EUROPÄISCHE
KOMMISSION

Brüssel, den 18.11.2015
COM(2015) 576 final

BERICHT DER KOMMISSION AN DAS EUROPÄISCHE PARLAMENT UND DEN RAT

Fortschrittsbericht zur Klimapolitik, einschließlich des Berichts über das Funktionieren des CO2-Marktes und des Berichts über die Überprüfung der Richtlinie 2009/31/EG über die geologische Speicherung von Kohlendioxid

(erforderlich gemäß Artikel 21 der Verordnung (EU) Nr. 525/2013 des Europäischen Parlaments und des Rates vom 21. Mai 2013 über ein System für die Überwachung von Treibhausgasemissionen sowie für die Berichterstattung über diese Emissionen und über andere klimaschutzrelevante Informationen auf Ebene der Mitgliedstaaten und der Union und zur Aufhebung der Entscheidung Nr. 280/2004/EG, gemäß Article 10 Absatz 5 und Article 21 Absatz 2 der Richtlinie 2003/87/EC des Europäischen Parlaments und des Rates vom 13. Oktober 2003 über ein System für den Handel mit Treibhausgasemissionszertifikaten in der Gemeinschaft und zur Änderung der Richtlinie 96/61/EG des Rates und gemäß Artikel 38 der Richtlinie 2009/31/EG des Europäischen Parlaments und des Rates über die geologische Speicherung von Kohlendioxid)

{SWD(2015) 246 final}

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Abbildungsverzeichnis

1. ZUSAMMENFASSUNG

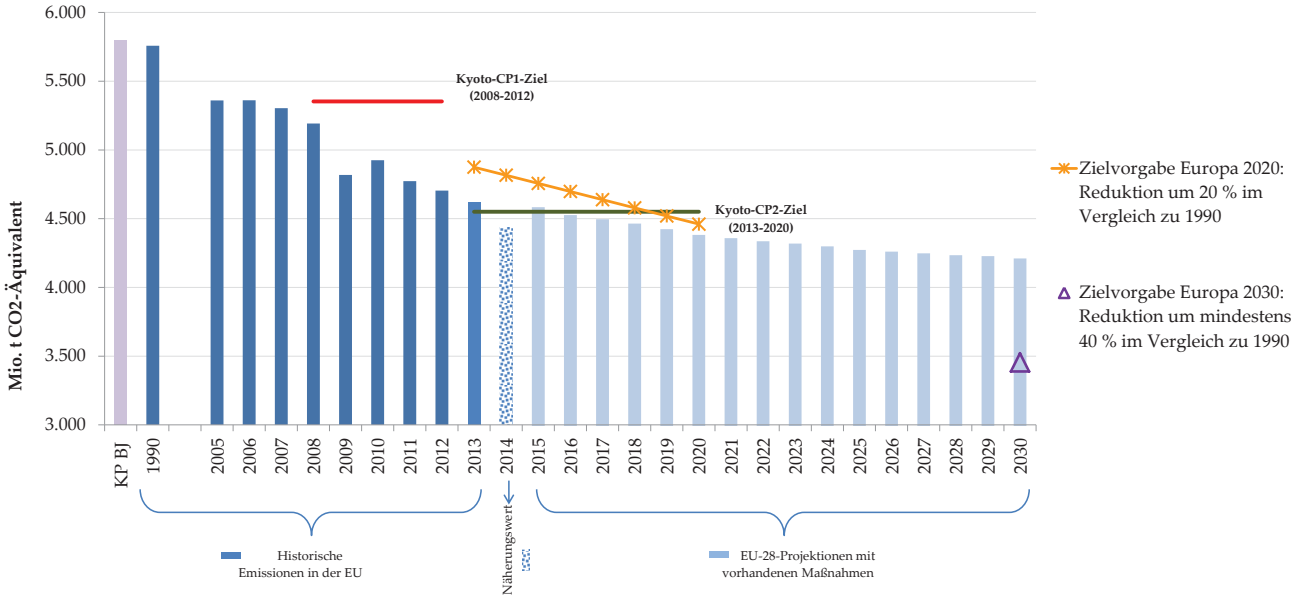
Auf gutem Weg, die Zielvorgaben von Europa 2020 und des Kyoto-Protokolls für die Treibhausgasreduktion zu erfüllen

Den jüngsten Schätzungen zufolge lagen die unter das Klima- und Energiepaket 2020 fallenden Gesamtemissionen von Treibhausgasen (THG) in der EU im Jahr 2014 um 23 % unter dem Niveau von 1990 und gingen im Vergleich zum Jahr 2013 um 4 % zurück.

Nach den im Jahr 2015 vorgelegten Projektionen der Mitgliedstaaten mit den bisherigen Maßnahmen werden die Emissionen bis 2020 schätzungsweise um 24 % gegenüber dem Jahr 1990 zurückgehen. Als diese Projektionen erfolgten, waren die Emissionswerte für 2014 noch nicht verfügbar.

Demzufolge ist die EU zurzeit auf gutem Weg, sowohl die Zielvorgabe von Europa 2020 für die Treibhausgasreduktion als auch die Zielvorgaben des Kyoto-Protokolls zu erfüllen.

Abbildung 1: Fortschritt bei der Erfüllung der Zielvorgaben von Europa 2020 und dem Kyoto-Protokoll



Quelle: Europäische Kommission und Europäische Umweltagentur (EUA).

Die prognostizierten Emissionen im Jahr 2020 liegen in allen Mitgliedstaaten mit Ausnahme von Luxemburg, Irland, Belgien und Österreich unter den nationalen, im Rahmen der Entscheidung über die Lastenteilung festgelegten Zielvorgaben.

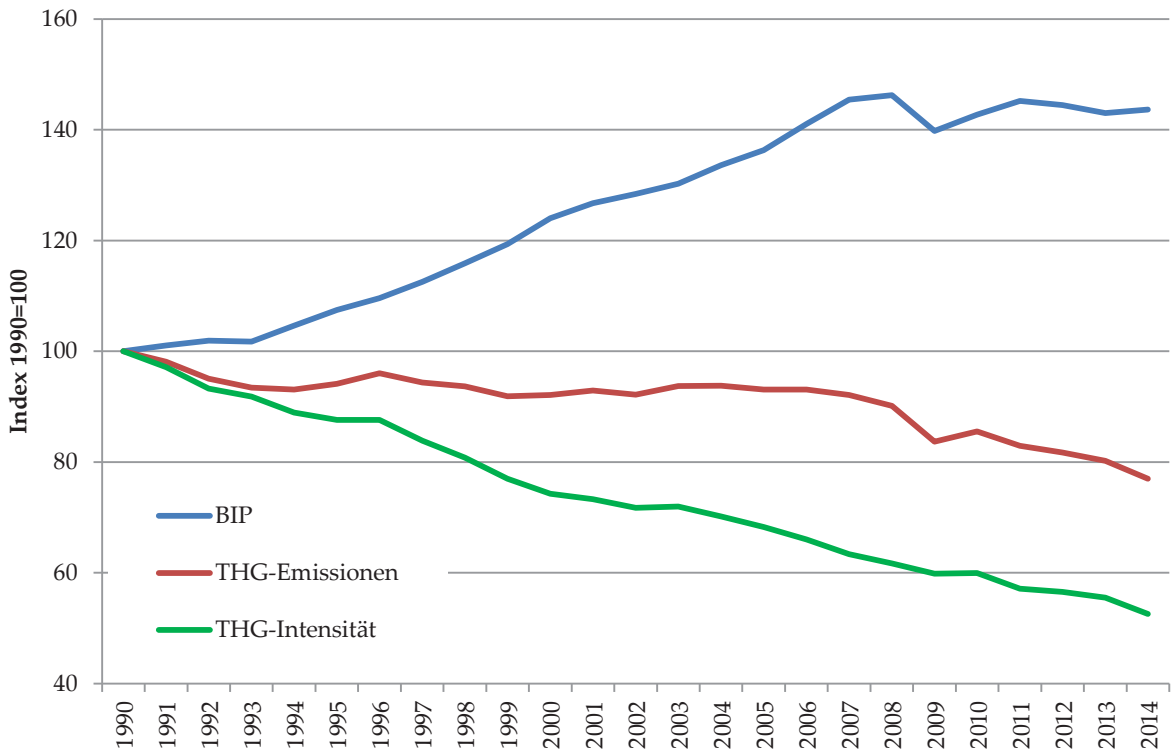
Erfüllung der Zielvorgabe für 2030 für die Reduktion von THG-Emissionen macht weitere Maßnahmen erforderlich

Den Projektionen der Mitgliedstaaten mit den bisherigen Maßnahmen zufolge werden die gesamten THG-Emissionen in der EU bis 2030 schätzungsweise um 27 % gegenüber dem Jahr 1990 zurückgehen. Zusätzliche Maßnahmen sind jedoch erforderlich, damit die EU die Zielvorgabe erfüllt, die EU-internen Treibhausgasemissionen bis zum Jahr 2030 um mindestens 40 % gegenüber 1990 zu senken. Daher hat die Kommission im Juli 2015 eine Änderung des EU-Emissionshandelssystems (EU-EHS) vorgeschlagen. In der ersten Jahreshälfte 2016 wird die Kommission außerdem Vorschläge für die Umsetzung des nicht mit dem EU-EHS im Zusammenhang stehenden Emissionsreduktionsziels von 30 % im Vergleich zu 2005 vorlegen.

Fortsetzung der erfolgreichen Abkopplung der wirtschaftlichen Tätigkeit von den THG-Emissionen

Die EU koppelt ihr Wirtschaftswachstum weiterhin erfolgreich von ihren THG-Emissionen ab. Im Zeitraum 1990-2014 stieg das EU-Gesamt-BIP um 46 %, während die Gesamt-THG-Emissionen (ohne Landnutzung, Landnutzungsänderungen und Forstwirtschaft (LULUCF), aber mit internationalem Flugverkehr) um 23 % zurückgegangen sind. Die THG-Intensität der Wirtschaft in der EU, die als das Verhältnis der THG-Emissionen zum BIP definiert ist, ging von 1990 bis 2014 um fast die Hälfte zurück.

Abbildung 2: Änderungen des BIP (real), der THG-Emissionen und der Emissionsintensität der Wirtschaft (Verhältnis der Emissionen zum BIP), Index (1990 = 100)



Quelle: Europäische Kommission.

Die Umsetzung der Strukturpolitik im Bereich Klima und Energie hat maßgeblich zu dieser erfolgreichen Abkopplung beigetragen. Vor allem die Umsetzung des Klima- und Energiepakets bis 2020 hat zu einer deutlichen Erhöhung des Anteils erneuerbarer Energien und zu einer Verbesserung der Energieeffizienz geführt. Diese beiden Faktoren haben entscheidend zur beobachteten

Emissionsminderung beigetragen, wobei der CO_2-Preis als Triebfeder künftig voraussichtlich zunehmend an Bedeutung gewinnen wird.

Geltungsbereich dieses Berichts

Dieser Bericht und seine beiden Anhänge entsprechen den Berichten, die gemäß Artikel 21 der Verordnung (EU) Nr. 525/2013 über ein System für die Überwachung von Treibhausgasemissionen sowie für die Berichterstattung über diese Emissionen und über andere klimaschutzrelevante Informationen auf Ebene der Mitgliedstaaten und der Union, gemäß Artikel 10 Absatz 5 und Artikel 21 Absatz 2 der Richtlinie 2003/87/EG über ein System für den Handel mit Treibhausgasemissionszertifikaten in der Gemeinschaft und gemäß Artikel 38 der Richtlinie 2009/31/EG über die geologische Speicherung von Kohlendioxid erforderlich sind.

Das beigefügte Arbeitspapier der Kommissionsdienststellen enthält zusätzliche technische Informationen und Daten zum Fortschritt bei der Erfüllung der Zielvorgaben von Europa 2020- und des Kyoto-Protokolls. Es stellt außerdem die Quellenangaben für die wichtigsten Daten und Fakten in diesem Bericht zur Verfügung.

2. FORTSCHRITTS BEI DER ERFÜLLUNG DER ZIELVORGABEN VON EUROPA 2020 UND DES KYOTO-PROTOKOLLS

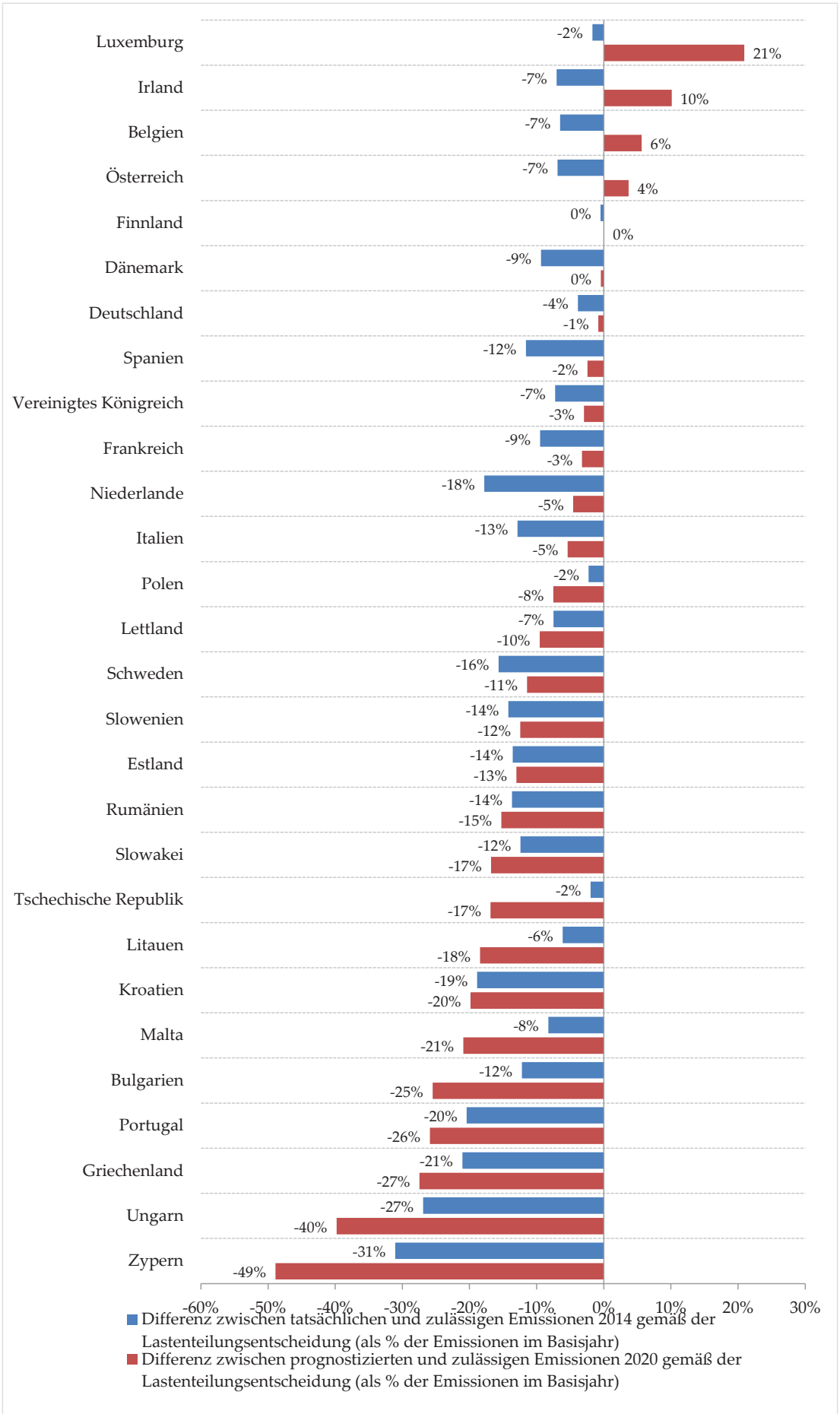
2.1. Fortschritte bei der Erfüllung der Zielvorgaben von Europa 2020

Das Klima- und Energiepaket sieht für die EU das Ziel vor, die THG-Emissionen bis zum Jahr 2020 um 20 % gegenüber dem Stand von 1990 zu senken, was im Vergleich zum Jahr 2005 einer Senkung um 14 % entspricht. Dieses Ziel gliedert sich in zwei Bereiche: die vom EU-Emissionshandelssystem (EU-EHS) erfassten Sektoren und die unter die Lastenteilungsentscheidung fallenden Sektoren. Während das EU-EHS eine EU-weite Obergrenze festlegt, sieht die Lastenteilungsentscheidung in den nicht vom EU-EHS erfassten Sektoren für jeden Mitgliedstaat jährliche Emissionszuweisungen vor

Den Projektionen der Mitgliedstaaten mit den derzeitigen Maßnahmen zufolge wird die EU ihre Zielvorgabe für 2020 erfüllen, da die Gesamtemissionen (sowohl in den vom EU-EHS erfassten als auch in den nicht erfassten Sektoren) im Jahr 2020 voraussichtlich um 24 % unter dem Stand von 1990 liegen werden. 24 Mitgliedstaaten werden ihre Zielvorgaben für 2020 in den nicht vom EU-EHS erfassten Sektoren voraussichtlich durch die derzeitigen Strategien und Maßnahmen erfüllen. Vier Mitgliedstaaten – Luxemburg, Irland, Belgien und Österreich – müssen jedoch zusätzliche Maßnahmen einführen oder von den flexiblen Mechanismen der Lastenteilungsentscheidung Gebrauch machen, um ihre Zielvorgaben für 2020 in den nicht vom EU-EHS erfassten Sektoren zu erfüllen. Die Mechanismen umfassen Übertragungen von nicht in Anspruch genommenen Emissionszuweisungen von einem Jahr auf das Folgejahr, die Nutzung internationaler Projektgutschriften und Übertragungen nicht in Anspruch genommener Emissionszuweisungen zwischen Mitgliedstaaten.

Es wird erwartet, dass die Emissionen im Jahr 2013 und die Schätzungen für 2014 unter den jeweiligen Zielvorgaben der Lastenteilungsentscheidung für 2013 und 2014 liegen werden. Im Jahr 2016 wird die Erfüllung der Zielvorgaben gemäß der Lastenteilungsentscheidung geprüft.

Abbildung 3: Differenz zwischen den geschätzten und den zulässigen Emissionen im Jahr 2014 und zwischen den (mit bestehenden Maßnahmen) prognostizierten und zulässigen Emissionen im Jahr 2020 in den nicht vom EU-EHS erfassten Sektoren. Negative Werte bedeuten eine Übererfüllung, positive Werte eine Nichterfüllung der Zielwerte.


