



# Papeles de Energía

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para una transición energética justa**

Claudio Aranzadi

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change mitigation?**

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Timo Gerres, José Pablo Chaves Ávila  
and Pedro Linares Llamas

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# Índice

- 3 Introducción editorial: Lecciones para una transición justa**
- 7 Lecciones de la política de reconversión industrial para una transición energética justa**  
Claudio Aranzadi
- 29 What does “just transition” mean for climate change mitigation?**  
Oliver Sartor
- 61 The transformation of the Spanish basic materials sector towards a low carbon economy**  
Timo Gerres, José Pablo Chaves Ávila and Pedro Linares Llamas



# INTRODUCCIÓN EDITORIAL

## Lecciones para una transición justa

Nadie discute que, como cualquier otro proceso de transición, la descarbonización de nuestras economías y la transición energética asociada generará oportunidades, pero también amenazas para las industrias o sectores económicos basados en los combustibles fósiles. Y esto a su vez implica que, si no queremos que estos procesos de transición descarrilen por la oposición de los perjudicados, debamos incorporar sus preocupaciones al diseño de la transición. La transición energética, para tener éxito, debe ser justa, y además ser percibida claramente como tal. Y esto requiere un diseño cuidadoso, para el que afortunadamente contamos con experiencias previas, tanto a nivel nacional como internacional, de las que aprender.

En este número incorporamos algunas de estas lecciones, presentadas en la Jornada sobre Transición Justa organizada en marzo por la Cátedra BP de Energía y Sostenibilidad, en colaboración con la AEEE. Y lo hacemos desde una posición constructiva, tratando de entender las oportunidades que se plantean, y reflexionando sobre cómo aprovecharlas, en un contexto de diálogo fundamental para este proceso y al que, como siempre, *Papeles de Energía* quiere contribuir.

En primer lugar, **Claudio Aranzadi** ilustra espléndidamente las similitudes y diferencias entre el proceso de transición energética y quizás el más parecido por el que ha pasado la economía española en términos de magnitud: la reconversión industrial de los años 80 y 90.

La reconversión industrial fue, según Aranzadi, un proceso claramente beneficioso, a pesar el elevado volumen de ayudas públicas requerido, si se compara con

lo que hubiera sucedido en ausencia de intervención pública (un ajuste desordenado). En cuanto a la compensación de perdedores, si bien la cobertura laboral fue satisfactoria, no se puede decir lo mismo de la política de reindustrialización dirigida a promover inversiones y empleos en las áreas geográficas más afectadas. Esta actuación tuvo resultados muy desiguales, algo que, según Aranzadi, requiere un análisis sosegado para entender el impacto de las políticas en función de los factores regionales específicos, fundamentalmente, las diferencias en el dinamismo industrial y empresarial preexistente en los distintos entornos.

El proceso de transición energética, al igual que el de reconversión industrial es también un proceso reglado, sometido a la disciplina de la Unión Europea, sujeto a negociación, necesitado del acompañamiento de la política industrial, y donde existen perdedores. Sin embargo, la transición energética exige un planteamiento de mayor alcance, inserto en un proceso de cooperación internacional en el que deben determinarse los compromisos nacionales de reducción. La política de compensación de perdedores es, sin duda, mucho más compleja que la reconversión, tanto por su mayor alcance sectorial, como por la necesidad de que las correcciones de los sobrecostes no generen incentivos negativos a la mitigación de emisiones. Será crucial en este sentido el diseño de una política industrial para el acompañamiento de los sectores más afectados que tenga en cuenta los factores regionales. Por último, un factor diferenciador de la política de transición energética es la posibilidad de contar con una fiscalidad específica que contribuya a su financiación, y quizás, a un posible doble dividendo.

A continuación, **Oliver Sartor**, investigador de IDDRI, reflexiona sobre el concepto de transición energética y climática justa. En la misma línea que Aranzadi, defiende que no hay reglas universales para gestionar esta transición, y que por tanto hay que adaptarla a los contextos locales. Para ello utiliza las lecciones aprendidas en el proyecto Coal Transitions, en el que se han estudiado procesos de abandono del carbón en distintos países.

Según el autor, los pilares para una transición justa son: el tratamiento justo de los trabajadores afectados negativamente por la transición; la importancia del empleo decente y de calidad como parte de la nueva economía verde; y la necesidad de alinear la transición con las prioridades nacionales de desarrollo. Y todo

ello en un contexto general de protección de los trabajadores frente a las amenazas de la automatización, la globalización, o la digitalización.

Además, Sartor recuerda que la justicia ambiental debe considerarse siempre como parte de la transición justa, y que por tanto esta última no debe entenderse únicamente en términos negativos. En este sentido, la mitigación de emisiones y la transición justa deben entenderse como elementos complementarios y no antagonistas. La transición hacia una economía neutral en emisiones proporciona muchas oportunidades para construir una sociedad mejor y más justa.

Pero, para ello es fundamental una implementación adecuada; un enfoque local; una apuesta por el diálogo; cuidar de que los subsidios a las nuevas tecnologías no vayan dirigidos a los más ricos; pero, sobre todo, hacer un buen diagnóstico de la situación que permita aplicar con rigor algunas de las soluciones exitosas ya probadas. Y, sobre todo, tener paciencia, ya que muchos de estos procesos de cambio son intergeneracionales.

Respecto a la componente local, el contar con agentes locales tractores del proceso es fundamental. Para ello íbamos a contar en este número con la contribución de Cameron McCoy, de Lehigh University, que nos iba a contar la experiencia de desarrollo de una antigua región siderúrgica liderado por su universidad. Desgraciadamente, problemas familiares de última hora lo han impedido. Confiamos en contar con su colaboración en futuros números. En su lugar, presentamos un ejercicio de diálogo como el que se está produciendo a escala europea, facilitado por varias universidades y centros de investigación, para analizar las posibilidades de descarbonización de la industria, un elemento también fundamental para la transición justa.

Este proceso de diálogo, conocido como la Plataforma de Materiales Respetuosos con el Clima, reúne a representantes de las administraciones públicas, industrias, e investigadores, para tratar de alcanzar un consenso sobre las opciones realistas de descarbonización de la industria intensiva en energía a escala europea y nacional. El artículo presenta la situación de estas industrias en España, y resume lo discutido en la mesa redonda que se organizó en la Universidad Pontificia Comillas en enero de 2019.

La principal conclusión de la mesa fue que el proceso de descarbonización de la industria, a la vez que se mantiene la competitividad y el empleo, es muy complejo, y con muchas preguntas pendientes, tanto a nivel tecnológico como regulatorio. Y que es necesario un marco de política industrial basado en la innovación y la competitividad como arma fundamental para lograr ambos objetivos. También se apunta a la necesidad de contar con sistemas transitorios de protección internacional, como los estándares; y de comenzar a analizar las implicaciones de la economía circular. Un tema en cualquier caso apasionante, que seguro merece un número futuro de *Papeles de Energía*.

Mientras, como siempre agradezco el interés de los lectores, y les animo a profundizar en los artículos contenidos en este número.

# Lecciones de la política de reconversión industrial para una transición energética justa\*

Claudio Aranzadi

## Resumen

En este artículo se examina, en primer lugar, un conjunto de marcos conceptuales que sirven de referencia para calificar una determinada política económica como equitativa (o justa), singularizándose una perspectiva “rawlsiana” como la más compatible con los valores de nuestras democracias liberales; de acuerdo con esta visión, las medidas de compensación de perdedores que una política justa debería incorporar, habrán de focalizar su atención en los colectivos sociales más desfavorecidos. Pero, aunque se remita a principios de carácter general, una política económica justa debería evaluarse en relación a alternativas factibles en el mundo real y no en comparación con construcciones ideales; por otro lado, su eventual *trade off* con respecto al requisito de eficiencia debería tener en cuenta que la cuantificación e incluso el signo de este dilema en un mundo de condiciones subóptimas están lejos de ser claros. En segundo lugar, se describen los rasgos más característicos de la política de reconversión industrial, desarrollada en los años ochenta y primera mitad de los noventa del siglo pasado, dirigida a promover el ajuste ordenado de sectores industriales en crisis, preservando en ellos un núcleo productivo competitivo a medio y largo plazo y articulando medidas de acompañamiento en los ámbitos de la política industrial, laboral y regional para minimizar el impacto en los colectivos sociales y áreas geográficas afectados. Por último, se señalan las semejanzas y diferencias, en la definición y ejecución de una política justa, entre la política de reconversión industrial y la política de transición energética.

