The relative importance attached to different kinds of renewable energy will be decided by the Member States in their transposition of the directive, allowing them, in principle, to attach substantial premia to the use of biomass in their calculation methods.

Moreover, for new buildings larger than 1000 square meters, Member States are required to carry out technical, environmental and economic feasibility studies on the use of decentralised energy supply systems based on renewable energy, on CHP and on district or block heating or cooling. This also gives Member States considerable leeway to promote biomass. In many Member States, biomass heating is one of the most practical and cost-effective options.

During 2006, taking into account comments received on the energy efficiency Green Paper[45], the Commission will decide how it thinks the directive should be further developed. The possibilities it will consider could include:

- amending the annex to the directive to ensure that calculation procedures allow greater weight and more active promotion to be given to biomass heating and other forms of renewable energy;

- reducing the thresholds in the directive so that many more new buildings would have to be considered for renewable energy before construction starts, and many more renovation projects would need to meet minimum efficiency requirements based on energy performance calculations that include the positive influence of renewable energy sources, including biomass;

- setting EU-wide minimum energy performance standards and criteria that could also promote the use of biomass where it is technically feasible and economically interesting.

At the same time, the Commission will examine other options for development of the directive, including *inter alia* the use of energy-efficient building materials.

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44 Directive 2002/91 of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings, O.J. L1, 4/01/2003

45 COM(2005)265 final of 22/06/2005

ANEXO 6 – Biomass for electricity generation

Electricity can be generated from all types of biomass. Several reliable technologies are available. These technologies can be used to "co-fire" biomass, by mixing it with coal or natural gas, or to run freestanding power stations.

Large centralised power plants, like those used to burn straw in Denmark or forest residues in Finland, offer the best economic performance, especially if they are also used for heat (combined heat and power, CHP). Co-firing biomass with coal is another good centralised option in existing large power plants.

It is more efficient, when electricity is generated from biomass, to make use of the heat that is produced as well. Member States can support this in the design of support schemes for electricity generated from renewable energy sources, or through CHP support schemes developed in accordance with the harmonised European efficiency reference values for CHP which will come into force in February 2006 in accordance with the CHP directive.[46]

Smaller decentralised plants burning solid biomass or biogas tend to cost more, but often have advantages for the environment and for rural development. The EU structural funds or its rural development programme can be used to study their optimal location in relation to biomass availability, transport infrastructure, grid connection possible and labour markets.

The Commission encourages Member States to harness the potential of all cost-effective forms of biomass electricity generation rather than focusing on one form alone.

[46] Directive 2004/8 of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC, O.J. L52, 21/02/2004

ANEXO 7 – Transport biofuels: background

In 2001 the Commission adopted a communication on alternative fuels for road transport, identifying three fuels (biofuels, natural gas and hydrogen) that could play a big part.[47] It was accompanied by legislative proposals requiring Member States to promote biofuels and making it easier to use fuel tax exemptions to do this. These proposals were adopted, in amended form, in 2003.[48]

Since the adoption of the communication the market share of biofuels has increased from 0.2% in 2000 to 0.8% in 2004. About 90% of biofuel consumption is covered by domestic raw materials, 10% by imports. Out of the EU25's total arable land of 97 million hectares, about 1.8 million hectares were used for producing raw materials for biofuels in 2005. As expected, there has been a shift towards low blends and away from the high blends or pure biofuels that prevailed in 2001. Biodiesel's share of total biofuel consumption has stayed at 70 to 80%.

The rise in the oil price and a growing interest in new markets for agricultural products in the light of the reform of the common agricultural policy - and the sugar regime in particular - have led to a wider appreciation of biofuels' advantages at European level and have provoked widespread discussion in Member States.

"Second-generation" biofuels from wood and wastes are currently more expensive than first-generation biofuels from agricultural crops and have not yet been fully demonstrated on a commercial scale. Once that has been achieved, they will widen the range of raw materials that can be used and could also further improve biofuels' environmental profile. It should be underlined, however, that first-generation biofuels already offer significant benefits and that any significant contribution from second-generation biofuels will not materialise until after 2010. Therefore, the emphasis of this action plan is on first-generation biofuels.

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47 COM (2001) 547

48 Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport, O.J. L123, 17/05/2003, and Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, O.J. L283, 31/10/2003

ANEXO 8 – Biofuels: progress at national level

Member State	Market share 2003	National indicative target for 2005	Targeted increase, 2003-2005
AT	0.06%	2.5%	+2.44%
BE	0	2%	+2%
CY	0	1%	+1%
CZ	1.12%	3.7% (2006)	+ 1.72% (assuming linear path)
DK	0	0%	+0%
EE	0	2%	+2%
FI	0.1%	0.1%	+0%
FR	0.68%	2%	+1.32%
DE	1.18%	2%	+0.82%
GR	0	0.7%	+0.7%
HU	0	0.4-0.6%	+0.4-0.6%
IE	0	0.06%	+0.06%
IT	0.5%	1%	+0,5%
LA	0.21%	2%	+1.79%
LI	0 (assumed)	2%	+2%
LU	0 (assumed)	not yet reported, assume 0	not yet reported
MT	0.02%	0.3%	+0.28%
NL	0.03%	2% (2006)	+0% (promotional measures will come into force from January 2006)
PL	0.49%	0.5%	+0.01%
PT	0	2%	+2%
SK	0.14%	2%	+1.86%
SI	0 (assumed)	0.65%	+0.65%
ES	0.76%	2%	+1.24%
SV	1.32%	3%	+1.68%
UK	0.03%	0.3%	+0.27%
EU25	**0.6%**	**1.4%**	**+0.8%**

Sources

2003: National reports under the biofuels directive except Belgium: Eurostat (figure for 2002) and Italy: EurObserv'Er

2005: National reports under the biofuels directive.

