



KOMMISSIONEN FOR DE EUROPÆISKE FÆLLESSKABER

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**MEDDELELSE FRA KOMMISSIONEN**

**Handlingsplan for biomasse**

{SEK(2005) 1573}

# MEDDELELSE FRA KOMMISSIONEN

## Handlingsplan for biomasse

### 1. INDLEDNING

Energien spiller en afgørende rolle, når Europa skal nå sine mål for vækst, beskæftigelse og bæredygtighed. De høje oliepriser har sat fokus på Europas stigende afhængighed af importeret energi.

Det er nødvendigt, at EU reagerer beslutsomt på denne udfordring. EU's stats- og regeringschefer bekræftede på det uformelle topmøde i Hampton Court i oktober 2005, at energipolitikken har stor betydning, når Europa skal tage globaliseringens udfordringer op.

På baggrund heraf gennemfører Kommissionen en grundlæggende gennemgang af sin energipolitik. Den vil blive emnet i en grøn bog i foråret 2006, der har tre vigtige mål – konkurrenceevne, bæredygtighed og forsyningssikkerhed.

Denne politik skal i sammenhæng med en stærkere økonomisk vækst primært fokusere på at mindske efterspørgslen efter energi<sup>1</sup>, øge anvendelsen af vedvarende energikilder i betragtning af mulighederne for at producere disse indenlandsk og i betragtning af deres bæredygtighed, diversificere energikilderne og øge internationalt samarbejde. Disse elementer kan medvirke til at gøre Europa mindre afhængig af importeret energi, øge bæredygtigheden og virke stimulerende på vækst og beskæftigelse.

Et godt resultat forudsætter en overordnet styring af målene inden for passende tidsrammer. Processen vil omfatte mekanismer, der skal involvere medlemsstater, repræsentanter for Europa-Parlamentet samt interesserede parter<sup>2</sup>.

En integreret og sammenhængende energipolitik og især fremme af vedvarende energikilder udgør rammen for den handlingsplan, som Kommissionen fremlægger. Handlingsplanen udgør kun en del af de foranstaltninger, som er nødvendige for at nå de i ovenstående omtalte mål – men handlingsplanen udgør en vigtig del, da biomasse i øjeblikket udgør næsten halvdelen af den vedvarende energi, som anvendes i EU<sup>3</sup>.

I Kommissionens meddelelse fra 2004 om den vedvarende energis andel i EU forpligtede Kommissionen sig til at udarbejde en handlingsplan for biomasse og fokusere på nødvendigheden af et samlet tiltag i biomassepolitikken<sup>4</sup>. På Det Europæiske Råds møde i foråret i 2004 konkluderede man, at "øget brug af vedvarende energikilder er afgørende

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<sup>1</sup> Omhandlet i den seneste grøn bog om energieffektivitet – "Hvordan vi kan få mere ud af mindre", KOM (2005) 265.

<sup>2</sup> Disse mekanismer omfatter Forummet for energi og transport, Amsterdamforummet for vedvarende energi, Berlinforummet for fossile brændstoffer, Firenzeforummet for regulering af markedet for elektricitet samt Madridforummet for regulering af markedet for gas. Herudover har Kommissionen fornylig besluttet at oprette en ekspertgruppe for konkurrenceevne, energi og miljø.

<sup>3</sup> 44 % i henhold til "substitutionsmetoden", 65 % i henhold til den "klassiske metode" – jf. evaluering af virkningerne, afsnit 2.

<sup>4</sup> "Den vedvarende energis andel i EU", KOM (2004) 366, punkt 4.3.1.

elementer både af hensyn til miljøet og af hensyn til konkurrenceevnen"<sup>5</sup>, ligesom Europa-Parlamentet for nylig har henvist til, "at anvendelse af biomasse har mange fordele i forhold til konventionelle energikilder og visse andre vedvarende energiformer, navnlig forholdsvis lave omkostninger, mindre afhængighed af kortvarige omslag i vejret, støtte til de regionale erhvervsstrukturer og skabelse af alternative indtægtskilder for landmændene"<sup>6</sup>.

I nærværende handlingsplan er der fastlagt foranstaltninger, der skal fremme udviklingen af biomasseenergi fra træ, affald og landbrugsafgrøder ved at skabe markedsbaserede incitamentter for anvendelsen heraf og ved at fjerne hindringer for udvikling af et biomassemarked. På denne måde kan Europa mindske sin afhængighed af fossile brændstoffer, nedsætte omfanget af drivhusgasemissioner og sætte gang i den økonomiske aktivitet i landdistrikterne. Foranstaltningerne er anført i bilag 1.

Nærværende handlingsplan er det første koordinerende skridt. Den omhandler foranstaltninger, der skal fremme udnyttelse af biomasse til opvarmning, elproduktion og transport, og tværgående foranstaltninger vedrørende biomasseforsyning og -forskning samt finansieringen heraf. Sammen med handlingsplanen gennemføres en generel evaluering af virkningerne. Det næste skridt vil være fremsættelse af forslag om særskilte foranstaltninger, der evalueres specifikt med hensyn til deres virkninger i overensstemmelse med Kommissionens bestemmelser.

### **1.1. Biomassens potentiale**

EU dækker i øjeblikket 4 % af sit energibehov med biomasse. Hvis EU udnyttede sit potentiale fuldt ud, ville det mere end fordoble anvendelsen af biomasse i 2010 (fra 69 mtoe<sup>7</sup> i 2003 til ca. 185 mtoe i 2010) – og samtidig sikre god praksis i landbruget og bevarelse af en bæredygtig produktion af biomasse uden markant at påvirke den hjemlige fødevarerproduktion<sup>8</sup>. Bulgariens og Rumæniens tiltrædelse vil forbedre forekomsten af ressourcer<sup>9</sup>, og derudover er der potentiale i forbindelse med import.