Palabras clave: Transición energética justa, reconversión industrial

## 1. INTRODUCCIÓN. LOS CRITERIOS DE EVALUACIÓN DE UNA POLÍTICA JUSTA

**L**a evaluación de una política económica se realiza en dos dimensiones: su eficiencia y su equidad (o justicia). Los criterios para evaluar la eficiencia (p. ej. el

\* Este artículo es la versión escrita de la exposición oral “Lecciones de la reconversión industrial española” en la Jornada *Cómo lograr una Transición Energética Justa: Experiencias internacionales y su aplicación a España*. (Cátedra BP de Energía y Sostenibilidad. 25-03-2019).

cálculo coste-beneficio) son normalmente neutros desde una perspectiva ideológica/filosófica. No ocurre lo mismo cuando se trata de calificar el grado de adecuación de una política a los imperativos impuestos por el criterio de equidad. El grado de equidad de la distribución de costes y beneficios que resultan de la aplicación de una determinada política será calificado de una manera diferente en función de los principios de justicia utilizados que siempre están presentes como última referencia intelectual, aunque los responsables de las decisiones de política económica pretenden estar libres de ellos. También en este contexto es aplicable, ampliando su alcance, la acertada admonición de Keynes (1936, 1943): “Los hombres prácticos, que se creen exentos por completo de cualquier influencia intelectual, son generalmente esclavos de algún economista difunto” (se puede incluir también a los filósofos políticos difuntos).

La mención de algunos de estos marcos intelectuales frecuentemente utilizados como referencias, no siempre explícitas, para jerarquizar las políticas económicas en función de su equidad, puede resultar ilustrativa. Un primer criterio de ordenación puede ser simplemente la ignorancia de la dimensión distributiva. Es el criterio habitualmente utilizado por muchos economistas en los cálculos coste-beneficio. La alternativa preferida será aquella que maximice el bienestar global del colectivo afectado. Aunque, en teoría, este planteamiento, de inspiración utilitarista, no es tampoco neutro desde una perspectiva distributiva (Sen, 1998); dado que los miembros del colectivo tienen utilidades marginales diferentes, la maximización de la utilidad agregada puede implicar un imperativo igualitarista. En la práctica, sin embargo, la exclusión de consideraciones distributivas (y, por lo tanto, la ignorancia *de facto* del criterio de equidad) suele venir provocada por la mayor facilidad de los cálculos en términos agregados.

Un segundo marco intelectual, completamente diferente, es el que representa el criterio de justicia distributiva inspirado en la utopía marxista (Marx, 1875, 1972): “de cada cual según sus capacidades, a cada cual según sus necesidades”. Este principio, radicalmente altruista, ha podido tener una aproximación en sociedades de cazadores-recolectores pero, en su literalidad, parece de difícil aceptación mayoritaria en las democracias liberales de las sociedades industrializadas. En las antípodas de este planteamiento se encontraría el criterio de justicia de inspiración ultraliberal (que representa, por ejemplo, F. A. Hayek). Para Hayek

(1960) la ejecución de políticas redistributivas por parte de los poderes públicos es rechazable por su incompatibilidad con el respeto a las libertades ciudadanas; la justicia exige la igualdad ante la ley en un estado de derecho y un tratamiento igual a todos los ciudadanos aunque no se plasme necesariamente en una igualdad de resultados (ni siquiera en una distribución según el mérito). Hayek muestra así su oposición “al tipo de Estado de bienestar cuyo fin es la ‘justicia social’ y que acaba convirtiéndose fundamentalmente en un mecanismo de redistribución de la renta que inevitablemente conduciría al socialismo y a sus métodos arbitrarios”. Aunque Hayek no excluye totalmente las intervenciones públicas para garantizar unas coberturas mínimas, su radical “anticonstructivismo” le conduce al rechazo por principio de las políticas redistributivas, algo difícilmente conciliable con los valores constitucionales de gran parte de las democracias liberales (en concreto de la española).

El último ejemplo de marco conceptual muestra una fundamentación de la justicia distributiva mucho más consistente con los valores de nuestras instituciones democráticas. Se trata del pensamiento de J. Rawls (1971). Su rasgo más característico es la formulación de su “principio de diferencia”: las desigualdades únicamente se justifican si suponen una ventaja para los más desfavorecidos<sup>1</sup>. Pero, además, el carácter imperativo de este principio está subordinado al cumplimiento de dos exigencias que lexicográficamente están por delante: en primer lugar, el respeto (de carácter constitucional) a un marco de libertades y en segundo lugar, el respeto a la igualdad de oportunidades. El “principio de diferencia” consagraría, por tanto, un criterio de justicia distributiva con un referente igualitario pero imponiendo la prioridad del interés de los más desfavorecidos (incluso por encima del imperativo de igualdad). Al mismo tiempo, la aplicación de este principio podría representar un estímulo a la eficiencia, si la maximiza-

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1 Rawls enuncia dos principios, estando el segundo principio, a su vez, dividido en dos (siendo el segundo sub-principio, “el principio de diferencia”). La formulación de estos principios es la siguiente (Rawls, 2001):

a).- Cada persona tiene el mismo irrevocable derecho a un marco plenamente adecuado de iguales libertades básicas, compatible con el mismo marco de libertades para todos; y

b).- Las desigualdades sociales y económicas deben satisfacer dos condiciones: primero, deben estar asociadas a cargos y puestos abiertos a todos en condiciones de igualdad de oportunidades; y, segundo, deben resultar en el mayor beneficio de los menos favorecidos de la sociedad (principio de diferencia”).

ción del beneficio neto global (independientemente de sus efectos sobre la desigualdad) condujese a una mejora de la situación de los más desfavorecidos. El conjunto de los principios de Rawls, a pesar de las críticas que ha suscitado, sobre todo en relación al realismo de su “experimento imaginario” (“posición original/velo de ignorancia”), puede servir como base de un criterio de justicia distributiva que compartan diferentes opciones ideológicas en una democracia liberal; esta es, desde luego, la pretensión de Rawls que considera que sus principios pueden representar lo que él denomina un *overlapping consensus* (Rawls, 1993) entre una pluralidad de planteamientos filosóficos, morales y religiosos que respeten el marco constitucional de una democracia liberal.

En todo caso, aunque la explicitación del marco de principios abstractos de justicia utilizados para calificar las políticas económicas sea relevante, su invocación rígida puede conducir a conclusiones estériles. Por ejemplo, la comparación de opciones políticas reales con referentes abstractos ideales, calificada como “trascendentalismo” por Sen (2009) o “falacia del nirvana” por Demsetz (1969) no conduce obviamente a ningún resultado práctico. La comparación pertinente debe realizarse entre opciones alternativas factibles y, en concreto, entre la política que se pretende calificar y el contrafactual definido por su no aplicación. Por otro lado, debe tenerse en cuenta que, en la realidad la elección tiene lugar siempre entre alternativas subóptimas y que, por tanto, no cabe ir más allá de un *second best*. Además, la discusión, en el mundo real, en torno a una distribución justa de costes y beneficios de una determinada política, se complica aún más porque los sujetos de dicha distribución no son solamente individuos, sino también, empresas, áreas geográficas, países y toda suerte de colectivos sociales.

La caracterización de una determinada distribución de costes y beneficios como justa se hace aún más compleja si se tiene en cuenta la potencial pérdida de eficiencia asociada a una política de carácter redistributivo. El criterio dominante en el pensamiento económico subraya la existencia de un *trade-off* entre eficiencia y equidad, lo que exigiría definir un límite para las políticas redistributivas (en función del coste en términos de eficiencia que se estimase aceptable). Sin embargo, la existencia de tal *trade-off* ha sido puesta en cuestión por trabajos tanto de la OCDE como del Fondo Monetario Internacional (Cigano, 2014; FMI, 2017) donde se muestra que la desigualdad (sobre todo si afecta a las rentas más bajas)

tiene un efecto negativo sobre el crecimiento económico. Esta conclusión ha sido matizada por otros economistas (Andersen y Maibom, 2016) que defienden la existencia de un *trade-off* cuando el análisis se realiza en la curva frontera de las posibilidades de sustitución (es decir, la curva de mejores prácticas), aunque obviamente admite la posibilidad de mejora en ambas dimensiones si la situación de partida se encontrase dentro del espacio limitado por la curva frontera. Dado que existe una clara controversia sobre esta cuestión, tanto desde el punto de vista teórico como empírico (Aghion, 2016), parece aconsejable atenerse a una casuística donde los parámetros institucionales, culturales y tecnológicos estén claramente definidos, pero manteniendo siempre abierta la posibilidad de una correlación positiva entre eficiencia y equidad (o, al menos, la inexistencia de un *trade-off* entre ambas).