National reports under the biofuels directive are available at http://europa.eu.int/comm/energy/res/legislation/biofuels_en.htm

ANEXO 9 – Implementing the biofuels directive: fuel tax exemptions and biofuel obligations

Member States are using two main tools to implement the Biofuels Directive: tax exemptions and biofuels obligations.

Tax exemptions

Member States make a good deal of use of fiscal policy to promote biofuels. The energy taxation directive establishes the framework for the consequent tax exemptions.

Under Article 16 of this directive, Member States can reduce taxes on biofuels or completely exempt them from taxes, without needing the Commission's prior approval (on fiscal grounds), as long as they respect certain strict conditions.

The tax reduction or exemption cannot exceed the amount of tax which would otherwise be payable on the volume of biofuel present in the product that is eligible for the reduction. In addition, it should be emphasised that the tax reductions or exemptions introduced by Member States must be modified in line with changes in the price of raw materials, in order to ensure that the reductions do not lead to overcompensation of the additional costs of biofuel production. The fiscal advantage (exemption or reduction) granted to a fuel of renewable origin cannot exceed the difference between this fuel and an equivalent fossil fuel.

These fiscal measures no longer need the prior, unanimous approval of other Member States. However, they remain subject to state aid control. The Commission has taken a generally favourable attitude to the notifications received. The exemptions that have received state aid approval are listed in the table.

Table - Biofuel tax exemptions that have received state aid approval

Case	Biofuels concerned	reference
C64/2000 FR	ETBE	OJ L 94 of 10.4.03, p.1
N461/01 IT	Biodiesel	OJ C 146 of 19.6.02,p.6
N480/02 SE	All CO2-neutral fuels	OJ C 33 of 6.2.2004, p.7
N804/01 UK	Biodiesel	OJ C 238 of 3.10.02, p.10
N512/02 SE	Biofuel pilot projects	OJ C 75 of 27.3.03, p.2
N685/02 DE	Bioethanol, biodiesel and vegetable oils	OJ C 86 of 6.4.04, p.15
N717/02 IT	Bioethanol and ETBE	OJ C 16 of 22.1.04, p.22
N407/03 UK	Bioethanol	OJ C 193 of 28.4.05, p.17
NN43/04 AT	Bioethanol, biodiesel and vegetable oils	Not published yet
N187/04 SE	Biofuel pilot projects	Not published yet
N206/04 CZ	Biodiesel	Not published yet
N427/04 HU	Biodiesel and ETBE	OJ C133 of 31.5.05, p.2
N582/04 IT	Biodiesel (prolongation of N461/01)	Not published yet
N599/04 IRL	Biodiesel, bioethanol and vegetable oils	OJ C 98 of 22.4.05, p.10
N44/05 LT	Biodiesel, bioethanol, vegetable oils and ETBE	Not published yet
N223/05 CZ	Biodiesel	Not published yet
N314/05 EE	Bioethanol, biodiesel and vegetable oils	Not published yet

All decisions not to raise objections can be found on the Commission's website: http://europa.eu.int/comm/secretariat_general/sgb/droit_com/index_en.htm#aides

However, the Commission is aware that the system of tax exemptions, as implemented, is giving rise to three problems:

1) The risk of **unnecessarily high cost to the state and unnecessarily high payments to undertakings**. Biofuels producers have different costs but, under the tax exemption system, all receive the same level of compensation. If the level of compensation is enough to bring high-cost producers into the market, there is a risk that it overcompensates lower-cost producers. The risk of overcompensation appears to be widespread, both within the Community and internationally. The services of the Commission are presently looking into several possibilities, including the limitation of detaxation to undenatured bioethanol (which is subject to the highest import duty) and/or making the rate of detaxation depend on the raw material used.

2) Insufficient **investor certainty**. The Energy Taxation Directive limits the duration of tax exemptions to six years. Among the schemes adopted to date, only the French scheme lasts as long as this. In general, Member States could consider taking coordinated measures to create a stable investment climate, in particular by making full use of the possibility under Community law to adopt six-year tax reliefs and to arrange for their extension well before the term has expired. However, stakeholder consultation has clarified that even this period of certainty is less than needed for some investments, particularly in second-generation biofuels but also in first-generation ethanol plants.

3) While some Member States use open aid schemes, available to all, others have opted for a **quota-based approach**, limiting the quantity of biofuel that will qualify for the tax exemption and setting up a process to choose the firms that will benefit from it. The Commission sees risks of non-transparency, arbitrary allocation and increased market concentration in quota-based schemes.

Biofuels obligations

At present there is increasing interest among Member States in the use of **biofuel obligations**, requiring fuel supply companies to incorporate a given percentage of biofuels in the fuel they place on the national market or face a penalty.[49] Obligations are in force in France and Austria and will come into force in Slovenia in 2006 and in the Czech Republic and the Netherlands in 2007. The UK and Germany have recently said that they will introduce them. Schemes vary in relation to: the point in the distribution chain where the obligation is placed; whether individual types of biofuel are distinguished; how compliance is monitored; whether they are implemented through a system of tradable certificates; and whether they coexist with fuel tax exemptions.

