# Topicality-NWG-2024

Contents

[Topicality-NWG-2024 1](#_Toc174717954)

[\*\*\*Adopt 4](#_Toc174717955)

[Adopt 5](#_Toc174717956)

[Adopt---Requires Congress 6](#_Toc174717957)

[Adopt---Is Agentless 7](#_Toc174717958)

[Adopt---Legal Force 8](#_Toc174717959)

[\*\*\*Clean Energy Policy 10](#_Toc174717960)

[Clean Energy 11](#_Toc174717961)

[Generic---No Emissions 12](#_Toc174717962)

[Generic---Renewables/Efficiency 13](#_Toc174717963)

[Defined by Objective 14](#_Toc174717964)

[Not Energy Efficiency 15](#_Toc174717965)

[Not Clean Coal 16](#_Toc174717966)

[Not Carbon Sinks 17](#_Toc174717967)

[Not Negative Emissions 18](#_Toc174717968)

[Not Renewables 19](#_Toc174717969)

[Not Natural Gas 22](#_Toc174717970)

[Not Shale 23](#_Toc174717971)

[Not Nuclear 24](#_Toc174717972)

[Yes Nuclear 26](#_Toc174717973)

[Clean Energy Policy 27](#_Toc174717974)

[Generic---3 Goals 28](#_Toc174717975)

[Generic---Reduce Fossil Fuel 30](#_Toc174717976)

[Generic---Broad 31](#_Toc174717977)

[Generic---Requires Legal Framework 32](#_Toc174717978)

[Yes Transmission 33](#_Toc174717979)

[\*\*\*Decarbonization 34](#_Toc174717980)

[Generic 35](#_Toc174717981)

[Reduce Emissions 36](#_Toc174717982)

[Not SRM 38](#_Toc174717983)

[“For” Decarbonization 39](#_Toc174717984)

[Relating To 40](#_Toc174717985)

[Objective 41](#_Toc174717986)

[Contextual Use 42](#_Toc174717987)

[\*\*\*In the United States 43](#_Toc174717988)

[In 44](#_Toc174717989)

[Within 45](#_Toc174717990)

[Throughout 47](#_Toc174717991)

[The 48](#_Toc174717992)

[Specification 49](#_Toc174717993)

[Unique Particular 51](#_Toc174717994)

[Definitive, Particular 52](#_Toc174717995)

[United States Context 55](#_Toc174717996)

[Context Key 60](#_Toc174717997)

[All 61](#_Toc174717998)

[One 62](#_Toc174717999)

[United States 63](#_Toc174718000)

[All Federal Jurisdiction 64](#_Toc174718001)

[Country/Nation 65](#_Toc174718002)

[USA 66](#_Toc174718003)

[Geographic 69](#_Toc174718004)

[Includes Territories 70](#_Toc174718005)

[Not All Jurisdictions/Territories 72](#_Toc174718006)

[Constitutional Union 73](#_Toc174718007)

[Federal Republic 75](#_Toc174718008)

[Republic 77](#_Toc174718009)

[Republic – Government 78](#_Toc174718010)

[Federal = National 79](#_Toc174718011)

[United States – Includes Agencies 80](#_Toc174718012)

[\*\*\*MBI 81](#_Toc174718013)

[Lists 82](#_Toc174718014)

[Generic---List of 3 83](#_Toc174718015)

[Generic---List of 4 85](#_Toc174718016)

[Generic---List of 6 92](#_Toc174718017)

[Price/Quantity 94](#_Toc174718018)

[Generic---Price or Quantity-Based Instruments 95](#_Toc174718019)

[Generic---Only Cap or Tax 100](#_Toc174718020)

[Not Command/Control 103](#_Toc174718021)

[Subsidies 110](#_Toc174718022)

[Not Subsidies 111](#_Toc174718023)

[Specific Violations 127](#_Toc174718024)

[Carbon Credit---Not MBI 128](#_Toc174718025)

[Carbon Offsets---Non-Governmental 130](#_Toc174718026)

[Compulsory Licensing 131](#_Toc174718027)

[FiTs 133](#_Toc174718028)

[Aff 136](#_Toc174718029)

[MBI is Meaningless 137](#_Toc174718030)

[WM---Permits & CAT 139](#_Toc174718031)

[WM---Taxes & Charges 140](#_Toc174718032)

[WM---Subsets are T 141](#_Toc174718033)

[WM---Ecolabels 142](#_Toc174718034)

[WM---Property Rights 143](#_Toc174718035)

[WM---Fuel Tax 144](#_Toc174718036)

[WM---Subsidies 145](#_Toc174718037)

[W/M---FiTs 147](#_Toc174718038)

[FW Card 149](#_Toc174718039)

[MBI Cost Benefit Analysis Good 150](#_Toc174718040)

# \*\*\*Adopt

## Adopt

### Adopt---Requires Congress

#### Adopt requires legislation

FAY 92 [THOMAS F. FAY et al, Chief Justice RI Supreme Court, “In re Advisory Opinion to Governor”, Supreme Court of Rhode Island Jun 10, 1992 https://casetext.com/case/in-re-advisory-opinion-to-governor-23]

In support we need only look to this state's historical treatment and understanding of the term. Most notably, the term "adopt" is included in the constitution itself. As previously indicated, article 15, section 4, directed that "on or before June 1, 1988, the general assembly shall adopt implementing legislation for Article III, Sections 7 and 8, and for Article IV, Section 10." (Emphasis added.) The General Assembly, pursuant to this constitutional directive, terminated the pre-existing Conflicts of Interest Commission and established the Ethics Commission. Thereafter, the General Assembly enacted the code of ethics as contained in chapter 14 of title 36, which the commission subsequently adopted. Obviously, by taking the foregoing actions pursuant to this constitutional mandate, the General Assembly itself understood and construed the term "adopt" as requiring it to "develop," "establish," or "enact" legislation to create an ethics commission and, albeit erroneously, a code of ethics.

#### Adopt requires congress

MR ND [Modern Republic, https://www.modernrepublic.org/adopt#:~:text=The%20parliamentary%20term%20adopt%20or,fought%20during%20the%20revolutionary%20war]

The parliamentary term adopt or adoption refers to the formal approval or acceptance of a bill, resolution, or other measure.

Example: The House voted unanimously to adopt the resolution to honor the African-American soldiers who fought during the revolutionary war.

### Adopt---Is Agentless

#### Adopt doesn’t require an agent

McMurdie 20 [Paul McMurdie, Presiding Judge of the Arizona Appeals Court (The Neth. v. MD Helicopters Inc., 2020 Ariz. App. LEXIS 284, 3/19/20, Nexis Uni]

P19 MD Helicopters' argument regarding the meaning of the terms "enact" and "adopt" is similarly unpersuasive on the question of whether A.R.S. § 12-3252(B)(2) refers only to acts of a foreign country's legislative body, and not of its courts as well. The common usage of the term "enact" does not generally include the actions of a court. See, e.g., 2015 Ariz. Sess. Laws, ch. 170, § 1 (1st Reg. Sess.) ("Be it enacted by the Legislature of the State of Arizona . . . ." (emphasis added)); Cronin v. Sheldon, 195 Ariz. 531, 537, 991 P.2d 231 (1999) ("[T]he legislature has the authority to enact laws."). But the term "adopt" is not nearly so limited. Courts make law through the adoption of rules or common-law principles. See, e.g., Carrow Co. v. Lusby, 167 Ariz. 18, 24, 804 P.2d 747 (1990) ("We adopt the modern common law view that an owner of livestock owes a duty of ordinary care to motorists traveling on a public highway in open range." (emphasis added)); Judson C. Ball Revocable Tr. v. Phoenix Orchard Grp. I, L.P., 245 Ariz. 519, 523-24, ¶¶ 11, 16, 431 P.3d 589 (App. 2018) (Finding Delaware courts' decision to "adopt" rule of standing for shareholder suits "as a matter of common law" persuasive and deciding to "adopt" that rule as well). Executive agencies are also frequently empowered by the legislature to "adopt" rules and [\*16] regulations. See, e.g., A.R.S. § 23-361 (Industrial Commission "may adopt such rules and regulations as necessary" to administer and enforce statutes governing the payment of wages (emphasis added)). And the use of both the terms "enact" and "adopt" must be read to contemplate different things, or one term will be rendered superfluous. See Cont'l Bank, 131 Ariz. at 8.

### Adopt---Legal Force

#### “Adopt” means legal force. Prefer – this ev cites Fed Code and says the language’s meaning is the same in external contexts.

Scopino 16 [Gregory Scopino – Adjunct Professor of Law, Georgetown University Law Center; Special Counsel, Division of Swap Dealer and Intermediary Oversight (“DSIO”), U.S. Commodity Futures Trading Commission (“CFTC”) - “EXPANDING THE REACH OF THE COMMODITY EXCHANGE ACT’S ANTITRUST CONSIDERATIONS” - HOFSTRA LAW REVIEW - Vol. 45 - <https://www.hofstralawreview.org/wp-content/uploads/2017/04/DD.3.Scopino.final_.pdf>]

Thus, it appears that, with section 4s generally and 4s(j)(6) in particular, Congress intended to impose a significant new regulatory regime over swap entities that would not permit any type of actions that are harmful to market participants or investors from slipping through the cracks. For instance, with the Dodd-Frank Act, Congress did not just prohibit fraudulent and manipulative acts by swap entities,355 as is the case with some other categories of market participants,356 Congress even dictated that swap dealers and major swap participants must communicate with their counterparties in a fair and balanced manner357 and not adopt any process or take any action that results in an unreasonable restraint of trade.358 As mentioned, the CFTC implemented many of the requirements of section 4s by promulgating the regulations in Part 23 of Title 17 of the Code of Federal Regulations, which only apply to swap entities.359

A. Adopting Any Process or Taking Any Action

One clause of Regulation 23.607(a) corresponds with identical language in section 4s(j)(6) in stating that “[n]o swap [entity] shall adopt any process or take any action that results in any unreasonable restraint of trade.”360 The word “adopt” means, inter alia, “to accept formally and put into effect.”361 The word “process” means, inter alia, “[t]hat which goes on or is carried on; a continuous action, or series of actions or events; a proceeding; . . . a course or mode of action, a procedure.”362 Likewise, the word “action” means, inter alia, “[s]omething done or performed, a deed, an act.”363 Collectively, the words “adopt,” “process,” and “action” are easily open to broad construction, which means that swap entities should not, as a general matter, be able to defend unreasonable restraints of trade by arguing that they had not taken an action or adopted a process.

#### Adopt means mandatory legal force.

Inhofe 5 [Senator Jim Inhofe - from the Committee on Environment and Public Works, submitted the following. James Mountain Inhofe is an American retired politician who served as a United States senator from Oklahoma from 1994 to 2023 - SENATE - 109TH CONGRESS, 1st Session – “SAFE, ACCOUNTABLE, FLEXIBLE, AND EFFICIENT TRANSPORTATION EQUITY ACT OF 2005 REPORT OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE TO ACCOMPANY” - S. 732 - APRIL 6, 2005 - <https://www.govinfo.gov/content/pkg/CRPT-109srpt53/pdf/CRPT-109srpt53.pdf>]

DISCUSSION

Transportation control measures, or TCMs, are transportation-related measures that have the potential to reduce emissions of criteria pollutants. Many TCMs reduce emissions by reducing VMT, for example, high-occupancy vehicle lanes, transit projects, park and ride lots, ride-share programs, and pedestrian and bicycle facilities. States can include TCMs in their SIPs. However, unless the SIP includes a TCM substitution mechanism, i.e., a set of provisions for substituting TCMs, the SIP must be revised to change a TCM that is delayed or no longer viable. The purpose of this section is to allow all States to substitute TCMs without a full SIP revision, regardless of whether the State has its own substitution mechanism.

TCMs can be substituted if the substitute measure achieves the same or greater emission reductions as the measure being replaced, based on an analysis that uses the latest planning assumptions and the current models. The substitute TCMs must be implemented on the same schedule as the original measure, if that is possible. However, the committee recognizes that it may not be possible for the substitute measure to be on the original schedule; for example, a possible reason that a State would want to substitute a TCM is that it has proved difficult to implement in a timely way. In those cases, the substitute measure must be implemented as soon as practicable, but not later than the date on which the SIP is supposed to achieve its purpose. For example, if the TCM is included in the SIP as part of the attainment demonstration, and the attainment date is 2005, the substitute TCM must be implemented as soon as practicable to reduce emissions by 2005.

Subparagraph (B) of this provision states that after carrying out subparagraph (A), a State shall adopt the substitute or additional control measure in the applicable SIP. In this instance, the committee has used the word ‘‘adopt’’ to mean that the State must record the measure as being part of the SIP. The sole intent of this subparagraph is to ensure that the State keeps an up-to-date list of the TCMs that must be implemented, so that a member of the public can review the list at any point and have the complete, correct list of TCMs that are in the SIP. This subparagraph is not intended to create any additional process requirements than those in subparagraph (A).

# \*\*\*Clean Energy Policy

## Clean Energy

### Generic---No Emissions

#### Clean energy emits no ghg’s

Esposito 21 [DAN ESPOSITO, SENIOR POLICY ANALYST, ENERGY INNOVATION, STUDIES AGREE 80 PERCENT CLEAN ELECTRICITY BY 2030 WOULD SAVE LIVES AND CREATE JOBS AT MINIMAL COST, September 2021, https://energyinnovation.org/wp-content/uploads/2021/09/Studies-Agree-80-Percent-Clean-Electricity-by-2030-Would-Save-Lives-and-Create-Jobs-at-Minimal-Cost.pdf, poapst]

“Clean energy” is typically defined as including any resource that does not emit GHGs, such as wind, solar, geothermal, nuclear, biomass, and hydropower. Some policies award partial credit to natural gas or CCS, with the amount of credit benchmarked to a pre-set emissions rate (i.e., a lower emissions rate translates to a higher credit value).

#### Clean energy is carbon free

Considerate Consumer 21 [MAKE THE SWITCH! CLEAN, RENEWABLE, SUSTAINABLE & GREEN ENERGY., considerate-consumer.com/clean-renewable-sustainable-green-energy, poapst+rodak]

Although terms like ‘clean’, ‘renewable’, ‘sustainable’ or ‘green energy’ are often used interchangeably, they don’t necessarily have the same meaning.

Here are brief explanations of what characterises the different energy type descriptions.

Green energy = from natural sources

Clean energy = from sources that do not release air pollutants

Renewable energy = from sources that can be naturally renewed

View fullsize

GREEN ENERGY

Green energy simply defines energy from natural sources.

SOLAR POWER

The most prevalent type of renewable energy, solar power, is typically produced using photovoltaic cells, which capture sunlight and turn it into electricity.

WIND POWER

Airflow on the earth's surface can push turbines, with stronger winds producing more energy.

HYDROPOWER

Also called hydroelectric power, hydropower is generated by the Earth's water cycle, including evaporation, rainfall, tides and the force of water running through a dam.

TIDAL ENERGY

Tidal energy is a renewable energy source produced by the surge of ocean waters during the rise and fall of tides.

GEOTHERMAL ENERGY

Under the earth's crust is massive amounts of thermal energy, which originates from the planet's original formation and the radioactive decay of minerals.

BIOMASS

Biomass refers to the energy from organic, natural materials like wood waste, sawdust and combustible agricultural wastes.

CLEAN ENERGY

Clean energy takes the idea of ‘green energy’ further. Clean energy is defined as energy whose production does not emit pollutants to the environment, i.e., a “carbon-free energy”. Examples of clean energy sources include wind and solar energy.

### Generic---Renewables/Efficiency

#### Clean energy is renewables and energy efficiency

NCSEC no date [What is clean energy? https://energync.org/what-is-clean-energy/ poapst+rodak]

What is clean energy? NCSEA defines clean energy as energy derived from renewable, zero-emissions sources (“renewables”), as well as energy saved through energy efficiency (“EE”) measures. How do renewables and energy efficiency work together? Renewable energy is derived from natural processes that are regenerative over short periods of time and cannot be depleted. The most common renewable energy resources are biomass, geothermal, hydropower, solar, and wind. Energy efficiency includes technologies (including passive solar), products, and services that reduce the amount of energy required for buildings, processes, or tasks. Find out more.

#### Clean energy must be renewable – nuclear and natural gas are not clean

Al Rakeezah 23 [Renewable Energy…The Path To Survival And Environmental Preservation, https://al-rakeezeh.org/en/renewable-energythe-path-to-survival-and-environmental-preservation/, poapst+rodak]

The difference between renewable and non-renewable energy

Energy is classified into two sources: the first type is renewable energy, which includes wind energy, water energy, ground energy, and solar energy. It is sustainable and renewable energy.

 The second type is non-renewable renewable energy, which includes coal, oil, chemicals, and natural gas. This type of energy is not sustainable and it will be compensated only after a period of time has passed, we will provide you with details about each type:

Renewable energy is used from natural resources such as the sun, water, and wind. It is also constantly renewed and is known as clean energy. The distinguishing feature of this energy is that it does not depend on fossil fuel sources to produce energy. Its quantities are unlimited and do not cause any emissions that harm the environment. It is also free and is not affected by wars or Conflicts, on the contrary, from non-renewable energy sources.

Non-renewable energy is an energy that derives its resources from the ground, and its sources are diverse, such as natural gas, coal, crude oil, and nuclear energy. Non-renewable energy is characterized by the fact that it is continuous energy that is not affected by weather fluctuations, unlike renewable energy, and it does not require large areas in order to build its own stations. Also, it has appeared new technologies reduce carbon dioxide emissions into the atmosphere as they are stored in the ground.

The disadvantages of non-renewable energy include high maintenance costs. It is also unsustainable energy that needs to be renewed every period of time. It is unclean energy that is harmful to the environment. It also depends on fossil sources in its generation of energy and is affected by political and economic conditions.

### Defined by Objective

Use in combination with a definition of the objective of decarbonization

#### “Clean” energy has no agreement on definition – the objective of the policy determines what is “clean energy” policy

Claussen and Sedano 11 [EILEEN CLAUSSEN, PRESIDENT, CENTER FOR CLIMATE AND ENERGY SOLUTIONS, Richard Sedano, Director of US Programs, Regulatory Assistance Project, "Clean Energy Standards: State and Federal Policy Options and Implications,"https://www.ourenergypolicy.org/wp-content/uploads/2012/05/Clean-Energy-Standards-State-and-Federal-Policy-Options-and-Implications.pdf, poapst+rodak]

This paper is intended to inform debate and deliberation among policymakers and stakeholders regarding state and federal clean energy standards (CES) for the electric power sector. A CES is still a relatively new policy option for increasing the role of “clean” energy in the power sector and realizing the associated benefits. This paper seeks to promote understanding of what a CES is and how policymakers might best design such a policy to achieve particular goals. A word is in order regarding use of the word “clean,” both in this paper and in the larger debate. There is no commonly accepted definition of “clean” energy. Indeed, one person’s definition of “clean” can differ dramatically from another’s if their objectives for energy policy differ. Renewable energy, nuclear power, natural gas, coal with carbon capture and sequestration, energy efficiency, and emissions offsets all have their advocates as falling under the definition of clean. Unless otherwise noted, this paper will use the term “clean” to refer to these options and “conventional” to refer to all other electricity generation. When referring to the share of total electricity obtained from clean energy sources, this paper will, unless otherwise noted, count natural gas generation as half clean for reasons that will be explained later. This paper does not choose what options should be considered clean. Rather, this paper explores issues pertaining to clean energy broadly and looks at the specifics of a policy mechanism (i.e., a clean energy standard) whose workings and implications are largely separate from the choice of how to define clean energy.

### Not Energy Efficiency

#### Clean energy is distinct from “energy efficiency”

Cohan 22 [Daniel S. Cohan, Associate Professor of Civil and Environmental Engineering at Rice University. Confronting Climate Gridlock How Diplomacy, Technology, and Policy Can Unlock a Clean Energy Future, April 12, 2022, Yale University Press, poapst+rodak]

However deeply we cut emissions, they won’t reach zero. Airplanes, ships, and some industries will be difficult to decarbonize. Not all buildings or equipment will be retrofitted or replaced. Some greenhouse gases like nitrous oxide don’t have engineered sinks. Thus, getting to net-zero greenhouse gases—as we must to stabilize the climate, and as the Paris Agreement committed the world to do within this century—will require new sinks to offset the emissions that remain. In other words, we will need to remove carbon dioxide from the atmosphere via negative emissions technologies or other means. That raises thorny questions about which approaches to pursue and the impacts of using them.

Decarbonizing energy and averting emissions are often a win-win situation. Energy efficiency and clean energy reduce not just climate-warming emissions but also the water and air pollution and ecosystem degradation that come from extracting, refining, transporting, and burning fossil fuels. Efficiency saves more money than it costs. Clean electricity and electrification can save money too, as renewable electricity, electric cars and buses, and heat pumps become cheaper than their rivals. Preventing leaks of methane and accompanying light hydrocarbons improves air quality. Averting nitrous oxide and CFC emissions protects the ozone layer.

### Not Clean Coal

#### The myth of clean coal and some of the potential silly excesses will either make the aff seem a fool or generate interesting debates about legitimately valuable transitional energy options.

Green America ND, [“Why Clean Coal Is A Myth” <https://www.greenamerica.org/fight-dirty-energy/amazon-build-cleaner-cloud/coal-why-it-dirty>]

While some policymakers support "clean coal," coal can never be clean. It is harmful to both people and the planet. Here are a dozen reasons why.

#### Making coal cleaner is not clean energy

Granoff & Pickard 15, [“How clean is clean coal?” https://odi.org/en/insights/how-clean-is-clean-coal/]

The coal industry argues that more efficient and less polluting ‘advanced coal’ will help reduce carbon emissions and other pollution. What we can’t forget, ahead of next week's [World Coal Association meeting](http://www.worldcoal.org/pathway-cleaner-low-emission-coal-use) and OECD [talks on coal policy](http://www.trust.org/item/20151110160312-n39da), is that there are cheaper and cleaner options.

Burning coal generates about [40% of fossil fuel emissions](http://www.globalcarbonproject.org/carbonbudget/14/data.htm). Current G7 and Chinese plants, alongside a dramatic expansion of coal power planned in the developing world, stand to [blow our carbon budget](https://www.odi.org/comment/10003-carbon-budget-coal-energy-g7-developing-countries).

To address this threat, the coal industry [proposes](http://www.ft.com/cms/s/0/68123376-71ba-11e5-9b9e-690fdae72044.html) replacing the most polluting coal technologies with advanced ‘high-efficiency, low emissions’ coal technologies. It claims that this will reduce emissions enough to keep global mean temperature under two degrees while taking advantage of coal as a cheap energy source.

Some also advocate that ‘climate finance’ should cover the price mark-up from conventional to advanced coal. For this to make sense, advanced coal would either need to be cleaner or cheaper than the alternatives – it is neither.

### Not Carbon Sinks

#### Carbon sinks are not clean energy

Cohan 22 [Daniel S. Cohan, Associate Professor of Civil and Environmental Engineering at Rice University. Confronting Climate Gridlock How Diplomacy, Technology, and Policy Can Unlock a Clean Energy Future, April 12, 2022, Yale University Press, poapst+rodak]

At $100 per ton, in line with the costs targeted by some negative emissions technologies, a U.S. goal of 2 gigatons per year would cost $200 billion per year. That is about 1 percent of U.S. gross domestic product, or around 4 percent of the federal budget—not unfathomable, but still an onerous expense. By comparison, President Biden’s budget proposal for 2022 sought to scale up federal climate-related investments to $36 billion, including $10 billion for nondefense clean energy innovation. Unlike carbon sinks, efficiency and clean energy can pay for themselves over time and yield benefits beyond climate, warranting immediate investment. Negative emissions technologies belong more in the realm of R&D for now, to expand options and bring down their costs ahead of widespread deployment.20

### Not Negative Emissions

#### Negative emissions technology is not clean energy

Cohan 22 [Daniel S. Cohan, Associate Professor of Civil and Environmental Engineering at Rice University. Confronting Climate Gridlock How Diplomacy, Technology, and Policy Can Unlock a Clean Energy Future, April 12, 2022, Yale University Press, poapst+rodak]

Clean energy and negative emissions technologies are undergoing rapid innovations, but they are not being deployed at anywhere near the rates needed to reach net zero. Fossil fuels continue to power most of the economy in the United States and globally, much as they have for the past century. Without new policies, energy forecasters project that fossil fuels will continue to dominate, and emissions will plateau for decades to come.1

Optimists may hope clean technologies will mimic the most abrupt transitions of the past. Cars replaced horses, color televisions replaced black-and-white ones, and smart phones replaced flip phones within a decade or two, driven more by market forces than policy. Each tracked an S-shaped adoption curve, with slow early adoption followed by a leap to dominance and then ultimately market saturation.2

Unfortunately, most clean energy and negative emissions technologies will not attract such rapid adoption via consumer appeal alone; policy will be imperative. More efficient lightbulbs, appliances, vehicles, and buildings all provide lifetime savings, but cost more upfront.

Technologies for avoiding methane leaks, replacing HFCs, and mitigating nitrous oxide are all readily available, but without policy there is little self-interest in deploying them. Wind and solar are the cheapest new sources of electricity, but they must compete with legacy coal and gas plants whose capital costs are paid. Electric vehicles are reaching cost parity with fossil-fueled ones, but they struggle with customer and dealer wariness and lack of charging infrastructure. Electrification of heating and industry proceeds far too slowly in the absence of adequate policies. Green hydrogen could provide a versatile feedstock and fuel, but for now it suffers from high costs and lack of distribution infrastructure. Negative emissions technologies remain in their infancy and are unlikely to be deployed without incentives or mandates. Across these and other technologies needed to mitigate climate change, the International Energy Agency has concluded that the vast majority are emerging far too slowly to achieve Paris Agreement targets.3

Policies can push and pull technologies toward faster diffusion. The “technology push” comes from research and development that drives innovations, and the “market pull” comes from policies that boost demand for those technologies. Push and pull policies are inherently synergistic, driving technologies along their learning curves toward better performance and lower costs with broader adoption.4

Diplomacy, technology, and policy together can create a virtuous cycle. The Paris Agreement and climate clubs motivate domestic policies to meet the expectations of other countries and leverage domestic advances beyond them. Those policies drive a push for technology R&D and a market pull to adopt those technologies, reducing their costs. Technological gains in turn make it feasible to pursue more vigorous policies and diplomacy. Although inadequate policies historically have failed to complete such a cycle, emerging conditions open promising pathways ahead.

### Not Renewables

#### Clean energy is distinct from green and renewable energy – requires zero or MINISCULE ghg emissions

DXP 21 [How to Get Clean Energy – Is Renewable Energy Always Clean?, March 4, 2021, https://www.dxpe.com/how-to-get-clean-energy-vs-renewable-energy-vs-green-energy/#:~:text=What%20Is%20Clean%20Energy%3F,emit%20pollutants%20into%20the%20environment., poapst+rodak]

It’s easy to get confused talking about clean, renewable, and green energy. The terms are often used interchangeably, but they don’t always have the same meaning. While there is a lot of overlap, subtle differences can have an effect on the environment and government credits for production.

To fully understand the differences between clean and renewable energy, you need to know what the terms mean. This way you know you’re using clean renewable energy and reducing your carbon footprint.

If you’re ready to act today, learn about the power generation process systems available through IFS.

What Is Clean Energy?

Clean energy is defined as energy that releases minuscule or zero amounts of radiation, carbon dioxide, and chemical contaminants into the atmosphere and soil according to NCSEA. Examples of clean energy sources include wind and solar energy that do not emit pollutants into the environment.

Like wind-produced power, solar energy is also clean. Power is generated by sunlight without emissions. Both are clean energy sources, along with geothermal, hydro, and biomass but it doesn’t automatically mean that these sources are renewable. This is why you don’t want to use the terms interchangeably unless you know that your clean energy is also renewable.

Clean Energy vs. Renewable Energy – How Clean Is Renewable Energy?

Renewable energy is in theory inexhaustible. It means that there is a continual source of energy. However, renewable energy isn’t always clean. Some renewable energy sources do emit pollutants over the threshold of what is considered “clean”.

It often depends on state legislation on whether a renewable energy source meets the parameters to also be considered clean power. For example, as of summer 2019, the majority of U.S. states have a “renewable portfolio standard” in place, but not all of them require clean energy sources. There is currently no federal standard in place to unite policy conditions.

The cleanest renewable energy source is a tie between solar, wind, and geothermal heat. Smaller hydro plants also produce clean, renewable energy. It’s the larger hydro plants that can emit pollutants that limit it to being only renewable, instead of clean energy.

clean energy vs. green energy

Clean Energy vs. Green Energy

Unlike clean energy types that produce little to zero emissions into the environment, green energy does release a small amount of pollution. Compared to fossil fuels like coal, the greenhouse gases are negligible, but there can still be an effect on the environment.

Due to the low amount of radiation, gas, and other containments, green energy does not threaten animals and plants with loss of habitat or extinction. Even though clean energy is the best way to counteract pollution, climate change, and possible species extinction, using green energy is a step towards lowering your impact on the environment.

Clean Energy vs. Sustainable Energy

Not only is wind energy clean, but it’s also sustainable. The same also applies to solar power. Sustainable energy is power that automatically renews. The supplies can’t be depleted no matter how much energy is uses. Wind will continue to turn the turbines, and the sun will provide solar energy as long as it produces light. Sustainable energy can keep the power flowing for generations.

Other sustainable energy sources include tidal and geothermal energy. These are also considered clean sources if production doesn’t emit pollutants into the environment.

Some people also consider nuclear power a sustainable energy source. There is more nuclear power available than humans can ever use during their existence. However, the supply of nuclear energy is exhaustible. There is a finite amount even if it is never completely used up.

examples of clean energy sources

Examples of Clean Energy

Renewable, green, and sustainable energy can all be considered clean energy sources if only a minuscule amount of containments are released into the air, soil, and water. Ideally, clean energy emits zero pollutants. Learn more about this on the Energy.gov website.

Some examples of clean energy include,

Solar energy uses panels to collect the sun’s light and heat turning it into useable power without any emissions.

Wind energy is produced by turbines, similar to windmills. There aren’t any pollutants emitted when power is generated.

Bioenergy does produce a low volume of emissions, but it’s still considered clean. Energy is created from waste found in landfills and fermented crops. It is a cleaner alternative to fossil fuels. Since waste is almost inexhaustible, it’s also a sustainable source.

Geothermal energy uses heat from the earth to generate power. Heat from the earth is used to boil water in the production plants, which turns to steam. The steam is used to turn the turbines that produce electricity. The concept is the same as a coal-burning power plant, only the energy created is clean.

Hydropower relies on power created by flowing water. Turbines are placed in the water’s flow and the resulting pressure causes them to turn. The spinning turbines produce clean energy that is sustainable as long as the water is running.

#### “Green” and “renewables” are not synonymous with “clean energy” – clean energy requires little to no ghg emissions

National Grid 23 [Energy Explained, https://www.nationalgrid.com/stories/energy-explained/what-is-green-energy, poapst+rodak]

What is green energy?

And what’s the difference between green energy, renewable energy and clean energy? Often these terms are used interchangeably, but there are some differences.

One thing that green, clean and renewable energy all have in common is that they're being increasingly used to generate electricity in order to phase out the use of fossil fuels, like coal and gas, which are a key cause of climate change.

What is the definition of green energy?

Green energy is energy that can be produced using a method, and from a source, that causes no harm to the natural environment.

What’s the difference between green energy and renewable energy?

The terms ‘green energy’ and ‘renewable energy’ are often used interchangeably, but there is one essential (and sometimes confusing) difference between them. While most green energy sources are also renewable, not all renewable energy sources are considered entirely green.

Renewable energy comes from sources that are constantly and naturally renewed (hence the name), such as wind power and solar power. Renewable energy is also often called sustainable energy.

A renewable energy source may not be considered ‘green’ if, for example, some carbon emissions are associated with the processes used to generate the energy – such as the building of infrastructure.

What's the differences between green energy and clean energy?

Clean energy is energy that, when used, creates little or no greenhouse gas emissions.

As with renewable energy, some types of clean energy may not always be considered entirely green.

Here’s an easy way to differentiate between clean energy, green energy and renewable energy:

Clean energy = clean air

Green energy = no harm to the environment

Renewable energy = sources that replenish naturally, such as the sun and the wind

### Not Natural Gas

#### Clean energy must be renewable – nuclear and natural gas are not clean

Al Rakeezah 23 [Renewable Energy…The Path To Survival And Environmental Preservation, https://al-rakeezeh.org/en/renewable-energythe-path-to-survival-and-environmental-preservation/, poapst+rodak]

The difference between renewable and non-renewable energy

Energy is classified into two sources: the first type is renewable energy, which includes wind energy, water energy, ground energy, and solar energy. It is sustainable and renewable energy.