En resumen, el primer filtro para evaluar una determinada política económica debería ser su sometimiento a un criterio de eficiencia lo que supone normalmente la aplicación de un cálculo coste-beneficio o, en el caso en que los objetivos de la política estén dados, el examen del requisito de minimización de costes para alcanzarlos. La distribución de estos costes entre colectivos sociales, empresas, áreas geográficas, etc., sin embargo, raramente es simétrica, es decir, supone la existencia de perdedores (al menos en términos relativos). La evaluación de esta asimetría en la repercusión de los costes y la política de compensación de los perdedores requeriría la aplicación de un criterio de equidad (o justicia). Esto supone remitirse a algún principio abstracto de justicia, aunque sea de forma vaga. Si se aplica un criterio de inspiración rawlsiana, en primer lugar, deberán respetarse las libertades básicas que caracterizan una democracia liberal lo que (traducido con cierta libertad a la esfera económica) implica la aplicación por defecto de instrumentos de mercado; en segundo lugar, el reparto de costes debería tender a ser igualitario, pero considerando prioritaria la atención a los colectivos más vulnerables (para Rawls, las desigualdades solamente son admisibles si derivan de una situación de igualdad de oportunidades y benefician a los colectivos más desfavorecidos); la plasmación práctica de este principio supone colocar la prevención de la pobreza (y la atención a los colectivos más vulnerables) como la principal característica de una política de distribución justa de los costes. Como se ha señalado, sin embargo, tiene poco sentido la comparación de políticas concretas y principios abstractos de justicia (aunque exista una referencia a dichos princi-

pios). Las políticas concretas deben evaluarse de forma comparativa, en relación a otras alternativas factibles y, sobre todo, en relación al contrafactual definido por la ausencia de toda actuación. Además, debe considerarse que las políticas reales se aplican en un mundo de condiciones subóptimas en el que el *first-best* es inalcanzable. Esta consideración es especialmente relevante al abordar el potencial *trade-off* entre equidad y eficiencia que puede no ser tal en condiciones subóptimas.

## 2. LA EXPERIENCIA DE LA POLÍTICA DE RECONVERSIÓN INDUSTRIAL

La política de reconversión industrial fue una línea específica de actuación de la política industrial desarrollada fundamentalmente a lo largo de los años ochenta y primera mitad de los noventa. El perfil temporal de la reconversión del sector de la siderurgia integral, que puede considerarse paradigmático del conjunto del proceso, es en este sentido ilustrativo: su hito inicial más significado (el cierre de Altos Hornos del Mediterráneo) tiene lugar en 1983-1984 y la creación de la Corporación Siderúrgica Integral que culmina la concentración corporativa del sector se realiza en 1994. Algunos autores han señalado el período 1983-1986 como el de aplicación más intensa de esta política, calificándolo como la “fase dura” de la reconversión industrial (Marín, 2006)<sup>2</sup>.

La política de reconversión industrial estuvo dirigida a promover el ajuste ordenado de una serie de sectores industriales en crisis (once en 1983: siderurgia integral, aceros comunes, aceros especiales, construcción naval, fertilizantes, electrodomésticos, textil, etc.), con el objetivo de preservar en los mismos un núcleo productivo competitivo a largo plazo, minimizando los impactos laborales y regionales y los recursos públicos utilizados (con un horizonte a largo plazo), frente a la alternativa de continuar con una actitud pasiva ante el evidente retraso en la adaptación estratégica de la industria española a los cambios estructurales que se habían producido globalmente, en gran medida como consecuencia de la crisis petrolera de 1973-1974. La prolongación de un “ajuste descontrolado” (Fuentes Quintana, 1983, señala una caída del peso del PIB industrial de 5,4 puntos entre

2 En Maravall (1987), Fanjul y Maravall (1984), y Aranzadi, Fanjul y Maravall (1983) se examinan los principales patrones de actuación de la política de reconversión industrial.

1974 y 1982 y una pérdida de 816.000 empleos en la industria en el mismo período) habría conducido a la desaparición de núcleos productivos industriales que con una estrategia de reconversión podrían recuperar su competitividad en un horizonte a medio y largo plazo.

Este proceso de reconversión industrial exigía, normalmente, reducciones en la capacidad productiva y el empleo de los sectores en crisis, concentración empresarial, saneamiento financiero, significativos esfuerzos inversores en modernización tecnológica y operativa, y mejoras en la gestión. En su ejecución pueden destacarse las siguientes características:

En primer lugar, un carácter predominantemente sectorial, frente al ajuste empresa a empresa que hubiese implicado la ausencia de una política de intervención activa. La perspectiva sectorial facilitaba una planificación estratégica dirigida a preservar un núcleo competitivo en el sector que difícilmente se podría lograr con el agregado de estrategias individuales independientes, dado que los planes sectoriales de reconversión podían tener efectos asimétricos tanto entre empresas del sector como entre centros productivos de la misma empresa.

En segundo lugar, es también reseñable el carácter reglado del desarrollo de la política de reconversión. El marco legal inicial lo establece el Real Decreto Ley 21/1982 sobre medidas de Reconversión y Reindustrialización, y el Real Decreto Ley 8/1983 de Reconversión y Reindustrialización (posteriormente Ley 27/1984 de Reconversión y Reindustrialización) configura el marco definitivo al que la política de reconversión se ajustaría en los años posteriores. A estos textos legales debeadirse el *Libro Blanco de la Reindustrialización* (1983), como definición política de las iniciativas reindustrializadoras. La Ley de Reconversión Industrial de 1984 establece los procedimientos de declaración de un sector en reconversión y de elaboración de un plan correspondiente; define el papel de los distintos agentes (Administración Central, administraciones autonómicas, sindicatos, etc. y su interrelación); prevé la creación de instituciones específicas (gerencias sectoriales, fondos de promoción de empleo, zonas de urgente reindustrialización, etcétera.); y establece los diferentes tipos de ayudas públicas. Más adelante, con la Ley de Industria 21/1992, se establece un marco general para la “adaptación estructural de las empresas y sectores industriales a las exigencias del mercado y

la proyección internacional de las mismas fomentando para ello las inversiones adecuadas". A su vez, el largo proceso de reconversión del sector del carbón tuvo siempre su encaje en el marco de la política energética.

El equilibrio óptimo entre reglas y discrecionalidad en la definición y ejecución de una política es siempre difícil de determinar<sup>3</sup>. En principio, como señalan Buchanan y Yoon (2001) el establecimiento de reglas, es decir, "la reducción del número de dimensiones que definen el tamaño del conjunto de posibles opciones reduce el coste de la elección entre alternativas tanto para los individuos como para las instancias colectivas". Los mismo autores, que utilizan este argumento (supuestamente fundamentado en un criterio de eficiencia económica y por tanto independiente del carácter sustantivo de las reglas) para establecer límites constitucionales a la discrecionalidad de los poderes públicos (parlamento incluido) son, sin embargo, conscientes de que una reducción excesiva del espacio de decisiones puede desincentivar la participación ciudadana en los asuntos públicos. En todo caso, el carácter reglado de una política, definida siguiendo los procedimientos de una democracia parlamentaria, permite incorporar a través de la deliberación y el debate en las instituciones democráticas, los efectos enriquecedores de la participación ciudadana y de la pluralidad política.

Un tercer aspecto característico de la política de reconversión industrial fue el condicionamiento que impuso en la ejecución de esta política nuestra integración en la Unión Europea (entonces Comunidad Económica Europea) en 1986. Esta integración suponía incorporar (aunque a lo largo de un proceso de transición) un acervo comunitario en cuya elaboración no habíamos participado, es decir, superponer un marco reglado multilateral europeo al vigente en España en el momento de la adhesión. El sometimiento a la disciplina comunitaria afectaba directamente tanto a la política de reconversión como a la política de reindustrialización. En el primer caso, la política de la competencia comunitaria (y, en concreto, la normativa sobre ayudas públicas) establecía un conjunto de restricciones que los plantes de reconversión debían respetar. De hecho la Ley 21/1992 de Industria, al incluir la "adaptación estructural de las empresas y sectores industriales" dentro del marco general de los programas de promoción industrial, men-

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3 En Aranzadi y Solchaga (2013) se analiza el dilema entre reglas y discrecionalidad en la política económica.

ciona explícitamente la disciplina comunitaria al establecer que estos programas “se someterán, en todo caso, a la normativa nacional y comunitaria sobre defensa de la competencia, podrán instrumentarse a través de la concesión de ayudas e incentivos públicos y la adopción de las medidas laborales y de seguridad social específicas que reglamentariamente se determinen, sometiéndose a los límites y condicionantes establecidos por el Derecho Comunitario”. En el ámbito de la política de reindustrialización el condicionamiento más relevante se refería a la adecuación de la política regional al marco comunitario. La exigencia de adecuación de los planes de reconversión a los requerimientos de la política europea de competencia introdujo una mayor complejidad en los procesos de elaboración y negociación de los mismos, pero también reforzó su aceptabilidad, dado el grado importante de respeto a la autoridad de las instituciones comunitarias vigente en España desde nuestra integración en la CEE.