Obligations have a number of advantages. They place responsibility for addressing the problem of excessive oil dependence on the sector where it originates – while implying only a negligible increase in the cost of fuel. They give fuel supply companies an incentive to push

[49] Obligations that take this form are compatible with the Fuel Quality Directive (Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (O.J. L350, 28/12/1998), as amended by Directive 2003/17/EC of the European Parliament and of the Council of 3 March 2003 (O.J. L76, 22/03/2003)). By contrast, an obligation to incorporate a given proportion of biofuel in each litre of fuel sold would not be compatible with the Directive..

down the cost of biofuels – and it follows that they are more cost-efficient. They can include a premium for second-generation biofuels. Unlike state aids, they are not subject to a time limit and so could be a good way to establish the stable framework that investors want.

Compatibility between obligations and exemptions

It is important to point out that Article 16.6 of the energy taxation directive states that if Community law requires Member States to comply with legally binding obligations requiring them to place a minimum proportion of biofuels, the option for Member States to reduce excise duties under fiscal control (that is, without needing specific authorisation from the Council under unanimity) would disappear.

ANEXO 10 – Trade in bioethanol

1. Current trade in bioethanol

There is currently no specific customs classification for bioethanol for biofuel production. This product is traded under code 22 07 which covers both denatured (CN 22 07 20) and undenatured alcohol (CN 22 07 10). Both denatured and undenatured alcohol can then be used for biofuel production. It is not possible to establish from trade data whether or not imported alcohol is used in the fuel ethanol sector in the EU.

An import duty of €19.2/hl is levied on undenatured alcohol, while an import duty of €10.2/hl applies to denatured alcohol.

Table I

Imports under code 2207 (in hl)			
	Av. 1999-2001	**Av. 2002-04**	**% of total (02-04)**
Undenatured alcohol	1 167 935	2 383 239	93%
Denatured alcohol	279 904	180 988	7%
Total	1 447 839	2 564 226	100%

Overall imports of alcohol under code 2207 averaged 2 564 226 hl over the 2002-04 period, up from 1 447 839 hl over 1999-2001. Over 93% of them came under code 22 07 10 (undenatured alcohol).

The principal trade trends are summarised in Table II:

Table II

Total imports of alcohol under code 22 07 (in hl) by type of duty					
	2002	**2003**	**2004**	**Av. 2002-04**	**% of total**
Reduced duty	227 285	182 940	288 364	232 863	9%
Duty-free	980 693	2 027 632	1 709 282	1 572 536	61%
MFN	657 011	494 771	1 124 699	758 827	30%
TOTAL	1 864 989	2 705 344	3 122 345	2 564 226	100%

a) average imports of bioethanol increased by 77% over 2002-2004 compared to the previous three-year period (1999-2001) when they totalled 1 447 839 hl;

b) over that period 70% of these imports were traded under preferential conditions, out of which almost 61% were duty-free, while 9% benefited from some type of duty reduction;

c) 30% of EU trade under code 22 07 takes place under MFN (most favoured nation) conditions.

With respect to the largest exporting countries:

a) over the 2002-2004 period, Pakistan was the largest duty-free exporter with an average of 501 745 hl followed, at a distance, by Guatemala with 223 782 hl;

b) Brazil is the only country capable of exporting large quantities as MFN with an average of 649 640 hl over the same period, with the second MFN exporter, the USA, on only 20 109 hl;

c) one country - Ukraine - accounts for the vast majority of imports at reduced duty with 107 711 hl over the 2002-04 period. Egypt came second with over 43 000 hl.

2. Preferential imports of bioethanol into the EU

The EU's preferential trade basically comes under two regimes: the Generalised System of Preferences (including, among others, the Everything But Arms (EBA) initiative) and the Cotonou Agreement. The main preferences accorded by each of them are summarised in Table III and described in detail in the following sections.

Table III

Import conditions under code 22 07 under EU's main preferential agreements					
	GSP normal		**GSP+**	**EBA**	**Cotonou**
Duty reduction	15% up to 31.12.2005	0% as of 1.1.2006	100%	100%	100%
Quantitative restrictions	NO		NO	NO	NO
Beneficiaries	All GSP beneficiaries if not graduated.		Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Panama, Peru, El Salvador, Venezuela, Georgia, Sri Lanka and Mongolia	LDCs	ACPs

2.1. GSP

The current Council Regulation (Regulation (EC) 2501/2001), in force until 31 December 2005, classifies denatured and undenatured alcohol under code 22 07 as a sensitive product, According to article 7.4 of the regulation, imports of this alcohol from all GSP beneficiary countries qualify for a 15% reduction of the MFN duty.[50]

Under the special drugs regime envisaged by Council Regulation (EC) 2501/2001, which was in force from the early nineties until repealed on - 30 June 2005, exports from a number of countries (Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Peru, Pakistan, El Salvador and Venezuela) qualified for duty-free access under code 22 07.

[50] Article 7(4) of Council Regulation (EC) No 2501/2001 of 10.12.2001.

The new GSP Regulation (Council Regulation (EC) No 980/2005 of 27.06.2005), which will apply from 1 January 2006 to 31 December 2008, no longer envisages any tariff reduction for either denatured or undenatured alcohol under code 22 07 (still classified as a sensitive product). This Regulation put in place a special incentive arrangement for sustainable development and good governance (the new GSP + incentive scheme) which has been applying on a provisional basis since 1 July 2005 and will apply on a permanent basis from 1 January 2006 to 31 December 2008. This new incentive arrangement grants unlimited and duty free access (suspension of Common Customs Tariff duties) to denatured or undenatured alcohol under code 2207. It includes all the countries which already benefited from the previous drugs scheme, with the exception of Pakistan which is subject to the full MFN duty.

The new incentive arrangement now also includes Georgia, Sri Lanka and Mongolia, which have not so far exported bioethanol to the EU.