 The second type is non-renewable renewable energy, which includes coal, oil, chemicals, and natural gas. This type of energy is not sustainable and it will be compensated only after a period of time has passed, we will provide you with details about each type:

Renewable energy is used from natural resources such as the sun, water, and wind. It is also constantly renewed and is known as clean energy. The distinguishing feature of this energy is that it does not depend on fossil fuel sources to produce energy. Its quantities are unlimited and do not cause any emissions that harm the environment. It is also free and is not affected by wars or Conflicts, on the contrary, from non-renewable energy sources.

Non-renewable energy is an energy that derives its resources from the ground, and its sources are diverse, such as natural gas, coal, crude oil, and nuclear energy. Non-renewable energy is characterized by the fact that it is continuous energy that is not affected by weather fluctuations, unlike renewable energy, and it does not require large areas in order to build its own stations. Also, it has appeared new technologies reduce carbon dioxide emissions into the atmosphere as they are stored in the ground.

The disadvantages of non-renewable energy include high maintenance costs. It is also unsustainable energy that needs to be renewed every period of time. It is unclean energy that is harmful to the environment. It also depends on fossil sources in its generation of energy and is affected by political and economic conditions.

#### Natural Gas not “clean” – emits ghg’s

Volcovici et. al 20, [“Cleaner but not clean - Why scientists say natural gas won't avert climate disaster“ https://www.reuters.com/article/idUSKCN25E1DR/]

(Reuters) - Natural gas produces half as much carbon dioxide (C02) when burned than coal, but that doesn't make it harmless. Climate scientists say that rising production of natural gas is emerging as one of the biggest drivers of climate change, and that plans for industry expansion could hobble efforts to stabilize the Earth's climate.

### Not Shale

#### Clean Energy definitions should not include nuclear and shale

Tomain 13 [Tomain, Joseph P. Dean Emeritus and the Wilbert & Helen Ziegler Professor of Law University of Cincinnati College of Law. "Shale Gas and Clean Energy Policy." Case Western Reserve Law Review, vol. 63, no. 4, Summer 2013, pp. 1187-1216. HeinOnline. poapst]

II. DEFINING CLEAN ENERGY There are significant reasons for and consequences attached to labeling a resource, such as shale gas, a clean energy resource. Although clean energy is generally understood to encompass a greater use of renewable resources and to capture increased gains from energy efficiency,32 it is necessary to more precisely identify those resources that constitute a clean energy portfolio for several reasons. First, simply as a matter of interest-group politics, the correct naming and framing of policy issues is necessary. Second, it must be noted, and emphasized, that sound clean energy politics is not inimical to economic growth; instead, clean energy is necessary for a vibrant economic future." Third, and correlatively, a clear definition will enable policymakers and analysts to more accurately define the metrics and set the goals needed to measure the gains in an emerging clean energy economy. And, fourth, defining clean energy has direct legal consequences. Once a resource, such as solar or wind power, is defined as a clean energy resource, then it can qualify for particular regulatory treatment or for government subsidies, as examples. Currently, the definition of clean energy differs according to particular applications.3 As states move forward and establish renewable portfolio standards (RPS), for example, the resources that qualify under those standards differ from state to state. Some states include nuclear power while others exclude it. Another open issue is whether to include "clean coal" in an RPS program. Indeed, in contrast to RPS programs, electricity advocates favor clean energy standards (CES) that explicitly include clean coal and nuclear power as central to their definition of clean energy." Another unresolved issue is whether or not RPS or CES programs should be rationalized across the country or if states should be free to use distinct definitions in order to take advantage of differences in regional energy resources.36 Clean energy, then, must be clearly defined. The most problematic energy resource in this regard remains nuclear power. Nuclear power generation, of course, emits no carbon dioxide, yet the carbon footprint for the entire nuclear fuel cycle is not completely carbon neutral." Regardless of its carbon footprint, however, nuclear power is the quintessential example of a traditional energy form in that it is large scale, centralized, and capital intensive. Further, the industry would not exist without government support." The argument, then, can be made that nuclear power should not be considered an environmentally friendly, clean resource because it fits so comfortably within the hard-path paradigm. Still, the issue of whether nuclear power should be considered a clean energy resource remains contentious. Similar challenges attend shale gas. Although shale gas emits less carbon than coal, it is still a dirty resource. Further, shale gas is underpriced-even given its current abundance-because the cost of carbon is not included in the cost. Shale gas, then, is simply an extension of our traditional hydrocarbon economy, favored by government for over a century. Although clean energy constitutes approximately 9% of today's U.S. fossil fuel economy, it is making notable gains." Renewable resources, particularly wind power, are outstripping the installation of new fossil fuel electricity generation. 40 Further, energy efficiency is increasing notably, and the costs of solar and wind resources are decreasing." Even though clean energy is not currently cost competitive and enjoys government subsidies, no energy resource operates in unfettered competitive markets. Clean energy gains must be tracked and reliable metrics must be established to fully understand the dollar value of investments in clean energy and the corresponding reductions in greenhouse gases, particularly carbon dioxide. Here lies the rub:. although pricing carbon is notoriously difficult,42 the failure to account for this harmful externality caused by shale gas in the price of electricity leads directly to underpricing the resource and over consuming it, to the direct detriment of the environment and human health.

### Not Nuclear

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### Yes Nuclear

#### Nuclear falls under clean, evidence otherwise is describing opinions and not consensus.

NEI ND [Nuclear Energy Institute; The Nuclear Energy Institute is the policy organization of the nuclear technologies industry, based in Washington, D.C.; “Climate”; https://www.nei.org/advantages/climate]

Clean energy sources—nuclear, hydropower, geothermal, wind and solar—work together to reduce greenhouse gases in our atmosphere. According to the Energy Information Administration, nuclear energy is the largest clean energy source in the United States, producing more carbon-free electricity than all other sources combined. 2020 figures show that nuclear energy generates more than half of America’s emission-free electricity.

## Clean Energy Policy

### Generic---3 Goals

#### CEP can have three goals

Tomain 11 [Joseph P. Tomain, University of Cincinnati College of Law, The Politics of Clean Energy: Moving Beyond the Beltway, https://scholarship.law.uc.edu/fac\_pubs/327/, poapst]

This article argues that the United States can achieve a new and smart energy policy and we are taking active steps in this direction. Public and private sector actors beyond the Beltway are crafting a clean energy agenda and promoting a new energy economy. This article describes the path for adopting that policy and sketches the politics of clean energy. This path is smoother than attempting to pass climate change legislation because there is a significant consensus about what the contours of a clean energy policy should be and there is an emerging clean energy politics that will drive that change. Much of the politics is occurring off Capitol Hill and beyond the Beltway. Clean energy politics are emerging despite the lack of Congressional leadership. The clean energy agenda is wise because a transition to a clean energy portfolio can promote environmental protection, stimulate the economy though innovation and job creation, advance national security and ultimately reduce the cost of energy consumption. For the purposes of this article, the concept of a clean energy policy is defined as: (a) an aggressive reduction in oil and coal consumption; (b) the use of natural gas as a transitional fuel once hydraulic fracturing ("fracking") is adequately addressed; and, (c) the rapid expansion of energy efficiency and renewable resources.

#### Clean energy policy is known by a consensus of political actors as a clear term of art for legislation and intentionally flexible.

Tomain 11 [Joseph Tomain; Dean Emeritus and the Wilbert & Helen Ziegler Professor of Law, University of Cincinnati College of Law; 2011; “The Politics of Clean Energy: Moving Beyond the Beltway”; San Diego Journal of Climate and Law; https://digital.sandiego.edu/jcel/vol3/iss1/10/]

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#### Clean energy policy promotes lower emissions, efficiency, renewables

Zhou and Noonan 19 [Shan Zhou; Department of Social Sciences, Michigan Technological University; Douglas Noonan; School of Public and Environmental Affairs, Indiana University-Purdue University; 02-03-2019; “Justice Implications of Clean Energy Policies and Programs in the United States: A Theoretical and Empirical Exploration”; MDPI Sustainability; https://www.mdpi.com/2071-1050/11/3/807] sheff

To establish a theoretical framework in which to organize the wide array of clean-energy-related policies and programs with prominent justice components, we propose beginning with a standard taxonomy of common policy instruments (see, [21,22]) in the clean energy policy regime in the United States. Here, clean energy policies are defined as those that promote the adoption and diffusion of sustainable or low-carbon energy technologies, such as energy efficiency (EE), renewable energy (RE), smart grids, electric vehicles, etc. Following Bardach and Patashnik [23] and Vedung [24], we group clean energy policy measures into four broad categories—regulatory, financial, government provision, and information and education policies. Of course, some policies can overlap multiple categories. (See more detailed discussions of clean energy policy instruments in the US by Carley and colleagues [23,24]).

### Generic---Reduce Fossil Fuel

#### Clean energy policy requires action to move away from fossil fuel reliance

Tomain 11 [Joseph P. Tomain, University of Cincinnati College of Law, The Politics of Clean Energy: Moving Beyond the Beltway, https://scholarship.law.uc.edu/fac\_pubs/327/, poapst+rodak]

Current energy studies, like those of a generation ago, continue to discuss the need for energy independence or, perhaps more accurately, independence from Middle Eastern oil. These studies approach discussion of oil independence in terms of both national security as well as economic security. From a national security perspective, continued reliance on oil imports from an unstable Middle East poses not only security threats to our country but imposes substantial national security costs as well.52 From an economic security perspective, volatile prices make investments in the energy sector financially risky as our country's flirtation with synfuels in the late 1970s and early 1980s demonstrated. Dependence on imported oil thus threatens economic security because prices are unstable, subject to manipulation by the oil cartel, and disrupt economic planning. Finally, these new policy studies are acutely aware of the challenges posed by global warming and climate change. In brief, these new energy policy studies address security and the environment as well as energy and the economy. Because of these four variables energy, economy, environment, and security-the new energy studies focus on clean energy as distinguished from fossil fuels. Clean energy policy, then, shifts its focus from fossil fuels to energy efficiency and renewable resources as necessary elements for a healthy future economy.

### Generic---Broad

#### CEP is any policy that supports clean energy adoption.

Busche 10, [Sarah Booth (née Busche) is the founder and principal at Booth Clean Energy where she focuses on clean energy policy analysis and making policy and energy data more accessible. Ms. Booth has supported both national governments and subnational governments in their efforts to increase renewable energy generation and efficient use of energy, “Clean Energy Policy Analyses: Analysis of the Status and Impact of Clean Energy Policies at the Local Level” https://www.nrel.gov/docs/fy11osti/49720.pdf]

Interest in facilitating the adoption of energy efficient and renewable energy (henceforth, “clean energy”) technologies has grown rapidly in recent years throughout the United States at all levels of government. Policy is one of the tools available to governments to address barriers to clean energy adoption and to drive market transformation, and the local, state, and federal governments have employed a variety of policies to support clean energy adoption. While substantial research on state level clean energy policies and local level climate change initiatives exists, to date there has been no comprehensive analysis of the effectiveness of local clean energy policy action.1 Local governments can play an important role in developing an environment conducive to clean energy adoption because decentralized policy development allows for policies to be designed to better meet the unique needs of various municipalities. Decentralized policy development also provides an opportunity for greater policy experimentation than policy development does at the federal level alone. Furthermore, local governments are uniquely positioned to frame the clean energy discussion in a way that connects it to the values of local citizens, building support for clean energy technology adoption. Policy development at the local level may also be initially more effective than pursuing policy development at the state or federal levels because it could be easier to address social acceptance issues on a smaller scale. While local governments can play an important role in driving market transformation, policy implementation at both the state and federal level continues to be important. As such, complementary policy development at multiple levels of government is critical to developing a consistent market for clean energy. This report aims to provide an initial overview of the current local clean energy policy landscape to develop a better understanding of the current policy environment and identify areas for further research.

### Generic---Requires Legal Framework

#### Clean energy policy includes renewable regulation/incentives or fossil fuel restrictions/disincentives – must create a legal framework

Kaminsky 23, [Andrew Kaminsky is a sustainability and ESG professional working with leaders in their respective industries like Morningstar Sustainalytics, SAP, and Unilever. I’ve also worked with smaller climate tech startups, newspapers, and I’ve done copywriting for a range of companies in other fields. “What Government Affairs Pros Need To Know About New Clean Energy Policy” https://fiscalnote.com/blog/government-affairs-clean-energy-policy#:~:text=Often%2C%20they%20provide%20incentives%20for,reduce%20reliance%20on%20fossil%20fuels.]

Clean energy policies are the rules and frameworks enacted by governments that determine how renewable energy will be regulated and managed in a jurisdiction. Often, they provide incentives for the production and use of low-emission energy sources. The stimuli may come in the form of tax incentives, subsidies, infrastructure improvement, and efficiency standards, or measures that disincentivize fossil fuels like fines, carbon caps, carbon taxes, funding restrictions, and stricter environmental regulations.

The goal of clean energy policy is to advance the production and use of clean, renewable energy and reduce reliance on fossil fuels.

### Yes Transmission

#### Can include transmission!

Kelliher 09 [EDISON ELEC. INST. v. PIEDMONT ENVTL. COUNCIL, 2009 U.S. S. Ct. Briefs LEXIS 2933, \*14-17]

B. Effective Federal Transmission Siting Is Essential to a National Clean Energy Policy.

The United States Government is in the process of implementing a new energy and environmental policy designed to sharply reduce carbon emissions from electric generation facilities and other sources, while assuring adequate electricity supply at a reasonable cost. 4 This reduction will be accomplished in large part by changing U.S. electricity supply away from use of fossil fuels, in part by [\*15] technology deployment, in part by other means. 5

 [\*16]

If the U.S. electricity supply is going to change, the grid must also change, since the grid is merely a delivery system. The central challenge facing U.S. transmission policy now is the need to develop a clean energy grid that can efficiently deliver an entirely different electricity supply across regional power markets.

Renewable energy or clean energy potential is not evenly distributed in the United States, and some regions have a much greater endowment than others. Wind Energy Study at 24. This is illustrated by a map of solar and wind resources prepared by the National Commission on Energy Policy, Ending the Energy Stalemate, Table 4-14 (2004):

[SEE [\*17] FIGURE IN ORIGINAL]

Regions with the greatest natural endowment of renewable energy potential tend to be remote from the interstate power grid, isolated by transmission constraints. Wind Energy Study at 75. Maximizing U.S. renewable energy supplies is a core element of clean energy and environmental policy. Id. at 13-14, 107; Midwest Independent Transmission System Operator, Inc., et al., Joint Coordinated System Plan '08 at 7.

If the United States is going to maximize its renewable energy supply, it must build out a clean energy grid and remove those constraints. Wind Energy Study at 2, 10-12, 93, 95-98; Joint Coordinated System Plan '08 at 4-9. Effective federal siting of transmission facilities is necessary to develop that grid in the timeframe envisioned by carbon policy. National carbon and clean energy policy, expressed in pending legislation and regulatory orders issued by the U.S. Environmental Protection Agency (EPA), envisions significant reductions of carbon emissions beginning as soon as 2012. 6 Significantly, EPA has initiated a series of actions to implement this new national policy, 7 and legislation has advanced in Congress.

# \*\*\*Decarbonization

## Generic

### Reduce Emissions

#### Decarbonization is the process of reducing carbon gases

CED no date [Cambridge English Dictionary; “decarbonization,” https://dictionary.cambridge.org/us/dictionary/english/decarbonization]

the process of stopping or reducing carbon gases, especially carbon dioxide, being released into the atmosphere as the result of a process, for example the burning of fossil fuels:

"The solution to the climate challenge is decarbonization," he states.

A massive decarbonization of the energy sector is necessary.

#### Decarbonization is a catch-all for the switch from fossil fuels to renewable energy to reduce emissions from energy

Just Energy ’24 [Just Energy; 4/4/24; Retail energy provider specializing in electricity and natural gas commodities; “Decarbonization: An Introduction to the Process and Meaning,” https://justenergy.com/blog/decarbonization-introduction/]

Decarbonization is a catch-all term that describes the switch from using fossil fuels to renewable energy and many processes in between. This shift reduces or eliminates the carbon dioxide emissions created within the energy system.

#### Decarbonization is the process of cutting GHG emission by phasing out fossil fuels and switching to renewable sources

Enel X ’24 [Enlex; 2024; “Decarbonization: how to achieve it through an integrated strategy,” https://corporate.enelx.com/en/question-and-answers/what-is-decarbonization-and-how-to-achieve-it]

What is decarbonization and why is it so important?

Carbon dioxide (CO₂) - a leading greenhouse gas (GHG) - is emitted into the atmosphere by human activities in both residential and industrial spheres of life, like construction, transportation, agriculture and production of electricity. Decarbonization - as the name implies - is the process of cutting or eliminating GHG emissions by phasing out the use of fossil fuels and switching to renewable sources of energy such as sunlight, wind and geothermal heat. It is the key driver of the energy transition, itself crucial to fighting climate change.

#### Decarbonization is the process of reducing carbon intensity from burning fossil fuels

TWI no date [The Welding Institute; Leading engineering institution supporting welding and joining professionals with welding, joining and allied technologies; “What is Decarbonization?” https://twi-global.com/technical-knowledge/faqs/what-is-decarbonisation]

What Does Decarbonisation Mean?

‘Decarbonisation’ tends to refer to the process of reducing ‘carbon intensity’, lowering the amount of greenhouse gas emissions produced by the burning of fossil fuels. Generally, this involves decreasing CO2 output per unit of electricity generated. Reducing the amount of carbon dioxide occurring as a result of transport and power generation is essential to meet global temperature standards set by the Paris Agreement and UK government.

#### Decarbonization is measures through which the business sector or government reduces its carbon footprint

Engie ’21 [Engie; November 17; French multinational utility company, with its headquarters in La Défense, Courbevoie, which operates in the fields of electricity generation and distribution, natural gas, nuclear, renewable energy and petroleum; “What is decarbonisation?” https://www.engie.com/en/news/decarbonation-definition]

The word decarbonisation refers to all measures through which a business sector, or an entity – a government, an organisation – reduces its carbon footprint, primarily its greenhouse gas emissions, carbon dioxide (CO2) and methane (CH4), in order to reduce its impact on the climate.

#### Decarbonization is switching from fossil fuels to renewables

myclimate no date [myclimate; international climate protection organisation with Swiss roots, whose scientific experts offer individual industry solutions and climate strategy consulting for business clients; “What does Decarbonisation mean?” https://www.myclimate.org/en/information/faq/faq-detail/what-does-decarbonisation-mean/]

“Decarbonisation” means switching from the use of fossil fuels such as coal, natural gas or oil to carbon-free and renewable energy sources as quickly as possible. Particularly in energy-intensive sectors such as mobility or energy and heat generation, it is essential to cut down on or avoid greenhouse gas emissions such as carbon dioxide (CO₂) so as to stem the advance of climate change.

#### Decarbonization is the process of replacing fossil fuels with less harmful fuels

OLD no date [Oxford Learner’s Dictionary; “decarbonization,” https://www.oxfordlearnersdictionaries.com/us/definition/english/decarbonization?q=decarbonization]

​the process of replacing fossil fuels with fuel that is less harmful to the environment

### Not SRM

#### SRM (solar radiation management) tech isn’t topical – it doesn’t promote decarbonization – at best, the AFF is extra-T

Hardin 20 [Buzz Hardin, University of Arkansas School of Law, “Compulsory Licensing of Climate Engineering Patents: How Embracing Technology- and Research-Sharing Strategies Brings Us One Step Closer to Solving Climate Change,” Arkansas Law Review Vol 73 No. 3, December 2020, Available at: <https://scholarworks.uark.edu/alr/vol73/iss3/4>, Bittner]

2. Climate Engineering as a Means of Mitigating and Reversing Climate Change

With the current state of international GHG emission regulation ineffective to stop the rapidly increasing rate of emission and ecological destruction,33 states are increasingly considering climate engineering options as alternatives to emissions reduction plans.34 The term “climate engineering,” or “geoengineering,”35 refers to “a broad set of methods and technologies operating on a large scale that aim to deliberately alter the climate system in order to alleviate the impacts of climate change.”36 Climate engineering technologies are generally divided into two categories: (1) carbon dioxide removal (CDR), which entails removing GHGs directly from the Earth’s atmosphere; and (2) solar radiation management (SRM), which involves increasing the reflectivity of the Earth’s atmosphere or surface.37

The aim of CDR technologies is to remove GHGs from the Earth’s atmosphere.38 To this end, a number of technologies and polices have been proposed—varying widely in scope, cost, and potential environmental implications—including: (1) reforestation of deforested land to promote the absorption of carbon by foliage; (2) the sequestration of carbon as biochar or other organic materials; (3) the capture and transfer of GHGs from the atmosphere into natural “sinks” such as underground cave systems; (4) and the addition of iron sulfate to the oceans to propagate phytoplankton that consume atmospheric carbon.39

SRM, unlike CDR, does not endeavor to decrease the amount of GHGs in the Earth’s atmosphere. Instead, its aim is to decrease the portion of solar radiation that reaches or is absorbed by the surface of the planet.40 SRM covers a wide array of technologies and policies ranging from the mundane to the extraterrestrial, including managing the amount of the sun’s radiation that is reflected back into space by changing the color of our rooftops to white or even modifying portions of the earth’s natural land cover to make them more reflective.41 Potentially more extreme options include spraying sulfates into the stratosphere to mirror the kind of radiation absorption that occurs following volcanic eruptions, injecting salt water or sulfuric acid into the troposphere to promote cloud formation, and even launching reflective satellites into the Earth’s orbit.42

##  “For” Decarbonization

### Relating To

#### For means saying what something relates to

Collins no date [Collins COBUILD Advanced Learner’s Dictionary; “Definition of 'for'” https://www.collinsdictionary.com/us/dictionary/english/for]

saying who or what something relates to, or who benefits

### Objective

#### Mentioning a purpose, reason or destination

Collins no date [Collins COBUILD Advanced Learner’s Dictionary; “Definition of 'for'” https://www.collinsdictionary.com/us/dictionary/english/for]

mentioning a purpose, reason, or destination

#### decarbonization is the GOAL of the policy mechanism

Ineratec no date [Ineratec; Glossary; German e-Fueling company; “Decarbonization,” https://www.ineratec.de/en/glossary/decarbonization]

Policy and regulation: Effective policies and regulations are essential to support decarbonization efforts. Governments, international organizations and the industry must work together to create incentives, regulations and mechanisms for decarbonization. One example would be high prices for CO2 certificates or the regulation of the quota for e-fuels at national but also especially at international level for long-haul flights.

#### Policies must have decarbonization as the objective FOR policy

Neeraj ’22 [Kumar; Stuart Doole; November 2; Executive Director, MSCI Research; Managing Director, MSCI Research; “Supporting the Low-Carbon Transition: An Indexed Approach” https://www.msci.com/www/blog-posts/supporting-the-low-carbon/03462695107]

The graphic below also illustrates how decarbonization can be delivered through diverse mechanisms for decarbonization. The attribution of change in WACI for the MSCI ACWI Climate Action Index shows that a substantial portion arose from a reduction in emissions of its constituents. In contrast, the MSCI Climate Paris Aligned Index maintained only a small exposure to fossil-fuel-based energy companies (because of prescribed exclusions). Thus, only a small portion of its WACI reduction can be explained by the change in constituent emissions.

### Contextual Use

#### Example of “for decarbonization” in the context of the rest of the resolution – also specifically used in the context of “policy”

Bose ’19 [Satyajit; Allison L. Bridges; Kelsie DeFrancia; Professor of Practice; Associate Director, M.S. in Sustainability Management Program; Lecturer in Professional Studies, M.S. in Sustainability Management, School of Professional Studies; Lecturer, Sustainability Management and Assistant Director, Research Program on Sustainability Policy and Management, The Earth Institute; The Earth Institute at Columbia University; “Carbon Pricing as a Policy Instrument to Decarbonize Economies,” https://spm.ei.columbia.edu/sites/default/files/content/Publications/Carbon%20Pricing%20Report%20July%2019%202019%20FINAL1.pd]

According to the 2018 IPCC Special Report: Global Warming of 1.5°C, global warming will reach 1.5°C above pre-industrial levels between 2030 and 2052. The net present value of estimated damages from greenhouse gas emissions amounts to $2.7 trillion1 . The commitments made as part of the Paris Agreement imply a finite carbon emissions budget for countries and companies. In the absence of an effective market price on the emissions of carbon, there is little incentive for the private sector to economize on carbon emissions. Carbon pricing mechanisms incentivize the changes needed in consumption, production and investment behavior to induce the transition to a low carbon future. This study analyzes carbon pricing mechanisms, specifically price-based mechanisms such as carbon taxes and quantity-based constraints such as cap-andtrade schemes, as a means to support decarbonization. The study comprises three parts. Firstly, we compare certain average economic and emission-related characteristics of 37 countries which have implemented or are considering implementing carbon pricing with the global average to derive a set of stylistic facts which appear to be correlated with the adoption of carbon pricing. We differentiate between carbon tax (CT) and emissions-trading (ETS) jurisdictions where possible. Secondly, we review the historical experience of 11 national and 2 sub-national jurisdictions which either implemented carbon pricing or attempted to do so in vain. Finally, we perform an in-depth review of two case study countries (Chile and Colombia) to identify the key drivers, or motivations, for adoption of carbon pricing policies as well as any barriers that may impact successful policy implementation or attainment of stated objectives.

To address climate-related risks to human and natural systems, governments around the world continue to set economic incentives and policies for decarbonization. As part of a growing toolkit of economic instruments that internalize the cost of greenhouse gas (GHG) emissions, governments have a choice among command-and-control regulations, carbon taxes, cap-andtrade systems, emission-reduction-credit systems, clean energy standards and the elimination of fossil fuel subsidies (Aldy & Stavins, 2012). Among these, carbon pricing schemes (comprising CT and ETS), are an important aspect of a comprehensive strategy for achieving sustainability targets. According to the World Bank, a total of 57 carbon pricing initiatives had been implemented or were scheduled for implementation as of June 2019 (World Bank Group, 2019b) 2 . Representing almost 20% of global GHG emissions, these initiatives cover 11 gigatonnes of equivalent carbon dioxide (GtCO2e). By setting an explicit price on GHG emissions, usually through an emissions trading system (ETS) or a tax on carbon, these programs provide a source of revenue while also working to mitigate emissions and incentivize the development of clean technologies. However, it should be noted that less than 5% of priced GHG emissions are currently priced at levels consistent with reaching the temperature goals of the Paris Agreement (World Bank Group, 2019b

# \*\*\*In the United States

## In

### Within

#### In means within

Cambridge Dictionaries Online

[“in”, <http://dictionary.cambridge.org/us/dictionary/american-english/in_2>, accessed 9-14-14, AFB]

in

preposition, adverb [not gradable] /ɪn/ US

in preposition, adverb [not gradable] (WITHIN)

› positioned inside or within the limits of something, or contained, surrounded, or enclosed by something:

There’s a cup in the cabinet.

Anne is still in bed.

Don’t stand in the driveway.

He’s always looking at himself in the mirror.

Clarice lives in Orlando.

He was in prison (= a prisoner).

Erika is still in school (= still a student).

He has a pain in his shoulder.

in and out

› If you are in and out of a place, you go there and leave, often repeatedly:

Since the accident, she’s been in and out of the hospital several times.

#### Means within

Merriam Webster

[“in”, Merriam Webster, <http://www.merriam-webster.com/dictionary/in>, accessed 9-14-14, AFB]

in

1 in preposition \ˈin, ən, ən\

—used to indicate location or position within something

: to the inside of (a room, container, etc.)

—used to indicate that someone or something belongs to or is included as part of something

#### In means within

Merriam Webster

[“in”, Merriam Webster, <http://www.merriam-webster.com/dictionary/in>, accessed 9-14-14, AFB]

1 a —used as a function word to indicate inclusion, location, or position within limits <in the lake> <wounded in the leg> <in the summer>

b : into 1 <went in the house>

#### In implies within the limit

Words and Phrases, 8

[Volume 28, p. 204-215]

C.R.S. ’63, 75-2-42.—Anderson v. Spencer, 426 P.2d 970, 162 Colo. 328.—Int Liq 69 Colo. 1967. “In” as used in statute requiring board when reviewing application for liquor license to consider the number, type and availability of liquor outlets located in or near the neighborhood is a spatial concept meaning inside of or within the bounds or limits of.

#### In means within a place

Words and Phrases, 8

[Volume 28, p. 204-215]

—Forman v. May, 202 So.2d 685, application denied 204 So.2d 576, 251 La. 397.—Wills 466. La.App. 3 Cir. 1967. Two words “of” and “in” are frequently used interchangeably to convey same meaning, one of which is that of location or inclusion within place or thing.

### Throughout

#### In means throughout

Words and Phrases, 8

[Volume 28, p. 204-215]

—Reynolds v. Larkins, 14 P. 114, 10 Colo. 126 Colo. 1887. In the act of 1861 providing that justices of the peace shall have jurisdiction “in” their respective counties to hear and determine all complaints, etc., the word “in” should be construed to mean “throughout” such counties.

## The

### Specification

#### “The” implies specification

Dictionary.com

(“the.” Dictionary.com. Dictionary.com Unabridged (v 1.1). Random House, Inc. <http://dictionary.reference.com/browse/the>, accessed: July 29, 2009, AFB)

the

1  /stressed ði; unstressed before a consonant ðə; unstressed before a vowel ði/ Show Spelled Pronunciation [stressed thee; unstressed before a consonant thuh; unstressed before a vowel thee] Show IPA

Use the in a Sentence

–definite article

1. (used, esp. before a noun, with a specifying or particularizing effect, as opposed to the indefinite or generalizing force of the indefinite article a or an): the book you gave me; Come into the house.

2. (used to mark a proper noun, natural phenomenon, ship, building, time, point of the compass, branch of endeavor, or field of study as something well-known or unique): the sun; the Alps; the Queen Elizabeth; the past; the West.

3. (used with or as part of a title): the Duke of Wellington; the Reverend John Smith.

4. (used to mark a noun as indicating the best-known, most approved, most important, most satisfying, etc.): the skiing center of the U.S.; If you're going to work hard, now is the time.

5. (used to mark a noun as being used generically): The dog is a quadruped.

6. (used in place of a possessive pronoun, to note a part of the body or a personal belonging): He won't be able to play football until the leg mends.

7. (used before adjectives that are used substantively, to note an individual, a class or number of individuals, or an abstract idea): to visit the sick; from the sublime to the ridiculous.

8. (used before a modifying adjective to specify or limit its modifying effect): He took the wrong road and drove miles out of his way.

9. (used to indicate one particular decade of a lifetime or of a century): the sixties; the gay nineties.

10. (one of many of a class or type, as of a manufactured item, as opposed to an individual one): Did you listen to the radio last night?

11. enough: He saved until he had the money for a new car. She didn't have the courage to leave.

12. (used distributively, to note any one separately) for, to, or in each; a or an: at one dollar the pound.

Origin:

bef. 900; ME, OE, uninflected s. of the demonstrative pronoun. See that

#### “The” is a definite determiner – it refers to a definite noun

Kosur, Language Learning Channel contributing editor & Illinois State University Milner Library conservation technician, 9

(Heather Marie, 6-16-9, “The Forms and Function of Determiners in English”,

<http://www.brighthub.com/education/languages/articles/36828.aspx>, accessed 9-7-9, AFB)

Definite and Indefinite Articles

The first grammatical form of the determiner in English is the article. Articles indicate definiteness or indefiniteness of a noun. The definite article in English is the. The indefinite articles in English are a and an. Both singular and plural nouns can take the definite article. Only singular nouns can take the indefinite article. The following italicized determiners are examples of articles:

\* The baby drank a bottle of milk.

\* An apron is often worn by bakers.

\* The shih tzu is a popular dog breed.

Articles are sometimes referred to simply as determiners.

### Unique Particular

#### “The” indicates uniqueness

American Heritage Dictionary

(“the.”, Dictionary.com. The American Heritage® Dictionary of the English Language, Fourth Edition. Houghton Mifflin Company, 2004. <http://dictionary.reference.com/browse/the>, accessed: 7-29-9, AFB)

the 1 (thē before a vowel; thə before a consonant)

def.art.

1.

1. Used before singular or plural nouns and noun phrases that denote particular, specified persons or things: the baby; the dress I wore.