El desarrollo de la política de reconversión, por otro lado, incluyó momentos de alta conflictividad social, dada la concentración empresarial y geográfica de los ajustes de empleo. Sin embargo, la negociación con los representantes sindicales (sobre todo con los dirigentes de las federaciones sectoriales), que se contemplaba explícitamente en la Ley de Reconversión de 1984, estableció un cauce de interlocución que permitió abordar con un espíritu constructivo la elaboración y ejecución de los planes de reconversión. El ajuste laboral se produjo, además, preferentemente a través de bajas incentivadas y, sobre todo, jubilaciones anticipadas (siendo el valor actualizado de los compromisos relativos a estas últimas un componente importante del volumen total de ayudas públicas asignadas a la reconversión industrial). La política de reindustrialización de las áreas geográficas más afectadas, definida en el *Libro Blanco de la Reindustrialización* de 1984 se canalizó inicialmente a través de los incentivos regionales previstos para las zonas de urgente reindustrialización (se aprobaron seis en 1985) y, a partir de 1988, fundamentalmente en el marco de los incentivos previsto por la normativa comunitaria para las zonas de promoción económica, las zonas industrializadas en declive y las zonas especiales. A los incentivos a la inversión propios de estos instrumentos de política regional se añadían lógicamente los programas inversores en infraestructuras y, el conjunto de programas de promoción industrial horizontal (MICYT, 1993). El resultado de las iniciativas de reindustrialización fue desigual en las diferentes áreas geográficas, como consecuencia seguramente

del diferente dinamismo del tejido empresarial existente antes del inicio de los procesos de reconversión y de la diversidad de los efectos de las políticas industriales desarrolladas por las comunidades autónomas. El volumen total de las ayudas públicas asignadas a la reconversión y reindustrialización (en forma de subvenciones, primas, créditos y avales de la banca pública, aportaciones del INI, compromisos de futuras pensiones, etc.) fue muy importante, aunque en una perspectiva intertemporal a largo plazo, menor que los costes de haber retrasado la aplicación de la política de reconversión industrial.

En resumen, la política de reconversión industrial fue un componente de la política industrial caracterizado por tener un predominante carácter de planificación sectorial, ser fundamentalmente reglado, estar (a partir de nuestra integración en la Comunidad Económica Europea en 1.986) sometido a la disciplina comunitaria (esencialmente a su política de competencia y política regional), incorporar continuos procesos de negociación con los sindicatos, y exigir la aportación de importantes ayudas públicas. Su examen desde la perspectiva enunciada en la Introducción (criterios de eficiencia y equidad) puede conducir a las siguientes reflexiones:

- En primer lugar, la evaluación más relevante de esta política sería su comparación con la alternativa de la pasividad, es decir con la continuidad de un ajuste desordenado de los sectores industriales en crisis.
- En segundo lugar, un análisis de su eficiencia (un análisis coste-beneficio) debe considerar tanto los beneficios de una mejora de la competitividad industrial y, por tanto económica, (difícil de evaluar) y los costes futuros evitados (tanto los humanos asociados a un proceso de ajuste desordenado como los estrictamente económicos: perspectiva de pérdidas crecientes a largo plazo y desaparición de importantes activos productivos si no hubiese existido una intervención programada de la política industrial). A pesar del volumen de ayudas públicas requerido, se puede afirmar que el valor actualizado de la diferencia entre beneficios y costes de la aplicación de la política de reconversión es claramente superior al contrafactual definido por la pasividad y el retraso a intervenir.
- En tercer lugar, desde la perspectiva de un criterio de justicia, la política de reconversión industrial incluyó una política de compensación de perdedores. Su

vertiente más importante fue la cobertura laboral aplicada a los trabajadores de los sectores en reconversión (con un peso muy significativo de las jubilaciones anticipadas). La segunda vertiente (la política de reindustrialización dirigida a promover inversiones y empleos en las áreas geográficas más afectadas) ha sido seguramente la más discutida, ya que los resultados han sido desiguales en las diferentes zonas. Esta diversidad en los resultados obtenidos requiere un detenido análisis para distinguir el impacto de las políticas ajustadas a un patrón común (política de incentivos regionales, políticas industriales horizontales, políticas de infraestructuras) de los factores regionales específicos (políticas industriales de las comunidades autónomas y, sobre todo, diferencias en el dinamismo industrial y empresarial preexistente en el entorno donde se intervenía).

### 3. UNA VISIÓN COMPARATIVA DE LA TRANSICIÓN ENERGÉTICA

El proceso de transición energética presenta similitudes con el de reconversión industrial, aunque también sustanciales diferencias, tanto cuando se examina desde la perspectiva de un criterio de eficiencia como cuando se hace desde el punto de vista de un criterio de equidad (o justicia). Al igual que en el caso de la reconversión industrial, la política de transición energética es un proceso reglado, sometido a la disciplina de la Unión Europea, sujeto a negociación, necesitado del acompañamiento del conjunto de la política industrial y, donde existen perdedores (al menos en términos relativos). La política de transición energética en España está perfilada en el Plan Nacional Integrado de Energía y Clima (PNIEC) y su paquete legislativo y político de acompañamiento. El PNIEC, además está integrado en el mecanismo de gobernanza definido dentro del marco de la estrategia europea “energía limpia para todos”, lo que va a exigir su discusión con las instituciones comunitarias (además de con los agentes económicos y sociales domésticos más significativos). Por otro lado, la política de transición energética está sometida además a un marco reglado de alcance global (el Acuerdo de París) que configura el instrumento de cooperación internacional indispensable de la política climática y cuyo desarrollo cuenta con el pleno apoyo tanto de España como de la Unión Europea. Además, tanto los efectos del cambio climático (que ya se están experimentando) como los costes de mitigación y de adaptación esta-

rán desigualmente distribuidos entre grupos sociales, empresas, y áreas geográficas, lo que exige incorporar criterios redistributivos a la definición y ejecución de la política de transición energética.

La formulación del objetivo de la política de transición energética es simple, desde la publicación del informe especial del IPCC sobre el calentamiento global de 1,5°C (IPCC, 2018): alcanzar un flujo cero de emisiones netas en 2050 (meta necesaria para limitar el aumento de temperatura a 1,5°C). Aunque dicho objetivo no está aún explicitado con esta rotundidad en el Acuerdo de París (que se fija como objetivo conseguir un crecimiento de la temperatura global significativamente inferior a 2°C y continuar los esfuerzos para limitar el aumento de la temperatura a 1,5°C) y los actuales compromisos nacionales agregados conducirían a una temperatura significativamente más elevada, es razonable esperar que el objetivo más ambicioso para 2050 suscite finalmente una aceptación global (algo que tanto en España como en la Unión Europea ya se ha logrado). Sin embargo, la política de transición energética, en comparación con la política de reconversión industrial, exige un planteamiento de mayor alcance y complejidad además de una mayor atención a sus específicas características económicas.

En primer lugar, la política de transición energética está dirigida a corregir una externalidad negativa global lo que, como se ha señalado, exige un proceso de cooperación internacional (el Acuerdo de París) y unas metas de reducción de emisiones de alcance global, aunque el reparto de esfuerzo entre países inevitablemente conduce a plantearse el grado de justicia del mismo; esta cuestión aparecerá con gran intensidad cuando deban plantearse unos nuevos compromisos nacionales compatibles con el objetivo global más ambicioso de alcanzar una emisiones netas nulas en 2050. La exigencia de neutralidad de emisiones para todos los participantes en el Acuerdo sería la solución más simple. Y el establecimiento de un impuesto pigouviano equivalente al coste social (daños futuros actualizados provocados por el calentamiento global) de la emisión marginal, podría considerarse el instrumento más eficiente. Con esta última alternativa se plantea la dificultad de la amplia gama de estimaciones del coste social de la emisiones –entre 2\$/Tn. y 200\$/Tn. (Pindyck, 2017)- y, en muchos casos, del carácter nacional o regional de las estimaciones del daño (ignorando la diferente localización de las emisiones y del daño causado por las mismas). Por otro lado,

parecer difícil que los países en vías de desarrollo acepten como justo un reparto del esfuerzo global en función del flujo actual y futuro de las emisiones, cuando el impacto climático resulta de la concentración de gases de efecto invernadero en la atmósfera que es el resultado de las emisiones históricas causadas esencialmente por los países industrializados. Es probable que el resultado final se obtenga después de arduas negociaciones y de la aplicación de criterios eclécticos y regateos geopolíticos.

En un ámbito estrictamente nacional, el programa de transición energética en el horizonte de 2030 está plasmado en el PNIEC (2018) que además está definido en función del objetivo de neutralidad de emisiones en 2050. La justificación de esta política en aplicación del criterio de eficiencia está generalmente admitida (el colectivo de climaescépticos, a pesar del apoyo de la actuación administración de E.E.U.U., mantiene su tendencia a la marginación). Diferentes trayectorias (p. ej. *mix* tecnológicos diferentes) hacia el objetivo establecido para la mitad del siglo pueden suponer perfiles de costes diferentes y deberá tenderse a elegir la vía que minimice dichos costes. Pero en cualquiera de las alternativas manejadas tanto en Europa como en España parece claro que los costes de mitigación son claramente inferiores al beneficio asociado a los daños evitados que el calentamiento climático excesivo provocaría. Aunque el análisis coste-beneficio conduce a un resultado claramente positivo, debe señalarse, sin embargo, que los costes tienden a concentrarse en el corto-medio plazo y los beneficios en el largo plazo por lo que la evaluación de la ganancia neta es muy dependiente del tipo de descuento utilizado (y, por tanto, de la conciencia de solidaridad intergeneracional) y la miopía temporal de una parte de la opinión pública puede ser una fuente de rechazo político a determinadas medidas (por ejemplo en el terreno de la fiscalidad) de la política climática.