Kommissionen skønner, at foranstaltningerne i denne handlingsplan kan øge anvendelsen af biomasse til ca. 150 mtoe i 2010 eller umiddelbart efter<sup>10</sup>. Dette er mindre, end hvad der ville være muligt; men det svarer til de vejledende mål for vedvarende energi<sup>11</sup>.

### **1.2. Omkostninger og fordele**

Det fremgår af adskillige videnskabelige og økonomiske undersøgelser, at den stigende anvendelse af biomasse kunne give følgende positive virkninger i 2010:

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<sup>5</sup> Det Europæiske Råds møde i Bruxelles den 25. og 26. marts 2004, formandskabets konklusioner.

<sup>6</sup> Beslutning om "den vedvarende energis andel i EU", plenarmødet den 28. september 2005.

<sup>7</sup> Megaton olieækvivalent.

<sup>8</sup> Det Europæiske Miljøagentur, "How much biomass can Europe use without harming the environment" (Hvor meget biomasse kan Europa anvende uden at skade miljøet), briefing 2/2005; jf. bilag 2.

<sup>9</sup> Bulgarien og Rumænien har f.eks. begge 0,7 ha landbrugsjord pr. indbygger sammenlignet med 0,4 i EU-25.

<sup>10</sup> Jf. bilag 3 og evaluering af virkningerne.

<sup>11</sup> Disse mål udgør 12 % for den vedvarende energis generelle andel, en andel på 21 % inden for elektricitetssektoren og en andel på 5,75 % for biobrændstoffer i 2010. Kommissionen skønner, at disse andele kan nås med de foranstaltninger, der er fastlagt i handlingsplanen - med hensyn til målene for den generelle andel i 2010, og hvis ikke så senest et år eller to senere.

- diversificering af Europas energiforsyninger, en stigning i den vedvarende energis andel med 5 % og en nedsættelse af afhængigheden af importeret energi fra 48 til 42 %<sup>12</sup>
- en nedsættelse af drivhusgasemissionerne med 209 mio. ton CO<sub>2eq</sub> om året<sup>13</sup>
- direkte beskæftigelse for op til 250–300 000 mennesker, mest i landdistrikterne. Forskellige undersøgelser giver vidt forskellige skøn<sup>14</sup>
- mulighed for et pres på olieprisen i nedadgående retning som følge af mindre efterspørgsel efter olie.

Antager man, at de fossile brændstofpriser ville ligge ca. 10 % lavere end i dag, kan de direkte målelige omkostninger vurderes til 9 mia. EUR om året – 6 mia. EUR til biomasse til transport og 3 mia. EUR til biomasse til elproduktion (biomasse til opvarmning er ofte konkurrencedygtig med hensyn til prisen)<sup>15</sup>. Dette svarer til en stigning på ca. 1,5 cent pr. liter benzin eller diesel og 0,1 cent pr. kwh el<sup>16</sup>.

En styrkelse af EU's ledende teknologiske rolle i disse sektorer kan også forventes at give fordele.

Det forventes, at disse fordele kan opnås uden yderligere forurening eller andre former for miljøskader<sup>17</sup>.

Kommissionen er ved at evaluere det bidrag, vedvarende energi kan bidrage med for at få en bedre sammensætning af energien i 2020. Denne handlingsplan kunne medvirke til et øget bidrag fra den vedvarende energi i 2020.

### 1.3. Anvendelse af biomasse til transport, elproduktion og opvarmning

Oliepriserne er tredoblet inden for de seneste 4 år. Transportområdet er en økonomisk sektor af afgørende betydning, og næsten al energi hertil kommer fra olie. At flydende biobrændstoffer som den eneste direkte erstatning for olie inden for transportområdet prioriteres højt politisk er fuldt ud berettiget.

Endvidere har den konstante vækst inden for transportsektoren bevirket, at det endnu ikke har været muligt at stabilisere omfanget af drivhusgasemissioner på trods af en betragtelig indsats fra erhvervslivets side. Biobrændstoffer er en meget dyr måde at nedsætte

<sup>12</sup> Jf. evaluering af virkninger, afsnit 5.

<sup>13</sup> Jf. evaluering af virkninger, afsnit 5.

<sup>14</sup> Ved dette tal går man ud fra, at 70-90 % af biomassen produceres i EU. Hvad angår den direkte beskæftigelse, er biobrændstoffer typisk 50-100 gange så arbejdsintensive i EU som alternative fossile brændstoffer; biomasseelektricitet er 10-20 gange så arbejdsintensiv; opvarmning med biomasse er dobbelt så arbejdsintensiv. Kommentatorerne er delt med hensyn til de indirekte virkninger. Nogle peger på multiplikatoreffekten eller på eksportmulighederne, som kunne fordoble omfanget af den direkte effekt. Andre argumenterer, at job inden for bioenergiområdet vil erstatte andre job, således at nettoeffekten for beskæftigelsen vil være nul (jf. evaluering af virkningerne, kapitel 5).

<sup>15</sup> Jf. evaluering af virkninger, afsnit 5.