2. Used before a noun, and generally stressed, to emphasize one of a group or type as the most outstanding or prominent: considered Lake Shore Drive to be the neighborhood to live in these days.

3. Used to indicate uniqueness: the Prince of Wales; the moon.

4. Used before nouns that designate natural phenomena or points of the compass: the weather; a wind from the south.

5. Used as the equivalent of a possessive adjective before names of some parts of the body: grab him by the neck; an infection of the hand.

6. Used before a noun specifying a field of endeavor: the law; the film industry; the stage.

7. Used before a proper name, as of a monument or ship: the Alamo; the Titanic.

8. Used before the plural form of a numeral denoting a specific decade of a century or of a life span: rural life in the Thirties.

9. Used before an adjective extending it to signify a class and giving it the function of a noun: the rich; the dead; the homeless.

10. Used before an absolute adjective: the best we can offer.

### Definitive, Particular

#### The indicates particular – setting a functional limit

Words and Phrases, 8

[“the”, Vol. 41B, p. 1]

Word “the” is a word of limitation. It is a word used before nouns with a specifying or particularizing effect, opposed to the indefinite or generalizing force of “a” or “an”.

#### The assumes a limit

Cambridge Dictionaries Online

(“the”, <http://dictionary.cambridge.org/dictionary/british/the_1>, accessed 9-11-14, AFB)

the determiner ( PARTICULAR )

used before noun phrases in which the range of meaning of the noun is limited in some way

#### The indicates particular

New Oxford American Dictionary, 13

[New Oxford American Dictionary (3 ed.), Edited by Angus Stevenson and Christine A. Lindberg, Oxford Reference database, accessed 9-11-14, AFB]

the /T͟Hē, , T͟Hə/

▶ determiner

1. denoting one or more people or things already mentioned or assumed to be common knowledge: what's the matter? | call the doctor | the phone rang. Compare with a.

■ used to refer to a person, place, or thing that is unique: the Queen | the Mona Lisa | the Nile.

■ informal denoting a disease or affliction: I've got the flu.

■ (with a unit of time) the present; the current: dish of the day | man of the moment.

■ informal used instead of a possessive to refer to someone with whom the speaker or person addressed is associated: I'm meeting the boss | how's the family?

■ used with a surname to refer to a family or married couple: the Johnsons were not wealthy.

■ used before the surname of the chief of a Scottish or Irish clan: the O'Donoghue.

2. used to point forward to a following qualifying or defining clause or phrase: the fuss that he made of her | the top of a bus | I have done the best I could.

■ (chiefly with rulers and family members with the same name) used after a name to qualify it: George the Sixth | Edward the Confessor | Jack the Ripper.

3. used to make a generalized reference to something rather than identifying a particular instance: he taught himself to play the violin | worry about the future.

■ used with a singular noun to indicate that it represents a whole species or class: they placed the African elephant on their endangered list.

■ used with an adjective to refer to those people who are of the type described: the unemployed.

■ used with an adjective to refer to something of the class or quality described: they are trying to accomplish the impossible.

■ used with the name of a unit to state a rate: they can do 120 miles to the gallon.

4. enough of (a particular thing): he hoped to publish monthly, if only he could find the money.

5. (pronounced stressing “the”) used to indicate that someone or something is the best known or most important of that name or type: he was the hot young piano prospect in jazz.

6. used adverbially with comparatives to indicate how one amount or degree of something varies in relation to another: the more she thought about it, the more devastating it became.

■ (usu. all the ——) used to emphasize the amount or degree to which something is affected: commodities made all the more desirable by their rarity.

– origin Old English (Northumbrian and North Mercian dialects) thē; related to Dutch de, dat, and German der, die, das.

usage: The article the is usually pronounced /T͟Hə/ before a consonant sound (please pass the potatoes; ) and /T͟Hē/ before a vowel sound (please pass the asparagus; ). Regardless of consonant and vowel sounds, when the desired effect following the is to emphasize exclusivity, the pronunciation is /T͟Hē/: she's not just any expert in vegetation management, she's the expert.

#### The specifies particular noun

Random House Dictionary, 2014

(“the”, Dictionary.com Unabridged, <http://dictionary.reference.com/browse/the>, accessed 9-11-14, AFB]

the1

[stressed th ee; unstressed before a consonant th uh; unstressed before a vowel th ee] Spell Syllables

Examples Word Origin

definite article

1. (used, especially before a noun, with a specifying or particularizing effect, as opposed to the indefinite or generalizing force of the indefinite article a or an):

the book you gave me; Come into the house.

#### “The” is definitive, referring to specific nouns

Words and Phrases, 8

[Vol. 41B, Page 1]

The word “the” is a definitive, and is commonly used before nouns which are specific or understood. Hoffman v. Franklin Motor Car Co., 122 S.E. 896, 900, 32 Ga.App. 229

#### The delineates a particular

Words and Phrases, 8

[“the”, Vol. 41B, p. 2]

The word “the” is a definitive and when used before a noun has a specifying and particularizing effect, and the word “the” is used with such meaning in the phrase “or the use of the premises” appearing in provision of zoning ordinance defining an accessory building as a subordinate building, separated from or attached to main building, the use of which is incidental to that of the main building of “the use of the premises”.

#### The is definitive

Words and Phrases, 8

[“the”, Vol. 41B, p. 1]

The word “the” is a definitive, and is commonly used before nouns which are specific or understood.

#### The is particular

Words and Phrases, 8

[“the”, Vol. 41B, p. 1]

“The” determines what particular thing is meant, i.e., what particular thing we are to assume to be meant. \* \* \* Yet this article is not always used to mean but one. Take the well-worn and well-wearing quotation: “The man that hath not music in his soul is fit for treason,” etc., the meaning of the article is not exhausted when one man is found with no music in himself. The “man” means there, “any man.”

### United States Context

#### “The” indicates particular proper noun

Merriam-Webster Online Dictionary

(“the". <http://www.merriam-webster.com/dictionary/the%5B1%5D>, accessed 7-30-9, AFB)

Main Entry: 1the Listen to the pronunciation of 1the

Pronunciation: \before consonants usually thə, before vowels usually thē, sometime before vowels also thə; for emphasis before titles and names or to suggest uniqueness often ˈthē\

Function: definite article

Etymology: Middle English, from Old English thē, masculine demonstrative pron. & definite article, alteration (influenced by oblique cases — as thæs, genitive — & neuter, thæt) of sē; akin to Greek ho, masculine demonstrative pron. & definite article — more at that

Date: before 12th century

1 a—used as a function word to indicate that a following noun or noun equivalent is definite or has been previously specified by context or by circumstance <put the cat out> b—used as a function word to indicate that a following noun or noun equivalent is a unique or a particular member of its class <the President><the Lord> c—used as a function word before nouns that designate natural phenomena or points of the compass <the night is cold> d—used as a function word before a noun denoting time to indicate reference to what is present or immediate or is under consideration <in the future> e—used as a function word before names of some parts of the body or of the clothing as an equivalent of a possessive adjective <how's the arm today> f—used as a function word before the name of a branch of human endeavor or proficiency <the law> g—used as a function word in prepositional phrases to indicate that the noun in the phrase serves as a basis for computation <sold by the dozen> h—used as a function word before a proper name (as of a ship or a well-known building) <the Mayflower> i—used as a function word before a proper name to indicate the distinctive characteristics of a person or thing <the John Doe that we know wouldn't lie> j—used as a function word before the plural form of a surname to indicate all the members of a family <the Johnsons> k—used as a function word before the plural form of a numeral that is a multiple of ten to denote a particular decade of a century or of a person's life <life in the twenties> l—used as a function word before the name of a commodity or any familiar appurtenance of daily life to indicate reference to the individual thing, part, or supply thought of as at hand <talked on the telephone> meters—used as a function word to designate one of a class as the best, most typical, best known, or most worth singling out <this is the life><the pill> ; sometimes used before a personal name to denote the most prominent bearer of that name2 a (1)—used as a function word with a noun modified by an adjective or by an attributive noun to limit the application of the modified noun to that specified by the adjective or by the attributive noun <the right answer><Peter the Great> (2)—used as a function word before an absolute adjective or an ordinal number <nothing but the best><due on the first> b (1)—used as a function word before a noun to limit its application to that specified by a succeeding element in the sentence <the poet Wordsworth><the days of our youth><didn't have the time to write> (2)—used as a function word after a person's name to indicate a characteristic trait or notorious activity specified by the succeeding noun <Jack the Ripper>3 a—used as a function word before a singular noun to indicate that the noun is to be understood generically <the dog is a domestic animal> b—used as a function word before a singular substantivized adjective to indicate an abstract idea <an essay on the sublime>4—used as a function word before a noun or a substantivized adjective to indicate reference to a group as a whole <the elite>

#### The refers to specific noun in context

Words and Phrases, 8

[“the”, Vol. 41B, p. 3]

The word “the”, as used in provision of will for setting aside of a specified number of shares of “the” bank stock, referred to existing stock and stock owned by testator and constituted a “specific bequest” of stock, so that administration expenses were first chargeable against the balance of the estate.

#### Assumes one particular noun in context

Words and Phrases, 8

[“the”, Vol. 41B, p. 3]

Word “the” in constitutional provision that either party may have certain matters attached to the bill of exceptions indicated an intent that there be but one bill of exceptions in a case. Kraft v. Montgomery Ward & Co.

#### The is defined as particular in context

Merriam-Webster

[“the”, <http://www.merriam-webster.com/dictionary/the>, accessed 7-12-14, AFB]

1 a —used as a function word to indicate that a following noun or noun equivalent is definite or has been previously specified by context or by circumstance <put the cat out> b —used as a function word to indicate that a following noun or noun equivalent is a unique or a particular member of its class <the President> <the Lord> c —used as a function word before nouns that designate natural phenomena or points of the compass <the night is cold> d —used as a function word before a noun denoting time to indicate reference to what is present or immediate or is under consideration <in the future> e —used as a function word before names of some parts of the body or of the clothing as an equivalent of a possessive adjective <how's the arm today> f —used as a function word before the name of a branch of human endeavor or proficiency <the law> g —used as a function word in prepositional phrases to indicate that the noun in the phrase serves as a basis for computation <sold by the dozen> h —used as a function word before a proper name (as of a ship or a well-known building) <the Mayflower> i —used as a function word before a proper name to indicate the distinctive characteristics of a person or thing <the John Doe that we know wouldn't lie> j —used as a function word before the plural form of a surname to indicate all the members of a family <the Johnsons> k —used as a function word before the plural form of a numeral that is a multiple of ten to denote a particular decade of a century or of a person's life <life in the twenties> l —used as a function word before the name of a commodity or any familiar appurtenance of daily life to indicate reference to the individual thing, part, or supply thought of as at hand <talked on the telephone> m —used as a function word to designate one of a class as the best, most typical, best known, or most worth singling out <this is the life> <the pill> ; sometimes used before a personal name to denote the most prominent bearer of that name

2 a (1) —used as a function word with a noun modified by an adjective or by an attributive noun to limit the application of the modified noun to that specified by the adjective or by the attributive noun <the right answer> <Peter the Great> (2) —used as a function word before an absolute adjective or an ordinal number <nothing but the best> <due on the first> b (1) —used as a function word before a noun to limit its application to that specified by a succeeding element in the sentence <the poet Wordsworth> <the days of our youth> <didn't have the time to write> (2) —used as a function word after a person's name to indicate a characteristic trait or notorious activity specified by the succeeding noun <Jack the Ripper>

3 a —used as a function word before a singular noun to indicate that the noun is to be understood generically <the dog is a domestic animal> b —used as a function word before a singular substantivized adjective to indicate an abstract idea <an essay on the sublime>

4 —used as a function word before a noun or a substantivized adjective to indicate reference to a group as a whole <the elite>

#### “The” in context means the specific United States

Johnston, University of Toronto International Student Centre, no date

(Martine, “Special Cases in the Use of the Definite Article”, <http://www.writing.utoronto.ca/advice/english-as-a-second-language/definite-article>, accessed 9-7-9, AFB)

To decide if you should use the word *the*, ask yourself these three questions:

1. Is the noun indefinite (unspecified) or definite (specific)?

The general rule states that the first mention of a noun is indefinite and all subsequent references to this noun are definite and take *the*.

A man is walking down a road. There is a dog with *the* man.

The second mention may be a synonym:

Combine butter, sugar and eggs. Add flour to *the* mixture.

First (indefinite) mention requires *a* or *an* for a singular count noun, no article for a plural or non-count noun. Second mention makes *the* correct for both count and non-count nouns:

*A* growing plant must have water and minerals. *The* plant must also have sunlight. *The* minerals must include nitrates and *the* water must not be saline.

Three **special groups of nouns** are considered definite in reference even if they have not been mentioned in the preceding sentence or clause.

a. The first group consists of nouns which refer to shared knowledge of the situation or context. For example, in Canada you can say

The Prime Minister will arrive tomorrow

because there is only one Prime Minister in Canada, and so it is clear to whom you are referring. Similarly, if there is only one hospital in the town, you can say

He's been working in *the* hospital for two years.

But you couldn't say this in Toronto, where there are many hospitals. You would have to name the particular hospital in your first reference to it:

He's been working at Toronto General Hospital for two years. He says *the* hospital is in a financial mess.

b. The second group consists of nouns referring to unique objects:

e.g., the sun/the earth/the Pope/the sky/the equator

c. **Superlative adjectives and unique adjectives** form the third group. Because there can be only one of these (only one of a series can be the tallest or the best or the first), they take the definite article

Mexico City is *the* most populous city in the world.

I enjoyed *the* first part, but I was disappointed at *the* end.

She is *the* principal researcher.

**2.** Is the noun modified?

**a. Premodification:** If the noun is preceded by one of the following--

this/that/these/those/some/any/each/every/no/none/my/mine

**do not** use the definite article.

e.g., the red books/some red books/no red book/his red books/each red book

b. Postmodification: if the noun is followed by a dependent clause (who/which/that) or a prepositional phrase (of/in/to...), it is made definite and takes the definite article. The man who lives next door is Chinese.

We take the regular collection of garbage for granted.

*The* journey to Vancouver take three days by train.

No one expected *the* results that were found.

**EXCEPTION**: collective nouns take the indefinite article:

a box of matches/a deck of cards/a bar of soap/a herd of cows.

#### The marks a proper noun, something well-known, or unique

Random House Dictionary, 2014

(“the”, Dictionary.com Unabridged, <http://dictionary.reference.com/browse/the>, accessed 9-11-14, AFB]

2. (used to mark a proper noun, natural phenomenon, ship, building, time, point of the compass, branch of endeavor, or field of study as something well-known or unique):

the sun; the Alps; the Queen Elizabeth; the past; the West.

### Context Key

#### Meaning of “The” varies in context

Words and Phrases, 69

[Vol. 43]

Meaning of “the” depends on the context and purpose of statute in which it is found. Craig v. Boyes, 11 P.2d 673, 674, 123 Cal. App. 592.

### All

#### The can mean “all of the”

Words and Phrases, 8

[“the”, Vol. 41B, p. 1]

The definite article “the” has sometimes been construed to mean “all of the.”

### One

#### The refers to one

Cambridge Dictionaries Online

(“the”, <http://dictionary.cambridge.org/dictionary/british/the_1>, accessed 9-11-14, AFB)

the determiner ( PARTICULAR )

used to refer to things or people when only one exists at any one time

## United States

### All Federal Jurisdiction

#### United States includes all of the jurisdiction of the federal government

Words and Phrases, 6

[“United States”, Volume 43A]

U.S.N.Y. (1901) Downes v. Bidwell

a. The term “United States” has a broader meaning in dealing with the foreign sovereignty than when used in the constitution, and includes all territory subject to the jurisdiction of the federal government.

#### The United States includes all areas under US jurisdiction

U.S. Department of Defense, 9

(“United States”, The Dictionary of Military Terms, p. 574)

United States – Includes the land area, internal waters, territorial sea, and airspace of the United States, including the following: A. US territories, possessions, and commonwealths; and b. Other areas over which the US Government has complete jurisdiction and control or has exclusive authority or defense responsibility.

#### United States, in topic context, means all jurisdictions of the US

Words and Phrases, 6

[“United States”, Volume 43A]

C.A.5 (Fla.) 1974.

Comprehensive Drug Abuse Prevention and Control Act of 1970.

a. The Term “United States,” as used in Comprehensive Drug Abuse Prevention and Control Act in a territorial sense, includes all the places and waters, continental or insular, subject to the jurisdiction of the United States, except the Canal Zone.

### Country/Nation

#### The United States is comprised of 48 contiguous states, Alaska, Hawaii, and various territories, with DC as the capital

American Heritage Dictionary

(“United States”, Dictionary.com. The American Heritage® Dictionary of the English Language, Fourth Edition. Houghton Mifflin Company, 2004. http://dictionary.reference.com/browse/united states, accessed: 7-29-9, AFB)

United States or United States of America Abbr. U.S. or US or U.S.A. or USA

A country of central and northwest North America with coastlines on the Atlantic and Pacific oceans. It includes the noncontiguous states of Alaska and Hawaii and various island territories in the Caribbean Sea and Pacific Ocean. The area now occupied by the contiguous 48 states was originally inhabited by numerous Native American peoples and was colonized beginning in the 16th century by Spain, France, the Netherlands, and England. Great Britain eventually controlled most of the Atlantic coast and, after the French and Indian Wars (1754-1763), the Northwest Territory and Canada. The original Thirteen Colonies declared their independence from Great Britain in 1776 and formed a government under the Articles of Confederation in 1781, adopting (1787) a new constitution that went into effect after 1789. The nation soon began to expand westward. Growing tensions over the issue of Black slavery divided the country along geographic lines, sparking the secession of the South and the Civil War (1861-1865). The remainder of the 19th century was marked by increased westward expansion, industrialization, and the influx of millions of immigrants. The United States entered World War II after the Japanese attack (1941) on Pearl Harbor and emerged after the war as a world power. Washington, D.C., is the capital and New York the largest city. Population: 302,000,000.

#### The United States is the nation

Cambridge University Press

(“United States”, Cambridge Dictionary of American English, [http://dictionary.cambridge.org/define\_b.asp?key=unite\*1+4&dict=A](http://dictionary.cambridge.org/define_b.asp?key=unite*1+4&dict=A), accessed 7-30-9)

Definition

The United States (abbreviation US) is the United States of America, a nation consisting of 50 states, all but one (Hawaii) in North America.

### USA

#### The United States is the United States of America

Cambridge University Press

(“United States”, Cambridge Dictionary of American English, [http://dictionary.cambridge.org/define\_b.asp?key=unite\*1+4&dict=A](http://dictionary.cambridge.org/define_b.asp?key=unite*1+4&dict=A), accessed 7-30-9)

Definition

The United States (abbreviation US) is the United States of America, a nation consisting of 50 states, all but one (Hawaii) in North America.

#### United States is synonymous with United States of America

Merriam-Webster Online Dictionary

(“United States of America". <http://www.merriam-webster.com/dictionary/United%20States%20of%20America>, accessed 7-30-9, AFB)

\* Main Entry: United States of America

\* Variant(s): or United States \yu̇-ˈnī-təd-ˈstāts, especially Southern ˈyü-ˌ\

\* Function: geographical name

country North America bordering on Atlantic, Pacific, & Arctic oceans; a federal republic ∗ Washington area 3,619,969 square miles (9,375,720 square kilometers), population 281,421,906

#### United States is the same as United States of America

Words and Phrases, 69

[Vol. 43, p. 506]

In informations and indictments in the United States of America, it is unnecessary to use the words “of America” after the words “United States”. People v. O’Campo, 71 N.E.2d 375, 377, 378, 330 Ill.App. 401.

#### United States refers to the republic comprising 48 conterminous states, Alaska, Hawaii, and D.C.

Dictionary.com

(“united states.” Dictionary.com. Dictionary.com Unabridged (v 1.1). Random House, Inc. http://dictionary.reference.com/browse/united states, accessed: July 29, 2009)

United States

Use united states in a Sentence

–noun

a republic in the N Western Hemisphere comprising 48 conterminous states, the District of Columbia, and Alaska in North America, and Hawaii in the N Pacific. 267,954,767; conterminous United States, 3,022,387 sq. mi. (7,827,982 sq. km); with Alaska and Hawaii, 3,615,122 sq. mi. (9,363,166 sq. km). Capital: Washington, D.C. Abbreviation: U.S., US

Also called United States of America, America.

#### The United States is comprised of 48 contiguous states, Alaska, Hawaii, and various territories, with DC as the capital

American Heritage Dictionary, no date

(“united states. Dictionary.com. The American Heritage® Dictionary of the English Language, Fourth Edition. Houghton Mifflin Company, 2004. http://dictionary.reference.com/browse/united states, accessed: July 29, 2009)

United States or United States of America Abbr. U.S. or US or U.S.A. or USA

A country of central and northwest North America with coastlines on the Atlantic and Pacific oceans. It includes the noncontiguous states of Alaska and Hawaii and various island territories in the Caribbean Sea and Pacific Ocean. The area now occupied by the contiguous 48 states was originally inhabited by numerous Native American peoples and was colonized beginning in the 16th century by Spain, France, the Netherlands, and England. Great Britain eventually controlled most of the Atlantic coast and, after the French and Indian Wars (1754-1763), the Northwest Territory and Canada. The original Thirteen Colonies declared their independence from Great Britain in 1776 and formed a government under the Articles of Confederation in 1781, adopting (1787) a new constitution that went into effect after 1789. The nation soon began to expand westward. Growing tensions over the issue of Black slavery divided the country along geographic lines, sparking the secession of the South and the Civil War (1861-1865). The remainder of the 19th century was marked by increased westward expansion, industrialization, and the influx of millions of immigrants. The United States entered World War II after the Japanese attack (1941) on Pearl Harbor and emerged after the war as a world power. Washington, D.C., is the capital and New York the largest city. Population: 302,000,000.

### Geographic

#### United States is a geographical entity

Merriam Webster

[“United States”, http://www.wordswarm.net/dictionary/united\_states\_of\_america.html#mw, accessed 9-11-14, AFB]

United States geographical name country North America bordering on Atlantic, Pacific, & Arctic oceans; a federal republic capital Washington area 3,619,969 square miles (9,375,720 square kilometers), population 281,421,906

#### United States is a country composed of 50 states and DC

Flaum, Encyclopedia Britannica, 14

[Thea K. Flaum, “United States,” 8-5-14, <http://www.britannica.com/EBchecked/topic/616563/United-States>, accessed 9-11-14, AFB]

United States, officially United States of America, abbreviations U.S. or U.S.A., byname America, country of North America, a federal republic of 50 states. Besides the 48 contiguous states that occupy the middle latitudes of the continent, the United States includes the state of Alaska, at the northwestern extreme of North America, and the island state of Hawaii, in the mid-Pacific Ocean. The coterminous states are bounded on the north by Canada, on the east by the Atlantic Ocean, on the south by the Gulf of Mexico and Mexico, and on the west by the Pacific Ocean. The United States is the fourth largest country in the world in area (after Russia, Canada, and China). The national capital is Washington, which is coextensive with the District of Columbia, the federal capital region created in 1790.

#### United States is 50 states and DC

The New Oxford American Dictionary, 13

[“United States”, 3rd edition, [Oxford](http://www.merriam-webster.com/dictionary/united%20states) Reference database, accessed 9-11-14, AFB]

United States

((abbr.: US or U.S.) )

a country that occupies most of the southern half of North America as well as Alaska and the Hawaiian Islands; pop. 304,059,724 (est. 2008); capital, Washington, DC. Full name United States of America.

The US is a federal republic comprising 50 states and the Federal District of Columbia. It originated in the American Revolution, the successful rebellion of the colonies on the eastern coast against British rule in 1775–83. The original 13 states that formed the Union drew up a federal constitution in 1787, and George Washington was elected the first president in 1789. In the 19th century the territory of the US was extended across the continent through the westward spread of pioneers and settlers and acquisitions such as that of Texas and California from Mexico in the 1840s. After a long period of isolation in foreign affairs, the US participated on the Allied side in both world wars and emerged from the Cold War as the world's leading military and economic power.

### Includes Territories

#### The United States includes states, DC, and multiple territories

US Legal, 16

[US Legal, “United States Law and Legal Definition”, <https://definitions.uslegal.com/u/united-states/>, accessed 8-10-17, AFB]

The United States is a country of central and northwest North America with coastlines on the Atlantic and Pacific oceans. The United States is the world's third largest country in population and the fourth largest country in area. It consists of 50 states and a federal district. The country includes the noncontiguous states of Alaska and Hawaii and various island territories in the Caribbean Sea and Pacific Ocean, such as the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, Guam, the Virgin Islands, American Samoa, Wake Island, the Midway Islands, Kingman Reef, and Johnston Island.

#### The United States includes territories and areas under US jurisdiction

U.S. Department of Defense, 9

(“United States”, The Dictionary of Military Terms, p. 574)

United States – Includes the land area, internal waters, territorial sea, and airspace of the United States, including the following: A. US territories, possessions, and commonwealths; and b. Other areas over which the US Government has complete jurisdiction and control or has exclusive authority or defense responsibility.

#### US is a country including states, territories, and DC

The American Heritage Dictionary of the English Language, 14

(Fifth Edition, <https://ahdictionary.com/word/search.html?q=united+states>, accessed 9-11-14, AFB]

United States or United States of America Abbr. US or U.S. or USA or U.S.A.

Share: United StatesUnited States

A country of central and northwest North America with coastlines on the Atlantic and Pacific Oceans. It includes the noncontiguous states of Alaska and Hawaii and various island territories in the Caribbean Sea and Pacific Ocean. The area now occupied by the contiguous 48 states was originally inhabited by numerous Native American peoples and was colonized beginning in the 1500s by Spain, France, the Netherlands, and England. Great Britain eventually controlled most of the Atlantic coast and, after the French and Indian Wars (1754-1763), the Northwest Territory and Canada. The original Thirteen Colonies declared their independence from Great Britain in 1776 and formed a government under the Articles of Confederation in 1781, adopting (1787) a new constitution that went into effect after 1789. The nation soon began to expand westward. Growing tensions over the issue of black slavery divided the country along geographic lines, sparking the secession of the South and the Civil War (1861-1865). The remainder of the 1800s was marked by increased westward expansion, industrialization, and the influx of millions of immigrants. The United States entered World War II after the Japanese attack (1941) on Pearl Harbor and emerged after the war as a world power. Washington, DC, is the capital and New York the largest city.

#### United States includes all territories

Words and Phrases, 6

[“United States”, Volume 43A]

D. Minn. 1944.

Alien Registration Act of 1940

a. “United States” is used in the Alien Registration Act as including the states, the territories of Alaska and Hawaii, the District of Columbia, Puerto Rico and the Virgin Islands, but the term does not include the Philippine Islands.

#### United States – states and territories

Business Dictionary, 17

[Business Dictionary, “United States”, http://www.businessdictionary.com/definition/United-States.html, accessed 8-10-17, AFB]

Fifty federated states plus District Of Columbia, American Samoa, Guam, Johnston Island, Midway and Wake Islands Northern Mariana Islands, and US Virgin Islands.

### Not All Jurisdictions/Territories

#### United States doesn’t mean all jurisdictions

Words and Phrases, 6

[“United States”, Volume 43A]

CA.9 (Hawai’i)

Rabang v. I.N.S.

a. As used in the constitution, term “United States” does not include all territories subject to jurisdiction of the United States Government.

#### United States means only the 50 States and DC

Words and Phrases, 6

[“United States”, Volume 43A]

Fla.App. 3 Dist. 1976.

Heftler Const. Co. and Subsidiaries v. Department of Revenue

a. Term “United States,” as used in statute providing for exclusion of income and losses derived from sources outside of United States, means only the 50 states and the District of Columbia.

### Constitutional Union

#### United States is a Constitutional entity

Ballentine’s Law Dictionary, 1969

[“United States”, 3rd edition, edited by James A. Ballentine, http://citizenlaw.com/pdf/u.pdf, accessed 9-11-14, AFB]

United States: The Union of several states, each equal in power, dignity, and authority, brought into being by the Constitution, emanating from and adopted by the people in whom the sovereignty resides. McCulloch v Maryland (US) 4 Wheat 3l6, 4 L Ed 579. A body politic and corporate, capable of attaining the objects for which it was created, by the means which are necessary for their attainment. Van Brocklin v Tennessee, 117 US 151, 29 L Ed 845, 6 S Ct 670. A person for the purpose of a pretrial deposition under Federal Rule 26(a) of the Federal Rules of Civil Procedure. 23 Am J2d Dep § 242. Inclusive in reference to transactions with foreign nations of all territories subject to the jurisdiction of the Federal Government, wherever located. Downes v Bidwell, 182 US 244, 45 L Ed 1088, 21 S Ct 770.

A Federal government was created in 1777 by the union of thirteen colonies of Great Britain in "certain articles of confederation and perpetual union," the first one of which declared that "the stile of this confederacy shall be the United States of America." Each member of the confederacy was denominated a “state." The confederacy, owing to well-known historical reasons, having proven a failure, a new Constitution was formed in 1787, by "The people of the United States” "for the United States of America," as its preamble declares. Downes v Bidwell, 182 US 244, 249, 45 1, Ed 1088, 1092, 21 S Ct 770.

See expressions following which begin with “United States," also terms and expressions beginning “federal” or “national.”

#### United States is the union of states under the Constitution

Words and Phrases, 69

[Vol. 43, p.506.]

The United States is the union of the separate states under a common Constitution. Texas v. White, 74 U.S.(7 Wall.) 700, 721, 19 L.Ed. 227

#### United States is a federal union

Guide to American Law, 83

(“United States”, The Guide to American Law: Everyone's Legal Encyclopedia Hardcover – December 1, 1983)

A comprehensive term for the territory that comprises fifty separate states and is bound by the Federal Constitution into a union, which, in the community of nations, is a single sovereign nation in international affairs.

### Federal Republic

#### United States is a federal republic

The New Oxford American Dictionary, 13

[“United States”, 3rd edition, [Oxford](http://www.merriam-webster.com/dictionary/united%20states) Reference database, accessed 9-11-14, AFB]

United States

((abbr.: US or U.S.) )

a country that occupies most of the southern half of North America as well as Alaska and the Hawaiian Islands; pop. 304,059,724 (est. 2008); capital, Washington, DC. Full name United States of America.

The US is a federal republic comprising 50 states and the Federal District of Columbia. It originated in the American Revolution, the successful rebellion of the colonies on the eastern coast against British rule in 1775–83. The original 13 states that formed the Union drew up a federal constitution in 1787, and George Washington was elected the first president in 1789. In the 19th century the territory of the US was extended across the continent through the westward spread of pioneers and settlers and acquisitions such as that of Texas and California from Mexico in the 1840s. After a long period of isolation in foreign affairs, the US participated on the Allied side in both world wars and emerged from the Cold War as the world's leading military and economic power.

#### United States is a republic

Flaum, Encyclopedia Britannica, 14

[Thea K. Flaum, “United States,” 8-5-14, <http://www.britannica.com/EBchecked/topic/616563/United-States>, accessed 9-11-14, AFB]

United States, officially United States of America, abbreviations U.S. or U.S.A., byname America, country of North America, a federal republic of 50 states. Besides the 48 contiguous states that occupy the middle latitudes of the continent, the United States includes the state of Alaska, at the northwestern extreme of North America, and the island state of Hawaii, in the mid-Pacific Ocean. The coterminous states are bounded on the north by Canada, on the east by the Atlantic Ocean, on the south by the Gulf of Mexico and Mexico, and on the west by the Pacific Ocean. The United States is the fourth largest country in the world in area (after Russia, Canada, and China). The national capital is Washington, which is coextensive with the District of Columbia, the federal capital region created in 1790.

#### United States is a federal republic

Merriam Webster

[“United States”, http://www.wordswarm.net/dictionary/united\_states\_of\_america.html#mw, accessed 9-11-14, AFB]

United States geographical name country North America bordering on Atlantic, Pacific, & Arctic oceans; a federal republic capital Washington area 3,619,969 square miles (9,375,720 square kilometers), population 281,421,906

### Republic

#### United States refers to the republic comprising 48 conterminous states, Alaska, Hawaii, and D.C.

Random House Dictionary, 14

(“united states.” Dictionary.com Unabridged, http://dictionary.reference.com/browse/united%20states, accessed: 9-11-14, AFB)

United States

Use united states in a Sentence

–noun

a republic in the N Western Hemisphere comprising 48 conterminous states, the District of Columbia, and Alaska in North America, and Hawaii in the N Pacific. 267,954,767; conterminous United States, 3,022,387 sq. mi. (7,827,982 sq. km); with Alaska and Hawaii, 3,615,122 sq. mi. (9,363,166 sq. km). Capital: Washington, D.C. Abbreviation: U.S., US

Also called United States of America, America.