Moreover, a special arrangement for least developed countries (the EBA initiative) provided for by the new GSP Regulation offers an unlimited duty-free access to denatured or undenatured alcohol under code 2207.

2.2. Cotonou Agreement

Under the Cotonou Agreement, ACP countries qualify for duty-free access for denatured and undenatured alcohol under code 22 07 with the sole exception of South Africa. According to Regulation (EC) 2501/2001, South Africa enjoys a 15% reduction in customs duties. From 1 January 2006 it will therefore have to pay full MFN duty. During the ongoing European Partnership Agreement (EPA) negotiations with ACP countries, the customs duties of alcohol under code 22 07 will need to be negotiated.

2.3. Other countries with preferential arrangements

Egypt currently has unlimited duty-free access to the EU under the Euro-Mediterranean Agreement. Before that, it qualified for a 15% reduction under the GSP scheme.

Norway, which ranks among the top ten exporters with a total of 89 375 hl under code 22 07 in 2004, has been granted duty-free access to the EU within the framework of tariff rate quotas (TRQs) since the mid-nineties. In 2005 the TRQ will total 164 000 hl for exports under code 22 07 10 (up from 134 000 hl the previous year) and 14 340 hl under code 22 07 20, up from 3 340 hl.

3. Trade analysis

Table IV sums up trade under the various preferential arrangements.

Table IV

Imports under preferential conditions 2002 – 2004 (in hl)					
	2002	**2003**	**2004**	**Av. 2002-04**	**% of total trade 2002-04**
GSP normal	227 285	182 940	288 364	232 863	9%

GSP +	553 156	1 569 005	1 412 896	1 178 352	47.5%
ACP	291 055	268 784	154 663	238 167	9%
EBA	30 018	86 247	18 956	45 074	1.5%
Others	106 464	103 597	122 768	110 943	4%
Total preferential	1 207 978	2 210 573	1 997 646	1 805 399	70%
Total MFN	657 011	494 771	1 124 699	758 827	30%
Grand total	1 864 989	2 705 344	3 122 345	2 564 226	100%

3.1. GSP

Trade data for 2001–2004 show a dramatic increase in bioethanol exports from the countries benefiting from the special drugs regime in previous years. Although these countries have benefited from the same regime since the 1990s, the unlimited duty-free access enjoyed under it at a moment of rising demand for alcohol under code 22 07 can be considered the single most important factor underlying the doubling of bioethanol exports from these countries to the EU. All major exporters under code 22 07 over the last three years benefit from such a scheme: Pakistan, Guatemala, Peru, Bolivia, Ecuador, Nicaragua and Panama.

Altogether, exports of ethanol from the GSP plus beneficiaries totalled 1 412 896 hl in 2004: practically all duty-free exports to the EU and 46% of all exports under code 22 07 to the EU over the 2002-2004 period.

Thanks to its lower production costs, Pakistan took a big lead over the other GSP beneficiaries with 1 008 656 hl in 2004 (the second largest exporter in the world) followed, at a distance, by Guatemala with over 250 000 hl.

Under the new GSP an exclusion of Pakistan from the list of countries having unlimited duty-free access to the EU market, will remove from the market one of the most aggressive and competitive producers. All old direct competitors under the GSP drugs regime will continue to enjoy duty-free access to the EU market and might be expected to fill the gap left by Pakistan as they have relatively low production costs too.

Nevertheless, at US$14.52/hl, Pakistan has production costs closer to Brazil's which, with production costs of US$13.55/hl, manages to export substantial quantities to the EU paying the full MFN duty. Pakistan might therefore be expected to continue to be able to export significant quantities of ethanol to the EU, albeit not at the same pace as before, thus utilising the increased production capacity built over the last couple of years.

By contrast, the 15% reduction offered by the normal GSP regime opened access for approximately 9% of exports of the same product to the EU market. Unlike the obvious favourable impact of the GSP drugs regime, the impact of the 15% duty reduction is more difficult to assess. The two largest exporting countries benefiting from such a reduction are Ukraine and South Africa. In the case of Ukraine, the introduction of the 15% reduction coincided with a dramatic increase in exports over the 2002-2004 period. For South Africa, on the other hand, the last two years showed

exports stable on approximately 50 000 hl, with a dramatic decrease over the 2000-2001 period. Under these conditions, it is difficult to predict the impact of removal of the 15% import duty reduction although it seems fair to say that even such a small reduction seemed to provide a competitive advantage over the countries paying full duty.

3.2. EBA

So far, exports of bioethanol from countries benefiting from the special arrangement for the least developed countries (the EBA initiative) under the GSP (EC) Regulation 980/2005 to the EU have been negligible and have primarily come from one country - the Democratic Republic of Congo - which already qualified for duty-free access as an ACP country. At the moment, the Democratic Republic of Congo is the only LDC with sizeable, though erratic, exports of alcohol to the EU under code 22 07 since 1999. In 2004 exports totalled 18 956 hl after peaking at 86 246 hl the year before.

It is fair to recognise, however, that EBA dates back to only 2001 and that some of the countries which did not have duty-free access under other earlier regimes (notably Bangladesh, Laos, Cambodia, Afghanistan and Nepal) might find new ways of access to the EU in the medium or longer term.

New opportunities might emerge in these countries - which generally do not produce (or are not very competitive at producing) sugar cane or any other raw material for bioethanol production from their own resources – in the form of processing molasses imported from their competitive, sugar-producing neighbours. This might be the case with Cambodia which could use raw material from Thailand, or with Bangladesh and Nepal which might process raw material from India. At the moment it is difficult to quantify future potential production from these countries but investments are known to have been made in some of them, like Bangladesh.