<sup>16</sup> Olie koster ca. 60 \$ pr. barrel eller (med den aktuelle kurs) 48 EUR pr. barrel. Hvis biodiesel skal være konkurrencedygtig, skal olieprisen ligge på ca. 75 EUR/barrel, medens prisen skal ligge på 95 EUR pr. barrel, hvis bioetanol skal være konkurrencedygtig. Hvis prisen på fossile brændstoffer afspejlede de eksterne omkostninger, ville flere former for biomasse være omkostningseffektive.

<sup>17</sup> Jf. bilag 4.

drivhusgasemissionerne på, men inden for transportområdet udgør de den ene af kun to foranstaltninger, som har en rimelig chance for at løse problemet på afgørende vis inden for den nærmeste fremtid (den anden løsning er en aftale med bilproducenterne om at mindske CO<sub>2</sub> emissioner fra nye biler - jf. afsnit 4.2).

I begyndelsen af 2006 vil Kommissionen fremlægge en meddelelse, der særligt omhandler biobrændstoffer.

Mens biobrændstoffer til transport har den stærkeste virkning på beskæftigelsen og giver den største forsyningssikkerhed, har biomasse til elproduktion størst virkning med hensyn til drivhusgasemissioner, mens biomasse til opvarmning er billigst. Biomasse bør fremmes i alle tre sektorer. I det mindste frem til 2010 vil der ikke være nogen større konkurrence med hensyn til råstoffer: biobrændstoffer bygger hovedsageligt på landbrugsafgrøder, mens biomasse til elproduktion og opvarmning hovedsageligt bygger på træ og affald.

## **2. BIOMASSE TIL OPVARMNING**

Teknologien til anvendelse af biomasse til opvarmning i boliger og industri er enkel og billig. Der er en stærk tradition for anvendelse af biomasse, og det er i denne sektor, at biomasse oftest anvendes. Der findes ny teknik til forarbejdning af træ og rent affald til standardiserede træpiller, som er miljømæssigt sikre, og som er nemme at håndtere.

Ikke desto mindre er biomasse til opvarmning den form, der har den laveste vækst.

Kommissionen overvåger nøje gennemførelsen af fællesskabslovgivningen om kraftvarmeproduktion<sup>18</sup> - et vigtigt afsætningsmarked for biomasse – og vil gennemføre følgende foranstaltninger for at afhjælpe dette problem:

### **2.1. Lovgivning om vedvarende energi til opvarmning**

Denne lovgivning er den brik, der mangler i puslespillet med de eksisterende direktiver, der dækker elproduktion og transport. Kommissionen vil arbejde på denne lovgivning i 2006. Det vil være nødvendigt at anvende en anden fremgangsmåde end ved tidligere direktiver, da de vigtigste problemer snarere er et spørgsmål om manglende tillid til markedet og holdninger end et spørgsmål om omkostninger. Blandt de elementer, der skal gennemgås, er:

- Ny specifik lovgivning om vedvarende energi til opvarmning, som baseres på en kritisk gennemgang af eventuelle bidrag:
  - foranstaltninger, der sikrer, at brændstofleverandører sørger for markedsføring af biobrændstoffer
  - udarbejdelse af effektivitetskriterier for biomasse og de anlæg, hvor den skal anvendes
  - mærkning af udstyr, således at man har mulighed for at købe rene og effektive apparater

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<sup>18</sup> Direktiv 2004/8/EF om fremme af kraftvarmeproduktion, 11.2.2004.

- andre tekniske foranstaltninger
  - det hensigtsmæssige ved at fastsætte mål
  - frivillige aftaler med erhvervslivet.
- Ændring af direktivet om bygningers energimæssige ydeevne for at øge incitamentet til at bruge vedvarende energi<sup>19</sup>.
  - En undersøgelse af muligheden for at forbedre ydelsen i kedler til biomasse i private husholdninger og for at mindske forureningen<sup>20</sup> med henblik på fastsættelse af krav i forbindelse med udarbejdelsen af direktivet om miljøvenligt design<sup>21</sup>.

## 2.2. Fornyelse af fjernvarme

Ved fjernvarme (kollektiv varme) er det lettere at styre anvendelsen af fornyelige brændstoffer og anvende flere typer brændstoffer med lavere emissioner. Det er lettere at fremme anvendelse af biomasse i fjernvarme end ved individuel opvarmning.

56 mio. EU-borgere nyder godt af fjernvarme, og 61 % af dem bor i de nye medlemsstater. Med Bulgariens og Rumæniens tiltrædelse vil der komme endnu flere. I konkurrencen med den private opvarmning stilles fjernvarmen over for problemer. I mange net er der brug for moderne anlæg, infrastruktur og ledelse for at få et bedre brændstofforbrug og gøre anlæggene mere omkostningseffektive og brugervenlige. Det er nødvendigt at nettene ændres, så de kan anvende biomasse som brændstof. Kommissionen opmuntrer fjernvarmenet til at gennemføre en sådan omlægning.

Kommissionen anmoder indtrængende Rådet om at godkende forslaget om, at levering af fjernvarme kommer med på listen over varer og tjenesteydelser, hvor medlemsstaterne kan anvende en nedsat momstakst<sup>22</sup>. Kommissionen vil herefter anbefale medlemsstaterne at udvide anvendelsesområdet for enhver nedsat momstakst, som allerede anvendes på naturgas eller el, til at omfatte fjernvarme.

Kommissionen fremlægger måske også et lovforslag om skattespørgsmål, der vedrører fjernvarme. Kommissionen vil undersøge, om der skal foreslås andre foranstaltninger samtidigt.