### Republic – Government

#### Republic is the government

Munro, Encyclopedia Britannica, 13

[Andre, 3-18-2013, “Republic”, <http://www.britannica.com/EBchecked/topic/498751/republic>, accessed 9-11-14, AFB]

republic, form of government in which a state is ruled by representatives of the citizen body. Modern republics are founded on the idea that sovereignty rests with the people, though who is included and excluded from the category of the people has varied across history. Because citizens do not govern the state themselves but through representatives, republics may also be distinguished from direct democracy, though modern representative democracies are by and large republics.

#### Republic the state run by the elected representatives

The New Oxford American Dictionary, 13

[“republic”, 3rd edition, Oxford Reference database, accessed 9-11-14, AFB]

republic /riˈpəblik/

▶ noun a state in which supreme power is held by the people and their elected representatives, and which has an elected or nominated president rather than a monarch.

■ archaic a group with a certain equality between its members.

– origin late 16th cent.: from French république, from Latin respublica, from res '‘ entity, concern’ ' + publicus '‘ of the people, public’ '.

### Federal = National

#### Federal is government of states, central government of US

The New Oxford American Dictionary, 13

[“federal”, 3rd edition, Oxford Reference database, accessed 9-11-14, AFB]

federal /ˈfed(ə)rəl/

▶ adjective having or relating to a system of government in which several states form a unity but remain independent in internal affairs: Russia's federation treaty shares powers among Russia's federal and local governments.

■ of, relating to, or denoting the central government as distinguished from the separate units constituting a federation: the federal agency that provides legal services to the poor.

■ of, relating to, or denoting the central government of the US.

■ (Federal) US historical of the northern states in the Civil War: a loud Federal cheer was heard, proving Stonewall to be hard pressed.

### United States – Includes Agencies

#### United States includes US agencies

Words and Phrases, 6

[“United States”, Volume 43A]

D.D.C. 1982

a. The term “United States,” as used in exception for offsetting judgments to the priority given by Federal Tax Lien Act for attorney liens includes the United States Postal Service and, hence, attorneys’ lien on taxpayer’s recovery on contract claims against the Service was subordinate to Internal Revenue Service’s claims against taxpayer for unpaid employment taxes.

# \*\*\*MBI

## Lists

### Generic---List of 3

#### MBI is price, rights, and friction reduction

Wen 17, A thesis submitted for the PhD of Political Science, “Modelling Emission Allowance Prices,” https://d-nb.info/1136270116/34

By way of contrast, a market-based instrument differs from a command and control instrument and provides more flexibility and effectiveness on reducing the greenhouse gases. A market-based instrument is defined as instruments or regulations that encourage behavior through market signals rather than through explicit directives. (HoSW 97) An environmental market-based approach uses markets, prices, and other economic variables to provide incentives for polluters to reduce or eliminate emissions. There are three types of market-based instruments on environmental policy:

• A price-based instrument: it alters the prices of goods and services to reflect their relative impact. For instance, by using taxes, introducing levies or providing subsidies to reduce emissions.

• A rights-based instrument: it controls the quantity of the environmental good or service to the socially desired level. For instance, by introducing a cap-and-trade scheme or offset scheme to achieve an emission reduction goal. And

• An instrument designed to reduce market friction: it aims to stimulate a market to produce a desired environmental outcome through improving the workings of existing markets by reducing transaction costs or improving information flows. For instance, substantial gains can be made in environmental protection by removing existing explicit or implicit barriers to market activity.

#### Price, rights, friction

Zhou et al 20 [Ying Zhou1, Amelia Clarke1, and Stephanie Cairns2 1 School of Environment, Enterprise and Development (SEED), University of Waterloo, Waterloo, Ontario, Canada 2 Smart Prosperity Institute, Ottawa, Ontario, Canada, Building Sustainable Communities Through Market-Based Instruments. In Environmental Policy (eds T. Walker, N. Sprung-Much and S. Goubran). https://doi.org/10.1002/9781119402619.ch14, poapst+rodak]

14.2.4 Market‐Based Instruments and Water

Market‐based instruments are policy tools that encourage behavioral change through market signals (Scoccimarro and Collins 2008). They are used to mitigate the limitations of conventional regulatory and legislative approaches (Hendrickson et al. 2011) and serve as implementation tools for LA21s.

The use of MBIs could help overcome the barriers associated with the SCP and implementation. Pricing signals and market power have the potential to stimulate behavior changes through economic rationales (Hendrickson et al. 2011). This research focuses on three types of MBIs: price‐based instruments, rights‐based instruments, and friction reduction instruments. Priced‐based instruments address environmental impacts using pricing and economic signals (Sargent 2002; Whitten et al. 2003; Clarke and MacDonald 2012). This type of MBI can also be classified as a financial instrument that diversifies local revenue streams (Jacobs 1993; Roseland 2000). Rights‐based instruments are those that control the type of goods and services produced (Whitten et al. 2003). Contrastingly, through price‐based approaches, the government is able to establish limits on the quantity or quality of goods and services, while the price reflects the market's response (Whitten et al. 2003). Finally, friction reduction instruments aim to influence behavioral change through improving market functions, addressing market power (monopoly), externalities, and information failures (Hahn and Stavins 1991; Clarke and MacDonald 2012).

To move beyond the current limitations, there is a need for the implementation of innovative approaches to sustainability. The traditional approaches are often “command‐and‐control” regulations, where standards are uniform and environmental burdens are equally shared (Stavins 2003). These conventional approaches effectively limit environmental pollutants and distribute the costs equally (Stavins and Whitehead 1996). Thus, traditional approaches are inadequate in aligning economic drivers with sustainability objectives (Stavins 2003; Hendrickson et al. 2011). Moreover, they may also result in unacceptable expenses and high societal costs as individuals vary in their contribution to environmental problems (Stavins and Whitehead 1996). Furthermore, utilizing “command‐and‐control” regulations to achieve sustainable community development tends to result in nothing more than compliance (Stavins 2003). Little or no financial incentive exists for those who strive to achieve objectives beyond the minimal requirements and standards, while also discouraging changes in policies and governance structure (Roseland 2000; Stavins 2003).

By contrast, MBIs for sustainable community development offer greater flexibility, accountability, and transparency (Stavins 2003; Hendrickson et al. 2011). They also help to improve the allocation of environmental resources and the dissemination of information for individuals and society (Pirard and Lapeyre 2014). The financial incentives associated with MBIs motivate communities to better manage their community capitals, especially natural capitals (Roseland 2000; Henderson and Norris 2008). Additionally, MBIs are intended to be market‐friendly and improve market efficiency if adequately designed (Hendrickson et al. 2011). MBIs can thus be used on their own or in conjunction with regulations.

Water pricing is often a mechanism to reduce water demands and consumption (Ruijs et al. 2008). Moreover, price structure (e.g., flat rates, unit pricing) has more influence on water demand and consumption compared to price level (Reynaud and Renzetti 2004). Cities in China with block pricing structures experienced a decrease in residential water demand by 3–5% compared with cities that had flat rates (Zhang et al. 2017). In fact, using pricing is considered to be more cost‐effective for demand management than “command‐and‐control” regulations or other nonprice conservation methods (Olmstead and Stavins 2009). Aside from demand management, other well‐known examples of MBIs for water include effluence charges and tradable permits (Stavins 2003, Cantin et al. 2005). Importantly, MBIs must not be regressive, and vulnerable populations also need to be considered. Thus, the proper design of MBIs remains crucial to alleviate these concerns.

Market‐based instruments for water management have two key roles: (i) a financial role as a mechanism for generating municipal revenue, and (ii) an economic role for signaling the scarcity value and the real cost of water (Dinar and Saleth 2005). MBIs for water could also promote equity by identifying usage of individual users and points of pollution, thus accurately awarding beneficial behaviors and penalizing negative ones (Dinar and Saleth 2005). However, it is important to note that they also have their limitations. For example, there is no guarantee that one will gain advantages from using MBIs because two critical factors affect the use and effectiveness of the MBIs: (i) the nature of the environmental problem/objective; (ii) the state of the market and the government (Whitten et al. 2003; Broughton and Pirard 2011).

The success of MBIs is determined by the nature of the environmental problem/objective. To start, the gain from MBIs for environmental problems must exceed their cost to ensure success (Guerin 2003). Point sources and stationary environmental problems are more amenable to the use of market instruments compared to nonpoint sources and mobile environmental problems (National Center for Environmental Economics 2015). However, MBIs will be more cost‐effective and beneficial if there is a higher degree of heterogeneity among the polluters (Stavins 2003). Since the degree of uncertainty regarding environmental problems affects effectiveness of MBIs, they tend to be more effective (Stavins 2003; National Center for Environmental Economics 2015). Lastly, clearly defining rights and responsibilities, as well as who pays and who will benefit, is necessary to ensure the effectiveness of an MBI (Whitten et al. 2003).

The market and the government have also played an influential role in the use and effectiveness of MBIs. Sufficient levels of political support are required to ensure the success of such instruments (Whitten et al. 2003). Moreover, transparency and information disclosure are critically important (National Center for Environmental Economics 2015). Lack of information is likely to discourage the proper design and use of MBIs (Kulsum 2012). Furthermore, market competitiveness also determines the design and price of MBIs (National Center for Environmental Economics 2015). Therefore, MBIs are by no means a replacement for the traditional command‐and‐control approach of implementation. In fact, they work to complement the traditional approach because each of the two could operate differently under different circumstances. The appropriate choice of MBIs will be essential in ensuring their successful implementation and practical results. This chapter explores the potential of MBIs as an alternative or complement to implementing water‐related goals in the LA21s.

### Generic---List of 4

List = tax, trade, market creation, eliminating subsidies

#### MBI’s exclude performance standards (e.g. RFS, CAFO’s, etc) command-and-control, and subsidies. There are four topical areas: taxes, TPS (tradeable permits), market creation, and eliminating subsidies.

Stavins ’98 [Robert; September 22; Albert Pratt Professor of Business and Government, and Faculty Chair, Environment and Natural Resources Program, John F. Kennedy School of Government, Harvard University; Public Policies for Environmental Protection, “Market-Based Environmental Policies,” ed. Portney and Stavins, Harvard University Resources for the Future]

1. WHAT ARE MARKET-BASED POLICY INSTRUMENTS?

Nearly all environmental policies consist of two components, either explicitly or implicitly: the identification of an overall goal (either general or specific, such as a degree of air quality or an upper limit on emission rates) and some means to achieve that goal. In practice, these two components are often linked within the political process, because both the choice of a goal, and the mechanism for achieving that goal, have important political ramifications.1 This chapter focuses exclusively on the second component, the means — the “instruments” — of environmental policy, and considers, in particular, economic-incentive or market-based policy instruments.

1.1 A Definition

Market-based instruments are regulations that encourage behavior through market signals rather than through explicit directives regarding pollution control levels or methods.2 These policy instruments, such as tradable permits or pollution charges, are often described as “harnessing market forces”3 because if they are well designed and implemented, they encourage firms (and/or individuals) to undertake pollution control efforts that both are in those firms’ (or individuals’) interests and that collectively meet policy goals.

By way of contrast, conventional approaches to regulating the environment are often referred to as “command-and-control” regulations since they allow relatively little flexibility in the means of achieving goals. Earlyenvironmentalpolicies,suchastheCleanAirActof1970andtheCleanWaterActof1972, relied almost exclusively on these approaches.4

In general, command-and-control regulations tend to force firms to shoulder similar shares of the pollution-control burden, regardless of the relative costs to them of this burden.5 Command-and-control regulations do this by setting uniform standards for firms, the most prevalent of which are technology-based and performance-based standards. Technology-based standards specify the method, and sometimes the actual equipment, that firms must use to comply with a particular regulation. For example, all electric utilities might be required to employaspecifictypeofscrubbertoremoveparticulates. A performance standard sets a uniform control target for firms, while allowing some latitude in how this target is met. For example, a regulation might limit the number of allowable units of a pollutant released in a given time period, but might not dictate the means by which this is achieved.

Holding all firms to the same target can be expensive and, in some circumstances, counterproductive. While standards may effectively limit emissions of pollutants, they typically exact relatively high costs in the process, by forcing some firms to resort to unduly expensive means of controlling pollution. Because the costs of controlling emissions may vary greatly among firms, and even among sources within the same firm, the appropriate technology in one situation may be inappropriate in another. Thus, control costs can vary enormously due to a firm’s production design, physical configuration, age of its assets, or other factors. One survey of eight empirical studies of air pollution control found that the ratio of actual, aggregate costs of the conventional, command-and-control approach to the aggregate costs of least-cost benchmarks ranged from 1.07 for sulfate emissions in the Los Angeles area to 22.0 for hydrocarbon emissions at all domestic DuPont plants.6

Furthermore, command-and-control regulations tend to freeze the development of technologies that might otherwise result in greater levels of control. Little or no financial incentive exists for businesses to exceed their control targets, and both technology-based and performance-based standards discourage adoption of new technologies. A business that adopts a new technology may be “rewarded” by being held to a higher standard of performance, but is not given the opportunity to benefit financially from its investment, except to the extent its competitors have even more difficulty reaching the new standard.

1.2 Characteristics of Market-Based Policy Instruments

The two most notable advantages that market-based instruments offer over traditional command- and-control approaches are cost effectiveness and dynamic incentives for technology innovation and diffusion.

In theory, if properly designed and implemented, market-based instruments allow any desired level of pollution cleanup to be realized at the lowest possible overall cost to society, by providing incentives for the greatest reductions in pollution by those firms that can achieve these reductions most cheaply.7 Rather than equalizing pollution levels among firms (as with uniform emission standards), market-based instruments equalize the incremental amount that firms spend to reduce pollution (their marginal cost).8

It is important to recognize that command-and-control approaches could — theoretically — achieve this cost-effective solution, but this would require that different standards be set for each pollution source, and, consequently, that policy makers obtain detailed information about the compliance costs each firmfaces. Such information is simply not available to government. By contrast, market-based instruments provide for a cost-effective allocation of the pollution control burden among sources without requiring the government to have this information.

In contrast to command-and-control regulations, market-based instruments have the potential to provide powerful incentives for companies to adopt cheaper and better pollution-control technologies. This is because with market-based instruments, it always pays firms to clean up a bit more if a sufficiently low- cost method (technology or process) of doing so can be identified and adopted.9

1.3 Categories of Market-Based Instruments

Market-based instruments can be considered within four major categories: pollution charges; tradable permits; market barrier reductions; and government subsidy reductions.10

Pollution charge systems assess a fee or tax11 on the amount of pollution that a firm or source generates.12 Consequently, it is worthwhile for the firm to reduce emissions to the point where its marginal abatement cost is equal to the tax rate. Firms will thus control pollution to differing degrees, with high-cost controllers controlling less, and low-cost controllers controlling more. A challenge with charge systems is identifying the appropriate tax rate. Ideally, it should be set equal to the benefits of cleanup at the efficient level of cleanup, but policy makers are more likely to think in terms of a desired level of cleanup, and they do not know beforehand how firms will respond to a given level of taxation.

A special case of pollution charges is a deposit refund system , where consumers pay a surcharge when purchasing potentially polluting products, and receive a refund when returning the product to an approved center (for recycling or disposal). A number of states have implemented this approach through “bottle bills,” to control litter from beverage containers and to reduce the flow of solid waste to landfills, and the concept has also been applied to lead-acid batteries.13

Tradable permits can achieve the same cost-minimizing allocation of the control burden as a charge system, while avoiding the problem of uncertain responses by firms.14 Under a tradable permit system, an allowable overall level of pollution is established and allocated among firms in the form of permits.15 Firms that keep their emission levels below their allotted level may sell their surplus permits to other firms or use them to offset excess emissions in other parts of their facilities.

Market barrier reductions can also serve as market-based policy instruments. In such cases, substantial gains can be made in environmental protection simply by removing existing explicit or implicit barriers to market activity. Three types of market barrier reductions stand out: (1) market creation, as with measures that facilitate the voluntary exchange of water rights and thus promote more efficient allocation and use of scarce water supplies; (2) liability rules that encourage firms to consider the potential environmental damages of their decisions; and (3) information programs, such as energy-efficiency product labeling requirements.

Government subsidy reductions are the fourth and final category of market-based instruments. Subsidies, of course, are the mirror image of taxes and, in theory, can provide incentives to address environmental problems. In practice, however, many subsidies promote economically inefficient and environmentally unsound practices. This market distortion received much attention in the 104th Congress under the rubric of “corporate welfare,” an example of which is the below-cost sale of timber by the U.S. Forest Service.

In the simplest models, pollution taxes and tradeable permits are symmetric, but that symmetry begins to break down in actual implementation.16 First, permits fix the level of pollution control while charges fix the costs of pollution control. Second, in the presence of technological change and without additional government intervention, permits freeze the level of pollution control while charges increase it. Third, with permit systems as typically adopted, resource transfers are private-to-private, while they are private-to-public with ordinary pollution charges. Fourth, while both charges and permits increase costs on industry and consumers, charge systems tend to make those costs more obvious to both groups. Fifth, permits adjust automatically for inflation, while some types of charges do not. Sixth, permit systems may be more susceptible to strategic behavior.17 Seventh, significant transaction costs can drive up the total costs of compliance, having a negative effect under either system, but particularly with tradeable permits.18 Eighth and finally, in the presence of uncertainty, either permits or charges can be more efficient, depending upon the relative slopes of the marginal benefit and marginal cost functions19 and any correlation between them.20

The degree of abatement achieved by a pollution tax and the tax's effect on the economy will depend — in part — on what is done with the tax revenue. There is widespread agreement that revenue recycling (that is, using pollution tax revenues to lower other taxes) can significantly lower the costs of a pollutiontax21. Someresearchershavesuggested,further,thatalloftheabatementcostsassociatedwith a pollution tax can be eliminated through revenue recycling in the form of cuts in taxes on labor.22 But pollution taxes can exacerbate distortions associated with remaining taxes on investment or labor. There is now common recognition that environmental taxes impose their own distortions that are at least as great as those from labor taxes.23 Using revenues from an environmental tax (or from the auction of pollution

permits24) to reduce labor taxes can reduce the efficiency costs of the environmental tax, but — in most cases — the substitution of an environmental tax for an investment or labor tax will reduce welfare, apart from the potentially beneficial environmental consequences of the tax. Thus, the primary justification for environmental taxes should be their environmental benefits, not reform of the tax system per se.

#### MBI’s use one of four market signals: taxes, permits, subsidy reduction, or market creation.

Zhang ’13 [Bei; June 20; Chinese Journal of Population Resources and Environment, “Market-based solutions: An appropriate approach to resolve environmental problems,” Volume 11]

Definition of the market-based solutions

In the eyes of the economists, the environmental factor is valuable and should not be cost free. When consumers buy products, the price they pay includes a certain amount of money for the environmental consideration, such as environmental harm and any recycling process. Market-based instruments should offer the environmental factor a proper price in the production and consumption process and present flexibility and distinction at the same time. This kind of economic method stops people undertaking a monetary burden regarding pollution. “Market-based instruments are regulations that encourage behavior through market signals rather than through explicit directives regarding pollution control levels or methods” (Stavins Citation1998).

A different approach to work out the environmental problem is a traditional method called “command-and-control theory” approach. This approach compels all the companies to implement similar pollution control strategies, irrespective of the relative cost (Hahn and Stavins Citation1992). Companies and individuals are informed how much pollution they may let out, the kind of technology to apply, and even the certain manufacturing procedures to follow. However, compelling all companies and individuals to obey the same rules or use the same technology or facilities may be costly. In addition, there will be fewer motives for companies to go further than the regulations and laws require them to follow.

Advantages of market-based solutions

In terms of the market-based instruments, which provide great flexibility and financial incentives, they can spur producers to adopt the new technologies and facilities to pursue better results in order to solve the environmental problems. From the definitions of market-based instruments and command-and-control instruments, we can figure out the comparative advantages of the market-based solutions: cost effectiveness and motivation for technology innovation.

In a theoretical view, if well-designed and carried out properly, market-based policies “allow any desired level of pollution cleanup to be realized at the lowest overall cost to society, by providing incentives for the greatest reductions in pollution by those firms that can achieve these reductions most cheaply” (Stavins Citation2003). Compared with the command-and-control measures, which set the same criterion for all companies, market-based policies equate the increased amount which companies use for reducing pollution. More specifically, it offers a motive for companies to equate abatement costs at the margin, thereby reaching the fixed standard of environmental quality in a cost-effective way.

What the command and control measures ignore is that the costs of dealing with environmental problems vary greatly according to the production, labor force, technology, the quality of equipment and other factors among different firms in the various industries. The way of setting uniform standards for all the firms may be inappropriate and costly in fact. In addition, it leaves little flexibility for companies to pursue better pollution reduction solutions.

As mentioned above, market-based solutions give the companies a greater incentive to use the new technologies and equipment. Incentives which will influence the individual's behavior to a considerable extent. People will accept a policy more easily if either the benefits increase or the cost decreases. One may pour their wastes to a close-by river if they do not need to pay for that. This can be regarded as a result of “tragedy of the commons” which means that if people can use valuable resources such as the water or fishery industry without restriction, the resources will be damaged or exhausted by people who want to share its value (Anderson and Leal Citation2001), because there is no incentive to stop gaining benefits in such an easy and cheap way. That is what market-based solutions try to change in the environmental protection process. Market-based solutions connect the “incentive” with “economy” and show that making use of an environmental protective incentive in an appropriate way could finally achieve a cost-efficient process. This is how the market-based solutions operate, they connect the environmental missions with the financial incentives. Because of this factor, the market-based solution often “pays firms to clean up a bit more if the sufficiently low-cost method (technology or process) of doing so can be identified and adopted” (Stavins 2003). Moreover, this kind of incentive drives companies to try and develop better technologies in their own interests and, ultimately, achieve a way to reduce pollution.

Major categories of market-based solutions

In terms of the different categories of market-based solutions, four major ways should be taken into account: “Pollution charges; tradable permits; market barrier reductions; and government subsidy reductions” (Stavins 2003).

Pollution charge

Pollution charge systems “assess a fee or tax on the amount of pollution that a firm or source generates” (Stavins Citation2001). The companies are willing to reduce the pollution to the level when the marginal abatement cost can equate the fee they pay.

The deposit refund system, which is regarded as a special case within the pollution charges, is widely used among many countries. The deposit refund system asks individuals to pay a deposit for the bottles when they buy the products and pay back the money to them when the bottles are returned. Many countries have carried out this method through “bottle bills” (Menell Citation1990).

In Norway, more than 90% of beer and soft drink bottles which have deposits are re-cycled; however, only 70% of wine bottles are recycled. The similar phenomenon is found in car hulks. In Sweden, the effect of the car hulks project tends to be limited due to its cheap deposit. While in Norway, with a deposit more than three times than that in Sweden, over 90% are re-cycled (Wrobel Citation1990). To some extent, a higher deposit always brings greater responses.

Furthermore, the deposit refund system can be used in other similar cases, such as tires and diapers, where disposal expense is very high if individuals throw them away randomly.

There are many issues concerning tire recycling in many countries. In Canada, Ontario holds a US$5 fee deposit for each tire bought. If the buyer returns the used tire to the re-cycle station, the deposit will be returned, then the station will pay for dealing with the used tires in a proper way (Wrobel 1990). This kind of charge for the environment not only brings money to the re-cycling process, but also encourages people to choose environmentally protective ways. To take the disposable diapers as an example, people prefer to use them because of their convenience and cheap price compared with other choices like diaper services. However, a large amount of used diapers become a big problem for the dump sites. In this way, people should be charged certain sales tax when they buy the products for the rubbish they make. Life can be easier and cheaper, but people should benefit the environment as well. Furthermore, this policy also encourages people to turn to choices which are more environmentally protective (NRDC 1997).

These daily cases show that individuals play important roles in the market-based solutions. This kind of tax which brings money for the reproduction or the environmental management and governance, increase the price for the dirty products and reduce the price for cleaner ones. In this case, individuals will have an incentive to use environmental protection in their daily lives.

Tradable permits

Tradable permits could “achieve the same cost-minimizing allocation of the control burden as a charge system, while avoiding the problem of uncertain responses by firms” (Stavins 1998). After the mission (the total amount of pollution within allowance) is fixed, firms will get certain permits which allow them to share the amount in freely distributed or auction way. To use the permits effectively, companies which manage to maintain their emission below the allocated standard will either sell the extra permits or put them into their other products to neutralize the emission which surpasses the standard. Meanwhile, companies which have excess emissions could buy emission reductions from other companies to meet their own demand. Thus, companies driven by the financial benefits will decrease their emissions as much as they can.

Tradable permits as an effective market-based solution are widely used in the US (US Environmental Protection Agency 1992). Several major federal markets permit solutions that contribute a lot to the environmental problems discussed below.

Lead trading

The lead trading strategy started during the 1980s with the aim of offering gasoline refiners a more flexible way to achieve emission criterion by reducing the lead content of petrol by 10% of its earlier standard. The Environmental Protection Agency (EPA) then ratified the lead credits transaction within the refinery and originated a project to let refineries to save their lead credits in the bank which achieved good effects (Hahn and Hester Citation1989). Though the gains of the marketing process are hard to estimate, the strategy seems to be a comparatively cost-effective solution. The transactions among companies became more frequent than that in previous environmental trading. EPA assessed that the lead trading project was 20% more cost effective than other programs, approximately $250 million per year (Schwartz et al. Citation1985.).

CFC trading

Another application of the marketable permits, called CFC Trading in US, is designed to promote the Montreal Protocol, an international agreement to protect the ozone layer. The agreement aims to reduce the use of CFCs, one of the most detrimental chemical gases in ozone depletion. The market formulates restrictions on the production and consumption processes of CFCs and distributes an allowance which restricts such activities (Stavins 2003). Due to the fact that various kinds of CFCs lead to various influences on ozone depletion, each CFC is allocated specific weight according to its depletion potential (Hahn and McGartland Citation1989). In this way, companies have to get the allowance first to produce a certain content of CFCs. The market-based solution which set a tax on CFCs provides great flexibility to the issue of the CFCs. Although the total benefits in the CFC market are hard to calculate due to lacking of statistics involving these issues, the comparatively cheap trade costs connected with trading is regarded as a cost-effective way compared with other approaches (Stavins 1998).

Market barrier reductions

Market barrier reductions have great influence on eliminating the existing frictions in market activity in order to archive the benefits in the environmental protective issues. By creating a market in water rights, this solution promotes voluntary market-based exchange of water rights and therefore facilitating more effective distribution and makes better use of water resources among competing users.

In the United States, an agreement was achieved that farmers in the Imperial Irrigation District (IID) supplied 100,000 acre-feet of water each year to the Metropolitan Water District (MWD) with increasing urban requirement for water (Willy, Citation1988). This program resolved the imbalance between supply and demand of a scarce water resource. For urban government and individuals, the water bill for the same quantity of water would be reduced to a certain degree.

Another effective way to eliminate the market barriers is to promote environmental issues by offering more information to people in order to influence their choices in the consumption process. At the same time, it creates incentives for environmental protection among firms. The “dolphin-safe” labels on canned tuna lets consumers know that the tuna are captured without injuring the dolphins. This solution delivers information to buyers that labeled tuna will contribute to the environment protection and therefore achieve a better sales volume, which will optimize the tuna capture process in the long run (Roe and Sheldon Citation2007.).

Government subsidy reductions

From the theoretical view, “since subsidies are the mirror image of taxes”, they can provide incentives to address environmental problems; while in practice, many subsidies are thought to “promote economically inefficient and environmentally unsound practices” (Stavins 1998).

The US government allocates many subsidies into energy areas such as fossil fuels which draw a lot of attention due to the climate change issues. An EPA research shows that reducing these subsidies may contribute a lot to CO2 emission reduction (Shelby et al. Citation1997). Another study shows that because of the government's involvement in energy areas via tax and other individual projects, US$17 billion was paid by the Federal government every year (Koplow Citation1993). In this way, a multiple share of the subsidies and projects will eliminate the dependence on fossil fuels to a considerate extent. In fact, traditional technologies take up 90% of the subsidies and even within fossil fuels, natural gas, which is regarded as the new energy most friendly to the environment, gets merely around 20% of the subsidies (Stavins 1998). Luckily, as time passes by, renewable energy gains more and more attention and governments will support the project for renewable energy sources and energy efficiency.

#### 4 categories: 1-pollution charges, 2-tradable permits, 3-market friction reductions, subsidy reductions

Stavins 1 (Robert, “Experience with Market-Based Environmental Policy Instruments,” Resources for the future, https://media.rff.org/documents/RFF-DP-01-58.pdf)

1.3 Categories of Market-Based Instruments

I consider market-based instruments within four major categories: pollution charges; tradable permits; market friction reductions; and government subsidy reductions (Organization for Economic Cooperation and Development 1994a, 1994b, 1994c, 1994d).

Pollution charge systems assess a fee or tax on the amount of pollution that a firm or source generates (Pigou 1920). Consequently, it is worthwhile for the firm to reduce emissions to the point where its marginal abatement cost is equal to the tax rate. A challenge with charge systems is identifying the appropriate tax rate. Ideally, it should be set equal to the marginal benefits of cleanup at the efficient level of cleanup, but policy makers are more likely to think in terms of a desired level of cleanup, and they do not know beforehand how firms will respond to a given level of taxation. A special case of pollution charges is a deposit refund system, where consumers pay a surcharge when purchasing potentially polluting products, and receive a refund when returning the product to an approved center, whether for recycling or for disposal (Bohm 1981; Menell 1990).8

Tradable permits can achieve the same cost-minimizing allocation of the control burden as a charge system, while avoiding the problem of uncertain responses by firms.9 Under a tradable permit system, an allowable overall level of pollution is established and allocated among firms in the form of permits.10 Firms that keep their emission levels below their allotted level may sell their surplus permits to other firms or use them to offset excess emissions in other parts of their facilities.

Market friction reductions can also serve as market-based policy instruments. In such cases, substantial gains can be made in environmental protection simply by reducing existing frictions in market activity. Three types of market friction reductions stand out: (1) market creation for inputs/outputs associated with environmental quality, as with measures that facilitate the voluntary exchange of water rights and thus promote more efficient allocation and use of scarce water supplies; (2) liability rules that encourage firms to consider the potential environmental damages of their decisions; and (3) information programs, such as energy-efficiency product labeling requirements.

Government subsidy reductions are the fourth category of market-based instruments. Subsidies, of course, are the mirror image of taxes and, in theory, can provide incentives to address environmental problems.11 In practice, however, many subsidies promote economically inefficient and environmentally unsound practices.

### Generic---List of 6

List = tax, charges, levies, permit schemes, deposit refund, subsidies

#### MBI’s are a list of 6 things – NOT c&c or voluntary agreements

INTOSAI Working Group on Environmental Auditing (WGEA) 2016 [INTOSAI Working Group on Environmental Auditing (WGEA) at The Audit Board of The Republic of Indonesia, “Market Based Instruments for Environmental Protection and Management,” October 2016, <https://www.environmental-auditing.org/media/5370/wgea-instrument-protection-and-management_isbn-ok.pdf>, Bittner]

Governments can use a range of environmental policy instruments to implement their environmental policies and deliver their commitments to international environmental agreements. Environmental policy instruments can roughly be divided into three broad categories11:

1. Regulatory/administrative instruments (so called “command-and-control”). These are regulations, directives, bans, permits, etc., which are prescriptive and provide the private sector with relatively little flexibility in achieving their goals.

2. Market-based instruments (MBIs) are taxes, charges, levies, tradable permit schemes, deposit refund systems, subsidies etc. These instruments can be used to provide producers and consumers with incentives to change their behaviour towards more efficient use of natural resources by reducing consumption, and to look for more effective ways of making environmental progress while giving them flexibility in how they do so (see chapter 3).

Market-based instruments can be implemented in a systematic manner, across an economy or region, across economic sectors, or by environmental medium (e.g. water).

3. Voluntary agreements and information strategies/ moral suasion. These are voluntary environmental measures independent of government requirement, such as bilateral agreements between the government and private firms and voluntary commitments made by firms, e.g. implementation of environmental management systems, publishing environmental reports. Voluntary changes in behaviour could be accomplished also via education, transfer of knowledge, training, persuasion, etc.