In this respect it is important to stress that under Council Regulation (EC) 2501/2001, imports are subject to the GSP rules of origin plus regional cumulation. The Commission is currently examining a proposal for a new regulation which would introduce the principle of determination of the preferential rules of origin based on the value-added method. Distillation should continue to be considered an operation with sufficient added value to confer origin on the finished product.

3.3. Cotonou Agreement

- On the whole, ACP exports to the EU under code 22 07 have so far been limited. Over the last couple of years they have, however, been fairly stable at 238 167 hl despite a low of 154 663 hl in 2004 (excluding South Africa: 48 728 hl).

- Swaziland and Zimbabwe are by far the leading exporters with an average of 85 562 hl and 120 261 hl respectively over the 2002-04 period. A number of ACP countries are likely to consider bioethanol production as an alternative to sugar production as part of the restructuring resulting from the EU sugar reform. However, bioethanol production from sugar cane might remain relatively low and limited only to countries where sugar production is competitive, such as Swaziland and Zimbabwe, which have production costs close to Brazil's and India's and which are already exporting substantial quantities to the EU under code 22 07.

ANEXO 11 – Achieving the 5.75% biofuels target: the balance between domestic production and imports

One of the key variables in biofuel policy is the balance between domestic production and imports. Biofuels and their raw materials are traded on world markets. An autarkic approach to meeting the EU's needs is neither possible nor desirable. But the Union still has a degree of discretion about how far to encourage domestic production and/or imports. The purpose of this annex is to set out the facts and assess the pros and cons of different options.

Tools for shifting the balance between domestic production and imports

The starting point is to understand the tools that can be used to shift the balance between domestic production and imports.

In the case of **bioethanol**, the main tool for shifting the balance is the duty paid. EU-produced bioethanol can be expected to cost about €900/toe by 2010 (costs are currently higher because most production plants are rather small). The cheapest imported bioethanol (from Brazil) can be bought in Europe at around €680/toe. Bioethanol imports are subject to duties ranging from zero (for imports from certain countries and/or under certain conditions) to about €376/toe (for undenatured ethanol imported at the maximum tariff). Consequently, imported bioethanol is cheaper than European if no import duty is paid, and more expensive if the maximum tariff is paid. If all tariffs on bioethanol were removed, it would be difficult for domestic producers to stay in the market.

In Germany, only fuel containing undenatured ethanol is eligible for fuel tax exemption. Even imported bioethanol needs the exemption in order to be price-competitive with petrol (currently around €457/toe[51]).

More details on trade arrangements affecting bioethanol are given in Annex 10.

Imports of **biodiesel** or of the vegetable oils used to make it are subject to low or zero tariffs.

Biodiesel can be made from most types of vegetable oil, notably rape oil, soya oil and palm oil.

EU rape oil competes at the world market price. Imported soya oil and palm oil are cheaper. However, biodiesel made predominantly from one or another of these oils does not comply with the "biodiesel" or "FAME" standard, EN14214 – and it needs to comply with this standard if it is to be sold for use in unadapted vehicles. Biodiesel made predominantly from rape oil does comply with the standard, even if blended with a small amount – around 25% – of one of the other oils.

The Commission believes that the limits in standard EN14214 could be adapted to allow a higher proportion of other oils – perhaps 50% – to be used in biodiesel.

Scenarios for assessment

Three theoretical models must be assessed:

[51] Assuming oil at $60/barrel and the € at $1.25.

1) Minimum share for imports;

2) Maximum share for imports;

3) Balanced approach.

Scenario 1: Minimum share for imports

The first point to assess is the technical feasibility of this option and, in particular, whether sufficient land is available to produce the necessary crops.

The Commission estimates that in order to meet the biofuel directive's objective of a 5.75% share of the petrol and diesel market in 2010, 18.6 mtoe of biofuels will be needed. Most domestic biofuel production will come from three crops: sugarbeet and cereals (for bioethanol, replacing petrol) and rape (for biodiesel, replacing diesel). Average biofuel yields per hectare vary widely, depending on the characteristics of the crops, the soil and the climate. The following averages have been assumed:

Sugarbeet	2.9 toe/ha
Cereals	0.9 toe/ha
Rape	1.1 toe/ha

On the basis of this it can be estimated that about 17 million hectares of EU agricultural land would be needed to meet the directive's objective entirely from domestic production.

This can be compared with total EU arable land of 97 million hectares.

In the present context where crop production per hectare is rising steadily and the reform of the sugar regime will release resources currently used for food production, this appears to be technically feasible in principle. The Union is technically capable of meeting its biofuels targets for 2010 from domestic production, although it should be noted that there are agronomic limits on the cultivation of individual crops (e.g. the frequency with which rape can be included in crop rotation cycles)..

However, it should be pointed out that: existing trade arrangements and World Trade Organisation commitments do not permit the EU to close the door to imports of biofuels and biofuel raw materials; these materials are already being imported today; and there is no proposal to increase tariff protection for these goods. Therefore, the scenario of 100% domestic production is a theoretical one and would not be possible in practice.

Even interpreted as "minimum imports" rather than "no imports", this scenario would have two disadvantages.

First, it would expose the EU food and biofuels sectors to excessive increases in the price of raw materials. By creating a new market that could be served only by domestically produced crops, the biofuels policy would drive up their prices, particularly for cereals and rape which are currently traded at world market prices.