Luxemburg
-2%
21%
Irland
-7%
10%
Belgien
-7%
6%
Österreich
-7%
4%
Finnland
0%
0%
Dänemark
-9%
0%
Deutschland
-4%
-1%
Spanien
-12%
-2%
Vereinigtes Königreich
-7%
-3%
Frankreich
-9%
-3%
Niederlande
-18%
-5%
Italien
-13%
-5%
Polen
-2%
-8%
Lettland
-7%
-10%
Schweden
-16%
-11%
Slowenien
-14%
-12%
Estland
-14%
-13%
Rumänien
-14%
-15%
Slowakei
-12%
-17%
Tschechische Republik
-2%
-17%
Litauen
-6%
-18%
Kroatien
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Malta
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Bulgarien
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Portugal
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Griechenland
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Ungarn
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Zypern
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-49%
-60%
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-40%
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0%
10%
20%
30%
Differenz zwischen tatsächlichen und zulässigen Emissionen 2014 gemäß der Lastenteilungsentscheidung (als % der Emissionen im Basisjahr)
Differenz zwischen prognostizierten und zulässigen Emissionen 2020 gemäß der Lastenteilungsentscheidung (als % der Emissionen im Basisjahr)

Quelle: Europäische Kommission und EUA.

Luxemburg wird seine nationale Zielvorgabe den Projektionen zufolge um 21 Prozentpunkte verfehlen. Emissionen aus dem Straßenverkehr machen mehr als zwei Drittel der nicht mit dem Emissionshandelssystem im Zusammenhang stehenden Gesamtemissionen aus, was auf die niedrigen Kraftstoffsteuern und die große Zahl der Grenzgänger zurückzuführen ist. Diese Projektionen berücksichtigen jedoch keine neuen Maßnahmen, wie die Erhöhung des Mehrwertsteuerregelsatzes, die das Kraftstoffpreisgefälle zu den Nachbarländern verringern wird, und den Bau einer Straßenbahn in Luxemburg-Stadt. Die Auswirkungen dieser Maßnahmen auf die prognostizierten Emissionen müssen noch quantifiziert werden.

In Irland zeigen die jüngsten im Jahr 2015 vorgelegten nationalen Projektionen, dass die Nicht-EHS-Emissionen bis 2020 ansteigen werden. Dies liegt an einem erwarteten Anstieg der Verkehrsemissionen im Zeitraum 2013-2020 um 19 %. In Irland und vor allem in Dublin fehlt es an Infrastruktur für den öffentlichen Nahverkehr und die Elektromobilität. Die Emissionen in der Landwirtschaft werden in diesem Zeitraum voraussichtlich um 2 % zunehmen. Demzufolge wird Irland seine Zielvorgabe für 2020 hinsichtlich der Gesamtemissionen schätzungsweise um 10 Prozentpunkte verfehlen.

Belgien wird sein THG-Emissionsziel für 2020 den Projektionen zufolge um 6 Prozentpunkte verfehlen. Die nationalen- und regionalen Behörden haben sich noch nicht auf die Verteilung der Anstrengungen verständigt, die zur Umsetzung der 2020-Zielvorgabe erforderlich sind. Zudem haben bestimmte Elemente des Steuersystems umweltschädliche Auswirkungen, beispielsweise die weiterhin steuerlich günstige Behandlung von Firmenwagen.

Den jüngsten Projektionen Österreichs zufolge werden die Straßenverkehrsemissionen von 2013 bis 2020 um 3 % steigen und 45 % der nicht unter das EU-EHS fallenden Emissionen ausmachen. Folglich werden die Nicht-EHS-Emissionen die Zielvorgabe für 2020 um 4 Prozentpunkte verfehlen. Die österreichischen Behörden wollen dem durch zusätzliche Maßnahmen entgegenwirken, die vor allem darin bestehen, den Verkehr weiter auf die Schiene zu verlagern, die Fahrzeugeffizienz zu verbessern sowie alternative Kraftstoffe und Elektromobilität zu fördern. Werden diese geplanten Zusatzmaßnahmen erfolgreich umgesetzt, wird Österreich seine Zielvorgabe für 2020 voraussichtlich erfüllen.

2.2. Fortschritt bei den Zielvorgaben des Kyoto-Protokolls

Erster Verpflichtungszeitraum (2008-2012)

Die abschließende Bewertung, inwieweit die EU und ihre Mitgliedstaaten im ersten Verpflichtungszeitraum die Ziele des Kyoto-Protokolls erfüllt haben, schließt sich an den Ablauf des „zusätzlichen Zeitraums für die Erfüllung der Verpflichtungen“ (Angleichungszeitraum) im November 2015 an. Im Anschluss wird der Bericht zum Angleichungszeitraum im Jahr 2016 einer internationalen Prüfung unterzogen.

Die EU-15 und die übrigen elf Mitgliedstaaten mit einer eigenen Zielvorgabe für den ersten Verpflichtungszeitraum des Kyoto-Protokolls haben ihre Ziele erreicht. Die EU wird – ohne Berücksichtigung von Kohlenstoffsenken aus Landnutzung, Landnutzungsänderungen und Forstwirtschaft (LULUCF) und internationalen Gutschriften aus Kyoto-Mechanismen – ihre Zielvorgabe voraussichtlich um 3,2 Gt CO_2-Äq. übererfüllen. Bei Berücksichtigung dieser Faktoren wird die EU ihre Zielvorgaben um voraussichtlich insgesamt 4,2 Gt CO_2-Äq. übererfüllen.

Unter Berücksichtigung der LULUCF- und Kyoto-Mechanismen konnte die EU-15 ihre Emissionen im betreffenden Zeitraum um 18,5 % gegenüber den Werten des Basisjahres senken. Dies entspricht einer Gesamtreduktion von 2,2 Gt CO_2-Äq. und einer Reduktion, die doppelt so hoch ist wie das Reduktionsziel von durchschnittlich 8 % im Zeitraum 2008-2012 gegenüber dem Basisjahr.

Zweiter Verpflichtungszeitraum (2013-2020)

Den jüngsten Projektionen der Mitgliedstaaten zufolge ist die EU auf gutem Weg, ihre Kyoto-Zielvorgabe für den zweiten Verpflichtungszeitraum (durchschnittliche Senkung um 20 % im Zeitraum 2013-2020 gegenüber dem Basisjahr) zu erfüllen.

3. ENTWICKLUNG DER THG-EMISSIONEN IN DER EU

3.1. Entwicklung der THG-Emissionen im Jahr 2014 gegenüber 2013

Die gesamten THG-Emissionen in der EU sind im Jahr 2014 um mehr als 4 % zurückgegangen. Parallel dazu hat sich die wirtschaftliche Situation mit einem BIP-Wachstum um 1,4 % gegenüber 2013 verbessert. Die Emissionen aus am EU-EHS teilnehmenden Anlagen sind schätzungsweise um 4,5 % zurückgegangen.

Der Verbrauch von Erdgas ist in allen Mitgliedstaaten gesunken, und auch der Verbrauch von festen und flüssigen Brennstoffen ist in der EU insgesamt erheblich zurückgegangen. Ein geringerer Wärmeleistungsbedarf der Haushalte aufgrund eines milden Winters und der weiter steigende Anteil erneuerbarer Energien im Jahr 2014 haben zu diesen Entwicklungen beigetragen.

3.2. Dekompositionsanalyse der Emissionsreduktion

Eine spezifische Dekompositionsanalyse wurde durchgeführt, um zu bewerten, wie sich die Entwicklung der europäischen Wirtschaft im Laufe der Zeit auf die Emissionen ausgewirkt hat. Einzelheiten zur verwendeten Methodik sind im beigefügten Arbeitspapier der Kommissionsdienststellen enthalten.

Diese Analyse erstreckt sich auf die CO_2-Emissionen aus der Verbrennung fossiler Brennstoffe, die rund 80 % der gesamten THG-Emissionen ausmachen. Die folgenden strukturellen Faktoren wurden berücksichtigt:

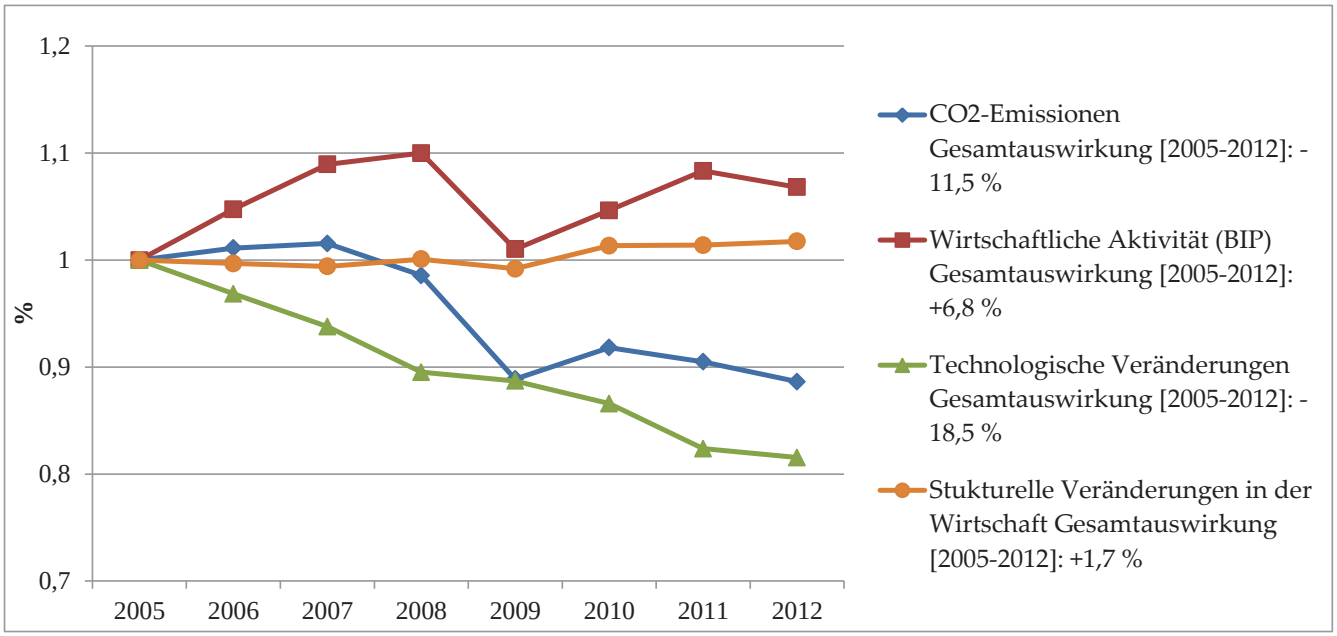
- wirtschaftliche Tätigkeit (BIP);
- strukturelle Veränderungen der Wirtschaft, gemessen an den Auswirkungen, die Änderungen der relativen Bedeutung der Wirtschaftszweige (beispielsweise zwischen Industriezweigen und Dienstleistungen) auf die Emissionen hatten;
- technologische Veränderungen, gemessen an den Auswirkungen, die die Umstellung auf CO_2-ärmere Technologien auf die Emissionen hatte (beispielsweise höhere Energieeffizienz oder der höhere Anteil erneuerbarer Energien).

Abbildung 4 zeigt, dass die CO_2-Emissionen im Zeitraum 2005-2012 um 11,5 % zurückgegangen sind. Die technologischen Veränderungen haben sich am nachhaltigsten auf die Emissionen ausgewirkt und zu einem Rückgang um 18,5 % geführt. Aufgrund der Zunahme der wirtschaftlichen Tätigkeit (BIP) sind die Emissionen um 6,8 % angestiegen. Strukturelle Veränderungen in der Wirtschaft haben einen leichten Emissionsanstieg um 1,7 % verursacht. Diese Auswirkungen sind auf zwei Faktoren zurückzuführen. Erstens hat zwar in einigen Mitgliedstaaten wie Frankreich und dem Vereinigten Königreich der Anteil der Dienstleistungen zugenommen, dafür wurde jedoch in anderen Mitgliedstaaten, insbesondere Deutschland, die verarbeitende Industrie ausgebaut. Zweitens ist auch der Anteil der relativ betrachtet stärker industrialisierten osteuropäischen Mitgliedstaaten an der EU-Wirtschaft gestiegen.

Aus den Ergebnissen geht somit hervor, dass technologische Veränderungen am stärksten zur Senkung der Emissionen beigetragen haben und die Gewichtsverlagerung zwischen den Wirtschaftszweigen

weit weniger Einfluss hatte. Die in der Klima- und Energiepolitik umgesetzten Maßnahmen haben maßgeblich zur Einführung sauberer Technologien beigetragen.

Abbildung 4: Dekompositionsanalyse der Veränderung der CO_2-Emissionen aus der Verbrennung fossiler Brennstoffe in der EU im Zeitraum 2005-2012



Quelle: Europäische Kommission.

4. EU-MAßNAHMEN ZUR EMISSIONSREDUKTION: JÜNGSTE ENTWICKLUNGEN

4.1. Rahmen für die Klima- und Energiepolitik der EU bis 2030

Im Oktober 2014 hat sich der Europäische Rat auf die Hauptbestandteile des Rahmens für die Klima- und Energiepolitik der EU bis 2030 verständigt:

- Eine verbindliche Zielvorgabe, die EU-internen Treibhausgasemissionen bis 2030 um mindestens 40 % gegenüber 1990 zu senken. Um diese Zielvorgabe zu erfüllen, müssen die durch das EU-EHS erfassten Emissionen gegenüber 2005 um 43 % und die Emissionen in den nicht erfassten Sektoren gegenüber 2005 um 30 % gesenkt werden, wobei dieser Prozentsatz in Form verbindlicher nationaler Zielvorgaben auf die Mitgliedstaaten zu verteilen ist.
- Eine auf EU-Ebene verbindliche Zielvorgabe, den Anteil erneuerbarer Energien bis 2030 auf mindestens 27 % zu steigern.
- Ein Richtziel, die Energieeffizienz in der EU bis 2030 um mindestens 27 % zu steigern und den Wert mit Blick auf eine Erhöhung um 30 % im Jahr 2020 zu überprüfen.
- Der Elektrizitätsverbund zwischen den Mitgliedstaaten sollte mindestens 15 % ihrer installierten Stromerzeugungskapazität ausmachen.
- Ein neues zuverlässiges und transparentes Governance-System, das sicherstellt, dass die EU ihre Klima- und Energieziele erreicht.

Jüngsten Projektionen der Mitgliedstaaten mit bestehenden Maßnahmen zufolge werden die gesamten Treibhausgasemissionen in der EU bis 2030 um 27 % gegenüber 1990 zurückgehen.

Demzufolge reicht der aktuelle politische Rahmen nicht aus, um die vereinbarte Zielvorgabe zu erfüllen, die Treibhausgasemissionen bis 2030 um mindestens 40 % zu senken. Die EU und die Mitgliedstaaten müssen weitere Maßnahmen zur Emissionsreduktion einführen.

Zu diesem Zweck hat die Kommission im Juli 2015 eine überarbeitete EU-Richtlinie über das Emissionshandelssystem vorgeschlagen und wird im ersten Halbjahr 2016 Legislativvorschläge für Sektoren außerhalb des Emissionshandelssystems vorlegen.

Darüber hinaus führt die Kommission die Initiativen ein, die unter der „Rahmenstrategie für eine krisenfeste Energieunion mit einer zukunftsorientierten Klimaschutzstrategie“ geplant sind. Anstehende Vorschläge für Maßnahmen umfassen Bereiche wie erneuerbare Energien, Energieeffizienz, Verkehr sowie Forschung und Entwicklung. Des Weiteren arbeitet die Kommission an der Umsetzung der Energieunion, wie im Bericht über den Stand der Energieunion 2015 dargelegt.

4.2. EU-EHS

4.2.1. Durchführung von Phase 3 des EU-EHS (2013-2020)

Seit 2013 gelten für das EU-EHS die verbesserten und stärker harmonisierten Regeln von Phase 3. Gemäß Artikel 10 Absatz 5 der EU-EHS-Richtlinie ist die Kommission verpflichtet, das Funktionieren des europäischen CO_2-Marktes zu überwachen und dem Europäischen Parlament und dem Rat alljährlich einen Bericht über das Funktionieren des CO_2-Marktes unter Berücksichtigung der Durchführung der Versteigerungen, der Liquidität und der gehandelten Mengen vorzulegen. Gleichzeitig veröffentlicht die Kommission gemäß Artikel 21 Absatz 2 auf der Grundlage der Berichte aus den Mitgliedstaaten einen Bericht über die Anwendung der EU-EHS-Richtlinie. Der Bericht über das Funktionieren des CO_2-Markts, der die beiden ersten Jahre von Phase 3 (2013 und 2014) abdeckt, findet sich im Anhang zu diesem Bericht. Er bestätigt, dass es sich um ein stabiles System handelt, auf dessen Grundlage eine funktionierende Marktinfrastruktur und ein liquider Markt geschaffen werden konnten.

4.2.2. Marktstabilitätsreserve

Mit dem Beschluss (EU) 2015/1814 des Europäischen Parlaments und des Rates vom 6. Oktober 2015 wird eine Marktstabilitätsreserve eingerichtet, die ab Januar 2019 einsatzbereit ist. Sie verfolgt zwei Ziele: die negativen Auswirkungen des bestehenden Überschusses an Emissionszertifikaten zu neutralisieren und das System besser gegen künftige Ungleichgewichte zu wappnen. Dies wird unter anderem durch einen Satz automatischer Regeln erreicht, der das Auktionsangebot an Zertifikaten anpasst, wenn die Gesamtanzahl der in Umlauf befindlichen Zertifikate außerhalb eines festgelegten Bereichs liegt.

4.2.3. Überarbeitung des EU-EHS – Phase 4 (2021-2030)

Am 15. Juli 2015 legte die Kommission einen Legislativvorschlag zur Überarbeitung des EU-EHS für die Phase 4 vor, wie in den Schlussfolgerungen des Europäischen Rates zum Rahmen für die Klima- und Energiepolitik der EU bis 2030 vom Oktober 2014 vorgesehen.