## 3. BIOMASSE TIL ELPRODUKTION

Der kan fremstilles el af alle former for biomasse under anvendelse af flere former for teknologi (jf. bilag 6). Kommissionen opmuntrer medlemsstaterne til at udnytte potentialet i alle omkostningseffektive former for elproduktion på grundlag af biomasse.

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<sup>19</sup> Direktiv 2002/91/EF om bygningers energimæssige ydeevne, EFT L 1 af 4.1.2003; jf. bilag 5.

<sup>20</sup> Hvis biomasse brændes uden ordentlig kontrol, kan den blive en stærk kilde til forurening. Miljøforureningen kan skyldes illegal afbrænding af affald eller brug af biomassekedler uden tilstrækkelig kontrol af forbrændingen og sikring mod forurening. Moderne træpillekedler og fjernvarmeanlæg medfører lang mindre forurening.

<sup>21</sup> Direktiv 2005/32/EF om rammerne for fastlæggelse af krav til miljøvenligt design af energiforbrugende produkter, EUT L 191 af 22.7.2005.

<sup>22</sup> I KOM(2003)397 af 23.7.2003.

Direktivet om fremme af elektricitet produceret fra vedvarende energikilder udgør lovrammen for el produceret af biomasse<sup>23</sup>. Medlemsstaterne har forpligtet sig til at opfylde mål for elektricitet produceret af vedvarende energikilder. I de fleste tilfælde synes det at være umuligt at nå disse mål uden at anvende mere biomasse<sup>24</sup>. Gennemførelsen af direktivet er derfor nøglen til udvikling af elproduktion på grundlag af biomasse. Kommissionen vil fortsat følge udviklingen nøje her<sup>25</sup>.

I kombinerede kraftvarmeværker kan biomasse give varme og el på samme tid. Kommissionen opmuntrer medlemsstaterne til at tage hensyn til dette dobbelte pluspunkt i ordningerne for støtte.

## **4. BIOBRÆNDSTOFFER TIL TRANSPORT**

### **4.1. Gennemførelse af direktivet om biobrændstoffer**

Ligesom ved elproduktionen er der fastlagt en lovgivningsramme med direktivet om biobrændstoffer<sup>26</sup>, hvor der er fastsat en referenceværdi for biobrændstoffers markedsandel på 2 % i 2005 og 5,75 % i 2010<sup>27</sup>.

Referenceværdien for 2005 vil ikke blive nået. Der er store variationer med hensyn til medlemsstaternes indsats<sup>28</sup>; hvis alle medlemsstaterne når de mål, de har sat, når biobrændstoffer kun en andel på 1,4 %.

Mange medlemsstater sætter deres lid til fritagelse for afgifter på brændstof<sup>29</sup>, når de skal gennemføre direktivet. Disse fritagelser falder ind under bestemmelserne for kontrol med statsstøtte. I overensstemmelse med retningslinjerne for statsstøtte på miljøområdet har Kommissionen reageret positivt på de anmeldelser, den har modtaget. Det har imidlertid givet anledning til en række praktiske problemer. En række medlemsstater har for nylig fastlagt krav om, at benzinselskaberne skal blande en vis procentuel andel biobrændstoffer i det brændstof, de markedsfører. Yderligere oplysninger om de to fremgangsmåder er anført i bilag 9. Forpligtelser vedrørende biobrændstoffer ser lovende ud, når man skal løse problemerne i forbindelse med fritagelse for afgifter og sikre, at målene nås omkostningseffektivt. Forpligtelserne gør det også nemmere at give andengenerationsbiobrændstoffer en positiv særbehandling, og dette støttes af Kommissionen.

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<sup>23</sup> Direktiv 2001/77/EF af 27. september 2001 om fremme af elektricitet produceret fra vedvarende energikilder inden for det indre marked for elektricitet, EFT L 283 af 27.10.2001.

<sup>24</sup> I sidste års meddelelse om andelen af vedvarende energi understregede Kommissionen, at blandt de tre vigtigste fornyelige energikilder til fremstilling af elektricitet er andelen af vandkraft næsten uforandret, andelen af biomasse vokser langsomt, og vindkraft vokser hurtigt. Målene i direktivet vil ikke blive nået, medmindre biomassen begynder at vokse hurtigere.

<sup>25</sup> Jf. særskilt meddelelse om støtteordninger for vedvarende energi i produktionen af elektricitet (KOM(2005) 627).

<sup>26</sup> Direktiv 2003/30/EF af 8. maj 2003 om fremme af anvendelsen af biobrændstoffer og andre fornyelige brændstoffer til transport, EUT L 123 af 17.5.2003.

<sup>27</sup> Jf. bilag 7.

<sup>28</sup> Jf. bilag 8.

<sup>29</sup> Dette støttes af direktiv 2003/96/EF af 27. oktober 2003 om omstrukturering af EF-bestemmelserne for beskatning af energiprodukter og elektricitet, EUT L 283 af 31.10.2003.

I 2006 vil Kommissionen som fastlagt i direktivet om biobrændstoffer fremlægge en rapport om gennemførelsen af direktivet med henblik på en eventuel revision. Denne vil omhandle spørgsmål vedrørende:

- nationale mål for biobrændstoffers markedsandel
- anvendelse af forpligtelser vedrørende biobrændstoffer
- krav om, at kun biobrændstoffer, der produceres i overensstemmelse med mindstekravene til bæredygtighed, hvilket sikres gennem et certifikationssystem, tæller med i opfyldelsen af målene<sup>30</sup>.