Second, it would do nothing to encourage the production of biofuels elsewhere in the world where the creation of new biofuels industries – partly serving foreign customers like the EU, partly domestic needs – can bring benefits to developing countries. In addition, to the extent

that increased consumption of biofuels is a tool to exercise downward pressure on the oil price, this is a global phenomenon – and the EU therefore has an interest in promoting biofuel production globally.

Scenario 2: Maximum share for imports

By encouraging amendment of the biodiesel standard, the EU would ensure that the maximum proportion of its biodiesel consumption is met from imports. The Commission believes that, with an appropriate amendment, imported vegetable oils would capture about 50% of the biodiesel market. However, much of the processing is likely to continue to take place in the Union.

By removing all tariffs on bioethanol, the EU would ensure that the maximum share of its bioethanol consumption is met from imports. The Commission believes that bioethanol made from agricultural crops in Europe will not be able to compete on price with bioethanol made from sugar cane from tropical countries. Therefore, the result of this policy would be that 100% of EU bioethanol consumption would be covered by imports. There would be no domestic bioethanol industry.

On the hypothesis that 56% of biofuel consumption will be biodiesel (in line with diesel's current share of the petrol and diesel market), these steps would lead to imported biofuels (or their raw materials) taking about 70% of the EU biofuel market.

For biodiesel, this approach has merit. It would enable both EU producers and developing countries to benefit, in a balanced way, from the growth of biofuel consumption in the EU. It is an appropriate response to the limits on expansion of rape production in the EU. An EU industry would continue to exist.

But this strategy would not address the serious concerns that the present expansion of vegetable oil production – such as palm oil and soya – in developing countries could be responsible for destruction of natural habitats and deforestation and that increased demand from the EU could translate into an increased rate of deforestation. If this is true, it would be an important factor to set against the greenhouse gas emission reductions that the increased use of biofuels would deliver. If such doubts cannot be removed, public support for biofuels will be undermined. Therefore, it would be wrong to maximise the import of biofuels/raw materials for biofuels without paying attention to the environmental impact of their cultivation.

For bioethanol, this is not a good approach for the EU to follow. If the EU obtains its bioethanol from imports rather than domestic production, the cost will be about 25% lower and the global greenhouse gas benefits will be greater. However, there will be no rural development benefits for Europe. And the security of supply benefits will be less, because Europe will not have the advantage of developing a new domestic fuel source. From a practical point of view, it must be remembered that implementation of the Union's biofuel policy depends on the efforts of Member States. If there is no prospect of domestic involvement in the production of bioethanol, it is likely that many of them will focus their efforts on biodiesel instead – eroding the market into which developing countries hope to sell. Finally, if the least developed countries are not able to compete on price on the world sugar market, there is no reason to believe that they will be able to do so on the world bioethanol market if trade is made completely free.

Environmental concerns are also raised about the cultivation of sugar cane for bioethanol. Against this, it is argued that most bioethanol comes and will continue to come from land that has been under cultivation for a long time.

Scenario 3 –Balanced approach

The Commission believes that an intermediate approach would avoid the disadvantages of the first two options.

This approach should have five elements:

i) Amendment of standard EN14214 to facilitate the use of a wider range of vegetable oils for biodiesel, to the extent feasible without significant ill effects on fuel performance;

ii) Maintain market access conditions for imported bioethanol that are no less favourable than those provided by trade agreements currently in force;[52]

iii) Pursue a balanced approach in ongoing free trade agreement negotiations with ethanol-producing countries/regions. The EU must respect the interests of domestic producers and EU trading partners, within the context of rising demand for biofuels; [53]

iv) Address the issue of amending the biofuels directive so that only biofuels whose cultivation complies with minimum sustainability standards count towards its targets;

v) Support developing countries in the production of biofuels.

The system of certificates would need to apply in a non-discriminatory way to domestically produced biofuels and imports. In particular, it would need to be non-discriminatory in relation to the requirements of the World Trade Organisation. It would need to be developed in line with other initiatives for certification of agricultural and forestry produce and could require EU support in its introduction. The potential impact on developing countries would be taken into consideration before any system of certification is introduced.

The Commission estimates that under this approach:

- price increases for agricultural crops could be kept in an acceptable range;

- a sufficient share of the market for biodiesel raw materials, a majority of the market for biodiesel production, and a majority of the market for bioethanol would remain domestic;

- least-developed countries, including those for whom the reform of the EU sugar regime is a particular challenge and whose bioethanol is not subject to tariffs, would gain a share of the EU biofuel market;

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52 In particular, under the Everything But Arms, Generalised System of Preferences (+) and Cotonou agreements, which presently provide free access to the EU for ethanol imports.

53 Note: existing trade agreements, notably Everything But Arms (EBA), Generalised System of Preferences (GSP) + and Cotonou, which presently provide free access to the EU for ethanol exports, will maintain this level of access..

- the promotion of biofuels would not cause deforestation and habitat destruction.

Notes on the production of biofuels in developing countries

Support for developing countries in the production of biofuels is in the EU's interest both for development policy reasons and to maximise downward pressure on the oil price. It could contribute in specific countries, as in the EU but often in more critical situations, to greater energy security and access to energy, improved foreign exchange and trade balances, economic development and employment in rural regions, and environmental benefits. To the extent that the development of biofuel consumption will exert downward pressure on the global oil price, consumption in developing countries will contribute in the same way that European consumption does. EU development policy, as well as other EU policies such as research and energy and the clean development mechanism under the Kyoto Protocol, offers a number of instruments that can be used.