## Price/Quantity

### Generic---Price or Quantity-Based Instruments

#### MBI’s are price- or quantity-based instruments

INTOSAI Working Group on Environmental Auditing (WGEA) 2016 [INTOSAI Working Group on Environmental Auditing (WGEA) at The Audit Board of The Republic of Indonesia, “Market Based Instruments for Environmental Protection and Management,” October 2016, <https://www.environmental-auditing.org/media/5370/wgea-instrument-protection-and-management_isbn-ok.pdf>, Bittner]

2.2 What are market-based environmental policy instruments (MBIs)?

Market-based instruments (MBIs), also referred to as “market-based economic instruments” or “economic instruments” (EIs)12, are tools for governments to implement environmental policy. These tools “affect estimates of the costs and benefits of alternative actions open to economic agents”13. Or, to put it more simply, if a tool affects the cost or price of goods and services in the market, then it is a market-based economic instrument. This definition focuses on the economic signals and incentives the instrument provides. If it changes the cost or price of a good (e.g., plastic bag), service (e.g., waste collection), activity (e.g., waste dumping), input (e.g., materials), or output (e.g., pollution) then it is a market-based instrument14 .

How Do They Work?

MBIs help to assign “the right price” to resources that are not otherwise appropriately valued in the market, such as water, clean air, ecosystem services, biodiversity, and marine resources15. “Getting the price right” means that it properly reflects the resource cost or cost of the pollution impacts and reflects the principle of “full-cost recovery” or the “user pays principle”16. This provides producers and consumers with incentives to change their behaviours and look for more effective ways of making environmental progress, while giving them flexibility in how they do so. Some MBIs through raising prices also result in revenueraising.

Price based instruments (taxes/charges, subsidies, deposit refund systems, feed-in-tariffs, etc) are used to lever behavioural change by changing prices in existing markets. Quantity based instruments (tradable permits/emissions trading schemes) influence behavioural change by specifying the ‘amount’ of new rights/obligations and allowing the market to set their price.

Whether by influencing prices (through taxation or incentives), or setting absolute quantities (emissions trading), or quantities per unit of output (emission charges), MBIs implicitly acknowledge that firms differ from each other and therefore provide flexibility that can substantially reduce the costs of environmental improvements17. In theory, if properly designed and implemented, market-based instruments will allow any desired level of pollution clean up to be realized at the lowest overall cost to society, by providing incentives for the greatest reductions in pollution by those firms that can achieve these reductions most cheaply18 .

#### MBIs are price or quantity instruments – not CAC

Klassert and Mockel 13 [Christian Klassert, Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany. and Stefan Möckel Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany, Improving the Policy Mix: The Scope for Market-Based Instruments in EU Biodiversity Policy, Environmental Policy and Governence, Volume 23, Issue 5, September/October 2013, pg 311-322, poapst+rodak]

Therefore, it has been recommended to improve the cost-effectiveness of EU biodiversity policy, meaning to lower the cost at which a given ecological result can be achieved or achieving a better result with a given budget (Wätzold et al., 2010). Current research on policy mixes highlights that MBIs provide an interesting option to increase the cost-effectiveness of the pursuit of ecological objectives beyond the level provided by command and control (CAC) regulations (Ring and Schröter-Schlaack, 2011a). The idea behind MBIs is to lower the costs of achieving a policy objective compared with CAC by providing incentives for each actor to contribute to it according to his or her individual costs, instead of imposing a standard contribution on all relevant actors no matter what their compliance costs are. MBIs can generally be divided into price instruments, such as taxes, and quantity instruments, such as permit trading, of which the latter are preferable if deviations from the degree of environmental protection are more costly to society than deviations in the price (Weitzman, 1974). Price instruments can further be divided into those providing negative incentives, such as taxes, charges or fees, which are preferably used to discourage negative environmental externalities, and those with positive incentives, such as subsidies, which are better at supporting the provision of positive environmental externalities and public goods (cf. Baumol and Oates (1988)). As an example of the potential cost-effectiveness of MBIs, a literature review by Goulder and Parry (2008) found cost savings between 40 and 95 percent for different MBIs targeting emissions, compared to equally effective CAC regulations.

#### Defines both pretty clearly and the distinction between what they do but that they both have the same goals/effects = unified neg ground

Page ’9 [Edward; September 11; Department of Politics and International Studies (Warwick University) and Visiting Research Fellow, Department of Political Science (Uppsala University); Paper presented to Panel PN210: ‘Improving the Climate Regime: Cosmopolitan Solutions’, 5th ECPR General Conference, Potsdam University; “Licenses to Kill? Cosmopolitanism, Climate Change and Global Emissions Trading,” https://warwick.ac.uk/fac/soc/pais/people/page/publications/cosmopolitanemissionstrading.pdf]

Market-based (or ‘economic’) instruments (MBIs) promote environmental quality by making firms and other agents internalise the full social cost of their environmental behaviour in absence of subsidies, voluntary agreements or specific emissions reduction regulations. The idea is that if users face a price for the environmental resources such as the atmospheric sink that they consume, they will use the goods, services and energy sources that degrade these resources more efficiently and consequently more sparingly. There are essentially two species of MBI relevant for climate change policy: ‘price-based instruments’ (introducing taxes, charges or levies on greenhouse gas emitting activities) and ‘quantity-based instruments’ (which introduce markets in tradable emissions allowances underpinned by a scheme-wide cap on the emissions of participants over specified commitment periods) (Nordhaus, 2007, 35ff; Helm, 2005, 207-16).4 In idealised circumstances, price-based and quantity-based instruments will converge in the social benefits they deliver relative to either policy inaction or rival policy instruments. In such circumstances, the difference between the two approaches is simply the way in which the social costs previously externalised become internalised. Regulators, that is, either (i) intervene directly by charging a uniform levy on each unit of pollution emitted or (ii) create a market in allowances affording the right to emit pollution the prices of which are set indirectly though market activity. In the real word, however, a number of factors can lead to divergence in the environmental effectiveness and cost efficiency of pollution taxes and emissions trading schemes, notably, uncertainty about the marginal costs and benefits of mitigation; political feasibility; and international harmonisation (Hepburn, 2006; Metcalf, 2009, 73-8; Nordhaus, 2007).

#### Quantity mech = permit or cap-and-trade system; Price mech = carbon tax – both can be either upstream or downstream

Pizer ’99 [William; July; Senior Fellow at Resources for the Future; Climate-Issue Briefs; “Choosing Price or Quantity Controls for Greenhouse Gases,” https://media.rff.org/documents/RFF-CCIB-17.pdf]

A quantity mechanism—usually referred to as a permit or cap-and-trade system—works by first requiring individuals to obtain a permit for each ton of carbon dioxide they emit, and then limiting the number of permits to a fixed level.1 This permit requirement could be imposed on the individuals who actually release carbon dioxide into the atmosphere by burning coal, petroleum products, or natural gas. However, unlike emissions of conventional pollutants which depend on a variety of other factors, carbon dioxide emissions can be determined very accurately by the volume of fuel being used. Rather than requiring users of fossil fuels to obtain permits, we could therefore require producers to obtain the same permits. This has the advantage of involving far fewer individuals in the regulatory process, thereby reducing both monitoring and enforcement costs (see the papers by Carolyn Fischer, Suzi Kerr and Michael Toman in Further Readings). This type of system has been used with considerable success in the United States to regulate both sulfur dioxide and lead.

A key element in a permit system is that individuals are free to buy and sell existing permits in an effort to obtain the lowest cost of compliance for themselves, in turn leading to the lowest cost of compliance for society. In particular, when individuals observe a market price for permits, those that can reduce emissions more cheaply will do so in order to either sell excess permits or avoid having to buy additional ones. Similarly, those who face higher reduction costs will avoid reductions by either buying permits or keeping those they already possess. In this way, total emissions will exactly equal the number of permits while only the cheapest reductions are undertaken.

A price mechanism—usually referred to as a carbon tax or emissions fee—requires the payment of a fixed fee for every ton of CO2 emitted. Like the permit system, this fee could be levied upstream on fossil fuel producers or downstream on fossil fuel consumers. Either way, we associate a positive cost with emissions of CO2 and create a fixed monetary incentive to reduce emissions. Such price-based systems have been used in Europe to regulate a wide range of pollutants (although the focus is usually revenue generation rather than substantial emissions reductions).

#### PBM = Pigouvian tax, QBM = emissions trading

Raufer ’22 [Roger; Paula Coussy; Carla Freeman; June 3; HNC Resident Professor of Energy, Resources and Environment at Hopkins Nanjing Center; CO2 Externalities Project Manager in the Economics and Environmental Evaluation Department, IFP Energies Nouvelles, Rueil-Malmaison; Director of the SAIS Foreign Policy Institute at Johns Hopkins University; Handbook of Climate Change Mitigation and Adaptation; “Emissions Trading,” p. 3237-3294]

In standard economic theory, the marginal abatement cost (MAC) of pollution control should equal the marginal social benefit (MSB) of such abatement. This means that the goal of the economic control program should be to set a control level such that the next dollar spent on pollution control purchases exactly one dollar’s worth of environmental amenities. Figure 1 illustrates the marginal abatement cost (MAC) and marginal social benefit curves (MSB).

Economists then offer two approaches to arrive at that point:

* A price-based mechanism also called a Pigouvian tax
* A quantity-based mechanism commonly referred to as emissions trading

The Pigouvian tax approach was first developed by Arthur Cecil Pigou (1877–1959), a British economist who was a professor at Cambridge. Pigou discussed the concept of externalities in his book The Economics of Welfare (Pigou 1920) and argued that a tax should be imposed on negative externalities such as pollution in order to discourage them. In the case of climate change, a Pigouvian solution would introduce a tax on GHG emissions. If the MAC of a polluter is higher than the tax, the polluter will find it more cost-effective to pay the tax and continue emitting. If the MAC is lower than the tax, then the polluter will try to abate the pollution as opposed to paying the tax (Fig. 2).

A Pigouvian tax is now considered a well-known and traditional means of bringing a modicum of market forces and therefore better market efficiency to economic situations where externalities exist. Such a tax will make it more expensive to pollute and will ensure a change in behavior by the polluting entity – forcing the polluter to either pay the tax or implement technologies to reduce pollution, whatever is more cost-effective. Despite being an efficient solution to controlling pollution, taxes introduce a political dynamic that raises questions about wealth transfer from industry to government, the distribution of this revenue, lobbying of the government by special interest groups, polluters, etc. Economists have attempted to address this wealth transfer by linking the tax with subsidies (and utilizing the revenue generated by the tax to fund such efforts), removing other taxes (so that there is tax neutrality), and similar schemes.

The quantity-based market approach, on the other hand, has an extensive background in the economics literature but is perhaps most often associated with the work of John Dales, professor of economics at the University of Toronto, and his classic 1968 book Pollution, Property and Prices (Dales 1968). In that work, Dales proposed a new market-oriented policy instrument for tackling pollution problems. Dales’ idea was to have an environmental authority issue a limited number of rights (or permits) to emit a specified pollutant and then leave the determination of the price of these permits to emitters within a market. Today, transactions in such markets are commonly called “emissions trading.” A regulator sets an overall emission limit (“cap”), which is the total quantity of a pollutant that the participants in the scheme are allowed to emit. That quantity is then divided into a number of “allowances,” and polluters are allowed to trade (i.e., buy and sell) such allowances in a market. Such “cap-and-trade” schemes have become quite popular over recent decades, and their success led to the development of carbon markets under the Kyoto Protocol. In the figure above, a cap is set at the point where MAC = MSB, which is at the point where 55% of the pollution is controlled. The “cap” of 45 units of pollution could be divided into 45 allowances, which could be bought and sold by polluters. Note that those with low marginal costs of control will put on control, rather than purchase such an allowance, and society will ultimately end up at the point where MAC = MSB; the figure also indicates that those with higher marginal costs should ultimately end up holding the allowances (Fig. 3).

#### The distinction between the two is significant

Heijmans ’22 [Roweno; August 31; Postdoc, Swedish University of Agricultural Sciences, PhD in Economics from Tilburg University; “Time Horizons and Emissions Trading,” https://www.roweno.nl/files/TimeHorizonsEmissionsTrading.pdf]

Price and quantity mechanisms are intuitively similar. A low price or a large surplus are interpreted to indicate that abatement is cheap, motivating a tightening of the emissions cap. Both mechanisms thus aim to better align supply and demand in the market for emissions. But, as the results of this paper illustrate, apparent similarities notwithstanding there is a fundamental distinction between the mechanisms. Price mechanisms use prices to update quantities, effectively turning the quantity-instrument that is cap and trade into a hybrid policy. Quantity mechanisms instead use quantities to update quantities, doubling down on the quantity aspect of emissions trading. The difference matters.

#### Market-based includes price and quantity, excludes CNC regs and distributive policy [subsidies]

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Varieties of market-based policy: Instrument choice in climate policy, Environmental Politics

We make an empirical and a theoretical contribution. First, we demonstrate the prevalence of two varieties of market-based environmental policy – price and quantity regulation – and show that they are moving toward a hybrid style of regulation. This is a two-directional process of institutional import of the two types of market-based environmental policy. Second, we advance understanding of the sources of regulatory change in comparative environmental politics by demonstrating that the emergence of domestic producer–government coalitions is the sufficient condition for policy import, as opposed to policy-maker learning. We first describe the shift from policy divergence to convergence around a new hybrid style of regulation in transatlantic climate and renewable energy policy. Second, we discuss alternative explanations before putting forward our argument on international diffusion and domestic coalitional politics to explain policy convergence. Third, we examine the sources of convergence and hybridization in the EU and the US, respectively. In conclusion, we discuss the implications of our findings for debates in comparative environmental politics and regulatory politics. Varieties of regulation in climate and renewable energy policy Price and quantity regulation are key analytical categories in economics. Transferring them to the study of comparative environmental policy allows us to unpack market-based environmental policy. Price instruments set the desired price (for a unit of pollution or renewable energy added), letting the quantity adjust. Quantity instruments set the desired quantity (of pollution reduction or renewable energy) while leveraging new regulatory markets to set the price. Our discussion thus focuses on competing varieties of market-based regulatory policy as opposed to command-and-control regulation or distributive policies (cf. Hughes and Urpelainen 2015).

### Generic---Only Cap or Tax

#### MBI’s can be upstream or downstream but must be CAT or a tax

Krupnick & Parry 2012 [Alan Krupnick [Resources for the Future, United States] & Ian Parry [Fiscal Affairs Department, International Monetary Fund], “Chapter 1. What Is the Best Policy Instrument for Reducing CO2 Emissions?” In Fiscal Policy to Mitigate Climate Change, USA: International Monetary Fund. Retrieved Jun 21, 2024, from <https://doi.org/10.5089/9781616353933.071.ch001>, Bittner]

Market-Based Policies

Comprehensive (upstream) policies. A highly effective policy for reducing CO2 emissions is a carbon tax applied upstream in the fossil fuel supply chain in proportion to the carbon content of each fuel (with refunds for any downstream capture of emissions by CCS). This tax system fully covers potential releases of CO2 from later fuel combustion. To the extent the emissions tax is passed forward, it leads to higher prices for fossil fuels (especially coal, but also natural gas and petroleum products) as well as electricity. These higher energy prices encourage all of the above emission-reduction opportunities.

Cap-and-trade systems. These can be applied to the same base as the carbon tax and are therefore about equally effective over time. That is, as the value of allowances (i.e., the emissions price) is reflected in fuel and electricity prices, the policy will exploit the same emissions reduction opportunities as under the carbon tax.

Market-based policies with partial coverage (downstream). Another possibility is market-based policies focused at the point of emissions releases by large power and industrial plants. These policies are less effective at reducing emissions than upstream systems unless they are accompanied by measures to address transportation fuels, home heating fuels, and small-scale industrial sources. For example, by itself, the EU Emissions Trading Scheme covers about half of energy-related CO2 emissions.3

Other energy taxes. Other energy taxes tend to be relatively ineffective at reducing CO2 (see Chapter 2). Excise taxes on residential and industrial electricity use only exploit one of the four main emissions reduction opportunities.4 Taxes on vehicle ownership are less effective still—even within the transport sector, they do not encourage people to drive a given vehicle less and may not (depending on how they are designed) create much demand for fuel-efficient vehicles. And while a coal tax is effective at reducing the most carbon-intensive fuel, it misses out on some opportunities exploited by a carbon tax, such as shifting from natural gas and fuel oil to nuclear and renewables and mitigation options outside of the power sector.

#### Carbon tax + cap-and-trade – both impose a cost on emissions

da Silva ’24 [António Baldaque; Professor of Finance (Adjunct) at CATÓLICA-LISBON; Center for Responsible Business & Leadership; “Sustainable Finance: An Introduction to Carbon Markets,” https://clsbe.lisboa.ucp.pt/news/sustainable-finance-introduction-carbon-markets]

There are two ways to force a price on carbon: a carbon tax (“price” mechanism) and a cap-and-trade system (“quantity” mechanism). In ideal settings, both schemes can be thought of as equivalent. In practice, the former tends to be more effective when focusing on the cost to reduce emissions (therefore, the emphasis on the “price” of emissions), while the latter is more effective when the focus is directly on the level of environmental damage (therefore, the emphasis on the “quantity” of emissions). Carbon markets are needed to implement a cap-and-trade system and are the focus of this article.

Note that both mechanisms impose a positive price (cost) on emissions, which in their absence would be zero. Therefore, if well implemented, those mechanisms are critical to curb overall emissions and, thus, facilitate a faster, steadier, and more efficient world transition to net-zero emissions (a state where the amount of GHG emissions emitted into the atmosphere equals that removed from the atmosphere).

#### MBI = cap or tax

Metcalf G E 2009 Market-based policy options to control US

greenhouse gas emissions J. Econ. Perspect. 23 5–27

For economists, the obvious choice is to move toward market-based environmental mechanisms that put a price on greenhouse gas emissions. The two main approaches are a carbon tax and a cap-and-trade system of marketable permits for emissions. These market-based approaches are superior to regulatory approaches in a number of dimensions. They ensure that all polluters, regardless of industrial sector, face the same marginal cost of abatement—a necessary condition for efficiency. They provide the right incentive to shift the larger pollution reductions from firms or sectors with high marginal abatement costs to those with low marginal abatement costs. Pricing pollution also encourages innovation, given the potential for reducing pollution at lower cost with new technology, and thus reduces the price that needs to be paid for emissions of greenhouse gases.

#### MBI is limited to carbon tax and cap-and-trade

Moselle 10, et al

“Harnessing Renewable Energy, p. 333

A "market-based instrument" is defined in this context to refer to an instrument that puts a price on greenhouse gas emissions (or at least on C02 emissions), either directly via a tax or indirectly via cap-and-trade. Under this definition, therefore, an instrument like tradable renewables certificates (or, hypothetically, a tax on all nonrenewable generation) does not qualify as a market-based instrument.

#### Everyone loves a good picture

Stavins 97, Policy Instruments for Climate Change: How Can National Governments Address a Global Problem?, https://media.rff.org/documents/RFF-DP-97-11.pdf



#### It’s creating a tax or a proxy market

European Environment Agency

“market-based instrument,” https://www.eea.europa.eu/help/glossary/eea-glossary/market-based-instrument

Market-based instruments seek to address the market failure of 'environmental externalities' either by incorporating the external cost of production or consumption activities through taxes or charges on processes or products, or by creating property rights and facilitating the establishment of a proxy market for the use of environmental services.

### Not Command/Control

#### MBI distinct from C/C – here is an MBI list

Oosterhuis and Papyrakis 15 [Frans, Instituut voor Milieuvraagstukken, and Elissaios, Associate Professor in Development Economics (Macroeconomics) at the Erasmus University Rotterdam. Ecosystem Services: From Concept to Practice, eds J. A. Bouma and P. J. H. van Beukering. Published by Cambridge University Press. © Cambridge University Press 2015, poapst+rodak]

The ecosystem services consumers (those who benefit from the provision of ecosystem services) can put pressure on their governments to issue regulations that ensure the continuous supply of ecosystem services. Authorities can directly regulate the provision of ecosystem services with legislation by setting restrictions on how certain types of consumption and production take place (these are often referred to as commandand-control measures). Alternatively, the authorities can also try to provide financial incentives (or disincentives) that support the provision of ecosystem services. Economists argue that such “market-based” solutions are often more cost-efficient for society as a whole. The basic idea is that MBIs ensure that ecosystem services are supplied by those who can do so at the lowest cost (see Box 8.1). Similarly, MBIs can also ensure that those who benefit the most from ecosystem services pay the highest price in return. In this chapter, we will first distinguish a number of MBIs that can be (and are being) applied in the area of ecosystem services (section 8.2). We will discuss a number of considerations and criteria that can influence the choice, design, and application of a specific MBI in a particular situation (section 8.3). Section 8.4 presents a number of MBIs that are actually used in practice and the experiences with these are used to highlight some of their relative advantages and disadvantages. The chapter concludes with a number of questions and items for discussion.

Instrument categories, types, and main features MBIs can play a significant role in biodiversity conservation and ecosystem services provision (TEEB, 2009). But what exactly do we mean by MBIs? As Pirard (2012) notes, the concept of MBIs refers to a rather heterogeneous group of policy instruments with a price component. A common feature of them is that they allow for a significant role of market mechanisms, financial (dis)incentives and/or monetary transfers in the provision of ecosystem services. Rather than trying to define MBIs, we will identify the main categories. Basically, one can make a distinction between two groups of MBIs. The first group consists of arrangements between market parties aiming at a good “match” between supply and demand of ecosystem services. This group includes instruments such as labeling and certification schemes, as well as contracts on “payments for ecosystem services” (PES). The second group consists of policy instruments applied by the government to achieve certain objectives (such as safeguarding the provision of ecosystem services with a “public good” nature) by using market mechanisms. This type of MBI includes instruments such as charges and taxes, financial penalties, tradable permits and obligations, subsidies and fiscal incentives, and public purchasing/investments. We will give a brief description of these instrument categories below.

Arrangements between market parties Some examples of instruments belonging to this group (certification and labeling schemes and ecotourism charges) are discussed in section 8.4. These types of instruments can be applied if the market barriers can be overcome with only limited government intervention (e.g. by merely setting up an institutional framework). The role of the government here is mainly to facilitate rather than directly regulate or steer a certain process. These schemes and charges capitalize on the fact that many consumers are prepared to pay a price premium for products if they know that these are produced in an environmentally and socially responsible manner. Many companies want to be sure that the products and services they offer meet sustainability requirements, including those parts of the value chain that are beyond their direct control. In other words, there is a willingness to pay (WTP) for product attributes that may not be directly observable to its user, but are related to preceding stages in the product’s life cycle. Certification and labeling schemes can play a role in ensuring that certain environmental and/or social criteria in these stages are met, and thus help to convert the WTP for these attributes into cash. Such schemes reduce transaction costs, since compliance with the criteria does not have to be checked by each single buyer of the product. Moreover, labels translate an often complicated message into a single logo. Clearly, their effectiveness and impact will depend on trust, reputation, and reliability. A mechanism for ecosystem services provision that has received much attention in academic and policy circles is the so-called PES. PES are not an instrument category, but rather a general term to indicate various ways to ensure that those who benefit from ecosystem services also pay for their provision (Farley and Costanza, 2010). PES schemes are “market based” in the sense that market transactions are used to make demand and supply of ecosystem services meet, but they differ from other MBIs discussed in this chapter in that PES are usually more “tailor-made.” Chapter 9 will discuss such contractual arrangements in more depth. 8.2.2 Instruments applied by the government User fees, charges, and taxes can be seen as price tags that are put on pollution, resource use, and certain types of economic activities that have a negative impact on ecosystem services provision (Milne and Andersen, 2012). Taxes on energy and the extraction of raw materials are examples of such “price tags” for ecosystem services in the category “provisioning services.” Likewise, pollution charges are economic incentives that discourage polluting economic activities that disturb “regulating ecosystem services” (such as the provision of clean water and air). Section 8.4 discusses how these instruments have been applied in practice, as, for example, in the case of rent-skimming charges and plastic bag taxes. Charges and taxes are a direct way of implementing the “polluter (user) pays principle” and provide an incentive to maintain ecosystem services provision. A prerequisite for their application as an ecosystem services instrument is that there is some measurable parameter on which they can be based, preferably closely related to the amount of ecosystem services provided (e.g. a tax can be dependent on the measured carbon intensity of different types of fuels as a means to limit climate change and ensure climate stability for the future generations). In effect, taxes and charges make goods and activities that limit ecosystem services provision more expensive. The challenge policy-makers face is to set the charges and taxes at the appropriate level that will allow for a specific target of ecosystem services to be reached (e.g. a certain level of carbon emissions). If they set the tax at a very low level, individuals and firms are not likely to adjust their behavior and habits that damage ecosystem services. A very high tax level is likely to face much public resistance, and may not necessarily achieve the intended result. To capture how well prices operate as signals that influence behavior, we often make assumptions about underlying price elasticities. This means we take into account the extent at which consumption or production of ecosystem services-damaging activities adjusts once a certain tax is imposed. Charges and taxes do not only discourage behavior that damages ecosystem services (when fulfilling their role as a price signal) but also generate public revenues. These additional public revenues can have multiple purposes. Governments, for example, can decide to make use of them to finance green public investment that secures ecosystem services provision (that is, dedicate financial resources for the same purpose that the original environmental tax was adopted in the first place). Alternatively, governments can view these additional public revenues as a substitute for existing unpopular taxes. For example, environmental taxes could allow governments to reduce taxes imposed on employment, particularly for those economies suffering from high unemployment rates. Financial penalties are a similar mechanism that aims at disincentivizing behavior that limits ecosystem services provision (Jack, 2010). However, whereas taxes and charges allow for the legitimate option to “pollute and pay,” financial penalties are imposed because those limiting ecosystem services provision commit an offense, and should be hence fined for their behavior. While taxes and charges are often collected on any activity that might limit ecosystem services provision, financial penalties assume that uninterrupted ecosystem services provision should be the status quo and any deviation from it should face some form of monetary punishment. In the case of limiting hunting, for example, one could impose a charge in the form of a license (or even a tax per hour of hunting activity) that would discourage many potential hunters to engage in hunting (naturally this would disproportionately affect low-income potential hunters). A financial penalty, instead, would typically presume that hunting (e.g. during certain periods of the year) is illegal and all non-compliants identified should face a certain financial penalty dependent on the extent of the offense. Again, compliance might not be full, given that some hunters might wish to take the risk of being fined. In both the case of taxes/charges and penalties, the outcome in terms of ecosystem services provision might be very similar, dependent on how effective the design of the instruments is. Tradable permits and obligations are a mechanism that allows you to sell some right that you are entitled to but do not exercise, or to pay someone else for the fulfillment of an obligation that you have but cannot (or prefer not to) meet yourself (Wissel and Wätzold, 2010). The EU trading system for greenhouse gas emissions is one of the best-known environmental examples. Companies receive carbon emission allowances which they then can trade with one another depending on whether they need to emit above their predetermined limit or are able to remain below it. The limit in the total amount of allowances puts a financial value to each ton of emissions saved – the lower the cap in total emissions allowed to be emitted, the higher will be the price of carbon and the faster will be the transition to cleaner, low-carbon technologies. In the area of biodiversity and conservation, this category is represented by instruments such as the habitat/biodiversity offsets and banking (see section 8.4.4). The intuition is similar. Landowners, for example, can restore ecological services in land they own (e.g. by protecting some virgin forest or endangered species) and earn credits that can be sold to companies and developers who have an obligation to compensate for the loss of biodiversity due to their activities. Subsidies and fiscal incentives are remunerations by the government for the supply of an ecosystem services (Engel et al., 2008). In practice, the subsidy or incentive is usually awarded if the (potential) ecosystem services supplier meets certain conditions that are favorable for bringing about ecosystem services, such as protecting a specific habitat or refraining from practices that would threaten a certain species. Clearly, this instrument should only be used to reward ecosystem services provision that goes beyond what can be considered as someone’s civic duty (such as “good agricultural practice”); otherwise it would contravene the “polluter (user) pays principle.” Given that these subsidies and fiscal incentives require the support of scarce public funds, governments try to ensure that they do not direct limited public funding towards ecosystem services-supporting activities that would have taken place anyway. Governments, hence, aim as much as possible for additionality: that is, they provide incentives where there is potential to instigate changes in behavior as a result of their intervention. An example of this instrument are the “conservation easements,” which are widely used in the United States to compensate landowners for certain restrictions on their land use that help restore ecosystem services (see, e.g., Byers and Ponte, 2005). Fiscal incentives can be used to render environment tfriendly behavior by taxpayers more attractive, for example, by exempting revenues from “green” investments from income tax. It is also worth keeping in mind that there are many other parallel government sponsored subsidies in place that actually harm ecosystem services provision. Subsidies in the non-renewable energy and farming sectors, for instance, encourage economic expansion but may also contribute to climate change and loss of biodiversity. This highlights the importance that policy-makers need to give to selecting the right mixture of instruments, so that these do not cancel each other out in terms of anticipated results. In-depth information on environmentally harmful subsidies can be found in Oosterhuis and ten Brink (2014). Positive financial incentives that support ecosystem services provision can be supplied in different forms and do not necessarily rely on public resources. Think, for example, of a government that wishes to reduce the amount of plastic litter that ends up in coastal ecosystems. One way to achieve this might be through providing subsidies to manufacturers who switch to using either alternative materials or recyclable plastic for packaging. Instead, the manufacturers could directly reward those consumers who return packaging material and residues to them (and hence encourage recycling and reuse of materials) by offering the refund of a deposit that was charged upon the purchase of the potentially polluting product. Such deposit-refund schemes (for instance, on beverage packaging) can be applied voluntarily by industry, but can also be mandatory (as, for instance, in Denmark, Germany, and a number of states in the United States). Public purchasing/investments: safeguarding the provision of ecosystem services may sometimes require public ownership of the land (or water) where these ecosystem services are generated (Torres et al., 2013). This may, for instance, be the case when the protection of certain habitats and species is incompatible with any profitable kind of land use. Public investments may also be needed to create or support favorable habitats, e.g. by means of “ecoducts” (i.e. wildlife crossings). While this type of government intervention is not generally regarded as an MBI per se, it has some MBI features (since there is a transfer of money related to the value of the ecosystem services). As common with classifications, there is no strict demarcation line separating the aforementioned categories. Instruments often have a mixed character, and different instruments are often applied simultaneously.

#### Even scholars who think MBI is delimiting say it is NOT command and control

Gomez-Baggethun and Muradian 15 [Erik, Norwegian Institute for Nature Research and Institute of Environmental Science and Technology, Autonomous University of Barcelona, Roldan, Graduate Program in Economics at Universidade Federal Fluminense, Brazil, In markets we trust? Setting the boundaries of Market-Based Instruments in ecosystem services governance, Ecological Economics 117 (2015) 217-224, Elsevier, poapst+rodak]

What should be the role and reach of different policy instruments, and in particular the so-called “Market-Based Instruments” (MBIs), in environmental governance? As markets and market values expand into environmental domains that have been traditionally governed by nonmarket norms (Harvey, 2005), some authors point to this question as a critically important missing debate (Gustafsson, 1998; Sandel, 2012; Satz, 2010). Since the late 1980s, the same institutions (environmental agencies, national governments, and intergovernmental organizations) that steered the first generation of environmental policy regulations, mostly based on standards enforced by the state through “command-and-control” mechanisms, have embraced a “new generation” of environmental policy instruments, usually labeled under the umbrella of “MBIs”. In comparison to so-called “command-and-control” approaches, proponents argue that MBIs are more flexible, cost-effective, and better at rising resources from the private sector (Stavins and Whitehead, 1997). Policy instruments labeled as MBIs include carbon trading schemes, wetland banking, biodiversity offsets and Payments for Ecosystem Services (PES) (Pirard, 2012). One of the distinctive features of this literature is the lack of a consensual definition and therefore a clear delimitation of MBIs. Indeed, although we use here the term MBIs for the sake of continuity with previous literature, we have argued elsewhere (Muradian and Gómez-Baggethun, 2013) that “MBIs” is a flawed and problematic category due to the confusion that the term “market-based” has induced. It is worthwhile to clarify here that not all the instruments that have been coined as MBIs would fall within a strict (even imperfect) definition of markets, neither all of them share the expectation to influence prices or the cost/benefit calculations of economic agents (an argument that has been used to include subsidies or taxes among MBIs). For the purpose of this paper, we assume that a core characteristic of the instruments labeled as MBIs is the expectation that they can entail economic efficiency gains when attaining environmental goals as compared to so-called “command-and-control” instruments due to their expected higher degree of flexibility.