Der Vorschlag sieht eine Reduktion der unter das EU-EHS fallenden Emissionen um 43 % gegenüber 2005 vor. Zu diesem Zweck wird die Gesamtmenge an Zertifikaten ab 2021 um jährlich 2,2 % verringert. Gemessen am derzeitigen Faktor von 1,74 % führt diese Anhebung zu einer weiteren erheblichen Senkung der Emissionen und einer Einsparung von rund 550 Mio. t Kohlendioxid zwischen 2021 und 2030. Die Kommission hat eine gezieltere und dynamischere Zuteilung kostenloser Zertifikate vorgeschlagen und möchte dies unter anderem auf folgende Weise erreichen: durch eine Aktualisierung der Benchmarks, die dem technologischen Fortschritt Rechnung trägt, durch eine gezieltere Einstufung von Sektoren in Carbon-Leakage-Gruppen und durch eine bessere Anpassung der kostenlosen Zuteilung an Produktionsmengen. Der Vorschlag sieht die Möglichkeit der Fortsetzung der

kostenlosen Zuteilung von Zertifikaten zur Modernisierung des Stromsektors in zehn einkommensschwächeren Mitgliedstaaten mit einer höheren Transparenz vor.

4.3. Sonstige Strategien und Maßnahmen

4.3.1. Die Lastenteilungsentscheidung im Rahmen für die Klima- und Energiepolitik der EU bis 2030

Im Einklang mit den Schlussfolgerungen des Europäischen Rates vom Oktober 2014 plant die Kommission, im ersten Halbjahr 2016 einen Legislativvorschlag zur Lastenteilungsentscheidung anzunehmen, um die nicht vom EU-EHS erfassten Emissionen im Zeitraum 2005-2030 um 30 % zu reduzieren.

Bei ihren Vorbereitungen hat die Kommission eine Ex-post-Bewertung der Durchführung der Lastenteilungsentscheidung gemäß Artikel 14 der Entscheidung vorgenommen. Dabei werden die Durchführung und die Ergebnisse der Lastenteilungsentscheidung auf Ebene der Mitgliedstaaten und der EU untersucht. Im Rahmen der Bewertung wird ermittelt, in welchem Maße die Lastenteilungsentscheidung zum allgemeinen Ziel der EU einer Senkung der Treibhausgasemissionen bis 2020 beiträgt.

4.3.2. Integration von Landnutzung, Landnutzungsänderungen und Forstwirtschaft (LULUCF) in den Rahmen für die Klima- und Energiepolitik der EU bis 2030

In der EU wirkt der LULUCF-Sektor zurzeit noch als Nettosenke, da er Emissionen absorbiert. Wenn keine neuen Maßnahmen ergriffen werden, ist jedoch davon auszugehen, dass diese Wirkung nachlassen wird. Sofern die verstärkte Nutzung von Biomasse zur Energiegewinnung nicht nachhaltig erfolgt, könnte sie zu einer noch schnelleren Abschwächung dieser Senkenwirkung führen.

Seit 2013 gewährleistet der LULUCF-Beschluss, dass standardisierte EU-Verbuchungsvorschriften festlegen, wie Emissionen und der Abbau von Treibhausgasen im LULUCF-Sektor in die Treibhausgasinventare der EU einbezogen werden, was die allgemeine Transparenz erhöht. Obwohl in den EU-Rechtsvorschriften keine explizite LULUCF-Zielvorgabe festgelegt ist, müssen die Mitgliedstaaten gemäß dem Kyoto-Protokoll dennoch sicherstellen, dass das Nettoergebnis der LULUCF-Konten nicht negativ ist.

Die Kommission arbeitet gegenwärtig an einer Folgenabschätzung, um zu untersuchen, wie LULUCF in den Rahmen für die Klima- und Energiepolitik der EU nach 2020 einbezogen werden kann, und stützt sich dabei auf den vorhandenen LULUCF-Beschluss. Im Rahmen dieser Folgenabschätzung führt die Kommission seit Anfang 2015 Konsultationen der Mitgliedstaaten und Interessenträger durch. Ein Vorschlag für die Einbeziehung der LULUCF-Sektoren ist für das erste Halbjahr 2016 vorgesehen.

4.3.3. Energieeffizienz

Im Jahr 2014 stimmte der Europäische Rat dem Richtziel zu, die Energieeffizienz in der EU bis 2030 im Vergleich zum Referenzszenario um mindestens 27 % zu steigern. Das Ziel wird vor 2020 überprüft, wobei entsprechend dem Vorschlag der Kommission eine Erhöhung der Energieeffizienz in der EU um 30 % angestrebt wird. Wie im Fahrplan für die Energieunion angekündigt, wird die Kommission die Richtlinie zur Energieeffizienz und die Richtlinie über die Gesamtenergieeffizienz von Gebäuden im Jahr 2016 überprüfen. Des Weiteren soll Anfang 2016 die spezifische Strategie für die Wärme- und Kälteerzeugung auf den Weg gebracht werden. Ein Vorschlag für eine Überarbeitung der Rechtsvorschriften zur Energieeffizienzkennzeichnung wurde bereits vorgelegt und wird zurzeit von den beiden gesetzgebenden Organen geprüft. Außerdem werden auf EU-Ebene Maßnahmen ergriffen, die Anreize zur Verwendung von Finanzierungsinstrumenten schaffen.

4.3.4. Erneuerbare Energien

Im Jahr 2014 verständigte sich der Europäische Rat auf ein auf EU-Ebene verbindliches Ziel, den Anteil erneuerbarer Energien am Endenergieverbrauch bis 2030 auf mindestens 27 % zu erhöhen. Um dieses Ziel zu erreichen, wurden in den Fahrplan für die Energieunion ein Vorschlag für eine neue Richtlinie über erneuerbare Energien und eine Nachhaltigkeitsstrategie für Bioenergie aufgenommen. Außerdem wurden auf EU-Ebene Maßnahmen ergriffen, die Anreize zur Verwendung von Finanzierungsinstrumenten schaffen, um den Ausbau der Stromerzeugungskapazitäten aus erneuerbaren Energien und die Zusammenarbeit zwischen den Mitgliedstaaten zu fördern.

4.3.5. Kohlendioxidabscheidung und -speicherung

In einer Bewertung der Richtlinie über CO_2-Abscheidung und -speicherung (Carbon Capture and Storage, CCS) kam die Kommission zu dem Schluss, dass die Richtlinie für den vorgesehenen Zweck geeignet ist und den notwendigen Rechtsrahmen vorgibt, um die Abscheidung, den Transport und die Speicherung von Kohlendioxid auf sichere Weise zu gewährleisten und den Mitgliedstaaten gleichzeitig genügend Flexibilität einzuräumen.

Der Bericht über die Überarbeitung der CCS-Richtlinie, der gemäß Artikel 38 dieser Richtlinie erforderlich ist, findet sich im Anhang zu diesem Bericht. Er befasst sich mit der Bewertung der Leistungsfähigkeit, Wirksamkeit, Effizienz, Kohärenz, Relevanz und des EU-weiten Mehrwerts der Richtlinie im Rahmen des Programms der Kommission zur Gewährleistung der Effizienz und Leistungsfähigkeit der Rechtsetzung (REFIT).

4.3.6. Verkehrssektor

Das System zur Messung, Berichterstattung und Überprüfung (MRV) für den EU-Seeverkehr

Die EU hat einen globalen Ansatz für die Reduktion der Emissionen aus dem internationalen Seeverkehr unterstützt, der in großem und steigendem Maße Emissionen verursacht. Im April 2015 hat die Kommission eine Verordnung angenommen, mit der ein EU-weites System zur Messung, Berichterstattung und Überprüfung für den Seeverkehr eingerichtet wird, und hat damit im Rahmen der EU-Strategie einen ersten Schritt zur Emissionsreduktion in diesem Sektor getan. Diese Verordnung verpflichtet Eigner von großen Schiffen mit mehr als 5000 Bruttoraumzahl, die nach dem 1. Januar 2018 Häfen in der EU nutzen, deren geprüfte jährliche CO_2-Emissionen und andere energiebezogene Daten zu messen und später zu melden.

Das MRV-System der EU zur Verringerung der Emissionen aus dem Seeverkehr ist so konzipiert, dass es zur Einrichtung eines internationalen Systems im Seeverkehrssektor beiträgt. Diesbezügliche Debatten innerhalb der internationalen Seeschifffahrts-Organisation (IMO) dauern an. Das MRV-System für den Seeverkehr in der EU wird außerdem neue Möglichkeiten bieten, Einigung über Effizienznormen für existierende Schiffe zu erzielen.

Leichte und schwere Nutzfahrzeuge

Im Bereich der leichten Nutzfahrzeuge schreiben die EU-Rechtsvorschriften verbindliche Emissionsziele für neue Flotten (PKW und leichte Nutzfahrzeuge) vor. Die Zielvorgaben für PKW (130 g CO_2/km im Jahr 2015) und leichte Nutzfahrzeuge (175 g CO_2/km im Jahr 2017) wurden bereits 2013 erfüllt. Vorläufige Daten für Zulassungen im Jahr 2014 zeigen, dass der durchschnittliche Flottenwert bei neuen PKW 123,4 g CO_2/km und bei neuen leichten Nutzfahrzeugen 169,2 g CO_2/km betrug. Solange dieses Fortschrittstempo beibehalten wird, sind die Hersteller auf einem guten Weg, die Zielvorgabe für 2021 in Höhe von 95 g CO_2/km für PKW und die Zielvorgabe für 2020 in Höhe von 147 g CO_2/km für leichte Nutzfahrzeuge zu erfüllen.

Die im Mai 2014 angenommene Strategie zur Minderung des Kraftstoffverbrauchs und der CO_2-Emissionen schwerer Nutzfahrzeuge ist die erste Initiative der EU dieser Art für Lastkraftwagen, Busse

und Reisebusse. Der Strategie zufolge erarbeitet die Kommission in einem ersten Schritt ein Computersimulationsinstrument zur Messung des Kraftstoffverbrauchs und der CO_2-Emissionen schwerer Nutzfahrzeuge (Vehicle Energy Consumption Calculation Tool, VECTO). Dieser Ansatz wurde im Paket zur Energieunion 2015 bestätigt.

Kraftstoffqualität

Im April 2015 haben sich das Europäische Parlament und der Rat darauf verständigt, die Richtlinie über erneuerbare Energien und die Kraftstoffqualitätsrichtlinie zu ändern, um die Auswirkungen indirekter Landnutzungsänderungen aufgrund des Anbaus bestimmter Pflanzen für die Herstellung von Biokraftstoffen bis 2020 zu berücksichtigen. Die neuen Rechtsvorschriften

- geben eine Obergrenze von 7 % für bestimmte Pflanzen, im Wesentlichen Nahrungspflanzen, vor, die diese zur Zielvorgabe von 10 % für erneuerbare Energien im Verkehrssektor bis 2020 beitragen können;
- führen ein Richtziel von 0, 5 % für fortgeschrittene Biokraftstoffe ein;
- verpflichten die Kommission, die Auswirkungen indirekter Landnutzungsänderungen durch die Einführung von Emissionsfaktoren in ihrer Berichterstattung zu berücksichtigen.

4.3.7. F-Gase

Die Verordnung über fluorierte Treibhausgase (F-Gase) von 2014 gilt seit dem 1. Januar 2015. Sie stärkt vorhandene Maßnahmen (z. B. Reduzierung der Gase durch Leckage-Erkennung, Installation von Einrichtungen durch geschultes Personal, Rückgewinnung verwendeter Gase usw.) und leitet einen Ausstieg aus der Verwendung von F-Gasen ein, wodurch die Gesamtemissionen von F-Gasen in der EU bis 2030 um zwei Drittel gegenüber dem Stand von 2014 gesenkt werden. Außerdem verbietet sie, dass F-Gase unter bestimmten Umständen in Verkehr gebracht werden, in denen Alternativen zur Verfügung stehen (z. B. Haushaltskühlgeräte und -gefriergeräte mit HFKW mit einem Treibhausgaspotenzial (Global Warming Potential, GWP) von mehr als 150).

5. EU-ANPASSUNGSSTRATEGIEN

Die EU-Strategie zur Anpassung an den Klimawandel von 2013 zielt darauf ab, Europa klimaresilienter zu machen. Sie unterstützt EU-weite Anpassungsmaßnahmen, gewährleistet die Einbeziehung der Anpassungsbelange in alle relevanten EU-Politikbereiche (Mainstreaming) und fördert eine bessere Koordinierung, Kohärenz und einen besseren Informationsaustausch. Im Jahr 2017 wird die Kommission dem Europäischen Parlament und dem Rat über die Umsetzung der Anpassungsstrategie berichten. Die folgenden allgemeinen Trends sind erkennbar:

- Viele Mitgliedstaaten beschäftigen sich mit der Anpassungsplanung und der Ermittlung der mit dem Klimawandel verbundenen Risiken und Anfälligkeiten. Nationale Anpassungsstrategien wurden bereits in 20 Mitgliedstaaten angenommen und sind in den meisten übrigen Mitgliedstaaten in Arbeit.
- Mehr als die Hälfte der Mitgliedstaaten hat bereits Mittel für die Anpassung vorgesehen, allerdings verfügt weniger als die Hälfte der Mitgliedstaaten über ein spezielles Budget für die Umsetzung der Anpassungsmaßnahme in anfälligen Sektoren.
- Die meisten Mitgliedstaaten müssen noch Aktionspläne für die Anpassung definieren und umsetzen.
- Abgesehen von einigen Ausnahmen stehen die Entwicklung und Einführung von Überwachungs- und Bewertungssystemen in den meisten Mitgliedstaaten noch aus.

6. FINANZIERUNG VON KLIMASCHUTZMAßNAHMEN

Dieser Abschnitt gibt einen Überblick über die Verwendung der Erlöse aus der Versteigerung von EU-EHS-Zertifikaten und den EU-Haushalt zur Finanzierung von Klimaschutzmaßnahmen. Des Weiteren fasst er Daten zur finanziellen Unterstützung des Klimasektors in Entwicklungsländern seitens der EU und der Mitgliedstaaten zusammen.

6.1. Erlöse aus der Versteigerung von EU-EHS-Zertifikaten

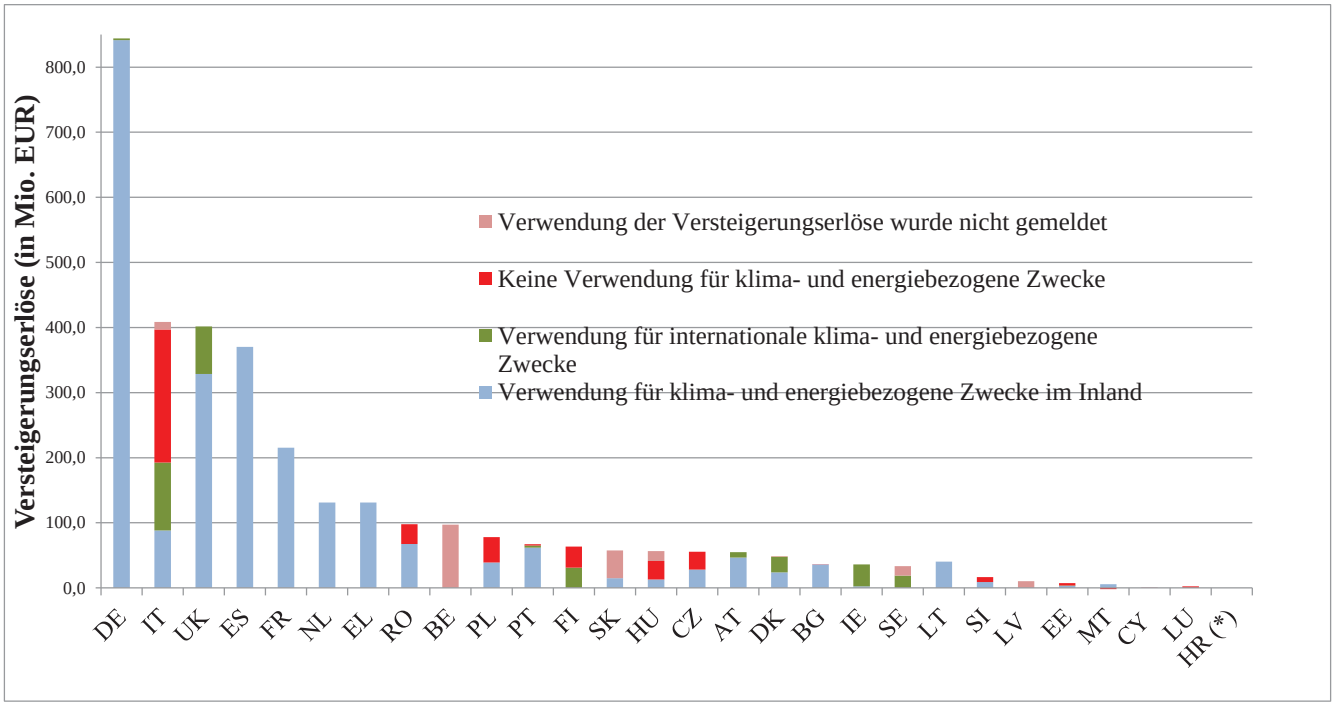
6.1.1. Verwendung der Versteigerungserlöse durch die Mitgliedstaaten

Im Jahr 2014 betrugen die Erlöse aus der Versteigerung von EU-EHS-Zertifikaten insgesamt 3,2 Mrd. EUR.

In der EU-EHS-Richtlinie ist festgelegt, dass mindestens 50 % der Versteigerungserlöse bzw. der entsprechende finanzielle Gegenwert dieser Erlöse von den Mitgliedstaaten für klima- und energiespezifische Zwecke verwendet werden sollten.

Die Mitgliedstaaten haben 2014 durchschnittlich 87 % dieser Erlöse bzw. den finanziellen Gegenwert dieser Erlöse für klima- und energiespezifische Zwecke, überwiegend zur Förderung von Investitionen in Klimaschutz und Energie im Inland, verwendet bzw. beabsichtigen dies. Einige wenige Mitgliedstaaten richten derzeit noch geeignete rechtliche und finanzielle Instrumente für einen Teil ihrer Erlöse ein. Belgien hat keine Informationen über die Verwendung seiner Erlöse vorgelegt, weil die Behörden sich noch nicht auf die Zuweisung der Erlöse verständigen konnten.