La política de compensación de perdedores, eje de una estrategia de transición energética justa, es sin duda mucho más compleja que la instrumentada en la política de reconversión industrial. En primer lugar, el alcance sectorial de la política de transición energética es mucho más amplio. Esta política va más allá de una política energética focalizada en el ciclo recursos primarios-consumo energético final. La energía es un *input* de uso generalizado en todos los procesos productivos y, por tanto, el alcance de la política de transición energética se extiende al

conjunto de la industria, la agricultura, la ganadería, el transporte, la edificación, etcétera. Esto supone una amplia variedad y heterogeneidad de agentes sociales y económicos afectados (grupos sociales, empresas, áreas geográficas). Pero, además, los mecanismos utilizados para inducir la reducción de emisiones también son variados y de diferente carácter que los utilizados en la política de reconversión industrial. Los sobrecostes de mitigación “estáticos”<sup>4</sup> asociados a estos mecanismos son en algunos casos explícitos (imposición sobre las emisiones, sobrecostes asociados a la adquisición de derechos de emisión en el mecanismo de *cap and trade*) pero, en otros, tienen el carácter de “precios sombra” correspondientes a restricciones impuestas en aplicación de estándares tecnológicos u operativos (imperativos de eficiencia en la edificación, restricciones operativas o tecnológicas en el transporte, etc.). Las eventuales correcciones por imperativos de justicia de los efectos de estos sobrecostes, en la medida que suponen la internalización de un coste social y están dirigidos a modificar el comportamiento de los agentes económicos y sociales en el sentido de propiciar una reducción de las emisiones, están sujetas a un límite: obviamente, la corrección no puede generar incentivos en sentido contrario.

La política de compensación de perdedores, en línea con lo expuesto en la Introducción, debería considerar como prioritaria la atención a los colectivos más desfavorecidos. El PNIEC (2019) ya incluye referencias a la transición justa y la pobreza energética que se han ampliado con la aprobación por parte del gobierno del documento *Estrategia Nacional contra la pobreza Energética 2019-2024*. Aunque esta estrategia no está vinculada específicamente a la corrección de los efectos de la transición energética en los consumidores más vulnerables, se solapa en gran medida con las iniciativas para una transición justa (en línea con el criterio “rawlsiano” de justicia).

El tratamiento de la pobreza energética como una vía de actuación específica responde en gran medida a una orientación de la política energética europea. Parece razonable, sin embargo, la articulación de las estrategias de lucha contra

<sup>4</sup> Estos costes no registran una serie de beneficios asociados que se generan en una perspectiva intertemporal (además, por supuesto, del beneficio asociado a la reducción de emisiones): contribución al *learning by doing* de tecnologías limpias, difusión no apropiable de innovación tecnológica, creación de externalidades de red, etc. (Gillingham y Stock, 2018).

la pobreza energética en un plan integral de lucha contra la pobreza que contemplase de forma integrada las iniciativas para garantizar unos mínimos de vida digna en terrenos como la alimentación, la vivienda, la enseñanza básica y la sanidad, además de la cobertura de otras necesidades como el acceso suficiente a los suministros energéticos. De esta manera se podría abordar de forma más eficiente la programación global del apoyo a los colectivos más desfavorecidos y la elección de los instrumentos más adecuados: en algunos casos mediante el suministro directo de servicios gratuitos o parcialmente subvencionados, y en otros, de manera complementaria, a través del establecimiento de rentas mínimas de inserción. En el ámbito de la transición energética es claro que, además de la utilización de instrumentos como el bono social dirigidos a minimizar la merma de renta real por el consumo energético para los colectivos sociales más desfavorecidos, se convertirá en fundamental el apoyo a los consumidores vulnerables para abordar imperativos de eficiencia energética (rehabilitación de edificios y sustitución de equipos de consumo) que van a ser de gran importancia en el desarrollo de la política de descarbonización.

La política de compensación de perdedores a través de actuaciones que supongan una redistribución más justa de los costes de mitigación se hace más problemática cuando se aplica a consumidores domésticos no vulnerables o al colectivo empresarial, dado que no tendría sentido una redistribución de costes que generase incentivos contrarios a la política de descarbonización. En el caso de los consumidores energéticos domésticos no vulnerables puede ser, sin embargo, perfectamente coherente la articulación de apoyos a las inversiones en rehabilitación de edificios y sustitución de equipos de consumo obsoletos con objeto de minimizar su coste y facilitar la superación de la barrera que impone con frecuencia la “miosis” del consumidor energético ante la racionalidad en términos intertemporales de las inversiones en eficiencia energética. En el caso de las empresas más intensamente afectadas por la política de descarbonización, la política de respuesta a los sobrecostes de mitigación deberá estar integrada en una política industrial de acompañamiento específica.

En algunas actividades productivas como, por ejemplo, la minería del carbón o la producción eléctrica térmica con este combustible, la política industrial a aplicar difiere poco de la puesta en práctica con la reconversión industrial (aunque en

el caso de las centrales térmicas se están estudiando alternativas de reconversión tecnológica hacia nuevos servicios eléctricos descarbonizados). En otros sectores energéticos como el del petróleo o el del gas natural, las empresas poseen un potencial autónomo de redefinición a largo plazo de su negocio energético, mediante su diversificación hacia otras actividades productivas (p. ej. la producción eléctrica limpia), la reorientación de su producto hacia una composición más descarbonizada (“nueva narrativa” del gas natural, por ejemplo) e incluso la apertura estratégica más allá del sector energético.

Mayor complejidad requerirá la política industrial aplicable a las industrias altamente intensivas en energía (sobre todo las que requieren calor a alta temperatura), como la siderurgia, el aluminio, el cemento, etc. (el Ministerio de Industria, Comercio y Turismo [2019] ya ha adoptado iniciativas en relación a los consumidores electrointensivos). Esta política, en primer lugar, debería dirigirse a fomentar en la Unión Europea unas condiciones de homogeneidad competitiva para las empresas del mismo sector en todos los países de la Unión Europea sin que los mecanismos de inducción de la reducción de emisiones en los países miembros (y las eventuales correcciones de su impacto) generen ventajas diferenciales en los costes de los *inputs* en función de la localización de la actividad productiva. En segundo lugar, la Unión Europea debería gravar (mediante impuestos compensatorios u otros instrumentos), las importaciones no europeas de países con legislación medioambiental más laxa para frenar un *carbon leakage* en estos sectores. En tercer lugar será indispensable el establecimiento de políticas tecnológicas específicas que promuevan la innovación en los procesos productivos y aceleren el avance en las curvas de aprendizaje de las tecnologías ahorradoras de consumo de combustibles fósiles ya implantadas pero todavía insuficientemente maduras. La adecuación de la política industrial a un calendario de adaptación que tenga en cuenta el itinerario tecnológico factible puede jugar un papel importante en la preservación de la competitividad de estas industrias.

Será igualmente crucial el diseño de una política industrial de acompañamiento para el sector de la automoción dado el peso del mismo (y de la industria de componentes) en la actividad industrial española. El radical cambio tecnológico que representa el vehículo eléctrico con batería (en probable paridad de coste con el vehículo de combustión interna a mediados de los años veinte) y, a más largo

plazo, la posible irrupción del vehículo con pilas de combustible, tendrán previsiblemente un efecto depresivo en la intensidad de empleo de los nuevos productos, pudiendo, además, provocarse cambios significativos en la distribución internacional de la localización de los nuevos procesos industriales. En el caso español, el horizonte para el límite de matriculación de los vehículos con motores de combustión interna está ya fijado (2040), lo que determina el calendario de un auténtico proceso de reconversión industrial. Además, dada la orientación altamente exportadora de la industria española de automoción y el control accionarial de sus empresas por grupos multinacionales, será necesario definir la política industrial para el sector con una visión de alcance global y, preferentemente, en un marco cooperativo dentro de la Unión Europea.