Systemet med certifikation skal anvendes på en ikke-diskriminerende måde for både indenlandsk producerede biobrændstoffer og importerede.

#### **4.2. Markedet for køretøjer**

Kommissionen vil snart fremlægge et lovforslag, der skal fremme offentlige indkøb af rene køretøjer, som også kunne omfatte køretøjer, der bruger blandinger af biobrændstoffer.<sup>31</sup>

Kommissionen er ved at gennemgå muligheden for anvendelse af alternative brændstoffer, herunder biobrændstoffer, for at nå målene for en nedsættelse af CO<sub>2</sub>-emissioner for lette erhvervskøretøjer som led i gennemgangen af, hvorledes man kan nå EU's mål, der sigter på at nedsætte de gennemsnitlige emissioner til 120 g/km. Den fremtidige strategi, der vil blive fremlagt i 2006, bygger på en "integreret fremgangsmåde". Dette betyder, at man ud over indsatsen fra bilproducenterne med hensyn til bilteknologi vil overveje foranstaltninger såsom anvendelse af biobrændstoffer, skattemæssige incitament, forbrugerinformation og forebyggelse af overbelastning. I denne strategi vil der blive taget hensyn til den strategi for bilindustriens fremtid, som ligeledes vil blive fremlagt i 2006.

#### **4.3. Ligevægt mellem indenlandsk produktion og import**

Biobrændstoffer og deres råstoffer handles på verdensmarkederne. Det er hverken muligt eller ønskeligt med en selvforsyningspolitik for at opfylde EU's behov. EU har dog et vist spillerum med hensyn til, i hvilket omfang man vil fremme et indenlandsk produkt eller import. I bilag 10 gives en beskrivelse af den aktuelle situation med hensyn til handel med bioetanol. I bilag 11 evalueres tre måder til at nå en markedsandel på 5,7% for biobrændstoffer:

- en minimumsandel for import
- en maksimumsandel for import
- en afbalanceret fremgangsmåde.

Kommissionen foretrækker en afbalanceret fremgangsmåde. Den vil derfor:

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<sup>30</sup> Kommissionen vil også se på, hvordan minimumsstandarder for bæredygtighed også kunne finde anvendelse på biomasse, der anvendes til andre energiformål.

<sup>31</sup> Offentlige indkøb spiller også en vigtig rolle for fremme af andre former for biomasse, især til opvarmning.

- foreslå en ændring af standard EN14214 for at gøre det lettere at anvende en mere omfattende række vegetabiliske olier til biodiesel, såfremt dette er muligt uden markante negative virkninger for brændstoffets ydeevne
- tage spørgsmålet om en ændring af direktivet om biobrændstoffer op, således at kun biobrændstoffer, der produceres i overensstemmelse med mindstekravene til bæredygtighed, tæller med ved opfyldelsen af målene
- fastholde betingelserne for markedsadgang for importeret bioetanol, som ikke er mindre gunstige end de betingelser, der gælder i øjeblikket iht. handelsaftaler
- tilstræbe en afbalanceret fremgangsmåde i de igangværende forhandlinger om frihandel med etanolproducerende lande/regioner. EU skal respektere de indenlandske producenters og EU's handelspartners interesser i forbindelse med en stigende efterspørgsel efter biobrændstoffer
- støtte udviklingslande, der ønsker at producere biobrændstoffer og udvikle deres hjemlige markeder. Dette er af særlig stor betydning i forbindelse med sukkerreformerne<sup>32</sup>.

Kommissionen vil fremlægge disse mål i bilaterale forhandlinger (f.eks. med Mercosur) og i multilaterale forhandlinger (f.eks. Doha-runden i WHO-forhandlingerne og drøftelser om handel med miljøprodukter).

#### 4.4. Standarder

I direktivet om kvaliteten af benzin og dieselolie<sup>33</sup> er der fastsat grænser for indholdet af etanol, æter og andre oxygenater i benzin. I direktivet begrænses benzins damptryk. I standard EN590 er det fastsat, at diesel ikke må indeholde mere end 5 % biodiesel i volumen (4,6 % i energi). Disse begrænsninger indsnævrer mulighederne for en øget anvendelse af biobrændstoffer.

Kommissionen er ved at gennemgå direktivet om kvalitet af brændstoffer. Den vil evaluere virkningerne af forskellige muligheder for at løse ovennævnte spørgsmål. Kommissionen overvejer en lang række faktorer under hensyntagen til omkostninger og fordele for de berørte sektorer. Ved gennemgangen af disse muligheder vil Kommissionen bl.a. se på:

- virkningerne for sundhed og miljø (herunder forurenende emissioner og drivhusgasemissioner)
- virkningerne for gennemførelsen af målene i direktivet om biobrændstoffer og omkostningerne for at nå disse.

#### 4.5. Fjernelse af tekniske hindringer

Der findes tekniske hindringer for indførelse af biobrændstoffer. Erhvervslivet har f.eks. fremført, at

<sup>32</sup> Dette aspekt vil blive uddybet i den kommende meddelelse om biobrændstoffer.

<sup>33</sup> Direktiv 98/70/EF af 13. oktober 1998 om kvaliteten af benzin og dieselolie (EFT L 350 af 28.12.1998), ændret ved direktiv 2003/17/EF af 3. marts 2003 (EUT L 76 af 22.3.2003).

- benzin blandet med etanol ikke kan transporteres i olieledninger
- det ikke er praktisk at have et benzinlager med nedsat damptryk af hensyn til den direkte blanding med etanol.