#### Distinct from command and control

Janet Peace & Jason Ye 20, Center for Climate and Energy Solutions, “Market Mechanisms: Options for Climate Policy,” April 2020, https://www.c2es.org/wp-content/uploads/2020/04/market-mechanisms-options-climate-policy.pdf

ECONOMIC EXTERNALITIES—POLLUTION

All environmental pollution, including emissions of greenhouse gases (GHGs), imposes costs on people who did not create the pollution. This is an example of an economic externality—a consequence or side effect of an action that is not experienced by the individual or entity from which it originates, and that is not reflected in prices. The damages and associated costs to society that GHGs cause through climate change (e.g., increased extreme weather events, rising sea levels, and loss of biodiversity) are not paid for by the entities that emit those gases, so those costs are not reflected in the market prices of goods and services. Because polluters do not have to account for the costs associated with the damages that greenhouse gases create, society produces and consumes too many pollution-creating products (like fossil fuels) resulting in additional GHG emissions being put into the atmosphere.

Market-based policies aim to correct this form of market failure (an instance where economic resources are allocated inefficiently). They do this by constructing systems that cause the “external” costs associated with pollution to be incorporated in the polluting entity’s decision-making. When firms explicitly see and must pay for the societal cost of pollution, they are able to determine how best to meet an environmental objective. Moreover, when prices of products reflect their full environmental costs, consumers also are better able to make informed purchasing decisions.

MARKET-BASED VERSUS COMMAND-AND-CONTROL REGULATIONS

Market-based environmental policies are a potentially attractive alternative to traditional command-and-control regulatory programs. Command-and-control policies typically require polluters to take specific actions to reduce emissions by installing a particular technology or meeting a specific performance (emissions) standard. Command-and-control regulations have been criticized as not providing the flexibility to take into consideration that different plants face different compliance options and associated costs—some can do more for less, while others face higher costs. Moreover, traditional regulations do not provide an incentive for firms to innovate by going beyond the reductions required by a standard.

Market-based options provide greater flexibility for firms and seem particularly appropriate in the context of policies to reduce GHG emissions. For some types of pollutants, it matters that emissions at any particular point or region do not exceed health-related thresholds. For those types of pollutants, command-and-control regulation is often the appropriate policy response. Because GHGs are not harmful on a localized basis—they are globally mixed in the atmosphere and do damage on a global scale—market-based policies that provide greater compliance flexibility can achieve environmental objectives at lower overall costs. Beyond providing an incentive for the use of lower emitting technologies, market-based policies also provide a financial incentive for inventors and investors to develop and deploy lower-emitting technologies. This type of policy also leaves the private market to determine which technologies will thrive and expand. At the U.S. federal level, market-based policies have been used to reduce sulfur dioxide emissions at a fraction of the originally estimated cost, while at the state level they have been used successfully in renewable energy programs and capand-trade programs for greenhouse gases and nitrogen oxides.

EXAMPLES OF MARKET-BASED POLICY OPTIONS FOR GREENHOUSE GAS EMISSIONS

Market-based environmental policies work by creating an incentive to reduce or eliminate emissions. Under this structure, each regulated business chooses independently how to most cost-effectively achieve the required pollution abatement. Notably, some companies can reduce pollution more cheaply than others (because of the age of their equipment or the technology they are using), allowing them to reduce their pollution more, to compensate for those facing higher costs doing less. Taken together, the overall environmental objective will be achieved at the lowest possible total costs. The key criterion in determining if a policy is ‘market-based’ is that it provides a financial incentive designed to elicit a specific behavior from those responsible for the pollution. Some policy options are applicable as economy-wide solutions where greater efficiencies can be achieved, while others are more generally targeted to a particular market segment or sector. The following section explores seven major market-based policy options. (Appendix A provides a quick reference for the market-based options described here.)

#### It’s market actions, as opposed to command-and-control

Kaitlyn MacEachern 13, Conservation Ontario

“Market‐based Instruments within the Green Economy,” https://conservationontario.ca/fileadmin/pdf/policy-priorities\_section/GreenEconomy\_Literature\_Review.pdf

2.0 Market­based Instruments: Background

Market‐based instruments (MBIs) are tools and practices that utilize markets, price, and other financial incentives and economic variables to reduce or eliminate unintended environmental impacts which economists refer to as negative environmental externalities.1 MBIs are used to maintain or enhance natural capital which includes renewable and non‐renewable resources such as minerals and energy, forests, water and fisheries, and ecosystems that provide essential services (Anderson, Gomez, McCarney, Adamowicz, Chalifour, Weber, Elgie, & Howlett, 2010). They are defined as instruments or regulations that encourage environmentally‐friendly behaviour through market signals as opposed to only standard command and control methods (Whittem, van Bueren, & Collins, 2003). MBIs use market processes or financial instruments to motivate desired types of behaviours and decision making in order to encourage individuals and companies to improve environmental performance and protection while still meeting their own economic self‐interests (Stirrett, Rolfe, Schewchuk, 2012). MBIs migrate away from traditional command and control methods for environmental conservation and look at establishing a balance between economic incentives and regulation.

#### MBI’s are distinct from CNC

Stavins 1 (Robert, “Experience with Market-Based Environmental Policy Instruments,” Resources for the future, https://media.rff.org/documents/RFF-DP-01-58.pdf)

Market-based instruments are regulations that encourage behavior through market signals rather than through explicit directives regarding pollution control levels or methods.2 These policy instruments, such as tradable permits or pollution charges, are often described as “harnessing market forces”3 because if they are well designed and implemented, they encourage firms (and/or individuals) to undertake pollution control efforts that are in their own interests and that collectively meet policy goals. By way of contrast, conventional approaches to regulating the environment are often referred to as “command-and-control” regulations, since they allow relatively little flexibility in the means of achieving goals. Such regulations tend to force firms to take on similar shares of the pollution-control burden, regardless of the cost.4 Command-and-control regulations do this by setting uniform standards for firms, the most prevalent of which are technology- and performance-based standards. Technology-based standards specify the method, and sometimes the actual equipment, that firms must use to comply with a particular regulation. A performance standard sets a uniform control target for firms, while allowing some latitude in how this target is met.

#### C&C instruments are distinct from MBI’s – Vote NEG

The Climate Policy Info Hub ND (No Date) [The Climate Policy Info Hub has been created within the POLIMP project which has received funding from the European Union's Seventh Framework Programme for Research, Technological Development and Demonstration under Grant Agreement Number 603847, "Non-Market-Based Climate Policy Instruments," Climate Policy Info Hub, https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html, Bittner]

1. Non-market-based instruments

Figure 1 depicts a general taxonomy of climate policy instruments. This section will give a short introduction to each instrument category.

1.1 Command-and-control regulations

Command-and-control instruments impose direct regulatory intervention by setting standards, e.g. of pollution output or technology requirements. In climate change policies, these are mainly connected to greenhouse gas (GHG) emissions or energy efficiency. Standards are usually combined with legal enforcement in the case of non-compliance. They are a very straight-forward way of policy intervention with relative certainty over the environmental effectiveness2. Forms of command-and-control instruments mainly comprise framework, performance and technology standards, as well as prohibition of certain products and practices1.

Taxonomy of Climate Policy Instruments Environmental policy instruments divided into market-based and non-market-based instruments



Figure 1: Taxonomy of climate policy instruments

Source: Görlach, Benjamin, “What constitutes an optimal climate policy mix? Defining the concept of optimality, including political and legal framework conditions”, CECILIA2050 Deliverable 1.1, (Berlin: Ecologic Institute, February 2013), online available at: http://cecilia2050.eu/system/files/G%C3%B6rlach%20%282013%29\_What%20cons...

## Subsidies

### Not Subsidies

#### “Market-based” instruments “for decarbonization” exclude specific subsidies for energy types. They are exclusively carbon pricing and tradeable standards.

---tradeable permit standards include RPS/CES

Cleary et al. ’21 [Kathryne, Carolyn Fischer, and Karen Palmer; 2021; Senior Research Associate at Resources for the Future (RFF), Washington, DC, USA, and works on RFF’s Future of Power Initiative and Graduate of Yale School of Forest Management; Canada 150 Research Chair in Climate Economics, Innovation and Policy at the University of Ottawa; Handbook on Electricity Markets, ed. Jean-Michel Glachant, Paul L. Joskow and Michael G. Pollitt, “Tools and policies to promote decarbonization of the electricity sector,” Edward Elgar Publishing]

Promoting decarbonization is largely motivated by climate change concerns, but there are also numerous other benefits associated with moving away from the use of fossil fuels. In particular, burning fossil fuels also contributes to local air pollution that can have numerous health consequences, especially for vulnerable populations. Moving toward a clean energy economy can also create local jobs, reduce dependence on foreign resources and promote technological innovation that can spill over into other sectors of the economy.

This chapter reviews the primary policy methods in use or under consideration to promote decarbonization. First, we discuss the more technology-inclusive and market- oriented tools like carbon pricing and tradable standards. Next, we consider common policies targeting specific supply technologies, like renewable energy, coal or nuclear power. Finally, we address demand-side programmes for encouraging energy efficiency. While some of these policies are substitutes, many can be complementary and work together to accelerate the transition to a cleaner electricity system.

2. TECHNOLOGY-INCLUSIVE AND MARKET-BASED MECHANISMS FOR DECARBONIZATION

2.1 Carbon Pricing

Electricity generation from the combustion of fossil fuels produces carbon dioxide (CO2), a greenhouse gas (GHG) that contributes to climate change. GHG emissions from elec- tricity and heat production are equal to 25 per cent of global emissions (Intergovernmental Panel on Climate Change [IPCC] 2014). Climate-related damages from electricity gen- eration impose costs on society but are not factored into the privatized cost of providing electricity. For the market to reach the efficient outcome for the quantity and price of electricity consumption, it must internalize these societal costs by including the costs of carbon-related damages in the price of electricity. Instituting a price for carbon damages can be implemented either through a price policy, like a carbon tax, or through a quantity-based policy, like a cap-and-trade policy. These methods do not pick clean technology winners but rather allow the market to decide, which reduces cost and encour- ages innovation (Stewart and Weiner 2003).

As of 2019, 46 national and 28 subnational jurisdictions are implementing a form of carbon pricing, with policies fairly evenly split between carbon taxes and tradable emis- sions quotas (World Bank Group 2019). Roughly 20 per cent of global CO2 emissions are covered by these schemes. Invariably, the electricity sector is the first to be covered by these schemes, as it represents the largest point-source emitters of GHGs, as well as those least exposed to foreign competition.

2.1.1 Carbon tax

A carbon tax is a tax per ton of carbon dioxide emitted from the burning of fossil fuels. It can be applied uniformly across many sectors of the economy, although the carbon tax discussed here is applied specifically to the electricity sector. For electricity, the tax is typically applied at the point of generation but is passed on to consumers through elec- tricity rates. To achieve an economically efficient market outcome, the tax rate should reflect the cost to society of emitting one ton of carbon dioxide.

The tax reduces damages from carbon dioxide pollution from the electricity sector by increasing the cost of providing fossil-based electricity, which incentivizes switching to cleaner fuels or other non-emitting technologies to avoid the tax. Even if applied upstream, a carbon tax will also raise retail electricity prices, which reduces demand for electricity overall and thus lowers carbon emissions. Additionally, it lays the groundwork for a low-carbon future by providing investment signals that discourage investment in fossil plants while encouraging the deployment and use of cleaner generation.

A carbon tax can be a favourable policy for several reasons. First, relative to other policies, it can be simpler for policymakers to understand and implement since it does not require much programme administration relative to a cap-and-trade or renewable port- folio standard. Second, it is inherently flexible and can be altered by adjusting the tax rate or base. Last, a carbon tax is considered to be a ‘first best’ policy with respect to address- ing carbon emissions because it is a Pigouvian tax that directly puts a price on the negative externalities.

However, a carbon tax can be regressive, meaning that it imposes higher relative costs on poorer households than rich households (Poterba 1991). These impacts depend on how the tax revenue is used (Williams et al. 2015). To address these distributional concerns, some policies will return the tax revenue in the form of a dividend to households on an income basis. Under a tax and dividend policy, lower-income households receive a higher proportion of the tax revenue than the high-income households, which can help reduce inequity from the policy. Williams et al. (2015) found that the regressive nature of the tax can be greatly improved by using the revenue for lump-sum rebates for poorer households.

While a carbon tax can be efficient if priced at the social cost of carbon, it can be dif- ficult to estimate this metric, and therefore the tax may not capture the true cost of the damages (Marron and Toder 2014). Marron and Toder (2014) also discuss how determin- ing the social cost of carbon depends on a number of subjective factors – namely, the difference between global and local impacts, and therefore its value varies significantly by national assessments. Another critique of a carbon tax is that by setting the price, the quantity of emission reductions is unknown, so a policymaker will not be guaranteed that the policy will achieve a certain target.

 Tools and policies to promote decarbonization 385

 Despite numerous failed attempts in the US at the national and state levels, carbon taxes have been implemented all over the world, including several European nations, Chile, Japan and the Canadian province of British Columbia (BC). BC’s carbon tax, a frequently studied case that was implemented in 2008, has been successful in many ways despite its modest stringency, including reducing carbon emissions while also keeping pace with Canada’s economic growth (Murray and Rivers 2015). Yamazaki (2017) also found that BC’s carbon tax was actually associated with slight employment growth overall due to an increase in employment in the clean energy sector. Also, by using a tax and dividend approach, the BC carbon tax is found to be progressive and minimizes impact on low-income households (Beck et al. 2015).

2.1.2 Cap and trade

A cap-and-trade policy is similar to the carbon tax but uses a quantity-based rather than price-based approach to reduce emissions. In a cap-and-trade programme, a policymaker will set a cap for carbon emissions from the electricity sector, which will restrict pollution from generators. To determine which generators can emit under the cap, policymakers will either freely distribute or auction off emission allowances. A firm must possess an allowance in order to emit carbon dioxide.

Generators that are covered by the programme must not exceed the cap in aggregate, but they are free to trade among themselves for the right to pollute. Both allowance trading and allowance auctioning should theoretically lead to the lowest-cost procure- ment for allowances since prices in both scenarios are set competitively. For electricity markets with retail competition, there is theoretically no difference in overall programme cost between free allowance allocation based on a fixed metric with trading or auctions with trading. However, if a utility operates in a vertically integrated electricity market with cost-of-service rate regulation, then electricity price impacts would be higher if allowances are auctioned rather than freely distributed since utilities cannot recover costs without an explicit expense (Burtraw and Palmer 2008).

A cap-and-trade policy has numerous design features that enable lawmakers to shape the policy. The stringency of the policy can be strengthened by reducing the cap, and most policies include a downward trajectory for the cap over a number of years. Similarly, there are mechanisms available for controlling both costs and the level of emission reduc- tions. A cost containment reserve (CCR) is a price ceiling for allowances that is triggered in the event that the allowance price becomes too high, in which case policymakers will introduce more allowances into the market. Allowance markets can also impose a price floor below which no allowances will be sold and thus if the allowance price falls that low, it acts more like a tax. Additional price steps can be added in between the two extremes at which some quantity of allowances is withdrawn (released) from (in) the market to allow for an adequate balance of environmental and costs benefits when demand for allowances is less (more) than expected (Burtraw et al. 2017). A policy can also include allowance banking, which allows firms to keep allowances for compliance in future years, so improving the flexibility of the policy.

Cap-and-trade programmes are also quite popular and have been implemented in Europe and parts of the US, among others. The European Union currently operates the largest carbon cap-and-trade programme in the world with 31 participating nations and covers both power stations and industrial plants. North America has two regional carbon cap-and-trade programmes, the Regional Greenhouse Gas Initiative (RGGI), a cap-and- trade programme in the Northeastern US that covers the electricity sector only, and the Western Climate Initiative, a cap-and-trade programme that includes California and Quebec and covers economy-wide emissions.

Assessment of these programmes is mixed with respect to emission reductions and programme design. The European Union Emission Trading System (EU ETS) has been criticized for not being flexible enough to respond to changing market conditions like the 2008 financial crisis, which resulted in allowance price collapses and little emission reduc- tions from the policy (Laing et al. 2013). Flexibility of the policy has since improved because the EU ETS recently implemented a market stability reserve (MSR) to prevent allowance prices from dipping too low or too high (Perino 2018). The EU ETS was also limited in effectiveness by the presence of other complementary policies, like renewables support policies, which crowded out the cap’s role in driving emission reductions. The result of overlapping support for renewable energy is not to increase total abatement, which is determined by the cap, but rather to interfere in the market for abatement effort, driving down allowance prices and increasing the overall costs of abatement (Böhringer and Rosendahl 2010, Fischer and Preonas 2010, Schmalensee and Stavins 2017). We discuss these issues further in Section 5.

RGGI has also faced similar issues regarding low allowance prices in the wake of the 2008 financial crisis but the programme implemented an emissions containment reserve in 2016 that limits the likelihood of very low prices going forward. Murray and Maniloff (2015) show that falling emissions within the RGGI region relative to other parts of the country are attributable to the policy.

Regional cap-and-trade policies also face challenges with respect to emissions leakage, which refers to an increase in emissions in jurisdictions not subject to the cap, which can limit the effectiveness of the policy. RGGI, for example, has resulted in an increase in emissions in states that border RGGI (Fell and Maniloff 2018).

2.1.3 Comparison

A carbon tax and a cap-and-trade system offer similar economic incentives for decar- bonization but have some important practical and institutional differences (Pollitt 2019). A cap-and-trade programme can provide more certainty of a quantity of carbon reduc- tions, which a carbon tax cannot. However, cap-and-trade can be more administratively costly than a carbon tax due to administrative requirements like allowance tracking and allocation and compliance monitoring (Goulder and Schein 2013). A carbon tax also has the benefit of price stability, since allowance prices can vary significantly under a cap-and- trade scheme unless additional policy measures are taken, such as the auction reserve prices in California or the MSR in the EU ETS.

Both a carbon tax and a quantity system have the potential to raise revenue for the government, depending on how the allowances are distributed under a cap-and-trade system. Taxes may be earmarked for special projects or rebated (for example, as dividend checks to households, as in Canada). Allowances may be auctioned and the revenues used in the same way as the revenues of a carbon tax, or they may be distributed freely (as is the case for energy-intensive industries in the EU ETS). In practice, the default allocation of allowances under cap-and-trade systems is typically to the covered firms, while the default allocation of carbon tax revenues is to the government, for subsequent recycling

(Avi-Yonah and Uhlmann 2009). However, that need not be the case; in fact, in the EU and in the state-run programmes in the US, the electricity sector must purchase all of its allowances at auction or in the market. Either way, the impacts of these policies can depend on how the collected revenue is used. Popular uses are to reduce the impact of such programmes on low-income households or to reinvest the funds into programmes that help reduce the cost of the programmes, such as research in clean energy or improv- ing existing technologies.

A recent strain of research is interested in whether price or quantity-based policies are more conducive to fostering international agreements on emissions reductions that increase ambition and promote price harmonization and cost-effective abatement. Given that more is known about the global carbon budget than the prices needed to stay within it, quantities are typically more intuitive as national targets. Prices can then be equalized across countries through linking or joint implementation, and the allocation of the targets can serve as a compensation mechanism as well. However, from a negotiation perspec- tive, national governments tend to prefer more lenient targets for themselves, to improve the terms of their carbon trade, which collectively tends to depress carbon prices (Cramton et al. 2017). By contrast, negotiating over a minimum common carbon price should encourage national governments to accept more stringency (Weitzman 2014). Evaluating compliance is likely easier with quantity targets. Comparing carbon prices requires considering exchange rates, coverage and adjustments in other policies (for example, energy taxes). Given the multiplicity of policies in use, the evaluation of a minimum carbon price would entail some comparison of effective carbon prices that do not result from carbon taxes (see Gollier and Tirole 2015 for a comparison of prices versus quantity mechanisms in an international context).

2.2 Tradable Standards

Tradable standards come in several forms, some more technology-neutral than others. A tradable performance standard (TPS) is a market-based, technology-inclusive standard intended to reduce emissions from the power sector. A traditional TPS would set an average emissions intensity standard for all generation; other versions modify this format to differentiate performance standards or benchmarks according to the generation tech- nology. A related form of tradable standards are portfolio standards, which intend to ensure a minimum market share of a given class of clean technologies, as opposed to ensuring a maximum emissions rate. We discuss these versions of tradable standards from the more broad-based to the more technology specific.

In considering these policies, one should keep in mind all the different margins for obtaining emissions reductions from the power sector, including (1) improving the effi- ciency with which given fuels are used; (2) substituting dirtier with cleaner fuels; (3) substituting generation technologies; and (4) reducing electricity demand. A large body of literature indicates that policies that provide incentives along multiple margins can be substantially more cost-effective than policies just targeting specific margins (see, for example, Fischer and Newell 2008, Fischer, Preonas and Newell, 2017, Paul, Palmer and Woerman 2015). However, even less cost-effective measures can still produce substantial increases in social welfare, given the benefits of reducing the burdens of air pollution and climate change (Paul et al. 2015).

2.2.1 Emissions intensity standard

The purest form of TPS is an emissions intensity standard that intends to limit the average emissions rate of an industry. A performance benchmark is set, which effectively allocates credits per unit of generation. Producers with emissions rates below the benchmark can sell credits equal to that shortfall times their generation. Producers with emissions rates above the benchmark must buy credits to cover their total excess emissions. Allowing the market to determine price enables competition and helps ensure that the standard is met at the lowest possible cost. If the performance standard is challenging to meet collectively, the market for credits will produce a positive price for emissions credits.

From an incentive standpoint, a TPS effectively combines a price on emissions – since additional emissions create an additional compliance requirement – with a subsidy to output – since additional generation creates an additional allocation of credits. That combination ensures that there is an incentive to reduce the emissions intensity of gen- eration, on average, but reducing emissions by reducing output is discouraged by the implicit subsidy. The result is lower electricity prices and higher emissions than with a carbon tax of the same price. Alternatively, to meet the same emissions target as with a cap-and-trade system, the carbon price will need to be higher with a TPS (Fischer and Fox 2007, Fischer and Newell 2008).

There can be some benefits to limiting carbon cost pass-through to electricity prices. One is if markets are already distorted by labour taxes, keeping product prices from rising limits further erosion of the real wage and exacerbation of the labour market distortions (Fischer and Fox 2007, Goulder, Parry and Burtraw 1997). Another is limiting the range and heterogeneity of impacts on consumers, particularly lower-income ones (Fischer and Pizer 2019). Political economy pressures often point toward standards over straight carbon pricing, as polls consistently reveal greater public acceptance of the former over the latter (for example, Newport 2018). Finally, performance standards – even tradable ones – can often be implemented under existing regulatory authority (at least in the US), while a carbon tax or cap-and-trade system can require new legislation.

We observe several variations of emissions intensity standards in practice. Many deviate from the traditional design of a common benchmark to all generators and instead offer different benchmarks according to different technologies. For example, the Chinese national emissions trading scheme awards higher benchmarks for more emissions- intensive sources (Goulder et al. 2020). While it may seem practical to give each source a similar reduction rate target, the effect in a tradable credit system is to price all emissions the same and subsidize the output of higher-emitting sources more. The result is an addi- tional efficiency loss from the benchmarking, since not only is conservation discouraged, but so is fuel-switching, which is typically the most cost-effective means for reducing emissions in the electricity sector. In Canada, the output-based performance standard (OBPS) in the federal backstop policy begins with differentiated benchmarks for coal and gas but transitions to a single benchmark in ten years. Furthermore, non-emitting sources are excluded, meaning they do not receive extra support (although they may be covered by other technology-specific policies, as listed below).

2.2.2 Clean energy standard

A clean energy standard (CES) is similar to a differentiated emissions intensity standard but is structured similarly to a portfolio standard (a policy commonly used in the US for renewable energy, as discussed in the next subsection). Rather than comply with an emissions performance standard, a utility is required to procure a certain percentage of its electricity from ‘clean’ resources. These resources may include both carbon-free resources – not only new renewables, but also hydropower, nuclear, or fossil plants fitted with carbon capture – and some sources that are relatively clean but not fossil-free, like natural gas combined-cycle plants, occasionally with partial credit. To meet the standard, utilities must either procure clean power directly or purchase clean energy certificates. The minimum standard increases over time, which spurs investment in credit-eligible clean sources of generation.

Under a CES, a clean plant is given clean energy credits for each megawatt-hour (MWh) of zero-carbon power produced that utilities can purchase to comply with the standard. Which power plants will be credited and how many credits are earned can vary depending on policy specifics. For example, some policies compare the carbon content of the fuel to a baseline, like coal, and award credits according to how much ‘cleaner’ that fuel is relative to the baseline. Under this construct, natural gas, for example, may earn 0.5 credits per MWh, while renewables will earn a full one credit per MWh for power generated. The crediting of emitting generators may be fixed by technology type, or it may depend on its emissions rate relative to a benchmark, but credits are always denominated in MWh even when the extent of partial crediting depends on source-specific emission rates. This system allows the clean energy standard to incentivize marginal emission reductions within the subset of generators that can earn partial credit.

Like TPS, clean energy credits are traded, which determines the credit price and quan- tity procured. A subtle distinction lies in terms of the market incentives. Recall that with a TPS, emissions are priced, and all electricity output is subsidized. By contrast, with a CES, clean output is subsidized – since additional clean generation creates additional credits – while all electricity output is taxed – since additional electricity creates an addi- tional portfolio compliance requirement. In both cases, dirty sources face a net tax and clean sources a net subsidy. Unlike a TPS, however, the CES does not target emissions directly: sources in dirty categories cannot reduce their net penalty by reducing their emis- sions intensity. Furthermore, a CES often excludes certain sources, making them ineligi- ble to earn any credits. Because it lacks direct incentives to reduce the emissions intensity of given types of sources, the effectiveness of the CES relies fully on inducing changes in the generation mix, and the incentives to switch between fossil-fuel sources ultimately depend on the relative crediting.

While a CES is typically less efficient at reducing carbon emissions relative to a carbon price or cap-and-trade scheme (Blanford, Merrick and Young 2014, Paul et al. 2015), the efficiency and cost-effectiveness of the policy can vary by its design. Paul et al. (2015) show that a CES can become much more efficient by crediting generators based on emission rates rather than technologies. This method accounts for heterogeneity in the fossil fleet with respect to emission rates and encourages marginal abatement. Mignone et al. (2012) also argues that crediting existing generators (like nuclear and hydro) can be more cost- effective than not crediting the existing fleet; however, this decision could lead to a trans- fer of wealth from consumers to producers and result in a regressive policy. The study argues that these impacts could be mitigated if policymakers can distinguish between which generators require the credit to continue operating.

In summary, being less direct, a CES is generally less efficient than a well-designed TPS. However, by being more comprehensive in its compliance options and technology coverage, a well-designed CES can be more cost-effective than a traditional renewable portfolio standard, which we discuss next.

2.2.3 Renewable portfolio standards

A renewable portfolio standard (RPS) is a quota and market-based policy instrument used to encourage renewable energy. Countries or states with an RPS usually mandate that a certain percentage of a utility’s electricity sales come from renewable resources (the definition of which can vary by policy). A renewable energy project within the RPS territory qualifies to produce a renewable energy credit (REC), which is generated per MWh of power produced. A utility is able to meet these obligations by either generating renew- able energy or by purchasing RECs from a qualified facility.

An RPS is thus like a CES, but with credits restricted only to the pre-defined renewable sources. In that sense, an RPS provides a subsidy to renewable energy – since additional renewable output generates credits – paid for by an implicit tax on electricity – since additional generation creates an additional portfolio requirement.

In an REC market, policy requirements determine credit demand and supply reflects the number of renewable projects in the market. If the standard increases and demand for RECs increases, then the prices tend to rise, while an increase in the supply of renew- ables drives down the REC price. The net effect of the renewable supply subsidy and implicit electricity tax may be to raise or lower electricity prices (Fischer 2010). RPSs are commonly used in the US at the state level. As of 2018, 29 US states plus the District of Columbia had mandatory RPS policies, while an additional eight had voluntary renew- able energy goals.

As of 2015, over 150 nations had some kind of renewable energy target, including both mandatory standards and voluntary goals (Kieffer and Couture 2015). While not as common, some countries have adopted an RPS similar to those used in the US. The UK, for example, has a target that 15 per cent of electricity consumption comes from renewa- bles by 2020 (UK Department of Energy & Climate Change [UK DECC] 2010). Other nations, like South Africa and Brazil, require a certain installed capacity of renewables rather than a percentage of power generated.

More narrowly defined policies are generally less cost-effective methods for reducing emissions relative to directly placing a price on carbon pollution. Marcantonini and Valero (2017) found the abatement costs implicit in Italian renewable energy policies were one or two orders of magnitude higher than prevailing EU ETS prices: around 165 €/tCO2 for wind and around 1000 €/tCO2 for solar. Marcantonini and Ellerman (2015) find similar, though somewhat less extreme, results for Germany. Johnson (2014) found that RPS policies in the US cost at least 11 US$/ton of CO2 abated versus 3 US$/ton under the RGGI, a regional carbon cap-and-trade programme mentioned earlier in this chapter. Under the latter, assuming no other imperfections or barriers, the market solves for the most efficient (and lowest-cost) option to reduce carbon emissions rather than requiring the use of certain technologies with the intent that they may reduce emissions but by an unknown amount.

Being more technologically specific, RPS is also less cost-effective than a TPS (Fischer and Newell 2008, Fischer, Preonas and Newell 2017). However, it can be an effective tool to address technology-related market failures. Fischer and Newell (2008) argue that an RPS is more effective at encouraging both learning by doing and research and development (R&D) than direct R&D subsidies or emission performance standards. Rivers and Jaccard (2006) similarly argue that market-based policies like an RPS are more cost-effective at addressing learning failures relative to a command-and-control policy.

#### MBI’s are not considered MBI’s.

Stavins ’1 [Robert; November; Albert Pratt Professor of Business and Government, and Faculty Chair, Environment and Natural Resources Program, John F. Kennedy School of Government, Harvard University; Discussion Paper 01–58, Resources for the Future, “Experience with Market-Based Environmental Policy Instruments,” https://media.rff.org/documents/RFF-DP-01-58.pdf]

Footnote 11

In many countries, subsidies have been advocated (and sometimes implemented) as means of improving environmental quality. Although such subsidies could, in theory, advance environmental quality (see, for example, Jaffe and Stavins 1995), it is also true that subsidies, in general, have important and well-known disadvantages relatives to taxes (Baumol and Oates 1988). They are not considered as a distinct category of market-based instruments in this chapter. Although the prevalence of subsidies intended to improve environmental quality is not very great in developed market economies, theyaremorecommonintransitionand,toalesserextent,developingeconomies(Úylicz2000). Mostenvironmental funds in transition economies, however, fail to select efficient projects or calculate efficient subsidies (Anderson and Úylicz 1999, Peszko and Úylicz 1998).

####  “Incentives for renewable generation” are outside of this categorization of market-based

Parry 12

Chapter 1. What Is the Best Policy Instrument for Reducing CO2 Emissions?, https://www.elibrary.imf.org/display/book/9781616353933/ch01.xml

Market-Based Policies

Comprehensive (upstream) policies. A highly effective policy for reducing CO2 emissions is a carbon tax applied upstream in the fossil fuel supply chain in proportion to the carbon content of each fuel (with refunds for any downstream capture of emissions by CCS). This tax system fully covers potential releases of CO2 from later fuel combustion. To the extent the emissions tax is passed forward, it leads to higher prices for fossil fuels (especially coal, but also natural gas and petroleum products) as well as electricity. These higher energy prices encourage all of the above emission-reduction opportunities.

Cap-and-trade systems. These can be applied to the same base as the carbon tax and are therefore about equally effective over time. That is, as the value of allowances (i.e., the emissions price) is reflected in fuel and electricity prices, the policy will exploit the same emissions reduction opportunities as under the carbon tax.

Market-based policies with partial coverage (downstream). Another possibility is market-based policies focused at the point of emissions releases by large power and industrial plants. These policies are less effective at reducing emissions than upstream systems unless they are accompanied by measures to address transportation fuels, home heating fuels, and small-scale industrial sources. For example, by itself, the EU Emissions Trading Scheme covers about half of energy-related CO2 emissions.3

Other energy taxes. Other energy taxes tend to be relatively ineffective at reducing CO2 (see Chapter 2). Excise taxes on residential and industrial electricity use only exploit one of the four main emissions reduction opportunities.4 Taxes on vehicle ownership are less effective still—even within the transport sector, they do not encourage people to drive a given vehicle less and may not (depending on how they are designed) create much demand for fuel-efficient vehicles. And while a coal tax is effective at reducing the most carbon-intensive fuel, it misses out on some opportunities exploited by a carbon tax, such as shifting from natural gas and fuel oil to nuclear and renewables and mitigation options outside of the power sector.