La atención sobre la distribución territorial del impacto de la transición energética en la actividad industrial y el empleo, a corto plazo focalizada en el sector del carbón y las centrales térmicas usuarias de este combustible, se irá progresivamente ampliando a medida que se perfilen más claramente otras repercusiones sectoriales. En este caso, la disparidad de los resultados de la política de incentivos regionales en el marco de la política de reconversión y reindustrialización debería servir de lección para la puesta en práctica de una política de compensación de perdedores territoriales. Aunque el dinamismo del tejido industrial y empresarial (factor decisivo para el éxito de las políticas regionales) no se improvisa, los diferentes componentes de una política industrial en sentido amplio (política tecnológica, política de recalificación de recursos humanos, etc.) deberían promover en las áreas geográficas más afectadas una mínima red de externalidades pecuniarias y no pecuniarias que minimicen el riesgo de declive. En la política de transición energética, además, no solo se plantean asimetrías territoriales en la distribución de los costes de mitigación sino también en los costes de adaptación. Incluso si se cumplen los objetivos de política climática fijados en España y Europa para 2050, es posible (ya está ocurriendo) que tengan lugar fenómenos climáticos extremos que necesiten poner en práctica políticas de adaptación que tengan en cuenta la desigual distribución territorial de los efectos del cambio climático.

Por último, un factor diferenciador de la política de transición energética en relación a la política de reconversión industrial, con importantes repercusiones en el diseño de una distribución más equilibrada de los costes, es su peculiar relación

(como ocurre con todas las políticas medioambientales) entre fiscalidad e instrumentos de actuación medioambiental. Un claro ejemplo es la posibilidad de “doble dividendo” (es decir, la utilización del suplemento de recaudación ligado a la imposición medioambiental para reducir la cuantía de otras figuras tributarias supuestamente generadores de ineficiencias). Habitualmente se suele considerar como candidatos a la minoración recaudatoria (por su supuesto mayor carácter distorsionador) a los impuestos sobre el capital y el trabajo. Jorgenson y otros (2013), utilizando un modelo de equilibrio general dinámico de la economía de E.E.U.U., consideran que la reducción en el impuesto de capital tiene un impacto superior en términos de eficiencia y la reducción del impuesto sobre el trabajo un mayor impacto en términos de equidad, aunque (según sus propios criterios de eficiencia y equidad), estos autores consideran que la minoración del impuesto sobre el capital tendría un efecto conjunto sobre el bienestar más elevado. Sin embargo, un grupo de distinguidos economistas de Estados Unidos (compuesto por premios Nobel, expresidentes del F.E.D., exsecretarios del Tesoro y expresidentes del Consejo de asesores económicos) en una declaración (Statement, 2019) en la que abogan por el establecimiento de un impuesto sobre el carbono en los Estados Unidos, proponen el reparto en cantidades iguales del exceso recaudatorio entre los ciudadanos, señalando que tendría un efecto redistributivo progresivo (algo que es cierto, aunque probablemente no sea la mejor alternativa en términos de eficiencia). La evaluación del efecto del “doble dividendo” en las diferentes alternativas dependerá de la aceptabilidad de los modelos teóricos empleados y de la evidencia empírica en su aplicación. Pero no cabe duda de que, combinado con una fiscalidad medioambiental integral, el “doble dividendo” puede suponer una fuente de recursos públicos utilizables para poner en marcha políticas de reequilibrio de los costes estáticos de reducción de emisiones, en consonancia con los principios de una transición energética justa.

En resumen, se pueden extraer lecciones de la política de reconversión industrial, para el desarrollo de una política de transición energética justa, en el terreno del diseño institucional y, sobre todo, en el ámbito de la compensación de perdedores a través de políticas de recursos humanos, políticas industriales de acompañamiento y políticas de desarrollo regional. Sin embargo, la política de transición energética presenta características económicas diferentes que las de la política de reconversión industrial, además de un mayor alcance y complejidad. Por otro

lado, la política de transición energética tiene posibilidades de apalancamiento en la fiscalidad medioambiental que no existían en la experiencia de la reconversión industrial.

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# What does “just transition” mean for climate change mitigation?

*Oliver Sartor\**

## Abstract

During the past few years, the concept of “Just Transition”, as used in relation to climate change mitigation, has increasingly gained attention. But while there is no shortage of talk and references to just transition, what is this issue really about? What do we mean by just transition? Do all actors in the climate mitigation debate mean the same thing? And what in practical and concrete terms might a just transition look like? This paper seeks to explore and shed light on these questions. This paper argues that there is no “universal blueprint” for a just transition. However, there are some common principles –principles that ultimately relate to basic philosophical ideas of natural justice, human decency and respect, and theories of effective social change— that are likely to be more or less universal across cultural contexts. In this author’s view, these will likely need to form an important part of the governance strategies for climate change mitigation to be both effective, socially acceptable and just.

Keywords: Just transition, climate change, climate policy, structural adjustment, coal transitions.

## 1. INTRODUCTION

During the past few years, the concept of “Just Transition”, as used in relation to climate change mitigation, has increasingly gained attention. In fact, it has become such an area of attention that environment and energy ministries in some countries have renamed themselves to include an allusion to the idea in their names. The former Ministry for environment and energy in France, for example, was re-baptised in late 2016 as the Ministry for Ecological Transition and Solidarity,<sup>1</sup> even though its scope of activities was largely unchanged. More generally, it is now difficult for self-respecting experts on climate mitigation, or for environmentally progressive political parties, to talk publicly about the idea of the energy- or low-carbon transition without making mention of the essential role of a just transition.

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1 “Ministère de la Transition Ecologique et Solidaire”, <https://www.ecologique-solidaire.gouv.fr/>

What does “just transition” mean for climate change mitigation?

But while there is no shortage of talk and references to just transition, what is this issue really about? What do we mean by just transition? Do all actors in the climate mitigation debate mean the same thing? And what in practical and concrete terms might a just transition look like? This paper seeks to explore and shed light on these questions. To do so, it starts by exploring a very brief history of the just transition concept (section 2). It then explores some of the negative and positive understandings of just transition, as well as their implications, the kinds of societal actors that focus on each (Section 3). Section 4 then looks in more detail at what just transition might mean in practice. It notes that the practical application will need to be highly differentiated based on geographical, social and economic contexts around the world.

To give a foretaste of where this paper is heading: it argues that there is no universal blueprint for a just transition that can reliably be transposed from one place to another without adapting to local context. However, there are some common principles – principles that ultimately relate to basic philosophical ideas of natural justice, human decency and the basic desire of people who are affected by economic and societal change to be respected and have their concerns taken seriously. In this author’s view, these will likely need to form an important part of the governance strategies for climate change mitigation to be both effective, socially acceptable and just.

## 2. THE JUST TRANSITION CONCEPT: A VERY BRIEF HISTORY

The idea of a Just Transition was essentially brought into climate mitigation discourse by two political events. One was the Paris Climate Agreement in 2015, whose recitals explicitly referenced the necessity to “*Tak(e) into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities,...*” (United Nations, 2015a, Recital 12). Since then, the idea of the need to combine deep, transformative and sometimes disruptive change with these concepts of social justice and inclusiveness, has increasingly become a core part of policy debates on implementing the Paris Agreement.

The Paris Agreement thus identified a few key ideas as constituting essential elements of a just transition. Namely, the ideas of a) fair treatment for strongly affected workforces needing to transition, b) the importance of decent work and quality jobs as part of the new green economy, and c) the need to align the transition with national development priorities. To date, these remain core pillars of what is understood by a just transition, whether by many national and international union confederations, governments in developed or developing countries or NGOs and researchers working on the topic.

This agreement on the core pillars of a just transition is no accident. On the contrary, the language that appeared in the Paris Agreement is the result of a deeper and more far-reaching process that culminated in the International Labour Organisation's (ILO) "*Guidelines for a just transition towards environmentally sustainable economies and societies for all*", (ILO, 2015) published prior to the Paris climate negotiations, in 2015. The ILO is a tripartite body, comprising representatives from employers, labour unions and governments in a large number of countries, between whom these guidelines were negotiated. The Paris Agreement therefore distilled down the essential elements of the ILO's Guidelines.

The ILO document is wide-ranging. However, it is nonetheless key to comprehending the concept of just transition, as it is understood by labour unions, social movements and developing countries, among other adherents to its conclusions. For instance, one key passage, defining just transition, notes that: "*a just transition for all towards an environmentally sustainable economy, as described in this document, needs to be well managed and contribute to the goals of decent work for all, social inclusion and the eradication of poverty*" (ILO, 2015, Chapter 2. Paragraph 4, p.4).

Moreover, the ILO's guidelines build on existing international agreements about what these terms mean. For instance, the Guidelines references to "decent work" build on the Decent Work Agenda: "*The four pillars of the Decent Work Agenda –social dialogue, social protection, rights at work and employment– are indispensable building blocks of sustainable development and must be at the centre of policies for strong, sustainable and inclusive growth and development.*"<sup>2</sup> (ILO, 2015, Chapter 2.

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<sup>2</sup> <https://www.ilo.org/asia/decentwork/lang--en/index.htm>

What does “just transition” mean for climate change mitigation?

Paragraph 1, p.4, CF) The references to eradication of poverty and rights to development, in turn, refer to the UN’s 2030 Agenda and the 17 Sustainable Development Goals (United Nations, 2015b).