Kommissionen vil anmode de berørte erhvervsgrene om at gøre rede for den tekniske begrundelse for disse hindringer og vil også indhente synspunkter fra andre interesserede parter. Kommissionen vil overvåge de relevante erhvervsgrenes handlemåde for at sikre, at biobrændstoffer ikke diskrimineres.

#### **4.6. Brug af etanol for at nedsætte efterspørgslen efter diesel**

Hovedparten af den europæiske bilpark består af dieslbiler. Men Europa har en større kapacitet til produktion af bioetanol end biodiesel, og det kræver mindre jordarealer og giver større mulighed for at nedsætte omkostningerne som følge af stordriftsfordelen. Der er også plads til en øget import af etanol fra tredjelande.

Kommissionen vil tilskynde til anvendelse af etanol for at nedsætte efterspørgslen efter diesel, herunder også anvendelse af 95 % etanol i ændrede dieselmotorer. Som led i en fornyet gennemgang af standard EN14214 vil Kommissionen foreslå en evaluering af virkningen af en ændring, der giver mulighed for at erstatte metanol med etanol i produktionen af biodiesel.

### **5. TVÆRGÅENDE EMNER**

#### **5.1. Forsyning med biomasse**

De foranstaltninger, der er omtalt i ovenstående, afhænger af, om det er muligt at få den nødvendige forsyning af biomasse. I dette afsnit fastlægges der foranstaltninger, der skal fremme dette.

## Den fælles landbrugspolitik

Med reformen i 2003 af den fælles landbrugspolitik afhænger landmændenes indkomststøtte ikke mere af de afgrøder, der produceres. Derfor kan landmændene frit reagere på den stigende efterspørgsel efter energiafgrøder. Med denne reform blev der også indført en særlig støtte til energiafgrøder<sup>34</sup>, ligesom man fastholdt muligheden for at anvende obligatorisk braklagte områder til dyrkning af afgrøder, som ikke er bestemt til levnedsmidler (herunder energiafgrøder). I 2006 aflægger Kommissionen beretning til Rådet om gennemførelsen af støtten til energiafgrøder og fremsætter om nødvendigt forslag, der tager hensyn til EU's mål vedrørende biobrændstoffer.

Før kunne kun en begrænset række energiafgrøder nyde godt af støtte fra ordningen om braklægning. Reformen banede vej for landmænd, der ville dyrke flere energiafgrøder, herunder hurtigt voksende lavskov og andre flerårige afgrøder. Beslutningen om, hvilke energiafgrøder der skal dyrkes, bør tages på regionalt eller lokalt niveau. Kommissionen vil finansiere en informationskampagne om egenskaberne ved energiafgrøder og deres muligheder<sup>35</sup>. Især hurtigt voksende skove forudsætter ændrede tiltag, fordi landmændene er nødt til at binde jorden i flere år, og fordi der skal gå mindst fire år, inden man får den første høst.

## Skovbrug

Ca. 35 % af den årlige trævækst i EU-skove anvendes ikke<sup>36</sup>. I mange lande er der kun et begrænset marked for udtyndingstræ med ringe størrelse, der kan bruges til produktion af varme og elektricitet. De fleste af de ubrugte ressourcer findes i små private skove, hvilket vanskeliggør en mobilisering. Nogle lande har klaret dette problem ved at oprette forsyningskæder knyttet til eksisterende anlæg og ved at give støtte til oprettelse af logistiske systemer, samarbejde mellem skovejere samt transport. Kommissionen vil forsøge at videregive erfaringerne og støtte lignende initiativer i andre lande.

Kommissionen er ved at udarbejde en handlingsplan for skovbruget, der skal vedtages i 2006; her vil man behandle energiudnyttelse af træ.

Kommissionen vil gennemgå virkningerne af energiudnyttelse af træ og affaldstræ for skovbrugsvirksomheder.

## Affald

Affald er en energiresource, der bruges alt for lidt. Kommissionen er ved at udarbejde en tematisk strategi til forebyggelse og genbrug af affald og er ved at udarbejde et forslag til en revision af rammelovgivningen for affald. Blandt de muligheder, der overvejes, er:

- støtte til en teknik til håndtering af affald, som mindsker miljøvirkningen af at bruge affald som brændstof

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<sup>34</sup> Støtten til energiafgrøder, hvor man kan få en præmie på 45 EUR pr. ha, med garanti for højst 1,5 mio. ha som loft for budgettet, til produktion af energiafgrøder.

<sup>35</sup> Kampagnen vil også dække skovbrug.

<sup>36</sup> (Uden at medregne skove i beskyttede områder såsom Natura 2000-områder).

- gennemførelse af en markedsorienteret fremgangsmåde ved genbrugs- og genvindingsaktiviteter
- udvikling af tekniske standarder, for at genbrugsmateriale kan betragtes som produkter (hvilket gør det lettere at bruge dem til energimål)
- støtte til investeringer i energieffektive former for teknik til anvendelse af affald som brændstof.

## **Animalske biprodukter**

Animalske biprodukter, der ikke er beregnet til føde for mennesker, genbruges i stigende grad til energi, især i biogas og i biodiesel. Teknologiske og videnskabelige fremskridt fører hele tiden til udvikling af nye produktionsprocesser. Kommissionen vil se på lovgivningsrammen for tilladelser til sådanne processer, for at man kan åbne op for nye energikilder, samtidig med at man fastholder et højt beskyttelsesniveau for offentligheden og dyrevelfærd.