The positive and negative impacts of cash crops for biofuels on food production and food security have been the subject of extensive discussion. The costs and benefits depend on the site, the way the crop is produced and how it is integrated in the local production system. There is no general rule. Sugar cane has almost always been cultivated as a cash crop in developing countries, and a switch in the end-product from sugar to ethanol should not affect the food supply of the region. Some biofuel raw materials like jatropha could allow the sustainable use of low-value land and, in the process, contribute (via earnings) to an improvement in food security.

ANEXO 12 – The Commission's perspective on biomass and biofuel research

1. Introduction

Research, technological development and demonstration have potential to support the use of biomass. The Commission intends to capitalise on this. Its proposal for the Seventh Framework Programme – Specific Programmes, adopted in September 2005, gives a high priority to biomass.

An industry-led European biofuel technology platform is under development.[54] This is intended to develop and implement a European vision and strategy for the production of biofuels, in particular for transport. Once the technology platform is established, the EC will explore the need to propose a possible joint technology initiative in this area.[55]

Other technology platforms will also play an important role – for example, those dealing with "Industrial biotechnology", "Plants for the future", "Road transport" and "Forest-basedsectors". Under the framework of the Seventh Framework Programme, there is a need for increased coverage of the following topics: biomass availability and logistics ; energy crops for the production of biomass;[56] and combustion, gasification and pyrolysis of biomass covering co-firing, recovered fuels and combined heat and power.

This research and development activity under the Seventh RTD Framework Programme will be complemented by non-research action in the "Intelligent Energy – Europe" programme. The main focus here is to support soft measures and to remove non-technological barriers to the widespread market deployment of already demonstrated biomass and biofuel technologies.

2. Research priorities – biomass in general

The following actions related to biomass, with their corresponding objectives, are included in the Seventh Framework Programme.

- *Biomass for electricity, heating and cooling*

The objective is to develop and demonstrate a portfolio of technologies for electricity, heating and cooling from biomass, including the biodegradable fraction of waste. This research aims at increasing overall conversion efficiency, achieving cost reductions, further reducing the environmental impact and optimising the technologies in different regional conditions. A broad range of research topics are considered including biomass availability and logistics; conversion technologies, such as combustion, co-firing and gasification; emission abatement; and land use.

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54 Technology platforms are channels to involve industries in defining research priorities.

55 Joint technology initiatives are a new way to create public-private partnerships at European level. They have their foundation in technology platforms. They may take the form of a joint undertaking.

56 With emphasis on woody crops (short-rotation coppice, grasses and miscanthus); on new crop breeds and novel cropping systems optimised for non-food use; on improving the energy content of the agricultural crops used for first-generation biofuels; and on machines and techniques for planting, harvesting, storage, transport, pre-treatment and conversion into material that can be fed into conveyor systems.

The Commission will propose to the "Zero Emission Power Generation" technology platform that co-firing be included in its scope.

- *Smart energy networks*

To facilitate the transition to a more sustainable energy system, a wide-ranging R&D effort is required on the EU electricity and gas systems and networks. Research aims at effective integration of biomass installations into electricity grids and feeding biogas and synthetic natural gas into the natural gas grid.

- *Life sciences and biotechnology for sustainable non-food products and processes*

The objective is to strengthen the knowledge base and develop advanced technologies for terrestrial or marine biomass production for energy and industry. Biotechnology will be applied to improve the productivity, sustainability and composition of biomass raw materials and to develop new bio-processes.

The Commission also attaches high importance to the "biorefinery" concept to maximise the value derived from biomass feedstocks by making full use of their components. Biorefineries could be built up by adding further fractionation and conversion steps to current biomass processing facilities (sugar, grain, pulp mills, oil refineries, etc.) to obtain a broad range of products such as food, feed, sustainable polymers, chemicals, fuels, and heat and power. Improving the cost-efficiency of biofuels through the biorefinery concept will be an important element of the biofuel technology platform.

3. Second-generation biofuels: state of play

Producing bioethanol from cellulose delivers a gasoline substitute which is identical to bioethanol produced from sugar or cereals. Synthetic enzymes provide the key to unlock the cellulose molecules and break them down into simpler substances, which are subsequently fermented to ethanol and purified (distilled) the same way as conventional bioethanol. It is hoped that energy balances and, hence, CO_2 emission reductions will be largely enhanced.

The first demonstration plant was taken in operation by Iogen (4 million litres per year in Canada) and this was followed by ETEK (150 thousand litres per year pilot plant in Sweden) which was supported by EU regional funds. A third facility is under construction by Abengoa (5 million litres per year in Spain) and this plant is supported by the Fifth Framework Programme. Enzymatic hydrolysis is expected to become competitive in the medium term due to the decreasing price of the enzymes and low cost of the raw material (such as straw or even wood); being one of the most critical parameters in the overall cost of the biofuel.

Second-generation biodiesel is chemically different from vegetable-oil-based biodiesel. Gasification of biomass (anything works, but the drier the better) produces a "synthesis gas" consisting mainly of carbon monoxide (CO) and hydrogen. Exposing this gas to a suitable catalyst converts it into hydrocarbons (Fischer Tropsch synthesis), which will subsequently be treated to deliver a mixture of gasoline, jet fuel and diesel. Because of the high price of jet fuel, the excellent quality of the diesel fraction and the low quality of the gasoline fraction (low octane number), the process is normally optimised towards the production of jet fuel/diesel.