Abbildung 5: Gemeldete Erlöse bzw. der entsprechende finanzielle Gegenwert, die 2014 für klima- und energiespezifische Zwecke verwendet werden bzw. verwendet werden sollen



Quelle: Europäische Kommission.
*HR: Versteigerung beginnt erst 2015, daher keine Erlöse aus 2014

Was die Art der unterstützten Maßnahme angeht, verwenden Dänemark und das Vereinigte Königreich einen erheblichen Anteil ihrer Versteigerungserlöse bzw. den entsprechenden finanziellen Gegenwert für die Finanzierung von Forschungsprojekten zur Emissionsreduktion, einschließlich Projekten zu CCS-Technologien. Frankreich investiert sämtliche Erlöse in die Verbesserung der Energieeffizienz

öffentlicher Gebäude mit Sozialwohnungen. 2014 und 2015 stellte Schweden dem Green Climate Fund der UNFCCC einen seinen Versteigerungserlösen entsprechenden Betrag in Höhe von 32 Mio. EUR zur Verfügung.

Weitere Informationen darüber, wie die Mitgliedstaaten ihre Versteigerungserlöse verwenden, enthält das beigefügte Arbeitspapier der Kommissionsdienststellen.

6.1.2. NER 300 und der vorgeschlagene Innovationsfonds

Im Rahmen des NER-300-Programms wurden 38 Projekte zu erneuerbaren Energien und ein CCS-Projekt für eine Förderung in 20 Mitgliedstaaten ausgewählt. Die NER-300-Zuschüsse belaufen sich auf 2,1 Mrd. EUR, wodurch zusätzliche 2,7 Mrd. EUR an privaten Investitionen mobilisiert werden dürften.

In seinen Schlussfolgerungen vom Oktober 2014 forderte der Europäische Rat die Kommission auf, das NER-300-Programm über das Jahr 2020 hinaus zu verlängern und zu erweitern. Der als Bestandteil der überarbeiteten EU-EHS-Richtlinie vorgeschlagene neue Innovationsfonds wäre mit 400 Millionen Zertifikaten zuzüglich 50 Millionen nicht zugeteilten Zertifikaten ausgestattet. Er würde auf dem NER-300-Programm aufbauen, und sein Anwendungsbereich würde auf emissionsarme Innovationen in den Industriesektoren erweitert werden.

6.1.3. Vorschlag für einen Modernisierungsfonds

Im Juli 2015 hat die Kommission außerdem die Einrichtung eines neuen Modernisierungsfonds vorgeschlagen, um so einen Beitrag zur Modernisierung der Energiesysteme in zehn Mitgliedstaaten zu leisten, deren Pro-Kopf-BIP weniger als 60 % des EU-Durchschnitts beträgt, und damit die Energieeffizienz zu verbessern und die Energieversorgung der Bürger letztlich sauberer, sicher und bezahlbar zu gestalten. Zwischen 2021 und 2030 würden 2 % der Zertifikate (insgesamt rund 310 Millionen Zertifikate) in den Fonds fließen.

6.2. Einbindung klimapolitischer Maßnahmen in den EU-Haushalt

<u>Unterstützung der Umstellung auf eine emissionsarme und klimaresiliente Wirtschaft in der EU durch den mehrjährigen Finanzrahmen</u>

Der aktuelle mehrjährige Finanzrahmen legt als Zielvorgabe fest, dass mindestens 20 % der EU-Haushaltsmittel einen Klimabezug aufweisen müssen. Dies entspricht rund 180 Mrd. EUR. Damit wurde der Anteil von 6-8 % der EU-Haushaltsmittel von 2007-2013 verdreifacht. Diese klimabezogenen Ausgaben werden jährlich nach einer von der Kommission entwickelten Methode verfolgt.

Es wurden erhebliche Fortschritte erzielt. Der Gesamtbeitrag im Jahr 2015 beläuft sich auf rund 16,8 %. Im Jahr 2016 werden voraussichtlich 20,6 % der EU-Haushaltsmittel zur Erreichung der folgenden Klimaziele der EU eingesetzt:

- Die Europäischen Struktur- und Investitionsfonds (ESIF) machen mehr als 43 % des mehrjährigen Finanzrahmens aus. Klimaschutzmaßnahmen sind Bestandteil der ESIF-Verordnungen, der 28 Partnerschaftsvereinbarungen und von über 530 fondsspezifischen Programmen. Zur Bestimmung der Höhe des Beitrags für Klimaschutzziele wurde eine einheitliche Methodik festgelegt. Über 110 Mrd. EUR sollen für Ziele mit Klimabezug eingesetzt werden, das entspricht rund 23-25 % der Gesamtmittel. Der genaue Betrag wird Ende der laufenden Programmplanung bekannt sein, wenn alle Programme angenommen sind. Die Mitgliedstaaten werden diesen Betrag dann für geplante klimabezogene Projekte verwenden.
- Mindestens 35 % des Haushalts von Horizont 2020 in Höhe von 79 Mrd. EUR werden voraussichtlich in klimabezogene Projekte fließen. Zum Zeitpunkt der Erstellung dieses

Berichts lag eine Übersicht über 80 % des Haushalts von 2014 vor, und 22 % der klimabezogenen Ausgaben waren ausgewiesen. Die Programmplanung für Themenbereiche kommt dem Klimaziel von 35 % sehr nahe. Allerdings entfallen auf die Bottom-up-Maßnahmen nicht viele klimabezogene Projekte, und sie allein machen 25 % des Gesamthaushalts von Horizont 2020 aus. Daher sind dringende Korrekturmaßnahmen erforderlich, um das Mainstreaming-Ziel von 35 % zu erreichen und ein weiteres Defizit im Jahr 2015 und darüber hinaus zu vermeiden. Der integrierte Strategieplan für Energietechnologie (SET-Plan) ist das erste Ergebnis im Bereich Forschung und Innovation der Energieunion. Er verleiht der Entwicklung und Einführung CO_2-armer Technologien neue Impulse, indem er Maßnahmen koordiniert und Prioritäten setzt. Der SET-Plan konzentriert sich auf zehn zentrale Tätigkeitsfelder, die darauf abzielen, die Prioritäten der Energieunion für Forschung und Innovation umzusetzen. Des Weiteren schlägt er ein neues Finanzprodukt namens „Fazilität für Energie-Demonstrationsprojekte“ vor, das zusammen mit der Europäischen Investitionsbank (EIB) entwickelt wurde und auf gänzlich neuartige, großmaßstäbliche kommerzielle Demonstrationsprojekte ausgerichtet ist.

- 2014-2015 ist für die gemeinsame Landwirtschaftspolitik (GAP) ein Übergangszeitraum. Die neue GAP wird ab 2015 wirksam und die Auszahlung von rund 4 Mrd. EUR allein aus den Ökologisierungsmaßnahmen beinhalten. Programme für die Entwicklung des ländlichen Raums werden im Wesentlichen im Jahr 2015 genehmigt und die Projekte anschließend durchgeführt, was mit einem erheblichen Anstieg der Ausgaben zur Entwicklung des ländlichen Raums für Klimamaßnahmen einhergeht.

6.3. Klimaschutzausgaben der EU und der Mitgliedstaaten zur Unterstützung von Entwicklungsländern

Die Unterstützung der Entwicklungsländer spielt eine zentrale Rolle bei der Verwirklichung des vereinbarten Ziels, den Anstieg der globalen Durchschnittstemperatur auf höchstens 2 °C gegenüber dem vorindustriellen Niveau zu begrenzen, bei der Umstellung auf eine THG-emissionsarme Wirtschaft zu vollziehen und bei der Förderung einer klimaresilienten, nachhaltigen Entwicklung. Auf der Klimakonferenz 2009 in Kopenhagen haben die Industrieländer zugesagt, kurzfristig gemeinsam zusätzliche öffentliche Mittel für die Finanzierung von Klimaschutzmaßnahmen in Höhe von 30 Mrd. USD für den Zeitraum 2010-2012 zu mobilisieren (Anschubfinanzierung). Die Industrieländer haben sich außerdem verpflichtet, langfristig bis 2020 gemeinsam 100 Mrd. USD jährlich zu mobilisieren (langfristige Finanzierung), um sinnvolle Klimaschutzmaßnahmen in Angriff zu nehmen und Transparenz bei der Durchführung zu gewährleisten. Diese Finanzmittel werden aus einer Vielzahl verschiedener Quellen kommen: aus öffentlichen und privaten, bilateralen und multilateralen sowie alternativen Finanzierungsquellen.

Dank der Zusage in Höhe von 100 Mrd. USD konnte die Klimafinanzierung im Kontext der Entwicklungszusammenarbeit und durch multilaterale und Entwicklungsbanken erheblich ausgeweitet werden. Die EU und ihre Mitgliedstaaten sind mit einem Beitrag von mehr als 70 Mrd. USD (rund 58 Mrd. EUR im Jahr 2014) jährlich die größten Geber öffentlicher Entwicklungshilfe für Entwicklungsländer. Sie haben im Zeitraum 2010-2012 eine Anschubfinanzierung in Höhe von 7,34 Mrd. EUR mobilisiert.

Darüber hinaus haben die EU und ihre Mitgliedstaaten 2014 gemeinsam 14,5 Mrd. EUR zugesagt, um Entwicklungsländer bei der Umsetzung von Klimaschutzmaßnahmen zu unterstützen. Dieser Betrag umfasst als Finanzierungsquellen für Klimaschutzmaßnahmen öffentliche Haushalte und andere Entwicklungsfinanzierungsinstitutionen. Seit 2014 wird die Klimafinanzierung der EIB in Höhe von 2,1 Mrd. EUR einbezogen. Gegenüber den Vorjahren wurde vollständigeres Zahlenmaterial auf Grundlage von OECD-Daten zu veranschlagten multilateralen Beiträgen in dieser Berechnung berücksichtigt.

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ANNEX 1

ANNEX

Report on the functioning of the European carbon market

Accompanying the document

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

Climate action progress report, including the report on the functioning of the European carbon market and the report on the review of Directive 2009/31/EC on the geological storage of carbon dioxide

{SWD(2015) 246 final}

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1. INTRODUCTION

An ambitious climate policy is an integral part of the Energy Union initiative[1], as also reflected in the climate and energy policy framework for 2030 endorsed by European leaders in October 2014.[2] Launched in 2005, the EU Emissions Trading System (EU ETS) – the cornerstone of the EU's strategy to reduce emissions of greenhouse gases – turned ten in 2015. As a result of the Market Stability Reserve and the measures needed and proposed to meet the increased ambition decided in the 2030 framework, the EU ETS will deliver a meaningful price on carbon emissions, stimulate greenhouse gas emission reductions and play its role as a technology neutral, cost-effective and EU-wide driver for low-carbon investments. The system not only reinforces the functioning of the internal energy market through its price formation at EU level, but also stimulates the uptake of renewables and other low-carbon and energy-efficient technologies.

The first report on the state of the European carbon market[3] was published in November 2012 (Carbon Market Report 2012). Its purpose was to analyse the functioning of the carbon market and to consider whether regulatory action was needed in the light of a growing surplus in allowances.

The present Report on the functioning of the European carbon market required under Article 10(5) and Article 21(2) of Directive 2003/87/EC[4] (EU ETS Directive) covers two years: 2013, the first year of the third trading phase which has brought many developments to the EU ETS, and 2014. In addition, it also presents certain initiatives proposed or agreed in 2015. Unless otherwise indicated, data used for this report were the ones publicly available and at the disposal of the Commission by June 2015.

The European Court of Auditors published in July 2015 a Special Report on the integrity and implementation of the EU ETS[5]. To the extent relevant, this report also makes references to issues examined by the Court.

Issues concerning aviation are mainly described in section 5 of this report.

[1] http://ec.europa.eu/priorities/energy-union/docs/energyunion_en.pdf
[2] http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145356.pdf
[3] COM(2012) 652 final, http://ec.europa.eu/clima/policies/ets/reform/docs/com_2012_652_en.pdf
[4] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC, OJ L 275, 25.10.2003, p. 32.
[5] http://www.eca.europa.eu/Lists/ECADocuments/SR15_06/SR15_06_EN.pdf

2. EU ETS IN THE THIRD TRADING PHASE

The EU ETS was launched in 2005 constituting the cornerstone of the European Union's strategy for cost-effective reduction of emissions of carbon dioxide (CO_2) and other greenhouse gases. The system is not only the world's first major carbon market, but it remains the biggest one, covering over three-quarters of the allowances traded on the international carbon market.

The EU ETS now covers about 11 000 power plants and manufacturing installations in the 28 EU Member States, Iceland, Norway and Liechtenstein, as well as emissions from over 600 airlines flying between European airports.

The EU ETS works on the 'cap and trade' principle. A 'cap', or limit, is set on the total amount of certain greenhouse gases that can be emitted by the factories, power plants and other installations in the system. The cap is reduced over time so that the total emissions fall.

In 2020, emissions from sectors covered by the EU ETS will be 21% lower than in 2005. By 2030 it is foreseen that they will be 43% lower.

In 2013, the EU ETS entered its third multi-year trading phase which will run until 2020. Following a major revision of the system agreed in 2009[6], it now operates under more harmonised rules. The third phase brought many improvements to the design of the system, including the main ones:

- A single, EU-wide cap on allowances decreasing by 1.74% annually, replacing the previous system of national caps and providing enhanced predictability and stability;
- Auctioning, not free allocation, becomes the default method for allocating allowances and is governed by the EU ETS Auctioning Regulation[7] ensuring an open, transparent, harmonised and non-discriminatory process for the auctioning of allowances;
- Harmonised allocation rules for the free allocation of allowances, based on ambitious EU-wide *ex-ante* performance benchmarks;
- Regulations for monitoring and reporting[8] and for verification of emission reports and accreditation and supervision of verifiers[9];

[6] Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community, OJ L 140, 5.6.2009, p. 63.

[7] Commission Regulation (EU) No 1031/2010 of 12 November 2010 on the timing, administration and other aspects of auctioning of greenhouse gas emission allowances pursuant to Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowances trading within the Community, OJ L 302, 18.11.2010, p.1.

[8] Commission Regulation (EU) No 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ L 181, 12.7.2012, p. 30.

- Stricter rules and conditions for the use of international carbon credits in the EU ETS with harmonised limits for their use by operators[10];
- Central electronic Union Registry replacing the national registries and governed by a Registry Regulation[11];
- Emission allowances, derivative financial instruments or auctioned products based on them are subject to the Markets in Financial Instruments Directive and Regulation under the MiFID2 package[12] (as of January 2017), and the Market Abuse Regulation[13] (as of January 2017).

Although the initial teething problems of the EU ETS were largely addressed by this reform, the impact of the economic crisis that started in 2008 was unprecedented. It resulted in the accumulation of a surplus of allowances, which grew over the years to reach two billion allowances in 2012. The first Carbon Market Report published in 2012 expected a surplus of about 2 billion allowances by 2013, a decreasing speed of build-up of the surplus by 2014, and no decline of the overall surplus was expected by 2020. This growing market imbalance, along with a weak price signal, triggered an intense public debate on the policy options presented in the Carbon Market Report 2012 to address the problems the EU ETS was experiencing. The system was not driving investments in low-carbon technologies sufficiently well and was also increasing the likelihood of the introduction of the new national policies. Hence, the Commission in November 2012 proposed a short-term measure to postpone (back-load) auctioning of 900 million emission allowances until 2019 and 2020. The European Parliament and the Council agreed on the proposal in December 2013[14] and the implementation of back-loading started in March 2014. Carbon Market Report 2012 contained several structural options to address the accumulated large imbalance of allowances. Subsequently, in January 2014 a proposal for legislation to establish a market stability reserve was presented in parallel to the Communication on a 2030 climate and

[9] Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council, OJ L 181, 12.7.2012, p. 1.

[10] Commission Regulation (EU) No 1123/2013 of 8 November 2013 on determining international credit entitlements pursuant to Directive 2003/87/EC of the European Parliament and of the Council (OJ L 299, 9.11.2013, p. 32) determines international credit entitlements for each operator and aircraft operator up to 2020.

[11] Commission Regulation (EU) No 389/2013 of 2 May 2013 establishing a Union Registry pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Decisions No 280/2004/EC and No 406/2009/EC of the European Parliament and of the Council and repealing Commission Regulations (EU) No 920/2010 and No 1193/2011, OJ L 122, 3.5.2013, p. 1.

[12] Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU, OJ L 173, 12.6.2014, p. 349 and Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012, OJ L 173, 12.6.2014, p. 84.

[13] Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (market abuse regulation) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC, OJ L 173, 12.6.2014, p. 1.

[14] Decision No 1359/2013/EU of the European Parliament and of the Council of 17 December 2013 amending Directive 2003/87/EC clarifying provisions on the timing of auctions of greenhouse gas allowances, OJ L 343, 19.12.2013, p. 1.

energy policy framework[15] (see section 10.1.). The European Parliament and the Council agreed on the proposal in October 2015[16].

In October 2014, EU Heads of State and Government agreed the headline targets and the architecture for the EU framework on climate and energy policy for 2030. The agreed targets include a cut in greenhouse gas emissions by at least 40% by 2030 compared to 1990 levels. This domestic target to reduce emissions by at least 40% will be delivered collectively by the EU in a cost-effective manner, with reductions in the ETS and non-ETS sectors. A well-functioning, reformed EU ETS together with an instrument to stabilise the market as proposed by the Commission will constitute the main mechanism to achieve this target, which amounts to the decrease of 43% of emissions compared to 2005 in the sectors covered by the EU ETS. On 15 July 2015 the Commission presented a legislative proposal to revise the EU Emissions Trading System in line with the 2030 framework (see section 10.2.).

3. EU ETS INFRASTRUCTURE

This section explains basic infrastructure of the EU ETS system: including its scope (i.e. what types of installations and gases are covered by the system) and the Union Registry which records the holding of allowances and transactions with them.

3.1. Coverage of activities, installations and aircraft operators

As of phase 3, the sectors with stationary installations covered by the EU ETS are energy intensive industries, including power stations and other combustion plants, with ≥20MW thermal rated input (except hazardous or municipal waste installations), oil refineries, coke ovens, iron and steel, cement clinker, glass, lime, bricks, ceramics, pulp, paper and board, aluminium, petrochemicals, ammonia, nitric, adipic, glyoxal and glyoxylic acid production, CO_2 capture, transport in pipelines and geological storage of CO_2. The aviation scope of the EU ETS is limited to flights within the EEA until 2016.[17]

In terms of greenhouse gases, the EU ETS now covers carbon dioxide (CO_2) emissions, nitrous oxide (N_2O) emissions from all nitric, adipic, glyoxal and glyoxylic acid production and perfluorocarbons (PFC) emissions from aluminium production.

[15] COM(2014) 15 final, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2014:0015:FIN:EN:PDF

[16] Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC, OJ L 264, 9.10.2015, p. 1.