## **Standarder**

Europæiske standarder for faste biomassebrændsler er nødvendige for at fremme handlen, udvikle markedet og øge forbrugernes tillid. Den Europæiske Standardiseringsorganisation (CEN) arbejder på dette. Kommissionen vil henstille til organisationen, at den prioriterer dette arbejde højt.

## **Forbedring af forsyningskæden**

Med støtte fra EU's program for intelligent energi i EU er der blevet taget initiativ til et europæisk handelsforum for træpiller og spåner. Mængden er meget ringe. Kommissionen vil undersøge, hvorledes resultatet kan forbedres med henblik på et EU-omfattende handelssystem (hvis det teknisk og økonomisk kan lade sig gøre).

## **Nationale handlingsplaner for biomasse**

Nationale handlingsplaner for biomasse kan mindske investorers usikkerhed ved at registrere, hvilke forskellige former for biomasse man råder over, fysisk og økonomisk, herunder træ og affaldstræ samt affald og landbrugsafgrøder, ved at prioritere, hvilke biomassetyper der skal anvendes, og hvorledes biomasseressourcerne kan udvikles samt ved at angive, hvilke foranstaltninger der vil blive gennemført på nationalt niveau for at fremme dette. Dette kan forbindes med informationskampagner for forbrugere om fordelene ved biomasse. Regionerne kan med stort udbytte gennemføre det samme. Kommissionen opmuntrer til udarbejdelse af nationale handlingsplaner for biomasse.

## **5.2. Finansiell støtte fra EU til biomasseenergi**

I mange af de regioner, der får støtte fra strukturfondene og samhørighedsfonden, er der gode muligheder for at videreføre den økonomiske vækst og skabe eller fastholde beskæftigelse ved hjælp af biomasse. Dette gælder især for landdistrikterne i Mellem- og Østeuropa. Lave arbejdsomkostninger og forekomsten af store ressourcer kan give disse regioner en komparativ fordel i produktionen af biomasse. Støtte til udvikling af vedvarende og alternative energikilder såsom produktion af biomasse er derfor et vigtigt mål for strukturfondene og samhørighedsfonden, som det er fastslået i Kommissionens forslag om Fællesskabets strategiske retningslinjer for samhørighedspolitikken<sup>37</sup>. Disse fonde kan give støtte til efteruddannelse af landmænd, fremskaffelse af anlæg til producenter af biomasse, investeringer i faciliteter til produktion af biobrændstoffer og andet materiale samt udskiftning af brændstof med anvendelse af biomasse hos producenterne af elektricitet og fjernvarme.

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<sup>37</sup> KOM (2005) 299 af 5.7.2005.

Kommissionen opfordrer medlemsstaterne og regionerne til at sikre, at der er taget passende hensyn til de mulige fordele ved biomasse, når de udarbejder deres nationale strategiske rammeplaner og operationelle programmer.

Investeringer i eller nær landbrugsbedrifter, f.eks. til fremstilling af biomasse, kan støttes gennem politikken for udvikling af landdistrikterne, og det samme gælder for mobilisering af ikke-anvendte biomasser hos skovejere. Kommissionen har fremsat forslag om Fællesskabets strategiske retningslinjer for udvikling af landdistrikterne, hvor der lægges vægt på vedvarende energi generelt og forsyningskæder for biomasse specielt<sup>38</sup>. Kommissionen opfordrer medlemsstaterne til at udnytte disse muligheder for udvikling og diversificering af økonomien i landdistrikterne i deres nationale programmer for udvikling af landdistrikterne. Kommissionen foreslår, at en særlig ad hoc-gruppe skal overveje mulighederne for biomasse i forbindelse med disse programmer.

### 5.3. Statsstøtte

Offentlig støtte til biomasseproduktion og -anvendelse skal være i overensstemmelse med EU's politik for statsstøtte. Kommissionen kan give tilladelse til investeringsstøtte og støtte til operative aktiviteter på grundlag af EF-rammebestemmelser for statsstøtte til miljøbeskyttelse<sup>39</sup>. I disse rammebestemmelser tages der hensyn til de positive virkninger, som energi produceret af biomasse kan have i sammenligning med energi, der er produceret på grundlag af fossile brændstoffer. Støtte til investeringer inden for støtteberettigede områder kan være i overensstemmelse med fællesmarkedet, jf. retningslinjerne for statsstøtte med regionalt sigte<sup>40</sup>. Der bør ikke forekomme uretmæssige tilfælde af konkurrenceforvridning. Der henvises også til bilag 9.

## 6. FORSKNING

I Kommissionens forslag til det syvende rammeprogram prioriteres forskning vedrørende biomasse højt. Der er flere aktioner, hvori biomasse indgår:

- "biomasse til brændstoffer, elektricitet, opvarmning og afkøling", hvor målet er at udvikle og vise en lang række teknologier
- "intelligente energinet", herunder integrering af biomasseanlæg i elledningsnettet og tilslutning af biogas og syntetisk gas til naturgasnettet
- "biovidenskab og bioteknologi til fremme af bæredygtige non-food-produkter og -processer", herunder anvendelse af bioteknologi til forbedring af produktivitet, bæredygtighed og sammensætning af biomasseråstoffer samt udvikling af nye bioprocesser.

Nogle af de vigtigste arbejdsområder vil vedrøre:

- udvikling af en erhvervsledet "platform for biobrændstofteknologi"

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<sup>38</sup> KOM (2005) 304.

<sup>39</sup> EFT C 37 af 3.2.2001, s. 3.

<sup>40</sup> EFT C 74 af 10.3.1998, s. 9.