## 2.1. Just Transition as a ‘negative’ concept

All this may give the impression that the ILO’s Guidelines define just transition as a “negative” concept, *i.e.*, that just transition is understood as ensuring that the low-carbon transition to tackle climate change does not restrict or impinge on certain values or goals. Workers, for instance, are to be compensated with equivalent high quality work. This negative idea –*i.e.* of limiting or mitigating negative consequences caused by the transition– is indeed the side of the ILO guidelines that labour unions, governments whose economies have important fossil fuel dependencies, and others who are sympathetic to the precariousness of certain workers or regions, tend to focus on.

Thus, for instance, during COP24 –which took place in the Polish coal mining region of Katowice– the Polish Presidency focused a good part of its diplomatic attention on giving birth to the Silesia Declaration on Solidarity and Just Transition. This Declaration, which was signed by 48 states, and sought to “*emphasis[e] the need to lead change together with people through the solidarity and fair transformation of regions and industrial sectors*” (UNFCCC, December 2018). This was to be done by “*building low greenhouse gas emission and climate resilient economies, … while ensuring a just transition of the workforce that creates decent work and quality jobs*” (*Ibid*).

The concern about what happens to workers and communities linked to the fossil fuel sector or other emissions-intensive activities has also been a key focus of the environmental NGO and think tank community. While this community has latched onto the moral importance of just transition in full sincerity –it makes no sense to commit social injustices to pursue “climate justice”– its political interest originates in the desire to remove a potential political obstacle to the low carbon transition. This strategic concern has been reinforced by the strength of the more general populist backlash that has occurred across the globe during recent years, where working class people have rebelled against the “globalist” agenda of urban

elites, and of which climate change mitigation is a part. US President Donald Trump's stated support for the coal workers of the dying US coal industry and his reneging on the U.S.'s participation in the Paris Climate Agreement are perhaps the best known –but far from the only– example of this.

It is in this context, then, that governments and non-governmental actors have sought to put just transition at the centre of climate policy to try to avoid climate becoming victim to populist backlash. Thus, for example, the European Union in 2017 developed a range of initiatives that aimed to do this, *e.g.* the Coal and Fossil Fuel Regions in Transition Initiative, which sought to share knowledge and identify ways to accompany cities and regions and workforces in Europe's 41 coal-using regions to transition out of coal in a just way. As part of this initiative, the EU has also established a Just Transition Fund under the revised EU ETS Directive (European Commission, 2018a) and Just Transition has become a key topic for member states to plan and report on under their new National Energy and Climate Plans, under the EU's new Energy Union Governance Regulation of 2018 (European Commission, 2018b).

## **2.2. Just Transition as a positive concept**

However, there is another important aspect to the just transition concept in the ILO guidelines, which is important not to overlook. This is the idea that climate change and environmental degradation itself is a major threat to the existence of just societies. This was a fact that was highlighted strongly in the IPCC's Special Report on 1.5°C (IPCC, 2018), which essentially argued that a > +2°C world is much less just and egalitarian than a +1.5C world. The stresses climate change will place on ecosystems, food scarcity, water availability, human health, economic activity (and thus employment and development), migration patterns, and exposure to extreme weather events will, it was argued, inevitably fall more heavily on poor countries and on the poorest within countries.

Thus, it is noteworthy that the ILO's Guidance begins with a paragraph that reads: *"Sustainable development means that the needs of the present generation should be met without compromising the ability of future generations to meet their own needs. Sustainable development has three dimensions –economic, social and environmental–*

What does “just transition” mean for climate change mitigation?

*which are interrelated, of equal importance and must be addressed together*” (ILO, 2015, p.4). This is crucial, because it posits the idea that for justice to occur, an ecological transition is required. The idea of “climate justice” is therefore embedded in the concept of just transition. This helps to explain why the idea of just transition and climate mitigation tend to fit relatively well together, and why the discourse of both unionists and environmental NGOs have tended –up until now– to align relatively well to pursue what might otherwise be considered conflicting political aims: the two groups essentially seek a more just world and a better society. It is hard to maintain a philosophical claim to one, without acknowledging the other, while still appearing intellectually coherent.

Perhaps the most salient example of this alignment –*i.e.* between the idea of a better, more just society, and a just transition to a decarbonised economy– can be found in the resolution the US House of Representatives calling for a “Green New Deal” (United States House of Representatives, 2019). With its reference to the [Social and Economic] New Deal of President Roosevelt, the Green New Deal brings together the ideas of economic progress, climate justice and a more just society into one political narrative. Historically speaking, it also conjures up the powerful symbolism of the US war-time industrial mobilisation together with the ideas of “no-one left behind” in the Great Society program. In a sense, the Green New Deal is the just transition personified in a positive political narrative, that defines a vision of a more desirable, more just society. It is perhaps also good politics – since at least it tries to essentially create an alliance between the great social and the environmental challenges of our time.

However, this alignment between the climate and ecological transition and the goal of a more just society is not only “clever political messaging”. The literature on deep decarbonisation scenarios and pathways provides some support for the idea that climate mitigation can also be a motor for a progressive social agenda, as well as more general societal and economic progress [Cf. for example, New Climate Economy (2018); European Commission (2018c); IDDRI (2015a); Coal Transitions (2018a)]. The transition to a GHG neutral economy provides many opportunities to make people’s lives better and society more just. For example, investment in energy efficiency of homes and appliances can help reduce energy bills –often significantly– for those who are counted among

the “energy poor”.<sup>3</sup> The bio-economy, more efficient farming practices and exploitation of forest sinks can help to reduce input costs and diversify income for farmers, who often are among the most economically vulnerable groups of the economy. By transitioning to electric or other non-internal combustion vehicles in cities and urban areas, it is possible to dramatically reduce the local air pollution that causes respiratory disease, and make cities more liveable. Such examples of mitigation measures that could improve the lives of citizens, and especially those who are least well-off socio-economically, as a co-benefit of climate mitigation abound. Indeed, it would be possible to write an entire paper just listing them.

The socially progressive aspects of a just transition to a decarbonised economy is not only true for rich countries either. On the contrary, examples abound of the ways in which the transition has the potential to improve the quality of life of the least well off in developing countries. For instance, in place like India or Sub-saharan Africa, there is growing evidence that decarbonised alternatives can now provide access to electricity to those without it either more cheaply or at equivalent cost, while also doing so more reliably, and being deployed more quickly (via small scale off-grid solutions), than via conventional fossil fuel power plants and grid connections [Cf. for example, IEA (2017); Coal Transitions (2018a)]. Moreover, as noted above, climate change will also very likely hit the most vulnerable the hardest and thus tend to exacerbate existing socio-economic inequalities in societies.

Against this view, it is sometimes argued that fossil fuels are nonetheless essential for the industrial development of developing countries. This, the argument goes, is why they have embraced them so wholeheartedly in places like China, India, South East Asia, etc., and continue to do so (the number of coal plants being financed by the Chinese Belt and Road Initiative is often pointed to for instance). However, this overlooks several issues. First, it assumes that the past is a good guide to the future – but given the speed at which decarbonised energy technology is developing and how recently cost parity is being attained in sunny and windy places, this is probably not the best guide to the economics

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<sup>3</sup> Energy poverty is typically defined as households paying more than 10% of income in energy bills per month, or households that regularly miss or struggle to make energy bill payments.

of energy in the future. Second, it overlooks the realities of the politics behind these choices. It should go without saying that investment decisions in the energy sector are not always made by pure economic cost considerations alone and in this area clean energy unfortunately starts at a political economy disadvantage in many developing countries. Thirdly, it overlooks the fact that inside many developing countries, the monetary and non-monetary costs of continuing the fossil-fuel based growth are increasingly becoming a major political issue. For instance, basic issues like equal access to clean air, clean water, and clean soil, are coming into focus as major political issues for the populations –and thus for governments– in developing countries. For populations in these countries, therefore, just transition is also about these issues. It is not only about mitigating the impacts on workers or regions of fossil fuel sector phase-downs.

The positive concept of just transition thus focused on the possibility of ensuring that governmental approaches to climate mitigation are designed to contribute to the creation of a better, more equal, society, is a thus a different take on the just transition idea. Rather than seeing the transition in the traditional economic sense as something that brings a cost burden onto society that should be minimised via “least cost policy interventions” and its distributive impacted “mitigated”; this approach posits the transition as an opportunity to bring net benefits to society – if not everywhere and always, then at least across many aspects of the transition. The transition itself can thus often be the source of greater social and economic justice, rather than purely being a source of injustice to be compensated for, or somehow mitigated.

Advocates of this “positive” approach to the question of just transition and climate mitigation appear to be growing, even if they don’t always use the language of just transition to describe it. Whereas this approach was initially championed by think tanks and research institutes working on long term decarbonisation pathways (IDRRI, 2015b; New Climate Economy, 2018), –perhaps motivated by the need to make the transition more attractive to developing countries who were not attracted to thinking about minimising sets of costs– the “positive agenda” for climate mitigation is now becoming embedded in things like the Green New Deal proposal (mentioned above) or in the narrative of the European Commission about its future vision of EU climate policy (European Commission, 2018c).