The different steps in the process have all been demonstrated to work commercially for Fischer Tropsch synthesis gas derived from coal or natural gas. Optimisation still remains to be done on gasification of biomass from different raw materials and gas purification to synthesis gas quality. A large-scale pilot plant (15 000 t/year) is being constructed in Freiberg (Germany) by the company Choren. In addition, Choren and Shell are in the process of developing a full-size prototype commercial plant with a capacity of 200 000 t/year which optimistically, depending on the experience with the pilot plant, could be operational in 2009/10. In parallel to the experience to be gained from this "biomass-to-liquid" (BTL) process, a number of large-scale "gas-to-liquid" projects, several in Qatar, will deliver technology experience on the second stage (Fischer Tropsch) of the process in the years ahead.

Alternatively the synthesis gas can be converted to bio-dimethylether (DME), which can also be used to replace diesel in modified diesel engines. DME, a gaseous fuel under ambient conditions, can be of particular relevance in heavy-duty applications.

The advantage of second-generation biodiesel is partly that the basic treatment of the raw material (gasification) allows virtually any organic material to be used and partly that it delivers a premium-quality diesel fuel, whether to be used in its own right or as a blending component in petroleum-based diesel. Its CO_2 emission profile depends on whether the energy source for conversion is biomass only or whether an external energy source is used, and whether the biomass is a waste product (e.g. straw) or an energy crop. This also affects the cost. Here too, significant CO_2 gains and energy balance improvements are hoped for.

Hybrids between first- and second-generation biofuels are also in preparation. Fortum (Finland) is planning to expand its Porvoo refinery to use vegetable oil and animal fat as a raw material in a conventional hydrogenation process. This delivers the same high-quality diesel as BTL with lower investment, but higher raw material costs (close to conventional biodiesel).

4. Research priorities - transport biofuels

The main area of research is second-generation biofuels made from various biomass resources and wastes, e.g. bioethanol, biodiesel, DME. The technical feasibility of converting cellulose material (straw/wood) and organic wastes into bioethanol and biodiesel has been demonstrated. But costs need to be brought down and technology needs to be further developed and demonstrated for commercial-scale production (over 150 000 tonnes a year). If this can be done, second-generation biofuels should offer three major advantages:

- they will secure a higher market share for biofuels by allowing the use of a wider range of raw material;
- the cultivation process (if any) could be less environmentally intensive than for ordinary agricultural crops;
- this lower intensity will be reflected in lower greenhouse gas emissions from cultivation.

Second-generation biodiesel production has a fourth advantage: the fuel is of better quality than conventional diesel.[57]

[57] The process can also be used to produce a (good) substitute for jet fuel or a (poor) substitute for petrol.

The price of these fuels will depend on technical developments and the price at which the raw material can be obtained. At this stage there is no reason to assume that they will be substantially cheaper than first-generation biofuels.

The Commission plans to substantially increase its support for the development of second-generation biofuels through its research budgets.

ANEXO 13 – Results of consultation

This communication and the impact assessment published alongside it take into account the results of extensive consultations. These began with the Commission's analysis of the various policies affecting biomass and an extensive public consultation campaign using all possible means, such as a public questionnaire via the Internet, numerous meetings with stakeholders, and bilateral meetings with Member States that have developed national Biomass Action Plans and with biomass experts.

The main conclusion drawn from the consultations was that the Commission should push strongly on all fronts, at EU level and national level, in order to overcome the non-technical barriers facing biomass.

Several more specific conclusions can be drawn from the consultation process:

- Sufficient biomass resources are available in the Union to meet the needs for an additional 80 mtoe per year by 2010 without major effects on forest products industries and food production. Energy crops can make a significant contribution while providing a new market outlet for agriculture and contributing to rural development. Any shortfalls can be addressed by imports.

- There are competitive, reliable and efficient European technologies to convert biomass resources into energy vectors (electricity, heating or cooling and biofuels for transport). Nevertheless, RTD work on biomass (supported by appropriate national and EC funds) has to be intensified in order to meet new challenges.

- European (as well as international) solid and liquid biofuels markets are in their infancy and have to be developed further to commodity level. In order to develop them successfully, work on standards and norms has to be accelerated.

- Biomass is generally more expensive than comparable fossil fuel energy. However, in some areas (such as household heating by pellets and industrial CHP based on residues) biomass is already competitive.

- There is an urgent need to start a professionally managed campaign to inform European citizens more fully about the benefits of biomass. This information barrier, as well as the absence of more effective representation of biomass at all levels, is also due to the lack of a strong European biomass association with industrial involvement.

- The main problem that appears to be holding back the penetration of biomass on the energy markets is the lack of demand. The only way to increase demand is through appropriate policies implemented at national level.

- Biomass is the only renewable energy source that does not suffer from intermittency problems and can potentially provide energy for heat, power and transport from the same installation.

- Biomass in the form of solid, liquid or gaseous biofuels is the only renewable energy source that can directly replace solid, liquid and gaseous fossil fuels, either fully or in blends of various percentages, in which case often there is no need for equipment modifications.

- Biomass is the only renewable energy source that cannot be found free; it necessitates a long chain of activities such as planting, growing, harvesting, pre-treatment (storage and drying) and upgrading to a fuel and, finally, mechanical, thermochemical or biological conversion into an energy carrier (power, heat or biofuels for transport). Therefore, biofuels (with the exception of untreated municipal waste) always have an associated cost that has to be borne by the final user.

- Since land availability is limited there could come a point in the future when biomass for energy will have to compete with food, materials, bio-chemicals and carbon sinks. However, this point in time is beyond 2020, and if international trade in biomass fuels becomes effective could lie beyond 2050.

- Environmental concerns must also be addressed whenever biomass is grown for food, products or fuels. This has to be done by taking an overall systems approach and by comparisons with other alternatives and not in isolation.