[17] The aviation activities within the initial scope of the EU ETS included all flights from or to an aerodrome situated in the territory of a Member State to which the Treaty applies, with some exceptions as listed in Annex I of the EU ETS Directive. However, in the light of the negotiations within ICAO looking to propose a global market based mechanism for reduction of aviation emissions, this scope has been temporarily reduced. Currently (until the end of 2016) only flights within the EEA are covered.

From the start of phase 3, the system covers approximately half of the overall GHG emissions in the EU. EU Member States may add more sectors and greenhouse gas emissions to the EU ETS (opt-in procedure).

In their 2015 reports corresponding to reporting year 2014[18], Member States[19] reported that a total of approximately 11 200 installations were included in the EU ETS, compared to approximately 11 400 in the previous reporting year 2013. These installations are very diverse in their characteristics, therefore the Monitoring and Reporting Regulation defines 4 categories of installations based on their average annual emissions.[20] According to the Article 21 reports, for 2014, similar to 2013, 72% of installations were category A, 21% category B and only 7% (868 installations) were category C. In 2014 over 5700 installations (51% of the total) qualified as 'installations with low emissions', compared to 5600 installations, 49% of the total, in the reporting year 2013. The high percentage of installations with low emissions and category A confirms the relevance of the tier-based architecture of the monitoring, reporting and verification system designed in view of the proportionality principle.

While in terms of categories of installations the picture is quite homogeneous among Member States, the situation varies in terms of industry sectors or activities covered. EU ETS installations involving combustion activities are found in all Member States. Other activities reported by the majority of Member States are oil refining, steel production, cement, lime, glass, ceramics and pulp and paper production. Only two countries (FR and NO) reported in 2014 that CO_2 capture and storage activities have had permits issued. Regarding the new gases (those added to Annex I of the EU ETS Directive for inclusion in the system from the start of phase 3), PFC emitting activities have had permits issued in 13 countries, while the activity 'nitric acid production' has had permits issued in 20 Member States. The other N_2O sectors are only present in three Member States (DE, FR, IT).

Only a small number of Member States have made use of the possibility to exclude small emitters from the EU ETS in line with Article 27 of the EU ETS Directive. This possibility is offered by the Directive in order to reduce the administrative costs of small emitters and is allowed where equivalent measures for GHG emissions reduction are in place. According to reports submitted in 2015, 8 countries (DE, ES, FR, HR, IS, IT, SI, UK) are making use of this possibility, especially for installations with combustion activities and ceramics production. The amount of emissions excluded is about 3.9 million tonnes CO_2, or 0.2% of total verified emissions in 2014, compared to 4.7 million tonnes CO_2 in 2013.

[18] Article 21 reports for the year (N) are required to be submitted by 30 June of the following year (N+1). The reports are submitted via Eionet which is a partnership network for data and information flows of the European Environment Agency (EEA) and its member and cooperating countries.

[19] For the reference to Article 21 reports, 'Member States' include the 28 EU Member States plus EEA countries (Iceland, Norway and Liechtenstein).

[20] See Commission Regulation (EU) No 601/2012, where category C installations emit more than 500 000 tonnes CO_2e per year, category B installations emit between 500000 and 50000 tonnes CO_2e per year, and category A installations emit less than 50000 tonnes CO_2e per year. Furthermore, 'installations with low emissions' are those category A installations which emit less than 25000 tonnes CO_2e per year.

As far as the coverage of aircraft operators is concerned, the number of aircraft operators actually subject to the EU ETS was estimated at around 600 in 2014.

3.2. Union Registry

The Union Registry, which records the holding of allowances and the transactions concerning those allowances, has centralised these operations since 2012. This single registry is operated and maintained by the Commission, whereas national registry administrators in all 31 countries participating in the EU ETS remain the point of contact for the representatives of more than 20 000 accounts (companies or physical persons).

In 2013 the Registry Regulation was revised to finalise the functionalities needed for phase 3 of the EU ETS and to incorporate the accounting of transactions under the Effort Sharing Decision.[21] In relation to the EU ETS, the revised Registry Regulation also provides for the mechanism to implement the provisions of Article 11a of the EU ETS Directive, whereby operators can exchange international credits for allowances (see also section 4.1.3.).

In accordance with the EU ETS Directive and the Registry Regulation, allocation processes in phase 3 of the EU ETS are performed centrally in the Union Registry, both for the allocation of allowances to stationary and aircraft operators for free (see also sections 4.1.2.1. and 4.1.2.4.) and for the auctioning of allowances through the common and two 'opt-out' auction platforms (see also section 4.1.2.3.). The Commission as the central administrator of the Union Registry also seeks the continuous improvement of registry functionalities, security and user friendliness in consultation with national registry administrators.

4. FUNCTIONING OF THE CARBON MARKET IN 2013 AND 2014

This chapter covers the main features of the EU ETS, both on the supply and demand side. It provides information on the cap, free allocation, auctioning and the derogation from full auctioning for the power sector in certain Member States. It also covers the use of international credits.

On the demand side, it provides information on the verified emissions and on the balancing of the supply and demand.

[21] Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020, OJ L 140, 5.6.2009, p. 136.

4.1. Supply: allowances put in circulation

4.1.1. Cap

The EU ETS works on the 'cap and trade' principle. The cap is the absolute quantity of greenhouse gases which can be emitted in the system to ensure the emission reduction target is met and corresponds to number of allowances put in circulation over a trading phase.

As from phase 3, an EU-wide cap is determined by the EU ETS Directive. The cap will decrease each year by an amount corresponding to 1.74% of the amount of allowances in 2010. This decrease rate is known as the linear reduction factor. In absolute terms this means the number of allowances will be reduced annually by a determined number of about 38 million allowances. This linear reduction factor was decided in the context of the overall 20% reduction target and results in a 21% reduction compared to the EU ETS emissions in 2005.

In phases 1 and 2, the EU-wide cap was determined in a bottom-up manner from the aggregated total quantity of allowances laid down by Member States in their National Allocation Plans (NAPs).

The total quantity of allowances issued in 2013 amounts to 2 084 301 856 allowances. Table 1 shows the figures for the cap for each year during the period 2013-2020.

Table 1: EU ETS cap 2013-2020

Year	**Annual cap *(excluding aviation)***
2013	2 084 301 856
2014	2 046 037 610
2015	2 007 773 364
2016	1 969 509 118
2017	1 931 244 873
2018	1 892 980 627
2019	1 854 716 381
2020	1 816 452 135

4.1.2. Issued allowances

4.1.2.1. *Free allocation*

Phase 3 of the EU ETS introduced significant changes concerning free allocation of allowances: in principle electricity production no longer receives any free allowances (see below section 4.1.2.4.) and auctioning became the default rule.

The principles underlying the free allocation to sectors in the EU ETS have fundamentally changed compared to the two previous phases. Firstly, allowances are distributed for free according to EU-wide harmonised rules, meaning that the same rules apply to installations of the same type across all Member States. Secondly, free allocation is based on performance benchmarks to strengthen the incentives for greenhouse gas emissions reductions and reward the most efficient installations. Thirdly, an EU-wide new entrants' reserve (NER) is foreseen equivalent to 5% of the total amount of allowances for phase 3. The NER300 programme made available 300 million allowances from this reserve to stimulate the construction and operation of large-scale demonstration carbon capture and storage (CCS) projects as well as innovative renewable energy technologies. It is proposed (see section 10.2.) that remaining allowances in the NER are used for free allocation to new and growing installations under the EU ETS from 2021.

Free allocation is provided to industrial installations to address the potential risk of carbon leakage (industries transferring production to third countries with laxer constraints on greenhouse gas emissions, leading to an increase of emissions globally) for energy-intensive manufacturing industries. The provision of free allowances substantially limits the costs for EU industries exposed to international competition. Sectors and sub-sectors facing competition from industries outside the EU are deemed at risk of carbon leakage and as such receive a higher share of free allowances than those industries not deemed at such risk.

The first list determining sectors and sub-sectors which are deemed to be exposed to a significant risk of carbon leakage (the carbon leakage list)[22] was adopted by the Commission in 2009 and applied for free allocation of allowances in 2013 and 2014. New sectors and subsectors were added to the carbon leakage list in 2011, 2012 and 2013. As the first carbon leakage list expired in 2014, after extensive consultations with stakeholders, including Member States, industry, NGOs and academia, the Commission adopted the decision[23] to prolong the existing carbon leakage list for the period 2015 to 2019.

[22]Commission Decision 2010/2/EU of 24 December 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage, OJ L 1, 5.1.2010, p. 10.
[23]Commission Decision 2014/746/EU of 27 October 2014 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage, for the period 2015 to 2019, OJ L 308, 29.10.2014, p. 114.

Over phase 3, some 43 % of the total phase 3 cap (corresponding to 6.6 billion allowances) are estimated to be allocated for free to industrial installations. Further free allocation is available to new entrants from the NER.

Table 2: The number of allowances (in millions) allocated to the industry for free in 2013, 2014 and 2015[24]

	2013	**2014**	**2015**
Free allocation[25] **(EU28+EEA EFTA states)**	903.0	874.8	847.6
Allocation from the new entrants reserve (greenfield investments and capacity increases)	10.7	12.4	12.3
Free allowances remaining unallocated due to closures or changes in production or production capacity	40.7	59.4	65.3

In phase 3 new installations covered by the EU ETS and installations that increase capacity, are eligible for additional free allocation from the NER. The initial NER, after deducting 300 million allowances for the NER300 programme, held 480.2 million allowances. Until July 2015, 91.3 million allowances have been reserved for 369 installations for the entirety of phase 3. The remaining NER can be distributed in the future in case there are new installations or existing installations increasing their capacity. It is expected that a significant number of these allowances will, however, remain unallocated.

Until July 2015, allocation has been reduced by around 165.4 million allowances due to installations that have closed or reduced their production or production capacity compared to the one initially used to calculate phase 3 allocation.

4.1.2.2. *NER 300 programme*

The NER 300 programme is one of the world's largest funding programmes for innovative low-carbon energy demonstration projects. It is funded from the monetisation of 300 million emission allowances from the NER set up for the third phase of the EU ETS. The funds from the monetisation are distributed to projects selected through two rounds of calls for

[24] The figures include notifications received until July 2015 and may be subject to large changes due to later notifications by Member States.
[25] Initial amount, before application of the reductions mentioned below in the table.

proposals. Performance-based grants under the first call were awarded in December 2012, when €1.1 billion were allocated to 20 renewable energy (RES) projects. In July 2014 the Commission awarded €1 billion funding to one carbon capture and storage (CCS) and 18 RES projects under the second call.

The aim of the programme is to successfully demonstrate environmentally safe CCS and innovative RES technologies on a commercial scale with a view to scaling up production of low-carbon technologies in the EU.

The programme is successfully delivering and three projects, awarded under the first NER 300 call for proposals, are already producing clean energy:

- The Italian bioenergy BEST project turns selected energy crops into second generation biofuels at a demonstration plant in Crescentino, near Turin. The highly innovative integrated biofuels plant uses giant cane, a new fast growing and drought-resistant energy crop, as well as wheat straw to produce ethanol. The plant has an annual production capacity of 51 million litres per year. BEST, led by Italian Bio Product S.p.A., entered into operation on 1 June 2013 and was awarded a NER 300 co-funding of €28.4 million.
- Verbiostraw is a German bioenergy project turning agricultural residue into biogas through a first-of-a-kind plant. The project has a capacity of 16.5 MW and will deliver 136 gigawatt hours per year of biogas using some 40,000 tonnes of straw annually. The feedstock is agricultural residue only and, as a result, the plant will not require farmland to grow energy crops. The conditioned biogas will either be fed into the natural gas network or used as advanced biofuel in the transport sector. Verbiostraw is led by VERBIO Ethanol Schwedt GmbH & Co and is located in Germany in Schwedt/Oder. It entered into operation on 3 January 2014 and was awarded NER 300 co-funding of €22.3 million.
- The Swedish wind energy project Windpark Blaiken concerns the development of a 225 MW wind farm located in the Arctic climate of northern Sweden. When fully operational, it will comprise 90 wind turbines equipped with an innovative de-icing system made up of heating elements in the leading blade edges. The project, which is constructed in 3 lots of 30 turbines over a three-year period, is connected to the national grid. The first two batches of turbines are already operational and the third one will be commissioned in 2015. The project is led by Blaiken Vind AB, entered into operation on 1 January 2015 and was awarded a NER 300 co-funding of €15 million.

4.1.2.3. *Auctioning of allowances*

As of phase 3, auctioning via the primary market became the default mode for allocating allowances. Under the EU ETS Directive, the Commission was required to adopt a regulation on timing, administration and other aspects of auctioning to ensure that it is

conducted in an open, transparent, harmonised and non-discriminatory manner. Accordingly, the Auctioning Regulation[26] was adopted in November 2010. It provides for the participating Member States and the Commission to procure jointly a common platform to auction allowances on behalf of the Member States, but it also provides for the possibility for individual Member States to opt out. Germany, Poland and the UK have decided to apply this option and appoint their own auction platform. Such appointment is subject to listing in Annex III of the Auctioning Regulation[27].

The Auctioning Regulation provides for the appointment of the auction platforms on the basis of competitive tender procedures; for the appointment of the common auction platform a joint procurement agreement between the Member States participating in the joint action and the Commission has been signed and entered into force. In August 2012 the European Energy Exchange (EEX) was appointed as the first common auction platform.

The Auctioning Regulation further provides for an auction monitor to be also appointed under a joint procurement agreement between the Member States and the Commission and options for this are currently being assessed.

Each auction platform has to determine and publish the volumes and dates of each individual auction (the so-called auction calendar), before the beginning of each calendar year.

By 30 June 2015, more than 650 auctions have been conducted for phase 3. The table hereafter provides an overview of the volumes of allowances of phase 3 auctioned by EEX and ICE in 2012 (so called early auctions[28]), 2013, 2014 and 2015. EEX, auctioning on behalf of 27 Member States (25 Member States cooperating on a common auction platform, Germany and Poland) auctioned 88% of the total auctioned amount in 2012 to 2014, with ICE, auctioning 12% of the total volume on behalf of the UK.

The auctions were generally conducted smoothly and the auction clearing prices were generally in line with the secondary market prices, without the occurrence of significant problems or incidents. Auctions were cancelled pursuant to Article 7(6) of the Auctioning Regulation on three occasions in EEX in 2013 shortly after the start of the auctions.

The volumes to be auctioned in 2014 have been revised as from 12 March 2014 (ICE) and 17 March 2014 (EEX) in accordance with the decision to backload 900 million allowances from 2014, 2015 and 2016 to 2019 and 2020, as per the Commission Regulation (EU) No 176/2014. The auctioning of aviation allowances was suspended in 2012, following the 'stop

[26] See footnote 7.

[27] European Energy Exchange AG (EEX) and Intercontinental Commodity Exchange (ICE) were listed in Annex III of the Auctioning Regulation as the opt-out auction platform for Germany and the United Kingdom respectively. Poland has not yet appointed its own opt-out auction platform and in the absence of listing is making use of the transitional common auction platform.

[28] Early auctions of allowances of phase 3 were performed in 2012 in view of the widespread commercial practice in the electricity sector of selling power on a forward basis and purchasing the required inputs (including allowances) when they sell their output.

the clock' Decision[29], and resumed in 2014. Croatia started auctioning its share of allowances as from January 2015. Iceland, Liechtenstein and Norway have not started auctioning of allowances yet.

Table 3: Volumes of allowances of phase 3 auctioned by EEX and ICE

Year	Amount of general allowances auctioned	Amount of aviation allowances auctioned
2012	89 701 500	2 500 000
2013	808 146 500	0
2014	528 399 500	9 278 000
2015[30]	632 725 500	16 390 500

The total revenues generated from the auctions between 2012 and June 2015 exceeded € 8.9 billion. The EU ETS Directive provides that at least 50% of auctioning revenues or the equivalent in financial value of these revenues, including all revenues generated from allowances distributed for the purposes of solidarity and growth, should be used by Member States for climate and energy related purposes. On average in 2014, Member States have used or plan to use around 87% of these revenues or the equivalent in financial value on climate and energy related purposes, largely to support domestic investments in climate and energy (see section 6.1.1. of the Climate action progress report).

The auction platforms publish the detailed results of each auction in dedicated websites. In addition, Germany, Poland and the UK as well as the Commission on behalf of the Member States making use of the common auction platform, publish monthly reports on the auctions[31].

4.1.2.4. *Derogation from full auctioning for the power sector*

A derogation from the general rule of auctioning has been provided for in Article 10c of the EU ETS Directive to enable investments in the modernisation of the electricity sector in certain Member States. Eight out of ten eligible Member States[32] make use of this derogation and allocate to electricity generators a number of allowances for free provided corresponding

[29] Decision No 377/2013/EU of the European Parliament and of the Council of 24 April 2013 derogating temporarily from Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, OJ L 113, 25.4.2013, p.1.

[30] For 2015 the figure refers to number of allowances to be auctioned pursuant to the published auction calendars.

[31] Such reports are available at the Commission's dedicated website where other information on the auctioning may also be found at http://ec.europa.eu/clima/policies/ets/cap/auctioning/documentation_en.htm

[32] Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland and Romania are eligible for the derogation. Malta and Latvia decided not to make use of it.

investments are carried out. The free allowances under Article 10c are deducted from the quantity that the respective Member State would otherwise auction. Depending on the national rules for the implementation of the derogation, electricity generators can receive free allowances of an equivalent value to the investments they carry out or have carried out from investments listed on the National Investment Plan, or to payments made into a national fund through which such investments can be financed.

The number of such allowances allocated for free to electricity generators for 2013 and 2014 are indicated in Table 4. If the number of allowances allocated is lower than the maximum allowed, these 'unused' allowances may be allocated for free in the following year(s), depending on the relevant national rules of the Member State. Ultimately, allowances not allocated for free pursuant to the derogation will be auctioned. In the first year, investments that had been undertaken from June 2009 onwards from the national plan could be reported. For 2013 and 2014, costs were reported for 500 investments, out of which 135 were completed and 22 investments were reported to be cancelled and the rest are ongoing but not yet completed.