- "bioraffineringskonceptet", hvor man får mest muligt ud af alle plantedele
- forskning i andengenerationsbiobrændstoffer, hvor der forventes en væsentlig stigning i EU's støtte.

Kommissionen vil overveje, hvorledes man bedst kan fremme forskningen vedrørende optimering af landbrugsafgrøder og produkter fra skovbrug til energiformål og omdannelsesprocesser.

Kommissionen vil med programmet "intelligent energi for Europa" støtte udbredelsen af kendskab til teknik, som af forskningen er dokumenteret som velegnet.

Yderligere oplysninger er anført i bilag 12.

## 7. KONKLUSION

Det er nødvendigt, at Europa overvinder sin afhængighed af fossile brændstoffer. Biomasse er et af de vigtigste alternativer. Det er nødvendigt, at man på europæisk niveau udarbejder omkostningseffektive foranstaltninger til fordel for biomasse for:

- at drage mest mulig nytte af nationale og lokale innovationer
- at give et klart perspektiv for de vigtigste erhvervsgrøner på europæisk niveau
- at dele byrderne rimeligt.

I denne meddelelse er der fastlagt et koordineret program for en EU-aktion, der også omfatter foranstaltninger til at øge efterspørgslen efter biomasse, forbedre forsyningen, overvinde tekniske hindringer og udvikle forskning.

Det har taget næsten et år at udarbejde handlingsplanen. Den bygger på en omfattende høring af de interesserede parter<sup>41</sup>. Der har været en yderst positiv og oftest udbredt positiv reaktion på tanken om et aktivt tiltag fra EU's side inden for dette område. Det næste trin vil være at omsætte programmet til praksis. Næste forårs grøn bog om en sammenhængende europæisk energipolitik vil omhandle fremskridt og udvikling inden for området.

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<sup>41</sup> Jf. bilag 13.

## **BILAG 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<sub>2</sub> 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 metanol 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.

## **BILAG 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<sup>42</sup>**

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

<sup>42</sup> 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

<sup>43</sup> 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.

### **BILAG 3 – A scenario to increase biomass energy using current technologies**

<i>mtoe</i>	<b>Current (2003)</b>	<b>Future (2010)</b>	<b>Difference</b>
<b>Electricity</b>	20	55	35
<b>Heat</b>	48	75	27
<b>Transport</b>	1	19	18
<b>TOTAL</b>	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 – 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.

## **BILAG 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<sub>2</sub>-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 steppe 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.

## **BILAG 5 – Renewable energy and the directive on the energy performance of buildings**

The directive on the energy performance of buildings<sup>44</sup> 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<sup>45</sup>, 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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<sup>44</sup> 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

<sup>45</sup> COM(2005)265 final of 22/06/2005

## **BILAG 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.<sup>46</sup>

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.

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<sup>46</sup> 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

## **BILAG 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.<sup>47</sup> 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.<sup>48</sup>

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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<sup>47</sup> COM (2001) 547

<sup>48</sup> 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

### **BILAG 8 – Biofuels: progress at national level**

<b>Member State</b>	<b>Market share 2003</b>	<b>National indicative target for 2005</b>	<b>Targeted increase, 2003-2005</b>
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%
<b>EU25</b>	<b>0.6%</b>	<b>1.4%</b>	<b>+0.8%</b>

#### *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](http://europa.eu.int/comm/energy/res/legislation/biofuels_en.htm)

## **BILAG 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 CO <sub>2</sub> -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	Bioetanol, biodiesel and vegetable oils	OJ C 86 of 6.4.04, p.15
N717/02 IT	Bioetanol and ETBE	OJ C 16 of 22.1.04, p.22
N407/03 UK	Bioetanol	OJ C 193 of 28.4.05, p.17
NN43/04 AT	Bioetanol, 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, bioetanol and vegetable oils	OJ C 98 of 22.4.05, p.10
N44/05 LT	Biodiesel, bioetanol, vegetable oils and ETBE	Not published yet
N223/05 CZ	Biodiesel	Not published yet
N314/05 EE	Bioetanol, 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](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.<sup>49</sup> 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

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<sup>49</sup> 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.

## BILAG 10 – Trade in bioetanol

### 1. Current trade in bioetanol

There is currently no specific customs classification for bioetanol 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**

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

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

- a) average imports of bioetanol 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
<b>Duty reduction</b>	15% up to 31.12.2005	0% as of 1.1.2006	100%	100%	100%
<b>Quantitative restrictions</b>	NO		NO	NO	NO
<b>Beneficiaries</b>	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.<sup>50</sup>

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.

<sup>50</sup> 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
<b>GSP normal</b>	227 285	182 940	288 364	232 863	9%

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

## **BILAG 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<sup>51</sup>).

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:

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<sup>51</sup> 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;<sup>52</sup>
- 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;<sup>53</sup>
- 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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<sup>52</sup> 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.

<sup>53</sup> 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.

## **BILAG 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.<sup>54</sup> 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.<sup>55</sup>

Other technology platforms will also play an important role – for example, those dealing with “Industrial biotechnology”, “Plants for the future”, “Road transport” and “Forest-based sectors”. 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;<sup>56</sup> 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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<sup>54</sup> Technology platforms are channels to involve industries in defining research priorities.

<sup>55</sup> 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.

<sup>56</sup> 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<sub>2</sub> 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<sub>2</sub> 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<sub>2</sub> 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.<sup>57</sup>

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<sup>57</sup> 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.

### **BILAG 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.