Direct Regulations

Regulatory policies by themselves can be expected to have (very) limited effects (particularly at the same implicit CO2 price as the market-based instruments). These instruments need to be combined in far-reaching policy packages to achieve anything close to the effectiveness of comprehensive market-based policies. We distinguish among regulations focusing on increasing particular types of energy use (renewables), reducing carbon emissions, and reducing energy use.

Incentives for renewable generation. While there could be a rationale for transitory policies to promote renewables due to broader, technology-related market failures (see below), usually this is—or at least should be—as a complement to, not a substitute for, broader pricing instruments. These policies in isolation are not very effective relative to comprehensive pricing policies. They do nothing to reduce emissions outside of the power sector. At best, they only have weak incentives for electricity conservation as they do not involve the pass-through of carbon tax revenue or allowance value in higher generation prices.5 And even within the power sector, they do not exploit emissions reductions from replacing coal with natural gas and fuel oil or for switching from these fuels to nuclear.

Broader policies to decarbonize power generation. An industry-wide standard for CO2 per kWh is a more effective approach than a renewables incentive policy because it encourages all possibilities for altering the generation mix to lower CO2 emissions (not just substitution toward renewables) as well as improvements in plant efficiency. (As noted later, however, these types of regulatory policies need to be accompanied by extensive credit trading provisions to keep down their costs.) An emissions standard is closely related to the Clean Energy Standard, variants of which are currently under consideration in the United States. This policy sets minimum requirements on the share of zero-carbon fuels in power generation, but allows partial credits for fuels with intermediate carbon intensity.6

There is also a pricing variant of the emissions standard, known as a feebate (see Box 1.1). This policy exploits the same incentives for reducing CO2 per kWh as an emissions standard, but with some possible advantages in terms of cost-effectiveness. The feebate is approximately equivalent to a tax on carbon emissions from the power sector, with revenues used to finance a per-unit subsidy for electricity production. More generally if the pivot point is reduced (i.e., the threshold CO2 per kWh, which determines whether firms pay fees or receive rebates), the feebate has a greater impact on electricity prices (because more generators are paying fees than are receiving subsidies). In this case, the policy is equivalent to an electricity emissions tax, with a fraction of (rather than all) revenues used for a production subsidy.

Energy efficiency policies. Regulatory policies can also reduce the demand for electricity, and direct fuel usage, through setting standards for energy intensity. For example, several countries (e.g., China, Japan, the United States) set standards for the average fuel economy (kilometers per liter or equivalent) of new passenger vehicle fleets. Building codes are also common, as are standards for the energy usage rate of household appliances (e.g., refrigerators), lighting, and heating/cooling equipment. Again, feebates represent a pricing variant of these policies. For example, if applied to passenger vehicles, manufacturers selling relatively fuel-inefficient vehicles would pay a fee in proportion to the difference between the average fuel consumption rate (or CO2 per kilometer) of their fleet and that for the industry average, multiplied by vehicle sales, while manufacturers with relatively fuel-efficient fleets would receive a corresponding subsidy.

In the power sector, efficiency standards are less effective at reducing emissions than market-based carbon policies. Potentially the most important reason is that efficiency standards do not provide incentives for power generators to reduce CO2 emissions per kWh. Another reason is that they do not encourage a reduction in the use of energy-using durables and other goods. Furthermore, a range of energy-intensive goods have typically been exempt from regulations (e.g., small appliances, audio and entertainment equipment, assembly lines), yet higher energy prices would provide across-the-board incentives for more efficient versions of these products. And, at least for some transitory period, standards on new products raise their price relative to used products, which can delay the retirement of old (relatively polluting) products. In contrast, higher energy prices will tend to accelerate retirement of older (energy-inefficient) products.

In the transport sector, efficiency standards are basically identical to CO2 standards (on a per-kilometer or tonne-kilometer basis) because this sector uses mostly oil-based fuels. These instruments are less efficient than market-based policies. Higher fuel prices provide incentives to reduce vehicle kilometers driven (by raising fuel costs per kilometer) and to buy more fuel-efficient vehicles: Fuel economy standards (or feebates or CO2 standards) only exploit the latter margin of behavior, which, as a rough rule of thumb, might reduce their effectiveness by about 50 percent relative to a fuel tax.7

Regulatory combinations. In short, regulatory policies by themselves provide only limited incentives for reducing CO2 emissions. However, regulatory (or feebate) combinations, involving a package of measures to reduce the emissions intensity of power generation and to improve the efficiency of major energy-using durables (buildings, vehicles, household appliances), may go a fairly long way in matching the environmental effectiveness of comprehensive, market-based policies. Nonetheless, even under these combination policies, not all emissions reduction opportunities—in particular reduced use of vehicles and other energy-using durables—will be exploited.

#### Subsidies are non-market

Koester 19, MA in Urban Planning (Stefan, “The Interaction between Market and Non-Market Based Energy and Environmental Regulations to Reduce Carbon Emissions: A Case Study of California and British Columbia,” Proquest Dissertations)

National and sub-national governments have pursued dual-paths to reduce GHG emissions to mitigate climate change. States have carbon pricing schemes and non-market-based policies such as renewable energy mandates, vehicle, building, and appliance standards, tax credits and subsidies for low-carbon energy. However, what is the possible interactive effect between market and non-marketbased policies? This thesis attempts to answer this question for California and British Columbia. California has had a cap-and-trade program since 2012 along with other climate and energy related policies. British Columbia has had a carbon tax since mid-2009, with a number of energy and efficiency standards. Using the synthetic control method (SCM), I attempt to isolate and measure the effect of carbon pricing programs on additional, per-capita GHG emissions reductions. Results are inconclusive as to the interactive relationship between market and non-market-based policies, however the SCM holds potential for future analyses in the energy and environmental domains.

#### Grants are non-market

CGIAR 24 (https://www.linkedin.com/posts/cgiar\_non-market-approaches-what-are-they-exactly-activity-7164072901707575296-8WFD)

🌍 At #COP28, we explored Non-Market Approaches (#NMAs) in climate action. NMAs are voluntary, non-transactional contributions to climate efforts by governments & corporations. They can include grants, but not loans or bonds, and aim to promote mitigation & adaptation.

#### Market-based requires an explicit price

Center for Energy and Climate Solutions, No Date

https://www.c2es.org/content/market-based-strategies/

Market-based strategies help fight climate change by putting an explicit price on carbon emissions and spurring businesses to find cost-effective ways to reduce those emissions.

The costs of climate impacts – such as higher sea levels and more frequent and severe heat waves, droughts, wildfires, and downpours – are not reflected in the price of goods and services that emit greenhouse gases. Putting a price on those emissions gives businesses an incentive to reduce them. By giving them flexibility to choose the most economical way to reduce emissions, rather than mandating one approach, pricing also encourages businesses to innovate.

Two of the best-known market-based strategies – cap and trade and a carbon tax –are being used around the United States and the world to reduce emissions.

The costs of climate impacts are not reflected in the price of goods and services that emit greenhouse gases. Putting a price on those emissions gives businesses an incentive to reduce them.

Carbon Pricing in Action

Market-based approaches to pollution were pioneered in the United States. A cap-and-trade program for sulfur dioxide, the cause of acid rain, was created in 1990 by a bipartisan Congress and launched by Republican President George H.W. Bush. Emissions were cut about twice as fast as predicted and at a fraction of the cost of traditional regulation.

Market-based policies to curb greenhouse gas emissions are being used in 12 states accounting for more than a quarter of the U.S. population and a third of U.S. GDP:

California began operating a cap-and-trade program in 2013.

Washington state launched its Clean Air Rule in 2017.

Eleven states participate in the Regional Greenhouse Gas Initiative (RGGI).

Boulder, Colo., was the first U.S. city to enact a carbon tax, and others are exploring the option.

Carbon pricing programs also are in place or in the works elsewhere around the world. European countries have operated a cap-and-trade program since 2005. Alberta, Canada, has had a carbon price since 2007, and now all Canadian provinces are implementing or developing carbon pricing plans. Several Chinese cities and provinces have had carbon caps since 2013, and government is working toward a national program. About half of the nations that signed the Paris Agreement plan to use market-based approaches to help achieve their emissions pledges.

Meaningful and Cost-Effective Climate Policy: The Case for Cap and Trade

A Carbon Tax in Broader U.S. Fiscal Reform

Cap and Trade vs. Taxes

State of World Carbon Pricing

Cap and Trade

Under a cap-and-trade approach, the government sets an upper limit on emissions (the cap). Emission allowances that equal the cap are distributed (either freely or through auction) to regulated sources.

Businesses can trade allowances among themselves, so a company that can cheaply reduce emissions may do so, and then sell its allowances to a company that finds it more cost-effective to buy allowances. This allows the market to find the cheapest ways to reduce emissions overall. The price is determined by the amount of allowances (supply), emissions (demand), and the cost of reducing emissions (abatement costs). Thus, the government establishes the environmental goal (the cap), but the market sets the price.

Carbon Tax

Under a carbon tax, the government sets a price that emitters must pay for each ton of greenhouse gas emissions they emit. Businesses will take steps to reduce their emissions to avoid paying the tax. The market will determine the emissions because businesses will undertake only those reduction activities that are cheaper than the tax.

Environmental Justice

Thoughtfully designed carbon pricing policies can drive down emissions while also tending to other social responsibilities. Revenue from cap-and-trade programs or carbon taxes can be used for a variety of purposes, including expanding clean energy and energy efficiency opportunities in low-income communities and reducing taxes on personal income or business.

More than $1 billion in program revenues from RGGI have been invested in energy efficiency, renewable energy and other efforts that are expected to lower energy bills. California’s program designates a significant portion of the revenue to help disadvantaged communities.

Companion regulations can ensure that other types of pollutants directly affecting the local community are reduced.

Reducing greenhouse gas emissions at the lowest cost allows more to be done, faster. That especially benefits those who can least afford to cope with the impacts of climate change, and keeps costs down for all consumers.

Cap and Trade vs. Carbon Tax

In theory, the choice between a cap-and-trade program and a carbon tax is the choice between environmental certainty (the cap) and price certainty (the tax). But in practice, these lines are blurred. The cap-and-trade programs operating in the Regional Greenhouse Gas Initiative (RGGI) and California both have provisions to limit how low or high the price of allowances can go. Taxes, too, can be designed to automatically adjust if emissions don’t drop to desired levels. These policies can also be used in conjunction, as in the U.K. and other countries.

Offsets

Both cap and trade and carbon taxes can include the use of carbon offsets. An offset represents a reduction, avoidance, destruction, or sequestration of carbon dioxide or other greenhouse gas emissions that: 1) are from a source not covered by an emissions reduction requirement; 2) can be measured and quantified; and 3) can be converted into a credit if it meets established eligibility criteria.

The effects of climate change are felt globally. The benefit of reduced emissions is also felt globally, regardless of where the reductions occur. Many offset projects can reduce emissions more cheaply than the industrial sources typically covered by climate policies. When offsets are allowed, they can provide the same environmental benefit at a lower cost.

Other approaches

Other market-based strategies price greenhouse gases indirectly. In the U.S. many states have Renewable Portfolio Standards (RPS) that require electricity providers to get some of the electricity from renewable sources. These states issue tradeable Renewable Energy Credits (RECs) to track the renewable power, and then the market sets a price for RECs as a function of the supply and demand for renewable power. This indirectly prices greenhouse gas emissions because the renewable power sources don’t emit greenhouse gases.

#### REC’s make the RPS “market-based”

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“Framing market-based versus regulatory climate policies: A comparative analysis,” Review of Policy Research, https://doi.org/10.1111/ropr.12493

The debate over carbon pricing has gone beyond the policy design's environmental efficacy to also consider its political efficacy. Critics argue that carbon pricing makes it too easy for opponents of climate policy to focus on higher energy costs for the public (Cullenward & Victor, 2020; Mildenberger & Stokes, 2020). According to this line of argument, policy designs based on regulations or public investment will be more politically successful by drawing less attention to energy prices, and more attention to benefits like new jobs and better air quality (Bergquist et al., 2020; Jaccard, 2020: ch. 6; Mildenberger & Stokes, 2020). A leading regulatory alternative to carbon pricing is a Renewable Portfolio Standard (RPS), which requires utilities to generate a fixed percentage of their electricity from renewables or other low or zero-emission sources by a given date (McMichael, 2021).

FN1

1 Although some RPS policies include a market-based element where utilities can “buy” renewable energy credits from other utilities out of state, RPS policies still do not put a new price on carbon emissions the way true carbon pricing policies such as a carbon tax or cap and trade do.

End FN 1

 More recently, a smaller number of states have gone further by committing to a clean energy mandate: a requirement to produce 100% of electricity in the state from zero-emission sources by a given date (Trumbull et al., 2019).

#### MBI’s are negative external inducements tied to the polluter pays model.

Lagouvardou et al. ’20 [Sotiria, Harilaos N. PsaraftisORCID and Thalis ZisORCID; May 12; Department of Technology, Management, and Economics, Technical University of Denmark; Sustainability, “A Literature Survey on Market-Based Measures for the Decarbonization of Shipping,” 12(10)]

Climate policies aim to reduce greenhouse gas (GHG) emissions in a cost-effective way. Traditionally, there are two main alternative approaches to assist in this goal: the “command and control” and the Market-Based Measures (MBMs) approach [1].

In a command and control scenario, a designated authority formulates a direct regulation by setting benchmarks for restricting the factors that lead to GHG emissions (for instance, speed, power, or fuel consumption limits). In a global environment like shipping, where there is a high degree of variability in vessel building specifications and operating practices, the identification of benchmarks is very challenging [2]. The enforcement requires a significant amount of resources as well as detailed ship specific knowledge to set up, operate, and review in order to avoid distortions of competition among the different sectors (bulk, container, cruise, etc.). A command and control approach restricts investments in technology as it gives little or no incentive for firms to innovate [3] and can penalize green operators; for instance, by forcing two vessels to sail at the same speed when one uses more energy-efficient propulsion technology.

1.1. MBMs in Relation to Climate Policies

Climate policies aim to reduce greenhouse gas (GHG) emissions in a cost-effective way. Traditionally, there are two main alternative approaches to assist in this goal: the “command and control” and the Market-Based Measures (MBMs) approach [1].

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Measures characterized as “goal-based” may be considered to be a subset of the command and control class, as they only prescribe an emissions reduction target, without prescribing the means for reaching the target, leaving this to the discretion of the ship-owner. Some of the short-term measures currently under discussion at the IMO fall under this category.

On the other hand, Market-Based Measures (MBMs) or Market-Based Instruments (as was their original name) are more flexible measures that use prices or other economic variables to provide monetary incentives for polluters to reduce emissions. MBMs apply the “polluter pays principle”—i.e., they internalize the negative external environmental cost of the emissions by forcing the polluter to compensate for that cost. Examples are environmental taxes, the provision of subsidies, various offsetting mechanisms, and Emission Trading Systems (ETS). In other words, by imposing indirect market-based regulations, MBMs let the stakeholders decide the way to respond and minimize the cost of their emissions. Their response can range from logistics-based measures such as speed reduction to technical measures such as investing in more energy-efficient technologies or alternative fuels.

#### Subsidies are market distortions, not MBIs tied to that model.

AGM ’94 [Annual General Meeting of the CCP; September; Ministry of Ecology and Environment for the PRC; presentation at the 1994 Annual General Meeting; “Policy Instruments and Market Measures for Environmental Protection under the Market Economy,” https://english.mee.gov.cn/Events/Special\_Topics/AGM\_1/1994agm/leaderspeech94/201605/t20160524\_345195.shtml]

12. Subsidies. Clearly contrary to the "polluter pays principle", governments frequently find subsidization of industrial expenditures on pollution control a necessary complement to pollution taxes or regulatory instruments. Thus in China, a proportion of the revenues derived from the pollution levy system is returned to industrial enterprises to encourage them to invest in pollution control, While inefficiencies in capital markets and considerations of equity may justify such subsidies during the transition period, it would be desirable if this policy were t o be phased out over time, Explicit subsidization of pollution control equipment may distort investment decisions, e.g. by favoring end-of-pipe treatment rather than (often cheaper) industrial process changes, and of course they impose a fiscal burden on government. Subsidies from national to provincial or municipal agencies may however be justified, even beyond the transition period, on grounds of equity or where cross-jurisdictional benefits may result from environmental improvements.

#### Subsidies are non-market

Furceri 24, Deputy Division Chief of the Development Macroeconomic Division, International Monetary Fund (Davide, et al, “Climate policies carry political costs, but those costs can be mitigated,” <https://www.bruegel.org/analysis/climate-policies-carry-political-costs-those-costs-can-be-mitigated>

The popular support measure is based on opinion polls and scaled between 0 (high risk of losing office) and 4 (low risk). The OECD’s EPS measure is the most comprehensive source for environmental policy measures across countries (28 OECD and six BRICS countries) and time (1990 to 2015) 3 . All policy indicators are scaled from 0 (not stringent at all) to 6 (very stringent). In addition to its wide geographical and temporal coverage, the dataset includes both market-based and non-market-based measures, such as indices of taxation of emissions, trading schemes and feed-in tariffs (market-based), and indices of emission limits and research and development subsidies (non-market-based). The availability of these sub-indices allowed us to test whether some instruments are politically costlier than others.

#### Direct financial support is a non-market instrument

Andreas Prahl and Elena Hofmann 13, \*Andreas Prahl is a Researcher at Ecologic Institute in the field of energy and climate. His research interests include the analysis and economic evaluation of policy tools, in particular in the field of renewable energies, energy efficiency, and carbon markets., \*\*Elena Hofmann works as a Research Assistant for Ecologic Institute in the areas of climate and energy. Her research interestes include European Union (EU) environmental policy, sustainable development, and international relations., “Non-Market-Based Climate Policy Instruments,” https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html, date is last date listed in article

1. Non-market-based instruments

Figure 1 depicts a general taxonomy of climate policy instruments. This section will give a short introduction to each instrument category.

1.1 Command-and-control regulations

Command-and-control instruments impose direct regulatory intervention by setting standards, e.g. of pollution output or technology requirements. In climate change policies, these are mainly connected to greenhouse gas (GHG) emissions or energy efficiency. Standards are usually combined with legal enforcement in the case of non-compliance. They are a very straight-forward way of policy intervention with relative certainty over the environmental effectiveness2. Forms of command-and-control instruments mainly comprise framework, performance and technology standards, as well as prohibition of certain products and practices1.

Taxonomy of Climate Policy Instruments

Environmental policy instruments divided into market-based and non-market-based instruments



Taxonomy of Climate Policy Instruments | Environmental policy instruments divided into market-based and non-market-based instrumentss | Figure 1: Taxonomy of climate policy instruments | Source: Görlach, B. (2013)

Figure 1: Taxonomy of climate policy instruments

Source: Görlach, Benjamin, “What constitutes an optimal climate policy mix? Defining the concept of optimality, including political and legal framework conditions”, CECILIA2050 Deliverable 1.1, (Berlin: Ecologic Institute, February 2013), online available at: http://cecilia2050.eu/system/files/G%C3%B6rlach%20%282013%29\_What%20cons...(link is external)

Performance standards (also referred to as minimum energy performance standards or benchmarks) aim at a specific environmental target without prescribing which technology needs to be used1. An example of a performance standard in the EU is the 2009 regulation on the reduction of CO₂ emissions of new passenger cars3. It sets a certain amount of CO2 that is allowed to be emitted per km (130g/km) by newly produced and registered passenger cars in the EU. This level is aimed to be reduced to 95 g CO2/km by 20204. Thus, producers are forced to produce cars that match these regulations. Another example is the Ecodesign Directive5, which provides EU-wide rules for improving the environmental performance of energy using products, such as household appliances and consumer electronics, as well as on energy related products, such as windows, insulation material etc. Furthermore, building codes and standards set environmental targets in the construction of buildings. Other examples include land use planning and zoning to set environmental targets for land use.

Technology standards prohibit or phase out certain technologies that are environmentally harmful or set minimum standards, e.g. for energy efficiency. The Ecodesign Directive5, for example, introduced EU-wide rules for improving the environmental performance, especially energy efficiency, of energy using and energy related products. These include regulations on standby and off mode of household and office equipment or the phase out of the traditional light bulb.

The Directive on Industrial Emissions (integrated pollution prevention and control) (IED)6, requires that industrial activities with a major pollution potential must meet certain obligations, e.g. reduce emissions, reduce and recycle waste or maximise energy efficiency. One qualitative basis for the assessment under this directive is the framework standard BATNEEC (best available technology not entailing excessive cost) as required by Article 13(1) of the IED, which introduces a moving target on applied technologies and practices, since technological standards and societal values might change.

1.2 Reporting Requirements

Introducing a reporting requirement is a non-market based instrument that is often the basis for future legislation or forms part of other (non-market and market based) instruments. It aims at increasing the level of information available to a governmental body. However, it can also serve to increase awareness, even through the effort of acquiring the additional information, for instance in the case of measuring emissions of an environmental pollutant, which otherwise literally goes out through the chimney without the plant operator taking particular notice1. Reporting requirements are often included into further legislation that accompanies the single policy instruments, such as the Renewable Energy Directive or the Energy Efficiency Directive.

An example is the Monitoring Mechanism Regulation (MMR), setting reporting rules on GHG emissions to meet international requirements and reporting obligations form the 2009 climate and energy package. It helps to keep track of progress towards meeting the Member States’ emission targets for 2013-2020 and thereby facilitates further development of the EU climate policy mix.

1.3 Active (green) technology support

Active green technology support is the public promotion of research and development on green technology or of the adoption of green technology. These instruments focus on the supply side of green technology, as they aim at improving its availability and deployment. Although these instruments involve market elements to a varying degree, they usually involve strong regulatory intervention and have marked technology specifications. Measures include the funding of public and private research, development and demonstration (RD&D), infrastructure funding, and public procurement.

Examples include the NER 300 programme funding innovative carbon capture and storage (CCS) and renewable energy demonstration projects. But also renewable energy support schemes, such as quota obligations or feed-in tariffs belong to this category1.

1.5 Removal of green-tech financial barriers

These are demand side measures to support the use of climate friendly products and practices. Support can be given via tax reductions or tax breaks, capital allowances, direct payments or subsidised loans. This includes examples such as capital allowances for investment in energy efficient equipment in the United Kingdom (UK) or sponsored loans and grants for homeowners who improve their building’s energy efficiency. Also here the instruments incorporate economic incentives but they incentivise highly specific technology applications instead of influencing energy product prices or GHG emissions per se and are therefore listed as non-market-based.

1.6 Information and voluntary approaches

This group of instruments influences the actions of societal actors through their moral sense and by changing the cultural environment. Hence, these instruments influence actors indirectly by means of information, awareness raising and setting of moral standards. Typical examples are product labelling, voluntary agreements with polluters, award schemes or information campaigns7.

Environmental product labelling aims to give consumers access to information on the environmental performance of the product to put them into position to include environmental characteristics in consumption decisions. The labels can contain information on product content, composition, and its origin or production method7. In climate policies the energy performance of products plays an important role. Energy efficiency labels can also provide incentives for industries to develop energy efficient products, as a means of marketing those to consumers as superior to others (based on a more favourable label). However, a prerequisite is that labels are updated regularly to keep up with efficiency advances and also to incentivise them. The energy consumption labelling scheme introduced by the Directive on Energy Labels8 informs consumers on the energy performance of most household appliances, of light bulbs and also cars. The products' energy efficiency is rated in terms of a set of energy efficiency classes.

## Specific Violations

### Carbon Credit---Not MBI

#### Carbon credits are MBI while carbon offsetting is an overarching process that can use carbon credits [prefer our specificity as a better internal link to limits]

Tekin 2024 [Emirahn, MA from Bilkent University, March 2024, “THE CARBON MARKETS AND THEIR EFFECTS ON CLIMATE JUSTICE”, Bilkent University, <https://hdl.handle.net/11693/115157>, 7-2-24, PGR]

Carbon offsetting and carbon credits, which are two interdependent tools, are critical parts of carbon markets. Carbon offsetting means purchasing carbon credits from others through emission trading schemes or reduction projects (UN-REDD, n.d.). Carbon offsets are tradable certificates or rights that are reduction projects of the GHG emissions in the atmosphere (Carbon Offsets | MIT Climate Portal, n.d.). In this way, individuals, firms, or countries can fund decarbonization projects instead of reducing their own carbon emissions. Those rights or certificates “offset” the GHG emissions of the buyers with an equal GHG decrease somewhere else (Carbon Offsets | MIT Climate Portal, n.d.). Subsequently, carbon offsets include reducing and sequestering GHG emissions, which means taking out some GHG and storing it (Carbon Offsets | MIT Climate Portal, n.d.). Building renewable energy, reforestation, waste, landfill management, and carbon-storing agricultural practices are typical examples of carbon offset projects (Carbon Offsets | MIT Climate Portal, n.d.). At that point, measurement and certification play significant roles in assessing the environmental integrity of those projects. The UN holds the primary measurement and certification with Certified Emission Reductions (CERs) (United Nations Online Platform for Voluntary Cancellation of Certified Emission Reductions (CERs), n.d.). In fact, the CERs are used to comply with carbon markets via the Clean Development Mechanism. The offsetting projects, which are invested in developing countries, bring 1 CER for each metric tonne of GHG emissions they decrease or sequester to the investor-developed countries (United Nations Online Platform for Voluntary Cancellation of Certified Emission Reductions (CERs), n.d.). Organizations, individuals, or corporations offset their own GHG emissions or even make voluntary contributions to the global climate movement by buying and selling those CERs in the carbon markets (United Nations Online Platform for Voluntary Cancellation of Certified Emission Reductions (CERs), n.d.). Carbon credits related to offsetting mean a market-based instrument that allows governments, firms, and other organizations to refer to their GHG emissions by reduction, sequestration, or removal projects of GHG emissions in the atmosphere (Carbon Credit Explained: An Introduction to Carbon Markets, n.d.). Therefore, we can explain CERs as a carbon credit, even one of the most applied ones. At this juncture, I want to clarify the differences between “carbon credits” and “carbon offset” because those terms look similar but different. Carbon offset is the name of the process, which is one type of carbon credit (Carbon Credit Explained: An Introduction to Carbon Markets, n.d.). On the other hand, there are some other types of carbon credits beyond offsetting, such as sustainable aviation fuel (SAF) (Carbon Credit Explained: An Introduction to Carbon Markets, n.d.). Ollendyke (2023) argues that carbon credits are a measurement unit to “cap” emissions, while carbon offsets are measurement units to compensate a business for applying green initiatives and projects.

#### Carbon markets with eligible credits is a market-based instrument, not carbon offsetting

Bleuel 2023 [Sebastian, PhD from Institut für Strategische Unternehmensführung und Finanzierung at Ulm University, 2023, “Including forest carbon credits in compliance emission markets”, OPARU <https://oparu.uni-ulm.de/xmlui/handle/123456789/52327>, 7-1-24, PGR]

Addressing climate change, a challenge faced globally, is estimated to cost between USD1.6 and USD3.8 trillion annually in mitigation efforts (Ecosystem Marketplace, 2019). A significant increase in financial flows towards forests, especially tropical forests, are required to incentivize to halt deforestation, to improve forest management, and to reverse deforestation by afforestation and reforestation projects. A promising approach to lever finance to forests is to make use of carbon markets, which are market-based instruments. In contrast to a price-based instrument like carbon tax, a market-based instrument is designed to incentivize the reduction of greenhouse gas (GHG) emissions, where the quantity of allowances or permits (so called cap) is fixed, but the price is subject to trade on a market. Carbon markets, from a design perspective, regularly exist as an Emissions Trading Systems (ETS) or a crediting mechanism (also baseline and credit system). As of January 2023 26, ETS are in effect, with the European Emissions Trading Scheme (EU ETS) being the largest in the world (ICAP, 2023). In 2022, the total transaction volume in global ETS achieved a record high of €865 billion, with the EU ETS accounting for 87% of this volume (Refinitiv, 2023). Crediting mechanisms like the Clean Development Mechanism (CDM) introduce flexibility into ETS by allowing eligible credits from specific projects to be used in place of buying allowances, thereby achieving emission reduction targets. For instance, carbon credits obtained from projects such as avoided deforestation in the Amazon could be used to fulfill requirements under a compliance scheme.

### Carbon Offsets---Non-Governmental

#### Interp – Compliance-based carbon markets are government-implemented while voluntary markets are private actors

Pierce and Strong 2023 [M. Hanna and Aaron L., Researchers at Hamilton College Environmental Studies Program, May 3 2023, “An evaluation of New York state livestock carbon offset projects under California’s cap and trade program”, Carbon Management, <https://doi.org/10.1080/17583004.2023.2211946>, 6-22-24, PGR]

Carbon offsets are accounting-based climate mitigation tools through which greenhouse gas emitters pay others to reduce emissions or increase carbon sequestration, claiming the emissions reductions for themselves. Carbon offsets are purchased and sold in two different types of markets: voluntary markets and compliance markets. Voluntary offset markets, which are not directly implemented by governments, allow emitters to claim emissions reductions through offsets to achieve internal private climate action goals, such as a corporation or nonprofit organization purchasing offsets to achieve carbon neutrality. Compliance offset markets are typically used within government-run cap and trade programs in which the government sets an emissions cap for specific sectors of the economy. Carbon offsetting under a compliance program then allows emitters subjected to the cap to comply with the regulation by paying others outside the cap to reduce emissions instead of reducing themselves.

#### Violation - “Carbon offsets” are part of the voluntary market

Smith 2023 [Benjamin A, JD from the Cumberland School of Law, 2023, “Buying a Clean Conscience: Susceptibility from the Lack of Oversight in the Carbon Offset Market.”, American Journal of Trial Advocacy, <https://openurl.ebsco.com/EPDB%3Agcd%3A3%3A29755299/detailv2?bquery=IS%200160-0281%20AND%20VI%2047%20AND%20IP%201%20AND%20DT%202023&page=1>, 7-1-24, PGR]

The market for carbon plays arguably the most influential role in countries’ quests to reach net zero through the presence of compliance and voluntary markets. The essential difference between these two markets lies in the shifting terminology transforming CO2 emissions and emission reductions into commodity units known as “carbon credits” and “carbon offsets.”4 Although these terms are often used interchangeably, carbon credits are in the compliance market and refer to the issuance of an allowance from a governmental institution to a company to generate one ton of CO2 emissions per credit.5 Carbon offsets, however, are in the voluntary market and entail the trading between companies of one ton of CO2 removed from the atmosphere per unit that can be bought and used by another company to “reduce [its] own carbon footprint.”6 The voluntary carbon market is increasingly being utilized by companies seeking to meet their own net zero or carbon emission reduction targets, but a rampant lack of clarity and oversight clouds the actual, demonstrable quality of these offsets.

#### Prefer:

#### [WIP] 1 – [Specificity/Limits] – key to check aff-side bias and flexibility from “market-based instrument” vagueness

#### [WIP] 2 – Ground – any counter-interp moots core neg ground like the private actor CP

### Compulsory Licensing

#### Topic experts see compulsory licensing as distinct from MBI’s

Kientzle 2024 [Michael E. Kientzle, Kientzle's practice focuses on intellectual property litigation. He has represented a broad range of technology, media, sports and consumer products companies in intellectual property disputes, including in litigation before the federal courts, the United States Patent and Trademark Office, and the Copyright Royalty Board. Michael has extensive experience in all stages of litigation, having successfully represented clients in jury trials, bench trials, and appeals. Michael graduated cum laude from Georgetown University Law Center. While at Georgetown, he served as a law clerk to Senator Amy Klobuchar, and was a judicial intern to the Honorable Judge Block of the Court of Federal Claims., "Copyright Office Seeks Comments On Compulsory Copyright License For Generative Ai," Arnold & Porter, 1-25-2024, https://www.arnoldporter.com/en/perspectives/advisories/2024/01/compulsory-copyright-license-for-generative-ai, Bittner]

Second, many commenters oppose compulsory licensing in favor of a marketplace-based solution. According to some of these comments, the free market has already begun to provide options for licensing works in the AI context. The Copyright Clearance Center, for example, argues that it “already offers market-based, global non-exclusive voluntary licenses to support AI in the commercial research, schools, and education technology sectors” and that those licenses “were built with rightsholders and users based on agreed understandings of needs and market conditions.” These commenters also point to the many criticisms leveled against existing compulsory licenses, including the high costs of administering the licenses, as well as litigation costs associated with setting rates and determining how to allocate royalties among many different copyright owners.