The total value of reported investment costs for 2009 to 2013 is €5.9 billion and for 2014 €1.9 billion. About 80% of this was dedicated to upgrading and retrofitting infrastructure, while the rest of the investments related to clean technologies or diversification of supply. Examples of investments include a new cogeneration-condensing steam turbine in Estonia (upgrade of infrastructure), rehabilitation of district heating networks in Bulgaria (retrofitting of infrastructure), substitution of coal by renewable energy sources through waste utilization in the Czech Republic (clean technologies) and the construction of an interconnector pipeline for natural gas in Hungary (diversification of supply).

Table 4: Number of free allowances (to be) issued pursuant to Article 10c

	Number of free allowances requested by Member State		Maximum number of allowances per year							
MS	**2013**	**2014**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**Total**
BG	11 009 416	9 779 243	13 542 000	11 607 428	9 672 857	7 738 286	5 803 714	3 869 143	1 934 571	54 167 999
CY	2 519 077	2 195 195	2 519 077	2 195 195	1 907 302	1 583 420	1 259 538	935 657	575 789	10 975 978
CZ	25 285 353	22 383 398	26 916 667	23 071 429	19 226 191	15 380 953	11 535 714	7 690 476	3 845 238	107 666 668
EE	5 135 166	4 401 568	5 288 827	4 533 280	3 777 733	3 022 187	2 266 640	1 511 093	755 547	21 155 307
HU	7 047 255	0	7 047 255	0	0	0	0	0	0	7 047 255
LT	322 449	297 113	582 373	536 615	486 698	428 460	361 903	287 027	170 552	2 853 628
PL	65 992 703	52 920 889	77 816 756	72 258 416	66 700 076	60 030 069	52 248 393	43 355 049	32 238 370	404 647 129
RO	15 748 011	8 591 461	17 852 479	15 302 125	12 751 771	10 201 417	7 651 063	5 100 708	2 550 354	71 409 917
Total	133 059 430	100 568 867	151 565 434	129 504 488	114 522 628	98 384 792	81 126 965	62 749 153	42 070 421	679 923 881

The EU ETS Directive requires Member States making use of the derogation to publish annual reports on the implementation of investments from their national plans. The applications should also be published. Experience shows that the existing reports that have been published vary in format and content. In some cases Member States restrict or aggregate the information provided on investment costs with reference to business confidentiality. Typically, the reports are published on the website of the responsible ministry e.g. Ministry for Energy (Bulgaria, Romania, Lithuania) or the Ministry for Environment (the Czech Republic, Cyprus, Estonia, Hungary, Poland).

4.1.3. International credits

Up to 2020, the EU ETS allows participants to use credits from the Clean Development Mechanism (CDM) and Joint Implementation (JI) – two UN-organised crediting programmes – towards fulfilling part of their EU ETS obligations, with the exception of nuclear and afforestation and reforestation projects[33]. According to the Commission Regulation (EU) No 550/2011[34], credits generated by projects involving the destruction of industrial gases (HFC_{23} and adipic N_2O) are no longer allowed as of the start of phase 3. In addition, in phase 3 further restrictions came into effect for credits resulting from projects registered after 2013 in countries other than least developed countries. Furthermore, since 31 March 2015 and in accordance with Article 11a(3) and (4) of the EU ETS Directive, credits issued in respect of emission reductions in the first commitment period of the Kyoto Protocol (2008-2012) are no longer eligible for exchange with EU ETS allowances.

Article 11a(8) of the EU ETS Directive also includes provisions related to the levels of use of international credits by category of operator and aircraft operator, and sets out minimum entitlements in this regard. Commission Regulation (EU) No 1123/2013 sets the rules for determining the entitlements of individual operators and aircraft operators up to 2020.

Although the exact amount of credit entitlements over phase 2 and 3 will partially depend on the amount of future verified emissions, market analysts estimate that it will amount to around 1.6 billion credits. In phase 3 credits are no longer surrendered directly but instead exchangeable at any time throughout the calendar year for allowances. As of 30 April 2015 the total number of international credits used or exchanged amounts to 1445 million.

[33] Both CDM and JI projects generate Kyoto carbon credits: Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) respectively, each equivalent to 1 tonne of CO_2.

[34] Commission Regulation (EU) No 550/2011 of 7 June 2011 on determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, certain restrictions applicable to the use of international credits from projects involving industrial gases, OJ L 149, 8.6.2011, p. 1.

Table 5: Summary of international credits exchange until 30 April 2015

	Mt	%	Track 1[35]		Track 2[36]	
CDM	**195.62**	**50.59%**				
China	150.21	76.79%				
India	12.61	6.45%				
Brazil	4.52	2.31%				
Uzbekistan	3.72	1.90%				
Chile	3.12	1.59%				
Korea	2.93	1.50%				
Mexico	2.63	1.34%				
Others	15.88	8.12%				
JI	**191.05**	**49.41%**	**million**	**percentages**	**million**	**percentages**
Ukraine	146.66	76.77%	144.92	75.85%	1.74	0.91%
Russia	32.06	16.78%	32.06	16.78%	0	0.00%
Lithuania	3.54	1.85%	0	0.00%	3.54	1.85%
Poland	2.82	1.48%	2.82	1.48%	0	0.00%
Germany	1.65	0.86%	1.65	0.86%	0	0.00%
France	1.24	0.65%	1.24	0.65%	0	0.00%
Others	3.08	1.61%	2.26	1.18%	0.81	0.42%
Total	**386.67**	**100.00%**	**184.95**	**96.81%**	**6.09**	**3.19%**

4.2. Demand: allowances taken out of circulation

According to the information recorded in the Union Registry, in 2014 emissions of greenhouse gases from stationary installations participating in the EU ETS are estimated to have decreased by about 4.5% compared to 2013 level, which is a faster decline than in previous years. In 2013 verified emissions of greenhouse gases were estimated to have decreased by at least 3% compared to 2012.

It has to be noted that due to the extension of scope of the EU ETS from phase 2 to phase 3, there are some methodological challenges in assessing with certainty the change in emissions compared to 2012. However, estimated emissions in 2013 on a like-for-like basis were at least 3% below the 2012 level for installations in sectors included in both phase 2 and phase 3. Whereas, verified GHG emissions from stationary installations amounted to 1895 million tonnes of CO_2-equivalent in 2013, emissions additionally covered by the EU ETS due to the extension of its scope are estimated at 79 to 100 million tonnes. In sum, the economic recession starting in 2008 had a profound impact on the emissions, but even with the correction for the extension of scope between phase 2 and phase 3, the emissions in 2014 are

[35] Track I Joint Implementation refers to the procedure whereby a host party may issue JI credits following verification, without reference to the Joint Implementation Supervisory Committee (JISC).

[36] Track 2 Joint Implementation refers to the procedure where verification is done under procedures laid out under the Joint Implementation Supervisory Committee (JISC). Under Track 2 an independent entity accredited by the JISC has to determine whether the relevant requirements have been met before the host Party can issue and transfer credits.

below the pre-crisis levels. The volatility of annual emissions cannot be explained only with the economic factors, but is also due to energy efficiency improvements and cleaner energy mix.

Table 6: Verified emissions

Year	2008	2009	2010	2011	2012	2013	2014
Verified emissions (in million tonnes CO_2 equivalents)	2100	1860	1919	1886	1867	1895	1812
Change to year x-1		-11.4%	3.2%	-1.8%	-2%	-3%	-4.5%
GDP (real economic growth rate EU27 or EU28)	0.4%	-4.5%	2.0%	1.7%	-0.4%	0.1%	1.3%

Source: European Union Transaction Log (EUTL) public website (http://ec.europa.eu/environment/ets/)
GDP data as reported on
http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00115

The number of allowances cancelled (not used for compliance) on a voluntary basis amounts to 13 219 allowances in 2013 and 47 278 allowances in 2014.

4.3. Balancing supply and demand

As indicated in the Carbon Market Report 2012, at the start of phase 3, the EU ETS was characterised by a large imbalance between supply and demand of allowances, resulting in a surplus of around 2 billion allowances. For 2013, this surplus increased further to more than 2.1 billion. For 2014, it has been slightly reduced to some 2.07 billion. In 2014 auction volumes were reduced by 400 million allowances due to the start of the implementation of the back-loading measure, which postpones the auctioning of these allowances. In the absence of back-loading the surplus in 2014 would have amounted to almost 2.5 billion allowances.

The reasons for this imbalance were outlined in the Carbon Market Report 2012. It is primarily a mismatch between the auction supply of emission allowances, which is fixed as a result of the emissions cap, and demand for them, which is flexible and impacted by economic cycles, fossil fuel prices as well as other drivers such as complementary policies and technological developments. The influx of international credits has also impacted the supply of emission allowances resulting in a significant increase. To remedy this situation, the Commission has made a legislative proposal to establish a market stability reserve and render the auction supply of emission allowances more flexible. The market stability reserve

aims to stabilise the market by addressing the imbalance between supply and demand (see section 10.1.).

A key notion for the functioning of the market stability reserve is the total number of allowances in circulation (TNAC). Allowances will be added to the reserve, if the TNAC is above a predefined upper threshold (833 million allowances) and allowances will be released from the reserve, if the number is below a predefined lower threshold (below 400 million allowances or where measures are adopted under Article 29a of EU ETS Directive). Thus the market stability reserve absorbs or releases allowances, if the TNAC is outside of a predefined range. The reserve will be also replenished by the backloaded and unallocated allowances[37].

The supply of emission allowances consists of the allowances banked from phase 2, auctioned allowances, allowances allocated for free and the allowances in the NER; while the demand is determined by the emissions of the installations and the cancelled allowances. For more details, see Table in Annex.

The starting point for determining the total number of allowances in circulation is the total number of allowances remaining after phase 2 of the EU ETS (2008-2012), which were not surrendered or cancelled. These allowances were replaced by phase 3 allowances at the end of the second trading period. No other allowances from before the third trading phase contribute to the total number of allowances in circulation[38]. This 'banking total' thus represents the exact number of ETS allowances in circulation at the start of the third trading period of the EU ETS. The banking total is 1 749 540 826 allowances (this number does not include early auctions of phase 3 allowances taking place in 2012 but does reflect the use of international credits before the start of phase 3. The total amount of international credits used since 2008 is listed in section 4.1.3.).

The total number of allowances in circulation relevant for the feeds and releases in the market stability reserve is calculated by the following formula:

$$TNAC = Supply - (Demand^{39} + allowances\ in\ the\ MSR)$$

The annual carbon market report allows the consolidation of the figures for supply and demand which are published according to the timeline of reporting obligations stemming from the EU ETS Directive and its implementing provisions. This timeline, relevant data and scope are outlined in Table 7.

[37] Unallocated allowances are allowances not allocated pursuant to Article 10a(7) of the EU ETS Directive, i.e. allowances remaining in the new entrants' reserve, and resulting from the application of Article 10a(19) and (20), i.e. allowances foreseen for free allocation to installations but remaining unallocated because of (partial) cessation of operations or significant capacity reductions.

[38] For the explanation on banking of the emission allowances see: http://ec.europa.eu/clima/policies/ets/registry/faq_en.htm

[39] This also includes cancelled allowances.

Table 7: Timeline for data publication

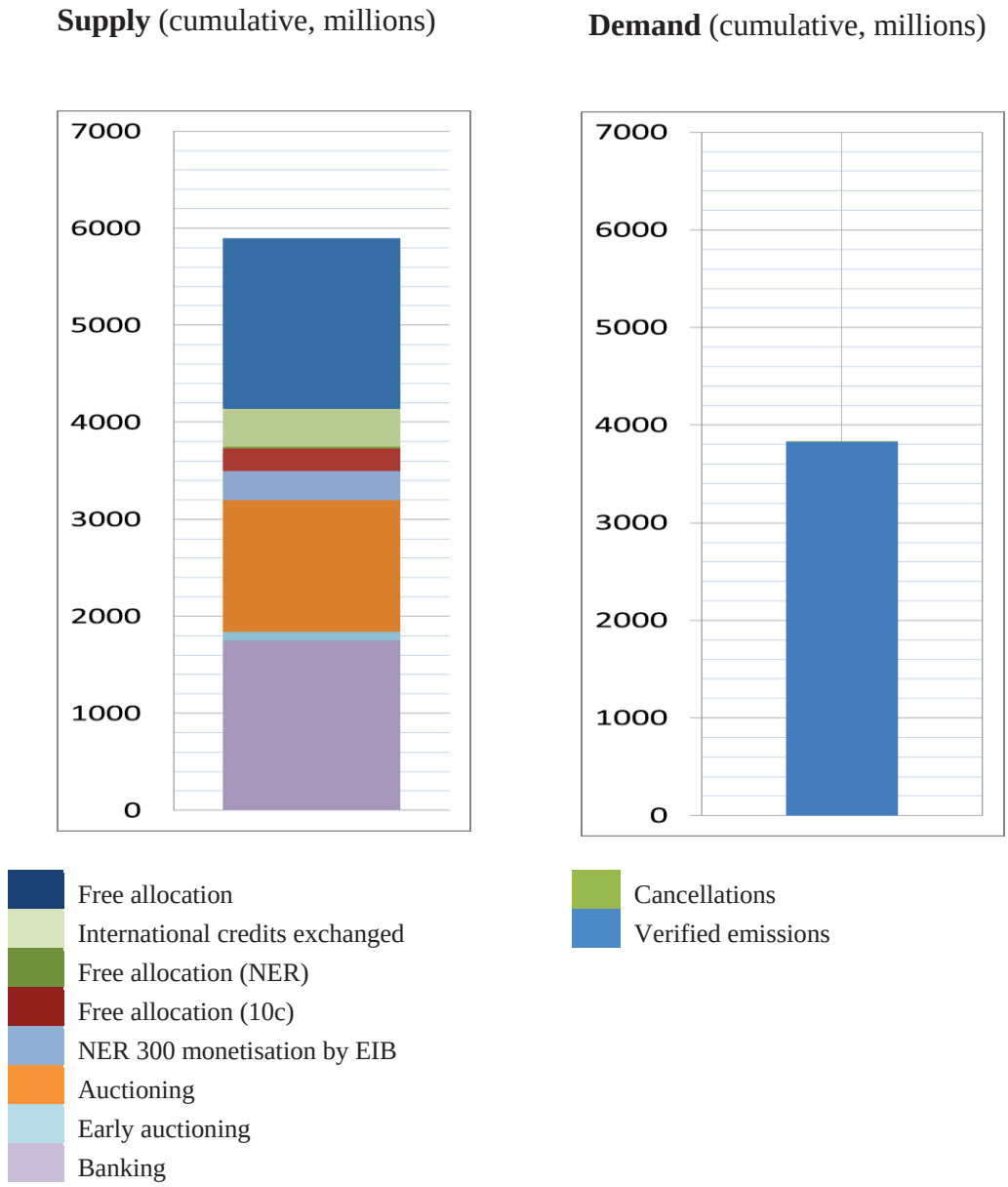
Timing	Data	Scope
1 January – 30 April year x	Updates to free allocation to power (Article 10c)	Year x-1
1 April year x	• Verified emissions • Free allocation (Article 10a(5) – NIMs[40]	Year x-1
1 May year x	Compliance deadline: verified emissions and surrendered allowances	Year x-1
May/October year x	International credits exchanged	Up to 1 May/1 October of year x
October/November year x	Carbon Market report	Year x-1
January/July year x	Status of new entrants' reserve - NER table	
Not published at EU level	Free allocation to aviation published at Member States level	

As the market stability reserve becomes operational in 2019, the Commission will regularly publish in mid-May the total number of allowances in circulation for the preceding year, as of 2017.

Figure 1 presents the cumulative supply and demand figures until the end of 2014, respectively. The total supply in 2013 was about 2.18 billion allowances, and the total demand was about 1.96 billion allowances. In 2014, both the total supply and demand decreased to around 1.87 billion allowances. The surplus therefore grew in 2013 by about 220 million allowances to over 2 billion allowances, while remaining stable in 2014. Reduced supply and demand in the year 2014 reflected lower auctioning due to the backloading of allowances as well as a continued decline in emissions. When considering these figures related to 2013 and 2014, it should be noted that these are based on the most recent data related to these years, as can be derived from the European Union Transaction Log (EUTL). This means that they can include recent data relating to 2013 and 2014.

[40] NIMs are the National Implementation Measures pursuant to Commission Decision 2011/278/EU containing the preliminary calculation of the number of free allowances to be allocated to each installation in the territory of all Member States and EEA-EFTA states which have been notified to the Commission.

Figure 1: Balance between cumulative supply and demand until the end of 2014



5. AVIATION

Aviation activities were included in the EU ETS by Directive 2008/101/EC[41]. The Directive establishes that since the start of 2012, emissions from all flights within airports in the European Economic Area (EEA), from flights departing from airports in the EEA to third

[41] Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community, OJ L 8, 13.1.2009, p. 3.

countries and, if not exempted through delegated legislation, from incoming flights to airports in the EEA from third countries are included in the EU ETS.

In September 2013 the ICAO Assembly agreed to develop by 2016 a global market-based mechanism (MBM) to be implemented from 2020 to tackle emissions from international aviation. This outcome was welcomed by the EU, and in response to it, the EU legislation was amended. In this regard, Regulation (EU) No 421/2014[42] temporarily reduces the scope of the EU ETS to emissions from flights within the EEA between 2013 and 2016.

According to the Article 21 reports submitted in 2015, 611 aircraft operators have a monitoring plan. Of these, 50% (305) were Commercial Aircraft Operators and the other 50% (306) were Non Commercial Aircraft Operators. A total of 329 (53.8% of the total) qualified as small emitters.

According to EUTL public website verified CO_2 emissions from aviation activities carried out between airports located in the EEA amounted to 53.4 million tonnes of CO_2 in 2013 and 54.9 million tonnes of CO_2 in 2014, which represents an increase of 2.8% in 2014 compared to 2013.

Aircraft operators' initial allocation was also adjusted to the reduced intra-EEA scope. The adjusted free allocation amounted[43] to 32.4 million allowances in 2013 and 32.3 million allowances in 2014.

The amounts of allowances to be auctioned for the years 2013 and 2014 were determined on the basis of an expected annual amount of 5.7 million, following the adjustments made to auction volumes in accordance with Regulation (EU) No 421/2014. These allowances were auctioned between 1 January and 30 April 2015.

These figures show around 32 million tonnes of emission reductions in 2013 and in 2014.

6. MARKET OVERSIGHT

The lion's share of transactions in emission allowances is in the form of derivatives (futures, forwards, options, swaps), which are already subject to EU financial markets regulation (including the currently applicable Markets in Financial Instruments Directive (MiFID)).[44]

[42] Regulation (EU) No 421/2014 of the European Parliament and of the Council of 16 April 2014 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in view of the implementation by 2020 of an international agreement applying a single global market-based measure to international aviation emissions, OJ L 129, 30.4.2014, p. 1.
[43] Data as of September 2015.
[44] Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC, OJ L 145, 30.4.2004, p. 1.

This is being replaced by the MiFID2 package, which will be applicable as of January 2017 and it requires the adoption of multiple implementing measures.

Under MiFID2 also emission allowances will be classified as financial instruments. This means that MiFID2 rules applicable to traditional financial markets (those including carbon derivatives trade on leading platforms) will also apply to the spot segment of the secondary carbon market (transactions in emission allowances for immediate delivery in the secondary market, currently unregulated at EU level), putting it on equal footing with the derivatives market in terms of transparency, investor protection and integrity[45].

Moreover, by virtue of cross-references to MiFID2 definitions of financial instruments, other pieces of financial market legislation will apply. This is in particular the case of Market Abuse Regulation (MAR), which will cover transactions and conduct involving emission allowances, both on secondary markets and in the EU ETS auctions in the primary market. Similarly, a cross-reference to MiFID2 in the Anti-Money Laundering Directive will trigger a mandatory application of customer due diligence checks by MiFID-licensed carbon traders to their clients in the secondary spot market in emission allowances.[46]

MiFID2 and MAR, both adopted in 2014, envisage certain adaptations of the general regime to carbon market specificities, including:

- specific exemptions from MiFID2 for carbon market participants (including on the grounds of ancillary character of such activity to the core activity, essentially addressed to compliance buyers and entities trading on behalf of others on a limited scale);
- inside information disclosure duty only for largest participants/emitters;
- more detailed position reporting (but no position limits) by trading venues;
- treating emission allowances as a separate category under pre- and post-trade transparency obligations (to facilitate development of adapted implementing rules);
- full coverage of emission derivatives (similarly to derivatives with 'financial' underlying and unlike commodity derivatives).

During the course of 2014 and 2015, several level 2 measures covering details of provisions under MiFID2 and MAR have been developed and are to be adopted, including the determination of the thresholds to be used in determining ancillarity under MiFID2, thresholds for application of inside information disclosure duty to carbon market participants under MAR, and secondary markets' transparency requirements in respect of emission allowances and their derivatives, including thresholds allowing for their determination as Liquid Markets under MiFID2.

[45] Oversight in the primary market will continue to be covered by the Auctioning Regulation, other than issues related to market abuse, where the Market Abuse Regulation will be directly applicable.
[46] Due diligence checks are already mandatory in the primary market and in the secondary market in emission allowances' derivatives.

6.1. The legal nature of emission allowances and fiscal treatment

As for many other cases, the legal nature of emission allowances and their fiscal treatment are not defined at EU level. However, despite non-harmonisation, a mature and very liquid market has developed over the last decade. The current regulatory framework provides the necessary legal underpinnings for a transparent and liquid carbon market, whilst ensuring the market's stability and integrity. Although stakeholders have not expressed the need for more clarity on the legal definition of allowances, the Commission plans to analyse the benefits of clarifying their legal status following the recommendation of the European Court of Auditors.

Under Article 21 reports, 23 Member States reported on and described the legal nature of an emission allowance within their legal system. Emission allowances are described variably as financial instruments, intangible assets, property rights and commodities. One country (DE) recognises the need for revised legislation.Other Member States treat allowances as financial instruments, define them as property rights, or consider them as state property.

As regards the fiscal treatment of allowances, under Article 21 reports a low number of Member States reported that value added tax (VAT)[47] applies to the issuance of emission allowances, VAT being due on transaction of emission allowances on the secondary market in 24 Member States. A majority of Member States reported on the application of the reverse-charge mechanism[48] on transactions involving emission allowances. Emission allowances for corporations can additionally be taxed. Sixteen Member States reported that there was no taxation on emissions allowances or corporate emission allowances.

7. MONITORING, REPORTING AND VERIFICATION OF EMISSIONS

7.1. Requirements in phase 3

Accurate monitoring, reporting and verification (MRV) is the backbone of the EU ETS. It is supplemented by a sound accreditation system for ensuring adequate quality of third-party verifiers. To improve and harmonise the MRV requirements in phase 3, the Monitoring and Reporting Regulation (MRR) and the Accreditation and Verification Regulation (AVR) were adopted (see section 2).

The Commission has also provided an extensive set of guidance documents and electronic reporting templates, which have been widely used by Member States.

The efficiency of the compliance system has also been improved since the MRR allows Member States to make electronic reporting mandatory. Ten Member States reported in 2015 that they have a dedicated IT system in place for EU ETS reporting.

[47] Emission allowances are subject to VAT as they are a taxable supply of services.
[48] The reverse charge moves the responsibility for the payment of the VAT transaction from the seller to the buyer of a good or service and constitutes an effective safeguard against VAT fraud.

The monitoring system in the EU ETS is designed as a 'building block' system which allows a high degree of flexibility for operators to ensure cost-efficiency, while at the same time achieving a high reliability of the monitored emissions data. For this purpose, several monitoring methods ('calculation[49]-based' or 'measurement[50]-based', as well as by exception 'fall-back approaches') are allowed. Methods may be combined for parts of the installation. The requirement for installations and aircraft operators to have a monitoring plan approved by the Competent Authority on the basis of the MRR prevents arbitrary selection of monitoring methods.

7.2. Monitoring applied

According to the Article 21 reports submitted by Member States to the Commission that cover the application of the ETS Directive in 2014, most of the installations use the calculation-based methodology. Only about 140 installations (in 22 Member States) were reported to use continuous emissions measurement systems. Only 13 Member States reported the use of the fall-back approach by 32 installations in total and covering 6.1 million tonnes CO_{2e}.

The flexibility in the choice of the monitoring methodologies allows for cost-effectiveness in the MRV framework. Another important element designed for this purpose is the tier-based approach. For all the parameters required for the determination of emissions data, so-called 'tiers' are defined to make efforts or uncertainty level requirements proportionate to the size of the installation. The MRR requires all operators to meet certain minimum tiers, with larger emission sources required to meet higher tiers (i.e. involving more reliable data quality), while for cost-efficiency reasons less strict requirements apply for smaller sources. [51]

The minimum tier requirements are usually met by installations. Only 118 category C installations (14% of total) were reported to deviate for at least one parameter from the requirement to apply the highest tiers for the major source streams (for 2013, there were 137 installations, 16% of total). However, the real number may be higher, as not all Member States reported details in this regard. These deviations are only allowed where the operator demonstrates that the highest tier is technically not feasible or incurs unreasonable costs. If those conditions are found not to apply anymore, operators have to improve their monitoring systems. In a similar way, Member States have had to report the number of category B installations which do not meet the highest tier requirements for major source streams or emission sources. Only 22 Member States reported on this issue, showing that on average 28% of category B installations deviate from the requirements in some respect (for 2013, 24 Member States reported indicating an average of 28% of category B installations affected).

[49] Although called 'calculation based', the method requires several measurements. In particular the quantity of fuels and materials leading to emissions needs to be measured. The emissions are then calculated as 'quantity times emission factor (times other factors if applicable)'. Chemical analyses are required for determining the emission factors in case of high emissions and/or more heterogeneous fuels and materials. In other cases default factors may be used.

[50] 'Measurement based methodologies' refer to the use of Continuous Emissions Measurement Systems (CEMS).

[51] Article 26 of Commission Regulation (EU) No 601/2012.

The above confirms that the MRR provisions for such deviations (bearing in mind that they have to be duly justified by the operator and approved by the competent authority) are applicable in practice, and compliance by operators overall is good.

For aircraft operators, there are fewer options applicable for the monitoring of emissions. Only calculation based approaches are feasible, with the fuel consumption being the central parameter[52] to be determined for the flights covered by the EU ETS.

7.3. Accredited verification

With the Accreditation and Verification Regulation for phase 3 and beyond an EU-wide harmonised approach towards the accreditation of verifiers has been introduced. Verifiers who are a legal person or a legal entity must be accredited by a National Accreditation Body (NAB) in order to carry out verifications in compliance with the AVR. Only in the case of a natural person may a Member State allow for certification as an alternative to accreditation[53]. The new uniform accreditation system has the advantage of allowing verifiers to operate with mutual recognition across all Member States, thereby taking full advantage of the internal market and helping to ensure sufficient availability overall.

Under Article 21 of the EU ETS Directive, Member States have reported the number of verifiers accredited per accreditation scope.[54] This totals 1044 verifiers accredited across all scopes (verifiers do multiple scopes, so this does not equal the total number of verifiers). The mutual recognition of verifiers among Member States is working successfully: most Member States (28) reported that at least one foreign verifier is active in their territory. Availability of verifiers did not constitute a bottleneck in the system in either the first year or the second year of implementation of the AVR.

Compliance of verifiers with the AVR is found to be high, as few administrative measures[55] imposed by Member States have been reported, the exceptions being one suspension of a verifier one withdrawal of an accreditation, and six reductions of scope. Seven Member States reported cases of complaints against a verifier, but these have been resolved in 99% of the cases. Eight Member States reported some non-conformity in relation to the information exchange required between NABs and competent authorities.

[52] Other parameters are the emission factor, for which usually a default value is applicable, and the fuel density, which again can often be based on a default value.
[53] Only one Member State has reported to have such system in place for certification, and only one verifier has been certified under that system.
[54] Scopes are defined by Annex I of the AVR, which creates a link to the activities listed in Annex I of the EU ETS Directive.
[55] Possible administrative measures are suspension or withdrawal of the accreditation, or a reduction of the scope of accreditation.

8. OVERVIEW OF ADMINISTRATIVE ARRANGEMENTS IN MEMBER STATES

The EU ETS is implemented in the Member States using different approaches regarding the competent authorities in charge. Most of the Member States have used existing structures, while few have set up new bodies dedicated to the EU ETS implementation. Thus, in some Member States several local authorities are involved, while in others the approach has been centralised. Article 21 reports give some insight into the organisational structure of each Member State. On average 4 different competent authorities are involved in EU ETS implementation. 15 Member States have reported that local authorities are involved, usually for issuing permits and MRV issues. Coordination between authorities is one of the important issues in order to ensure a uniform and correct application of the legal requirements within each Member State. This is ensured by the appropriate provisions of the MRR. For coordination between competent authorities, Member States reported that they use different tools where relevant. For 2014, 10 Member States reported that they have legislative instruments in place for central management of monitoring plans or emission reports, and in 8 cases a central body provides binding instructions and guidance. Twelve Member States reported that they hold regular workshops for authorities, but only 8 reported common training for Competent Authorities. The use of a joint IT platform was reported by 8 Member States as a means of coordination.

On administrative fees charged by Member States (in relation to permitting and approved monitoring plans), 14 countries reported that they do not charge any fees to operators. Aircraft operators do not pay fees in 16 countries. Six Member States reported that they collect an annual subsistence charge from operators or aircraft operators. These charges are in the range of 671 to 5250€ per year per operator. In two cases reported, they are expressed as an amount (0.02 to 0.07€) per allowance. Seventeen Member States reported that they collect fees for various specific services, such as approval of monitoring plans or updates of monitoring plans or permits. Those fees vary strongly, from less than 100€ to over 3000€ for a new monitoring plan approval.

Overall it is inferred that the Member State systems are largely effective as aligned to the country's administrative organisation. The principle of subsidiarity is applied. Communication between Member States local authorities and the sharing of best practices among Competent Authorities should continue to be reinforced.

9. COMPLIANCE AND ENFORCEMENT

The competent authorities in the Member States contribute significantly to the high level of compliance of operators, by carrying out different compliance checks on the annual emissions reports. According to the information in the Article 21 reports submitted in 2015, all Member States (except SE) checked between 95 and 100% of annual emission reports for

completeness and internal consistency. Furthermore about 80% of reports were checked for consistency with monitoring plans and about 72% on average were checked against allocation data. Twenty-four Member States reported that they carry out cross-checks with other data/detail.

All the above checks are intended to supplement the verifier's work and to ensure the high quality level of the MRV system. After verification, the competent authorities detected errors in only 0.2% of reports in 2014 (and 2013).

The number of cases reported by Member States, in which the competent authority had to make conservative estimates on installation emissions[56] is another indicator showing that the compliance system in the EU ETS is functioning well. Fourteen Member States reported in total 37 such cases (0.3% of installations), with emissions of 9.1 million tonnes CO_2 involved (0.5% of the total verified emissions reported for 2014). This compares to twelve Member States that reported for 2013 a total of 70 such cases (0.6% of installations), with emissions of 2.7 million t CO_2 involved (0.14% of the total verified emissions reported for 2013).

The above figures demonstrate that checks by the competent authority are important, despite third party verification. However, the findings also demonstrate that 99.5% of installations comply with the EU ETS' reporting requirements.

The EU ETS Directive provides for a monetary penalty in the form of an 'excess emissions penalty' of €100 for each tonne CO_2 emitted for which no allowance has been surrendered in due time. As noted by the European Court of Auditors[57], the EU ETS has a very high compliance rate: each year around 99% of the emissions are actually covered by the required number of allowances. The level of compliance with the EU ETS rules was also very high in the aviation sector: aircraft operators responsible for more than 99.5 % of aviation emissions covered under the EU ETS complied. This also includes more than 100 commercial aircraft companies based outside EU, which operated flights within the EEA.

For 2014, the application of 'excess emissions penalty' was reported for a low number of cases (ca. 0.1% of installations) in 6 Member States (DE, ES, PL, PT, RO, UK). As provided for by the Directive, Member States should increase the penalty in accordance with the European index of consumer prices[58].

Other penalties possible in the Member States are very diverse, regarding the types of infringements covered and the range of penalty. Many Member States reported that the penalties will be set by the court based on the relevant case. Most Member States reported a lower and/or upper limit for the penalty (as applicable), with the minimum ranging from a

[56] This is the case when the operator does not submit a verified emissions report, or if the competent authority detects serious misstatements or non-conformities in the report.
[57] See footnote 5.
[58] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Harmonised_index_of_consumer_prices_(HICP)

few hundred euro to as much as €75 000, and the maximum ranging from €5 000 to €15 million. Seven Member States reported possible penalties in the form of imprisonment.

For 2014, as well as for 2013, more than 99% of installations complied with the requirement to submit a verified annual emissions report in time. It is also important that operators comply with their greenhouse gas permit and the approved monitoring plan. Under Article 21, Member States have reported on measures they apply for ensuring the highest compliance levels possible. For the reporting year 2014, 25 of the 31 reporting countries mentioned that they offered regular meetings with industry and/or verifiers. On-site inspections and spot checks carried out by the competent authorities are reported by 23 Member States. Twenty-two Member States stated that they prohibit the selling of allowances as long as the installations are non-compliant. Only 11 Member States reported that they publish the names of MRR/AVR non-compliant operators. These measures appear reasonably effective. For 2014, only 10 Member States reported that fines were imposed. No imprisonments were reported. Most frequent reasons for fines were failure to submit a verified report in time (in 7 Member States – ES, HU, PL, PT, RO, SK, UK), and failures to comply with permit conditions (5 Member States – ES, GR, HU, NL, UK).

The EU ETS Compliance Forum continues to provide an effective mechanism for sharing MRV information between Member States and competent authorities and identifying best practice for efficient implementation. An annual Compliance Conference is typically held to ensure widest awareness of Compliance Forum activities in particular concerning its five Task Forces on Monitoring and Reporting, Accreditation and Verification, Aviation, Electronic-reporting and Carbon Capture and Storage. In the meantime, details concerning the meetings and on-going work of the Task Forces are made available to all EU ETS competent authorities.

The Registry Administrators' Working Group is a cooperation forum between Member States and the Commission as the central administrator on issues and procedures linked to the operation of the Union Registry and the implementation of the Registry Regulation.

10. STRUCTURAL REFORM OF THE EU ETS

10.1. Backloading and Market Stability Reserve

The European carbon market is currently characterised by a growing imbalance between supply and demand of allowances (see section 4.3.).

As a short term measure to mitigate the effects of the surplus it was decided to postpone ('back-load') the auctioning of 900 million allowances in the early years of phase 3. At the same time, considering the structural and long-lasting nature of the surplus, the Commission pursued its public consultation on options for structural reform of the EU ETS set out in the Carbon Market Report 2012. The concept of a market stability reserve that could render the auction supply of emission allowances more flexible and increase shock resilience emerged

from this discussion as the preferred option. The Commission made a corresponding legislative proposal to establish a market stability reserve in January 2014. Decision (EU) 2015/1814 of the European Parliament and of the Council of 6 October 2015 creates such Market Stability Reserve.

The aim of the Market Stability Reserve is twofold: firstly, to address this existing imbalance between the supply and demand of emission allowances in the EU ETS and, secondly, to make the EU ETS more resilient to large demand or supply shocks in the future.

The reserve will start operating in January 2019. Allowances will be added to the reserve, if the total number of allowances in circulation is higher than 833 million allowances. 900 million backloaded and a for the time being unknown amount of unallocated allowances will also be transferred into the reserve. Allowances will be released from the market stability reserve, if the total number of allowances in circulation is lower than 400 million allowances or where measures are adopted under Article 29a of EU ETS Directive.

The reserve is fully embedded in the existing framework of the EU ETS.

For more technical explanations on its functioning, see section 4.3.

10.2. EU ETS reform

In October 2014 EU Heads of State and Government have decided- within the 2030 Climate and Energy Framework- that a well-functioning, reformed EU ETS together with the market stability reserve will constitute the main mechanism to achieve the reduction of emissions in the EU ETS by 43% compared to 2005. In July 2015 the Commission presented a legislative proposal on the revision of the EU ETS as of phase 4 (2021-2030). The key changes are:

- The overall number of emission allowances will decline at an annual rate of 2.2% from 2021 onwards, compared to 1.74% currently.
- The proposal further develops predictable, robust and fair rules to address the risk of carbon leakage. The system of free allocation is revised in order to distribute the available allowances in the most effective and efficient way to those sectors at highest risk of relocating their production outside the EU (around 50 sectors in total).
- An Innovation Fund will be set up to extend existing support for the demonstration of innovative technologies to breakthrough innovation in industry. Free allowances will continue to be available to modernise the power sector in lower-income Member States. In addition, a dedicated Modernisation Fund will be established to facilitate investments in modernising the power sector and wider energy systems and boost energy efficiency in these Member States.

The proposal has been submitted to the European Parliament and to the Council for adoption and to the Economic and Social Committee and the Committee of the Regions for opinion.