#### Compulsory licensing is statutory – NOT an MBI

Merges 2004 [Robert P. Merges, Robert P. Merges is a professor at the University of California—Berkeley School of Law and the University of California—Davis School of Law., “Compulsory Licensing vs. the Three “Golden Oldies” Property Rights, Contracts, and Markets,” Policy Analysis No. 508, January 15, 2004, <https://www.cato.org/sites/cato.org/files/pubs/pdf/pa508.pdf>, Bittner]

Lessig’s concern for balance with respect to rights in the creation of intellectual property and its use by others is right on the mark. Ideas and other intellectual property should not be locked up in perpetuity. His idea of creators making voluntary contributions of intellectual works to a low-restriction “creative commons,”9 for example, is a creative and novel response to the risk of over-appropriation of intellectual property, which he and others worry about. Under the creative commons approach, the creators of digital work (e.g., photo, story, or drawing) can offer their work to others for copying and reuse, but can also limit others’ uses in any of a number of ways, such as for noncommercial exploitation only. Lessig apparently sees compulsory licensing as a similarly flexible and beneficial policy for making intellectual works widely available. But compulsory licensing, although often regarded as a reasonable compromise, is not a policy that will bring about balance between creation, use, and profit in the long run. Markets will tend to be superior in their beneficial impact on the creative process and output. Compulsory licenses, being creatures of federal statute, tend to be less flexible and more susceptible to political manipulation than market-based transactions. The costs that are saved by a compulsory license in the short run are usually more than offset by the inefficiencies that it causes over time.

#### Compulsory licensing runs opposite to MBI mechanisms

Delrahim 2021 [MAKAN DELRAHIM Assistant Attorney General Antitrust Division U.S. Department of Justice, ““And the Beat Goes On”1: The Future of the ASCAP/BMI Consent Decrees,” US Department of Justice Remarks as Prepared for the Vanderbilt University Law School, January 15, 2021, <https://www.justice.gov/opa/speech/file/1355241/dl>, Bittner]

Compulsory licensing also runs counter to the principles that form the very foundation of the free market and rights in intellectual property. Those principles hold that the best, most efficient way to allocate resources—and the most effective way to maximize consumer welfare—is through allowing parties to negotiate, to set prices based on supply, demand, and available information. Antitrust law serves as a crucial backstop when market conditions become distorted or when industry actors attempt to stifle the free and full exchange of goods. Compulsory licensing, however, does not permit this sort of market-based negotiation—quite the opposite.

Similarly, chief among basic property rights, including intellectual property rights, is the right to exclude, to determine who may or may not use your property. It is this right to exclude that gives property its value, and that enables property holders to negotiate over use rights. Compulsory licensing eviscerates essential aspects of the right to exclude. It transfers the power to set rates—to determine when property may be used or exploited by a non-rightsholder—to a third party. That third party may be seeking to act in the public interest, but it is not the rightsholder, and the two entities’ goals may be in conflict. For this reason, compulsory licensing in the United States is the exception—the rare exception—not the rule, and our representatives seek to avoid compulsory licensing requirements in agreements with other countries.

### FiTs

#### Feed-in-tariffs are a non-market-based instrument

Prahl and Hoffman ‘16(Andreas Prahl and Elena Hoffman are writers for the Ecologic Institute, "Non-market-based climate policy instruments applied in the EU". Climate Policy Info Hub, 27 June 2016, http://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments, Hobson)

**Taxonomy of Climate Policy Instruments**

Environmental policy instruments divided into market-based and non-market-based instruments



Figure 1: Taxonomy of climate policy instruments

Source: Görlach, Benjamin, “What constitutes an optimal climate policy mix? Defining the concept of optimality, including political and legal framework conditions”, CECILIA2050 Deliverable 1.1, (Berlin: Ecologic Institute, February 2013), online available at:

http://cecilia2050.eu/system/files/Görlach%20%282013%29\_What%20constitutes%20an%20optimal%20policy%20mix\_0.pdf

**Performance standards** (also referred to as minimum energy performance standards or benchmarks) aim at a specific environmental target without prescribing which technology needs to be used[1](https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html#footnote1_1a0cosb). An example of a performance standard in the EU is the 2009 regulation on the reduction of CO₂ emissions of new passenger cars[3](https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html#footnote3_aaxkesb). It sets a certain amount of CO2 that is allowed to be emitted per km (130g/km) by newly produced and registered passenger cars in the EU. This level is aimed to be reduced to 95 g CO2/km by 2020[4](https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html#footnote4_w1hilid). Thus, producers are forced to produce cars that match these regulations. Another example is the Ecodesign Directive[5](https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html#footnote5_kq7c3w9), which provides EU-wide rules for improving the environmental performance of energy using products, such as household appliances and consumer electronics, as well as on energy related products, such as windows, insulation material etc. Furthermore, building codes and standards set environmental targets in the construction of buildings. Other examples include land use planning and zoning to set environmental targets for land use.

**Technology standards** prohibit or phase out certain technologies that are environmentally harmful or set minimum standards, e.g. for [energy efficiency](https://climatepolicyinfohub.eu/glossary/4.html#Energy_efficiency). The Ecodesign Directive[5](https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html#footnote5_kq7c3w9), for example, introduced EU-wide rules for improving the environmental performance, especially [energy efficiency](https://climatepolicyinfohub.eu/glossary/4.html#Energy_efficiency), of energy using and energy related products. These include regulations on standby and off mode of household and office equipment or the phase out of the traditional light bulb.

The Directive on Industrial Emissions (integrated pollution prevention and control) (IED)[6](https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html#footnote6_acffbs8), requires that industrial activities with a major pollution potential must meet certain obligations, e.g. reduce emissions, reduce and recycle waste or maximise [energy efficiency](https://climatepolicyinfohub.eu/glossary/4.html#Energy_efficiency). One qualitative basis for the assessment under this directive is the **framework standard**BATNEEC (best available technology not entailing excessive cost) as required by Article 13(1) of the IED, which introduces a moving target on applied technologies and practices, since technological standards and societal values might change.

1.2 Reporting Requirements

Introducing a reporting requirement is a non-market based instrument that is often the basis for future legislation or forms part of other (non-market and market based) instruments. It aims at increasing the level of information available to a governmental body. However, it can also serve to increase awareness, even through the effort of acquiring the additional information, for instance in the case of measuring emissions of an environmental pollutant, which otherwise literally goes out through the chimney without the plant operator taking particular notice[1](https://climatepolicyinfohub.eu/non-market-based-climate-policy-instruments.html#footnote1_1a0cosb). Reporting requirements are often included into further legislation that accompanies the single policy instruments, such as the Renewable Energy Directive or the [Energy Efficiency](https://climatepolicyinfohub.eu/glossary/4.html#Energy_efficiency) Directive.

An example is the [Monitoring Mechanism](https://climatepolicyinfohub.eu/glossary/4.html#Monitoring_mechanism) Regulation (MMR), setting reporting rules on [GHG](https://climatepolicyinfohub.eu/glossary/4.html#GHG) emissions to meet international requirements and reporting obligations form the 2009 climate and energy package. It helps to keep track of progress towards meeting the Member States’ emission targets for 2013-2020 and thereby facilitates further development of the EU climate policy mix.

1.3 Active (green) technology support

Active green technology support is the public promotion of research and development on green technology or of the adoption of green technology. These instruments focus on the supply side of green technology, as they aim at improving its availability and deployment. Although these instruments involve market elements to a varying degree, they usually involve strong regulatory intervention and have marked technology specifications. Measures include the funding of public and private research, development and demonstration (RD&D), infrastructure funding, and public procurement.

Examples include the NER 300 programme funding innovative carbon capture and storage (CCS) and renewable energy demonstration projects. But also renewable energy support schemes, such as quota obligations or **feed-in tariffs belong** to this category1.

#### Feed in tariffs a non-market based approach

**United Nations ‘14** (“Non-market-based approaches”, United Nations Framework Convention on Climate Change, 24 November 2014, https://unfccc.int/resource/docs/2014/tp/10.pdf, Hobson)

27. Incentives are a type of economic and fiscal instrument used to promote or penalize certain purchases, investments or behaviour through financial means. Types of incentives

include: fees, subsidies and project funding, for example charges for using landfills; subsidies for energy-efficient product purchases or home/commercial building renovations;

guaranteed minimum feed-in tariffs for electricity production from renewable energy sources; and grants, loans or guarantees for emission mitigation projects or project financing assistance.

28. Incentives are widely used to promote activities, such as sustainable transport, increased home energy efficiency and sustainable consumption.

29. Under the Warm Front programme, the United Kingdom of Great Britain and Northern Ireland earmarked funds to improve energy efficiency in poor households. Sweden provides subsidies to single family households for investments in energy-efficient systems for heating, water and electricity, and solar and thermal water heaters are subsidized in Denmark, Germany and Spain.

30. Other incentive schemes which promote a non-market-based approach include the “eco-point” system in Japan to reward purchases of energy-saving home appliances and the “waste against bus tickets” programme in Brazil, where the urban poor in the city of Curitiba can bring their waste to neighbourhood centres and exchange it for bus tickets and food.

31. Implementing subsidies is also a way to encourage climate-friendly practices using a **non-market-based approach**. Germany was one of the first countries to implement a **feed-in tariff law** through the Renewable Energy Sources Act (2000). Since then, many countries, states and regions have replicated the German model and there has been a **significant uptake** in renewable energies and **significant reductions** in their cost. Germany’s success can be attributed to strong political will, a solid policy framework.

## Aff

#### Note – the aff could also look at some of the larger lists for c/I cards

### MBI is Meaningless

#### MBI is a meaningless category

Muradian and Gomez-Baggethun 13 [ROLDAN MURADIAN Centre for International Development Issues Nijmegen (CIDIN), Radboud University Nijmegen, Nijmegen, The Netherlands, and Department of Development, Agriculture and Society, Federal Rural University of Rio de Janeiro, Rio de Janeiro, Brazil ERIK GO´ MEZ-BAGGETHUN Institute of Environmental Science and Technology, Universitat Auto`noma de Barcelona, Barcelona, Spain, The Institutional Dimension of “Market-Based Instruments” for Governing Ecosystem Services: Introduction to the Special Issue, Society & Natural Resources, 26:10, 1113-1121, DOI: 10.1080/08941920.2013.829380, poapst+rodak]

Market-Based Instruments: A Flawed Category The current discussion about the governance of ecosystem services seems to be muddled by an (often implicitly) assumed dichotomy between command-and-control and ‘‘market-based’’ instruments. Scholars have already argued that such dichotomy is indeed false (see Driessen 1998). In practice, the governance of ecosystem services combines different types of coordination instruments, which interact in ways that are not always consistent with the theory of externalities, as we have just stated. Furthermore, we think that the very category of ‘‘market-based’’ instruments is flawed, since in practice most of the policy tools that have been labeled using such a category are far from complying with the requirements of markets: a high degree of voluntariness, and trading of a clearly defined ecosystem service embedded in a price system (high level of commodification). What has been traditionally coined as ‘‘market-based’’ covers in fact a too wide a range of hybrid instruments, which makes such a category rather useless for understanding the nature of these policy mechanisms. The articles in this special issue shed new insights and clarifications on this topic. Boisvert et al. (this issue) review how two of the most commonly cited ‘‘market based’’ instruments (payments for ecosystem services and biodiversity offsets) can actually take a wide variety of institutional forms, which often do not respond to a market rationale. In addition, they state that ‘‘rather than the emergence of a completely new type of instrument, the term market-based instruments reflects the fact that new representations and expectations have been adopted in relation to existing tools.’’ The article by Barton et al. (this issue) shows that there are both ‘‘spatial’’ and ‘‘functional’’ overlaps between compulsory and voluntary policy instruments in Norway. Spatial overlap refers to the fact that payments for ecosystem services may take place within protected areas or national forests regimes that regulate extraction, while functional overlap means that different instruments are applied to territories with similar forest conservation values and opportunity costs. Primmer et al. (this issue) explain these overlaps by means of conducting an institutional analysis of the evolution of policies across time, and more precisely of how in practice different instruments get ‘‘amalgamated’’ in preexisting governance structures. It shows well how institutional constraints shape the way policies are designed in practice, resulting often in a reality that is far from the ideal conceptual realm. Such constraints are also shown by Rodriguez et al. (this issue), using as case study a payment for ecosystem services (PES) scheme in the Ecuadorian Andes. In such a case, these authors argue that the preexisting allocation of land and power between landholders resulted in a very biased distribution of costs associated with the implementation of the scheme among the involved farmers. The socio bosque program of Ecuador (see Krause and Loft in this issue) is a good example of a hybrid policy tool aiming to reward the provision of ecosystem services. It combines a high degree of voluntariness (participation of landholders, either communal or private, is voluntary) with a strong role of the state (which disburses the transfers from the national budget and sets the conditions for the payments). Also, monetary transfers intercept community governance for the management of common pool natural resources (forests and paramos) and community decisions about how to allocate resources at the local level. The level of commoditization is low (the program does not aim to estimate the contribution of collective or individual landholders to the provision of ecosystem services) and the scheme combines the double goal of contributing both to rural economic development (to act as a redistribution mechanism) and to environmental protection, even if trade-offs between these two goals clearly exist. On the ground, this program works as a conditional cash transfer (much closer to a ‘‘subsidy’’ than to a ‘‘market’’), in which conditions are related to land uses. Furthermore, in this scheme, communities are also targeted as beneficiaries (not only individual farmers). Indeed, about 90% of the resources of socio-bosque are allocated to communities (de Koning et al. 2011). This can be considered an example of an instrument that crosses scales and complements rather than substitutes locally evolved institutions for environmental governance. Such interplay between scales and instruments in governance structures for managing ecosystem services is the core issue addressed by Go´mez-Baggethun et al. (this issue). Taking as example a case study in southern Spain, this research shows that institutional trasformations of access regimes imposed top-down over local governance arrangements (e.g., through enclosure and forced privatization) can create fundamental mismatches betwen the scales at which ecosystems services operate and the scale at which they are governed, thereby paving the way for the emergence of environmental conflicts over access to ecosystem services and associated benefits. The insights gained through the different articles presented in this special issue call for avoiding discrete classifications of policy instruments in environmental governance, and in particular avoiding being caught in sweeping dichotomies such as ‘‘command-and-control’’ and ‘‘market-based.’’ Therefore, we think that a wider classification of instruments based on multiple nested scales would be more capable of reflecting the complexity and diversity that governance structures take on the ground. These dimensions should include at least four key elements: (1) the degree of voluntariness; (2) the degree of commoditization; (3) the social meaning (see Muradian, this issue) of the monetary transfers involved (as well as whether these transfers take place or not); and (4) the role of the state (whether it is a regulator or also an actor engaged in transactions). In addition, the systematization of instruments can also include the way they shape the relationship between different governance layers. Taking into consideration such dimensions (criteria) will render a wide diversity of combinations (policy options). The use of these categories would allow us to move away from using simplistic notions to understand and classify policy instruments for the provision of ecosystem services. An institutional analysis of instruments for environmental governance, as has been done by the articles of this special issue, also calls for revisiting the assumptions adopted by scholars taking both very critical and supportive stances on the so-called ‘‘market-based instruments’’ for the provision of ecosystem services. On the one hand, scholars who assume these instruments to be by definition more cost-effective (Pattanayak et al. 2010) tend to forget the key tenet that the performance of policy instruments is dependent on the governance challenge at stake and on the particular institutional setting in which they operate. No instrument should be taken a priori as ‘‘superior’’ to solve governance problems in the provision of ecosystem services. Each of them has advantages and disadvantages, which are to be assessed in relation to the problem at stake. Overly simplistic assumptions, derived from particular economic models, about behavioral responses and efficiency gains due to ‘‘market’’ dynamics generally do not hold on the ground. For this reason, scholars arguing that these instruments are the expression of ‘‘neoliberal’’ conservation (Arsel and Buscher 2012; McAfee 2012) may be shooting a strawman by missing the point that in fact most of them are very far from following market rationales, and have an hybrid nature that can hardly be labeled as ‘‘neoliberal.’’ For instance, most monetary transfers for enhancing the provision of ecosystem services should not be equated with markets, and on the ground they seldom involve the commodification of nature (Muradian et al. 2013). Assuming that any flexible mechanism responds to market forces is an oversimplification that obscures complex and diverse institutional arrangements that dominate actual ecosystem services governance on the ground.

### WM---Permits & CAT

#### Tradeable permits & capandtrade are MBI’s

INTOSAI Working Group on Environmental Auditing (WGEA) 2016 [INTOSAI Working Group on Environmental Auditing (WGEA) at The Audit Board of The Republic of Indonesia, “Market Based Instruments for Environmental Protection and Management,” October 2016, <https://www.environmental-auditing.org/media/5370/wgea-instrument-protection-and-management_isbn-ok.pdf>, Bittner]

MBIs can be classified in different ways, for example, according to their sector of implementation (e.g. transport, energy) or by environmental medium (e.g. water, air). Alternatively, the European Environmental Agency (EEA) has classified MBIs into five main types based on their aim and functioning 27:

1. Environmental taxes (also environmentally related taxes) that have been designed to change prices and thus the behaviour of producers and consumers, as well as raise revenues.

2. Environmental charges that have been designed to cover (in part or in full) the costs of environmental services and abatement measures such as waste water treatment and waste disposal.

3. Tradable permits that have been designed to achieve reductions in pollution (such as emissions of CO2 ) or use of resources (such as fish quotas) in the most effective way through the provision of market incentives to trade.

4. Environmental subsidies and incentives that have been designed to stimulate development of new technologies, to help create new markets for environmental goods and services including technologies, to encourage changes in consumer behaviour, and to temporarily support achieving higher levels of environmental protection by companies.

5. Liability and compensation schemes that aim at ensuring adequate compensation for any damages resulting from dangerous activities to the environment and provide for means of prevention and reinstatement.

### WM---Taxes & Charges

#### Defining taxes & charges as MBI’s

INTOSAI Working Group on Environmental Auditing (WGEA) 2016 [INTOSAI Working Group on Environmental Auditing (WGEA) at The Audit Board of The Republic of Indonesia, “Market Based Instruments for Environmental Protection and Management,” October 2016, <https://www.environmental-auditing.org/media/5370/wgea-instrument-protection-and-management_isbn-ok.pdf>, Bittner]

The most common MBIs in use are environmental (or environmentally related, green) taxes and charges. Taxes are generally considered to be unrequited payments to (usually) national or regional governments with no individual counterpart service received in exchange for the payment. Charges, on the other hand, are typically payments made in exchange for a service, with the charges usually levied in proportion to the quantum of service received, and so the terms ‘user charges’, or ‘cost recovery charges’ are often used in this context28. Environmental taxes and charges can be based on emissions, inputs and outputs29

Environmental taxes include all environment-related taxes, excises and state fees which are recorded as taxes in national accounts. The base of an environmental tax is a physical unit (or a proxy of it) of something that has a proven specific negative impact on the environment – pollutants or on goods, the use of which produces such pollutants30. By seeking to reduce polluting behaviour, environmental taxes by definition are intended to alter production decisions and to have a disproportionate impact on polluters31. Accordingly, environmental taxes can be either explicit (taxes directly on emissions) or implicit (taxes on inputs or related goods).

### WM---Subsets are T

#### Subsets are germane to MBI’s – in sectors & environmental medium – in addition to 5 different types of MBI’s

INTOSAI Working Group on Environmental Auditing (WGEA) 2016 [INTOSAI Working Group on Environmental Auditing (WGEA) at The Audit Board of The Republic of Indonesia, “Market Based Instruments for Environmental Protection and Management,” October 2016, <https://www.environmental-auditing.org/media/5370/wgea-instrument-protection-and-management_isbn-ok.pdf>, Bittner]

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5. Liability and compensation schemes that aim at ensuring adequate compensation for any damages resulting from dangerous activities to the environment and provide for means of prevention and reinstatement.

### WM---Ecolabels

**Ecolabels are a market-based instrument**

**Fabio 20** [Iraldo, Fabio, "The future of ecolabels", 03/11/2020, SpringerLink, https://link.springer.com/article/10.1007/s11367-020-01741-9, Shananier/AJS]

Within this project, the German Environment Agency (UBA) also planned and organised an international conference ‘40 Years of Credible Environmental Labelling – Driving Smart Innovations towards Our Green Future’, on 25 October 2018 in Berlin, to promote the dialogue among policy-makers, academia and civil society on challenges facing ecolabels and possible solutions for the future. The major occasion flagging this international conference was the 40-year anniversary celebration of the German ecolabel, the Blue Angel. Founded in 1978, the Blue Angel was the first type I ecolabel of the world and has been a successful market-based, voluntary instrument of environmental policy in Germany.

### WM---Property Rights

#### MBI includes property rights

EEA, ND [European Environment Agency, “market-based instrument”, <https://www.eea.europa.eu/help/glossary/eea-glossary/market-based-instrument>, wagner]

Market-based instruments seek to address the market failure of 'environmental externalities' either by incorporating the external cost of production or consumption activities through taxes or charges on processes or products, or by creating property rights and facilitating the establishment of a proxy market for the use of environmental services.

### WM---Fuel Tax

#### Fuel taxes are an environmental focused market based instrument to reduce the end point of emissions in the use cycle

Sterner 07 [Thomas Sterner is an Professor at the Department of Economics, Göteborg University, Sweden. “Fuel taxes: An important instrument for climate policy.” 1-12-07. https://www.sciencedirect.com/science/article/abs/pii/S0301421506004113. GMU NR]

On **both ends** of the **political spectrum**, there are people who **lack faith** in **fuel taxes as environmental instruments**. There are some who do believe in **market mechanisms** but who do not **fully grasp** the **importance** of the **environmental issues** at stake and therefore **dislike** **fuel taxes**. On the other side, there are those who are concerned for the atmosphere but who believe capitalism cannot survive without satisfying a ‘constantly growing thirst for oil’. They therefore think there is no point in arguing for **economic instruments**. But both are wrong! **Economic instruments** can and do **work well**! The evidence is already here because—by some irony—the policies have been tested for quite a long time but it seems no-one sees the forest for the trees: The **instrument** relatively few **climate researchers** write about **already exists** and has a very large effect: **it is called a fuel tax** and if it were not for the fuel taxes in some countries the atmospheric content of carbon would already be much higher!

**Fuel taxes** might **not** **originally** have been **designed** for **environmental purposes** but their effect is **surely environmental**.1 People discuss whether or not there are any sufficiently powerful economic instruments available but fail to see the available evidence: The **experience** of fuel taxes in Europe, Japan and a few other countries is in fact a **full-scale demonstration** of how **powerful economic instruments** can be. Since this is a very important policy with large effects, we need to be very cautious not to abandon it lightheartedly—for instance as part of any scheme to integrate transport into the European Trading Scheme for carbon rights (ETS).

### WM---Subsidies

#### Includes financing

HANDELSHØYSKOLE 13, MA in Natural Resources / Environment

NORGES, “China’s Pilot Carbon Trading Schemes,” <https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/169877/Zhang_2013.pdf?sequence=>1

Market mechanism

Having seen the disadvantages of using command and control approach, the Chinese government has recognized the increasingly important role of market-oriented mechanism in mitigating energy consumption and carbon emissions. The term "market mechanism" refers to the system where, instead of politically forced actions, price plays the fundamental role in decision-marking and incentivizing. The market mechanism compromises of the reform of energy markets, carbon-trading schemes, taxations, and increasing access to financing for energy-efficiency and environmental protection related projects.

#### direct subsidies are T

United Nations Department of Economic and Social Affairs, 2021

https://www.un.org/development/desa/dpad/publication/frontier-technology-issues-lithium-ion-batteries-a-pillar-for-a-fossil-fuel-free-economy/

Market-based instruments

In terms of market-based instruments, governments can improve overall economic returns to the installation of Li-ion batteries by introducing monetary rewards at different points. First, direct subsidy or preferential tax treatment can be given when Li-ion batteries are installed. For example, the German government and its development bank, KfW, provide low-interest loans and repayment bonuses for batteries in conjunction with photovoltaic systems (Potau et al., 2018). Levy and grid tariff exemptions are also given to grid-connected electricity storage facilities. For electric vehicles, countries introduced measures such as exemptions or rebates on road toll to accelerate their adoption.

#### Includes subsidies

Andersen 98, The European Union Research Network on Market-based Instruments for Sustainable Development, https://www.ucd.ie/t4cms/pb-ep-05.pdf

1. Definitions and Descriptions

Market-based instruments can be defined as proxies for market signals in the form of changes to relative prices and/or a financial transfer.

Market-based instruments are aiming at:

* forcing producers and consumers to take account of the implications for the
* environment of their action,
* leaving them the freedom to choose and adapt their activities,
* enabling them to apply least-cost solutions,
* creating a dynamic which encourages the search for and application of better and
* cheaper means of maintaining and improving environmental quality,

Types of market-based instruments:

* user charges
* emissions charges or taxes,
* deposit-refund systems
* subsidies
* emission reduction credits
* tradeable permits

#### A direct subsidy based on the amount of abated carbon is a “market-based instrument.” That’s not what most subsidies do.

He 23 (Guojun, “Asian Climate Policies and Way Forward,” https://www.adb.org/sites/default/files/institutional-document/874256/adotr2023bp-asian-climate-policies.pdf)

Subsidies are also a popular tool for policymakers to mitigate climate change. They are often used by governments to promote activities that can compete with polluting activities (e.g., subsidizing electric/hybrid vehicles) and encourage the development of existing or new technologies (e.g., subsidizing renewable energy). For example, public spending on subsidies and other incentives for electric vehicles was nearly $30 billion in 2021 (IEA 2022b), which is the main factor for the proliferation of electric vehicle sales. For renewable energy, based on the analysis by IRENA (2020), the world’s total subsidies to renewable power generation technologies reached $128 billion in 2017. If the government directly subsidizes firms based on the amount of abated carbon, i.e., giving a specific price for carbon abatement, it can be viewed as a negative tax and will have similar welfare implications. The optimal subsidy rate should be equal to the marginal benefit caused by per ton reduction of carbon emissions. Under such subsidy schemes, cost-effectiveness will be achieved because each emitter will equalize their marginal abetment cost to the subsidy rate. This type of subsidy would be considered a market-based instrument, like a carbon tax program. However, in reality, policymakers seldom set the subsidy rate based on the marginal social benefit of carbon abatement (like electric vehicle subsidies and renewable energy subsidies). Instead, subsidies are often used as industry policies that often serve other purposes, and therefore the subsidy rates often differ across firms, locations, and industries. Our discussions will focus on these subsidies, which neither belong to the marked-based instruments nor the command-and-control regulations.

### W/M---FiTs

#### FiT’s are a market based instrument

OECD 20 [The Organisation for Economic Co-operation and Development is an intergovernmental organisation with 38 member countries, founded in 1961 to stimulate economic progress and world trade. “Renewable energy feed-in tariff” OECD, March 2020, Rodak]

Feed-in tariffs (FITs) are prevalent support policies for scaling up renewable electricity capacity. They are market-based economic instruments, which typically offer long-term contracts that guarantee a price to be paid to a producer of a pre-determined source of electricity per kWh fed into the electricity grid.

Given the importance of FITs for the deployment of renewable electricity in many countries, it is essential to consider them in qualitative and quantitative analyses of environmental policy and the energy sector. The OECD dataset on renewable energy feed-in tariffs has the objective of supporting cross-country studies in this field. The dataset provides FIT values which were derived in a manner that is comparable across countries, years and renewable energy sub-sectors.

#### Worldwide consensus!

RCREEE 16 [Regional Center for Renewable Energy and Energy Efficiency is an intergovernmental organization that teams with regional governments and global organizations to initiate and lead clean energy policy. “Egyptian Solar PV Feed-in-Tariff Procedures for Small Scale Projects: A guideline for investors,” Deutsche Gesellschaft für Internationale Zusammenarbeit, September 2016, Rodak]

Feed-in tariffs, or FITs, are a type of market-based instrument aimed to increase investment security for technologies that have not reached grid parity. Worldwide, FITs are commonly used and many studies argue that this policy option is the most effective to stimulate the deployment of grid-connected renewable energy technologies. (Michel et al., 2011; del Río, 2012).

FITs allow for the electricity producers (system owners) to sell their generated electricity to the utility under a Power Purchase Agreement (PPA). A regulatory body sets the price to which electricity can be sold and thereafter lets the market determine the level of deployment. The price paid per kWh is usually technology-specific and an appropriate price level should be determined as closely as possible to the specific generation cost (Levelised Cost of Electricity - LCOE) of a certain technology (Couture & Gagnon, 2010).

#### Feed-in tariffs are a price-based mech

Timilsina 22 [Govinda Timilsina is a Senior Research Economist at the World Bank Group. “Price-based Mechanisms for Climate Change Mitigation and the Role of Results-based Climate Finance,” Transformative Carbon Asset Facility, 2022, Rodak]

Price-based mechanisms (PBMs) are important vehicles to reduce greenhouse gas emissions. Examples of PBMs include carbon taxes, emission trading systems, other taxes on fossil fuels, feed-in-tariffs and the removal of fossil fuel subsidies. PBMs are gaining momentum worldwide and have been included in the packages of policy instruments considered by most of Paris Agreement parties to achieve their nationally determined contributions. However, PBMs face numerous political, financial, and technical barriers, and they have yet to be implemented at the scale needed to achieve the emissions reduction goals of the Paris Agreement. Results-Based Climate Finance (RBCF)— a result- or outcome- based development financing instrument specifically designed for financing climate change mitigation and adaptation activities—could help lower some of these barriers. This study explores potential ways in which RBCF can help facilitate successful implementation of PBMs in developing countries.

#### FiT’s are one of the main price-based mechs used globally

Timilsina 22 [Govinda Timilsina is a Senior Research Economist at the World Bank Group. “Price-based Mechanisms for Climate Change Mitigation and the Role of Results-based Climate Finance,” Transformative Carbon Asset Facility, 2022, Rodak]

Feed-in-Tariff (FiT) is one of the main PBM used to incentivize renewable energy, particularly solar and wind power. At present, around a hundred countries around the world have introduced some forms of FiT (REN21, 2021). Tax credits, subsidized finance, production subsidies are also commonly used to promote renewables in many countries and are also part of PBMs (Timilsina et al. 2012). Removal of fossil fuel subsidies is one of the key vehicles to reduce greenhouse gas (GHG) emissions. A recent Global Subsidy Initiative (GSI) study reports that removal of fossil fuel subsidies in 32 countries that account for 77% of global CO2 emissions would reduce 6% of their emissions from the baseline in 2030. (Kuehl et al., 2021).

# FW Card

### MBI Cost Benefit Analysis Good

#### Effective policy design and implementation of MBI’s *requires* cost-benefit analysis and iterative testing

INTOSAI Working Group on Environmental Auditing (WGEA) 2016 [INTOSAI Working Group on Environmental Auditing (WGEA) at The Audit Board of The Republic of Indonesia, “Market Based Instruments for Environmental Protection and Management,” October 2016, <https://www.environmental-auditing.org/media/5370/wgea-instrument-protection-and-management_isbn-ok.pdf>, Bittner]

Policy design phase

The most important phase in policy making is the selection of suitable instruments to achieve the objectives. In this phase policy makers should analyse the possibilities for achieving the objectives identified in the agenda setting stage and assess the alternative options by using cost benefit analysis76. Modelling can be used to inform the cost benefit analysis (e.g. forecasting the behaviour of consumers when different charge levels are applied on electricity) and assess the interaction of the proposed new policy with existing policies. The policy evaluation which is conducted before actual implementation (so called ex-ante analysis or impact assessment) should ensure that the best choices of policy and instruments are made to achieve the objectives.

Auditors can review whether policy makers have identified the magnitude of the externalities, and properly put an economic value on them in order to set the best “dosage” for their proposed public policy. They can review the government’s modelling: the evidence base for the inputs; the internal logic within the model and any limitations; and the sensitivity of the outcome to changes in the inputs and modelling assumptions.

In this phase auditors may also review whether indicators have been set to allow measurement of the efficiency and effectiveness of the operation of the selected policies and instruments and of performance against the policy objectives. For example, for emissions trading systems indicators of trading volumes show how the market is operating; and indicators of emissions by sector before and after the policy change help to evaluate the policy’s performance and the rate of progress to the desired goals.

EEA suggests that MBIs, where they have been applied, work better if:

▪ they are well-designed in themselves and as part of a wider package of instruments

▪ the reasons for having them and how revenues will be used are clearly communicated

▪ the levels at which ‘prices’ are set reflect both an incentive to producers and consumers to change behaviour and a realistic analysis of affordability77.