11. CONCLUSIONS AND OUTLOOK

For the last decade, the EU ETS has delivered emissions reductions in the EU and inspired other international partners to use carbon pricing as a cost-effective driver for a gradual but sustainable decarbonisation of their economies for the benefit of future generations. Since 2005, it has provided a price signal for factories, power plants and other installations covered by the system, to promote investment in clean, low-carbon technologies. The system proved that putting a price on carbon is an effective way to achieve cost-efficient emissions reductions, motivate business and help bring innovative technologies to the marketplace.

The teething problems that the EU ETS has experienced in the beginning have been largely addressed. For example the phasing out of free allowances for power plants in 2013 has successfully addressed the issue of windfall profits for power plants which found it easy to pass on the cost of carbon in power prices. The first two years of the phase 3 indicated that the system architecture is robust and that the EU ETS has created a functioning market infrastructure and a liquid market.

While the initial problems have been addressed, the wider macro-economic circumstances in the wake of the 2008 financial crisis have had a decisive impact on the supply and demand balance in the EU ETS leading within a period of 24 months to the emergence of a market surplus of more than 2 billion allowances, which would further expand in the coming year and would still be around the prevailing level by 2030. The intense debate in recent years how to react to the unexpected and sudden phenomenon has led to decisions on initially back-loading, which is already in implementation, and a market stability reserve, which will be implemented as of 2019. These decisions have set the EU ETS on course to progressively regain importance in the coming years.

Together with the proposed revision of the system which will apply as of phase 4 (2021-2030) these measures will ensure that the EU ETS – the cornerstone of EU climate policy – remains an effective way to cut emissions in the decade to come. Ambitious climate action creates business opportunities and opens up new markets for innovation and the use of low-carbon technologies.

The Commission will continue to monitor the carbon market and provide the next report in late 2016.

ANNEX

Table: ETS supply and demand elements

Element	Supply or demand?	Publication	Update and uncertainties
Banking total phase 2	Supply	Carbon market report	No update is foreseen as phase 2 ended. Final figure.
Early phase 3 auctions	Supply	DG Climate website, EEX and ICE websites	Not part of phase 2 banking total. Final figures.
Allowances for NER 300	Supply	EIB website	300 million allowances were monetised in 2012-2014. Final figures.
Aviation auctions	Supply	DG Climate website, EEX and ICE websites	No – adjustments are reflected in the volumes for the following year. 2013 and 2014 auctions took place in 2015.
Phase 3 auctions	Supply	DG Climate website, EEX and ICE websites	No - the figure is not subject to revision. However, allowances (e.g. due to delays to start of auctioning for certain Member States, e.g. those for EEA-EFTA) withheld from auctions can be auctioned in subsequent years.
Free allocation (NIMs)	Supply	EUTL, tables	These figures are updated throughout the year. - Member State may provide late submissions for previous years or actual allocation can be lower than the amount initially foreseen. The EUTL provides an accurate state of play of actual allocation.
Free allocation (NER)	Supply	EUTL, tables	
Free allocation (aviation)	Supply	EUTL, MS publication of allocation tables	
Free allocation (Article 10c)	Supply	EUTL, status table	
Emissions (stationary installations)	Demand	EUTL, compliance data	Compliance data made public on 1 May shows emissions and surrendered allowances for installations that are in compliance (i.e. those installations reporting for all years concerned).
Emissions (aviation)	Demand		Compliance for aviation operators for both 2013 and 2014 took place in 2015.
Allowances cancelled	Demand		Carbon market report

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ANNEX 2

ANNEX

Report on review of Directive 2009/31/EC on the geological storage of carbon dioxide

Accompanying the document

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

Climate action progress report, including the report on the functioning of the European carbon market and the report on the review of Directive 2009/31/EC on the geological storage of carbon dioxide
(required under Article 21 of Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC, under Article 10(5) and Article 21(2) of the Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC and under Article 38 of Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide)

{SWD(2015) 246 final}

1. INTRODUCTION

Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide (the Carbon Capture and Storage (CCS) Directive) was adopted as part of the 2009 climate and energy package. It provides a legal framework for the environmentally safe geological storage of carbon dioxide (CO_2). It aims to ensure that there is no significant risk of leakage of CO_2 or damage to public health or the environment, and to prevent any adverse effects on the security of the transport network or storage sites, thereby addressing public concerns. The Directive also contains provisions on the capture and transport components of CCS, though these activities are covered mainly by existing EU environmental legislation, such as the Environmental Impact Assessment Directive[1] and the Industrial Emissions Directive[2].

The European Commission considers the transposition measures to be complete for all Member States, except for one Member State with which discussions are ongoing. The Commission is advancing with the conformity checks of these measures.

Article 38 of the CCS Directive requires the Commission to assess the CCS Directive in a report to be transmitted by 31 March 2015 to the European Parliament and to the Council and to present a proposal for revision of the Directive if appropriate.

This report, in addition, evaluates the Directive for its effectiveness, efficiency, coherence, relevance and EU added value under the Commission's Regulatory Fitness and Performance (REFIT) programme[3].

It also examines the extent of CCS deployment and outlines further steps to be taken regarding the wider economic and policy environment to accelerate deployment.

2. METHODOLOGY

An online survey and consultation of stakeholders and experts were organised to support the findings of this report. More than 100 responses were received to the survey from industry and utilities, research organisations and non-governmental organisations. These were complemented by targeted interviews, literature review and case studies. The Commission further consulted the Member States through the Information Exchange Group formed under Article 27(2) of the Directive. The survey and analysis were based on the review topics listed in Article 38 and the REFIT criteria. Further details are given in the evaluation report[4].

A constrain of the review is the fact that the number of CCS installations (referring to capture, transport and storage) achieved to date has been much less than expected when the Directive was passed. Only one project - the ROAD project in the Netherlands[5] - has practical experience with the Directive, other than with exploration permits and the feasibility of retrofitting large combustion plants with CCS. To comprehensively test the content of the

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[1] Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment
[2] Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control)
[3] The REFIT evaluation of the CCS Directive is listed in the Commission Work Programme for 2015 - A New Start, COM(2014) 910 final
[4] 'Study to support the review of Directive 2009/31/EC on the geological storage of carbon dioxide (CCS Directive)', Luxembourg: Publications Office of the European Union, 2015.
[5] The Rotterdam Capture and Storage Demonstration Project, http://road2020.nl/

Directive and perform a more in-depth assessment of its effectiveness and efficiency, a larger experience with application of the Directive and with CCS in general would have been necessary.

3. CURRENT DEPLOYMENT OF CCS TECHNOLOGY

In June 2008 the European Council, asked the Commission to propose as soon as possible an incentive mechanism for Member States and the private sector to ensure the construction and operation of up to 12 CCS demonstration plants by 2015 to contribute to mitigation of climate change. This target has not been reached and there are only two large scale CCS plants operating in Europe (both in Norway).

The Commission's position on CCS has been confirmed in a number of policy communications[6]. To reach the decarbonisation targets, CCS will need to be deployed from around 2030 onwards in the fossil fuel power sector.[7] In the longer term, CCS may be the only option available to reduce direct emission from large scale industrial processes.[8]

So far, one CCS project – the White Rose project in the United Kingdom – has been awarded EUR 300 million under the second call of the NER 300 programme[9]. In addition, the UK has awarded study contracts to the White Rose and Peterhead projects[10]. The European Energy Programme for Recovery (EEPR)[11] earmarked EUR 1 billion for CCS demonstration projects. Currently, two projects – the ROAD project in the Netherlands and Don Valley in the United Kingdom are ongoing. In total, there are four projects at the planning stage in the EU, which could start operation around 2020. Once operational, these projects would complement the experience of two Norwegian commercial projects, linked to natural gas production – Sleipner and Snøhvit. However, this rate of progress with large-scale CCS in Europe is much slower than expected.

Outside the EU, there are currently 20 large-scale CCS projects either in operation or in construction. These are mostly industrial projects linked to enhanced oil recovery providing additional economic benefits.[12]

Carbon capture and utilisation (CCU) is a relatively new development which offers the potential to reuse CO_2 as a feedstock for several applications. CCU is expected to have much smaller scale impact on climate mitigation than CCS, but it has a number of potential benefits, including adding economic value to CCS projects.

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[6] For example, in the Commission's Communications The Future of Carbon Capture and Storage in Europe, COM(2013)180 and A Roadmap for moving to a competitive low carbon economy in 2050, COM(2011)112.
[7] Energy Roadmap 2050, COM(2011)885.
[8] A policy framework for climate and energy in the period from 2020 to 2030, COM(2014)15.
[9] The NER 300 programme is one of the world's largest funding programmes for innovative low-carbon demonstration projects and has awarded a total of EUR 2.1 billion to 38 renewable energy projects and one CCS project. It is established under Article 10(a)8 of Directive 2003/87/EC and funded by the sale of 300 million emission allowances from the New Entrants' Reserve (NER) set up for the third phase of the EU emissions trading system. See http://ec.europa.eu/clima/policies/lowcarbon/ner300/.
[10] For more on the UK CCS commercialisation competition, see https://www.gov.uk/uk-carbon-capture-and-storage-government-funding-and-support.
[11] Regulation (EU) No 1233/2010 establishing a programme to aid economic recovery by granting Community financial assistance to projects in the field of energy.
[12] GCCSI, 2014, The Global Status of CCS.

4. REVIEW OF THE CCS DIRECTIVE

The CCS Directive provides the legislative framework for addressing environmental, health and safety concerns about the storage of CO_2. It harmonises administrative procedures for the whole cycle of carbon capture, transport and storage across Member States and so creates the necessary legal certainty for investors to construct large-scale installations for CO_2 capture and transport pipelines and to develop CO_2 storage sites.

This section looks at the specific questions the Commission was asked to answer for the REFIT process and Article 38 of the Directive.

Effectiveness and efficiency
The number of CCS installations constructed is much lower than expected due to the lack of a commercial case for the technology, largely because of the global economic downturn and low carbon prices. The lack of practical experience with the technology makes it difficult to assess progress towards objectives such as creating legal certainty, ensuring the installations are safe for the environment and human health and determining efficiency through evaluation of administrative costs or regulatory burden. The lack of practical experience of CCS projects going through the regulatory process described by the CCS Directive also makes it impossible to identify data on the costs of implementation that have fallen on the Member States and therefore to assess the Directive's efficiency.

Relevance
The Directive focuses on the key issues required for a common approach in the development of CCS. The need for action to reduce emissions remains high and the most recent analysis[13] suggests that this need has become even more urgent.

Coherence
The provisions of the CCS Directive are internally coherent and the Directive is aligned with the overall climate and energy framework.

EU added value
The Directive provides the overall framework, while Member States specify, decide and apply the site-specific details of CCS installations. The evidence so far is that this approach has provided sufficient minimum requirements and guidance to ensure a common approach while leaving Member States sufficient freedom to adapt them to their national circumstances.

Permanence of CO_2 storage
Due to the EU's limited experience with CCS, permanent containment has not yet been fully demonstrated at a large scale. Results from research-scale storage sites and from projects in other countries, in particular from the two large-scale Norwegian projects that have been injecting CO_2 into saline aquifers under the North Sea (since 1996) indicate that safe and long-term storage without leakage is possible.

Need for the Commission to review draft storage permits and draft decisions on transfer of responsibility
So far, only one permit has been awarded under the Directive - to the ROAD project, by the Competent Authority in the Netherlands. The Commission gave a positive opinion on the

[13] IPCC AR 5 October 2014. http://www.ipcc.ch/.

draft permit[14]. Referring draft permits to the Commission for review under Article 10 does not significantly prolong the time needed to obtain a permit.

Articles 19 and 20 on financial security and the financial mechanism give Member States enough scope to decide how site operators should prove their ability to safely operate and monitor a storage site up to the point of transfer of responsibility to the Competent Authority.

There is no practical experience with Article 18 on transfer of responsibility. The application of this Article will be examined in the next review of the Directive.

CO_2 stream acceptance criteria, procedure referred to in Article 12, third-party access and transboundary cooperation

There is no practical experience yet with these requirements, so the Commission considers that no action is necessary at this stage. These articles will be examined in the next review of the Directive.

Application of the provisions on large combustion plants

Data on Member States' application of Article 33 on the feasibility of retrofitting installations for CO_2 capture is readily available only for the United Kingdom, where operators of large combustion plants have to demonstrate sufficient space has been set aside to capture CO_2 in the future[15]. Some Member States (e.g. Germany, France, Hungary, Poland, Romania, Slovenia and the United Kingdom) have reported that they have applied Article 33, as they gave permits to new fossil fuel power plants of above 300 MW.[16]

Prospects for geological storage of CO_2 in third countries

There are currently no plans to store CO_2 in third countries due to the cost of transport and the availability of storage within the EU.

Criteria referred to in Annex I and Annex II on suitability of storage sites and on monitoring plans

The criteria for the characterisation and assessment of storage sites set out in Annex I to the Directive are used to determine the suitability of geological formations for use as storage sites. They are generally viewed by stakeholders as acceptable.

Some stakeholders have reported difficulties in getting geological data from areas explored or used by oil and gas companies. The Commission considers that there is no need for action regarding the Directive. However, it would help new entrants if Member States examined their regulatory processes with a view to promote relinquishment of closed hydrocarbon fields.

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[14] Commission Opinion relating to the draft permit for the permanent storage of carbon dioxide in block section P18-4 of block section P18a of the Dutch continental shelf, in accordance with Article 10(1) of Directive 2009/31/EC of 23 April 2009 on the geological storage of carbon dioxide, C(2012)1236.

[15] The United Kingdom has also produced a guidance note which explains what plant developers should consider and demonstrate in their feasibility checks to retrofit for CO_2 capture: *Carbon Capture Readiness (CCR) - A guidance note for Section 36 Electricity Act 1989 consent applications*, URN 09D/810, November 2009, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/43609/Carbon_capture_readiness_-_guidance.pdf.

[16] Report on the Implementation of Directive 2009/31/EC on the geological storage of carbon dioxide, COM(2014)99.

Annex II to the Directive sets out the criteria for establishing and updating the monitoring plans for operation and post-closure. These criteria are generally accepted as workable. The Commission is of the view that it is too early, given the lack of practical experience, to amend the existing technical requirements.

Incentives to apply CCS to installations combusting biomass

The challenges associated with deploying CO_2 capture for biomass plants are not significantly different from those associated with CCS for coal power plants. There are currently no specific incentives in Europe to apply CCS to installations combusting biomass.

Environmental risks of CO_2 transport

The Commission considers that there is no need at this stage for further regulation of CO_2 transport. The risks entailed in transport of CO_2 are no higher than those of the transport of natural gas or oil and there have been no events or suggestions to warrant any change in current regulations.

Need to establish emission performance standards (EPS) for new electricity-generating large combustion plants

In 2011, the Commission investigated the potential impact of emissions performance standards (EPS) for newly built power plants and the interaction with the ETS[17]. The study concluded that even under conservative assumptions about the development of the EU ETS, the implementation of EPS from 2020 would not provide additional incentives for CCS deployment.

With the 2030 climate and energy policy framework, including the target of reducing greenhouse gas emissions by at least 40% by 2030 compared to 1990 levels, supported by the October 2014 European Council, the Commission does not consider it necessary or practicable to establish a mandatory requirement for EPS for new power plants. The ongoing reform of the EU ETS, with the proposed introduction of a market stability reserve and the increased ambition of the EU ETS beyond 2020 with the target of reducing emissions by 43% by 2030 compared to 2005, is expected to substantially boost the investment climate for low-carbon technologies over time.

5. CONCLUSIONS

5.1. The CCS Directive

Based on the evaluation study, the Commission finds that the CCS Directive is fit for purpose. Overall, and despite the limited information available so far on its practical application, stakeholders are of the opinion that the Directive provides the regulatory framework needed to ensure safe CO_2 capture, transport and storage while allowing the Member States sufficient flexibility. However, the lack of practical experience of projects going through the regulatory process precludes a robust judgement of the performance of the Directive. There is clear stakeholder concern that reopening the Directive now could be counterproductive as it would bring a period of uncertainty for CCS, which would not be helpful in a sector where investor confidence is already low.

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[17] Bloomberg New Energy Finance, 2011, *Emission performance standards: Impacts of power plant CO_2 emission performance standards in the context of the European carbon market,* http://ec.europa.eu/clima/policies/lowcarbon/ccs/docs/impacts_en.pdf.

As regards the REFIT evaluation, the Commission concludes that there is insufficient evidence at this stage to judge the full effectiveness of the Directive, to carry out an efficiency analysis of administrative and regulatory burden and to look at aspects of simplification. Stakeholders and Member States consider the Directive necessary for the safety of geological storage and to provide legal certainty for investors. The Directive is coherent within its own provisions and with other related legislation. As regards EU added value, the Directive is generally considered to provide a good balance between defining an outline approach at EU level and the Member States developing their own detailed and case-specific interpretation.

The next review of the CCS Directive will be carried out when more experience is available with CCS in the EU.

5.2. Enabling policy

It is important to maintain support for commercial-scale demonstration projects both in the power and industry sectors, as this is essential to gain experience, bring down costs and demonstrate safe and reliable underground storage of CO_2. At EU level, the Innovation Fund, which should be endowed with 450 million allowances under the EU ETS, should support CCS besides innovative renewable energy and energy-intensive industry.[18] It is essential for successful demonstration projects that Member States match the EU's financial support, as well as involving the private sector.

Power generation and other industrial projects have long investment cycles, so it is important that Member States consider CCS as part of their long-term planning (ideally up to 2050) to be developed under the future Governance for the Energy Union.

With a view to future CCS deployment, it is important to plan adequate CO_2 transport and storage infrastructure, and consider sharing infrastructure to reduce costs. Advancing knowledge of CO_2 storage capacity and mapping the location of key storage sites and clusters of CO_2 sources would help with the planning of the future transport and storage network. The Connecting Europe Facility can play a role in supporting cross-border transport networks and regional cooperation in this area.

Stepping up research and innovation activities in this area is one of the ten actions identified in the new Strategic Energy Technology Plan to accelerate energy system transformation and create jobs and growth[19]. Support will also continue through the EU Framework Programme for Research and Innovation Horizon 2020[20].

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[18] Proposal amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, COM(2015)337.

[19] Commission communication *Towards an Integrated Strategic Energy Technology (SET) Plan: Accelerating the European Energy System Transformation*, C(2015)6317 final.

[20] Regulation (EU) No 1291/2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020).