### 3. IMPLEMENTING JUST TRANSITION: FROM THEORY TO PRACTICE

Above two broad approaches to the question were outlined, *i.e.* “positive” and “negative”. This section thus discusses experiences reflecting each.

#### 3.1. Socially progressive approaches to a just low-carbon transition: insights from a French case study

Systematically complete examples of the “so-called” positive concept of just transition are limited, since the idea is a relatively recent one and experience is limited. As noted above, policy makers in both the EU and US have increasingly sought to create a positive narrative for climate policy, based on the numerous social and economic co-benefits of the transition itself. It remains too early to assess how effective this narrative is and how well this vision will be translated into concrete policies.

However, there are some interesting examples of countries currently making attempts to go in this direction. The case of France is interesting in this regard. Despite its reputation for having mismanaged the social aspects of the energy transition in relation to fuel taxation (one of the many factors that led to the so-called yellow vests protests), the Macron government in France was and is making an attempt to align the pursuit of environmental and social objectives via the energy transition. This example is instructive both because of what was attempted and because it highlights also how such approaches can be undermined by intrinsic and extrinsic weaknesses in policy implementation.

In 2017, the newly named Ministry for Ecological and Social Transition in France, set out its Plan Climat (Ministère de la Transition Ecologique et Solidaire, 2017) – essentially an agenda and set of policy announcements for the new government’s 5-year term. The Plan Climat included several policy ideas that sought to bridge the socially progressive and environmental:

What does “just transition” mean for climate change mitigation?

- Implementing bonus payments for low income households to replace their old, less efficient internal combustion vehicles with cleaner alternatives (even if a second hand vehicle).<sup>4</sup>
- Investing 4 billion Euros in an effort to eradicate energy poverty, notably by subsidising and prioritising the retrofitting the homes of some of the poorest households, many of whom tend to own the least well insulated dwellings.
- Supporting investments in so-called «auto-consumption» of renewable electricity, thus allowing homeowners in rural and non-urban areas to gain access to seemingly cheaper forms of electricity than via the grid.
- Establishing a process of so-called Ecological Transition Contracts (CTEs), aimed at encouraging territories and local communities in France to negotiate deals with the central government to support the creation of employment through the green economy, accompanied in the social transition away from local fossil fuel industries, and support local ownership of the transition.
- Launching a public consultation and policy development process on the theme of “better eating”. The subjects dealt with during this process included the development of organic foods to better protect consumer health, supporting the wages of farmers via the development of the bio-economy and more sustainable agricultural practices, etc.
- Announcing an end to the sale of internal combustion vehicles nationally (and thus also in cities where local pollution is known to cause major respiratory illnesses) by 2040. The purpose of this was to allow the automotive industry time to adjust, while also providing clear guidance on the direction of travel, and tackling both climate and local pollution problems simultaneously.

The Plan Climat was a well-intentioned new direction for French climate policy. However, as subsequent developments would reveal, it was not without certain

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<sup>4</sup> Most lower- and even middle-income households purchase second-hand rather than new vehicles, thus making them potentially ineligible for pre-existing bonuses for clean new vehicles (Sartor, Spencer and Fryatt, 2017).

weaknesses that were not fully appreciated at the time. One such weakness lay in the policy design of certain of the measures. For instance, while subsidies for energy efficiency retrofits are indeed available, the administrative complexity and monetary cost of applying for them are prohibitive for many households, especially for the targeted socio-economic groups.<sup>5</sup>

Another key weakness was a failure on the part of policy elites to fully grasp the nature of broader economic and political grievances being felt by some of the French working and middle class. In this context, many felt that these measures were too little, too late. For instance, while motorists no doubt appreciated the possibility of a bonus to buy a more efficient vehicle, some expressed resentment that the higher fuel efficiency would be wiped out by higher taxes on motor fuels and the longer distances they were required to travel to work, or at the need to use their car more often to compensate for a decline in rail services, or they felt stuck because of the sheer cost of changing vehicles, etc.<sup>6</sup>

Another major weakness, and one which served as the “spark” for the yellow vest protest movement, was the decision to simultaneously implement a significant rise in fuel taxes. This involved simultaneous decisions to raise the carbon tax (contribution climat et énergie) on motor fuels, together with a decision to quickly align diesel and gasoline taxation rates. These policies were made more visible by the fact that, by chance, fuel prices were rising because of a renewed growth in global oil prices. Interestingly, some have noted that neither the yellow vest movement, nor other political campaigners for social justice, have ever questioned the need for aligning diesel and gasoline taxes or higher carbon taxes on fuel. They point out, however that what was missing was a credible story for motorists about how this would help the environment, since motorists considered that they had no alternative form of transport, they thus felt that they had no choice but to pay the higher fiscal burden.

One should be careful not to overstate the errors of the French experiment with the social and ecological transition to date. The yellow vests movement was a complex social and economic phenomenon, and ultimately has a lot more to do

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<sup>5</sup> Pers comm. (15/05/19) Y. Marignac, expert on French energy policy, Association Négawatt.

<sup>6</sup> Pers comm. (15/05/19) Y. Marignac, expert on French energy policy, Association Négawatt.

What does “just transition” mean for climate change mitigation?

with blow-back from two decades of rapid globalisation, and a much profounder sense of political and economic disenfranchisement, than anything specific about the Plan Climat.

Nonetheless, the French case is an important lesson that the quality of policy implementation and communication matters crucially to the way that socially progressive environmental policy is ultimately perceived. However, this lesson is not unique to France. For instance, one can cite the numerous hiccups that the Chinese government has faced with replacing coal-fired heating by lower carbon alternatives (Greenpeace, 2018) — something intended to improve citizens health, but, because of implementation mistakes, ultimately led to citizens going without heating during periods of the winter.

Another relevant example is the present South African government’s decision to align the phase-in of renewable energy with the partial privatisation of the power sector through Renewable Energy Independent Power Producer Program (“REIPP Program”) (World Bank, n.d.). This has had the unintended effect of turning a progressive social and environmental policy (since in South Africa wind and solar are now cheaper than maintaining the existing coal-fleet) (Coal Transitions, 2018e) into a clash between the government and labour unions, who fear that renewables imply privatisation which implies loss of social protections for workers (Coal Transitions, 2018e). These examples highlight the extent to which implementation matters when it comes to evaluating the acceptability and real world impact of Green New Deal-type policies.

### **3.2. Who deserves dedicated “just transition” policies?**

Turning from the “positive” to the “negative” concept of just transition, there is a broader literature, detailing lessons from historical cases of industrial transitions in response to various kinds of economic shocks. There is also a growing literature on just transition policy options. Moreover, there are some recent examples (albeit based on “unfinished” processes), of “just transition” deals or policy frameworks between governments and civil society stakeholders for specific fossil fuel (essentially coal) phase out policies.

The literature on just transition in this context tends to focus on two key dimensions: labour force transition and regional economic resilience and transition. However, before discussing these dimensions, it is important to reflect briefly about which kinds of sectors and situations give rise to a need for dedicated just transition policies.

To date, the call for just transition policies has largely occurred in the context of phase down of fossil fuel extraction, essentially coal. In this case, a need for a dedicated policy has tended to be justified because of the geographical concentration and remoteness of mining activities, as well as the specific nature of the impacts of the activities on the workers and the regions. The geographical concentration of extraction activities, as well as the fact that fossil fuels extraction often tends to crowd out other economic activities (due to local pollution, land-lock, unbalanced work between men and women, the health impacts on workers, etc.), means that the transition to new jobs and new sources of economic self-sufficiency will be much harder in these regions. Indeed, history of past coal transitions has repeatedly shown that such regions often experience systematically higher rates of unemployment, lower rates of workforce participation, poorer health and education outcomes, higher crime rates post coal phase down. Moreover, such effects have often lasted for generations, thus disadvantaging not only the displaced mining workers, but also their children and the broader community.

The geographical concentration of coal and arguably also oil or natural extraction activities is therefore an argument as to why “special treatment” could be justified –in the form of dedicated just transition policies for the workers and regions– even though such special assistance is not provided to workers in other parts of the economy. For instance, it may appear hypocritical or unfair to spend significant resources on a just transition for workers or regions affected by climate change, and not those affected by other, everyday economic forces, such as automation, globalisation and digitalisation. However, in some cases, these economic activities are more diffuse, suggesting that it is the broader social safety net and macro-economic performance of the country which are at issue. Admittedly, however, this is not always true – as evidenced by the extent to which globalisation has tended to significantly punish specific geographically concentrated regions of countries at the expense of denser urban areas.

What does “just transition” mean for climate change mitigation?

There is, therefore, an open question of broader social fairness that is raised by calls for a just transition for fossil fuel extraction sectors that is somewhat unresolved. Not least of all, because the transitions of coal regions to date have seen very significant amounts of public funds invested in helping workers or regions. For example, Germany’s recent Coal Exit Commission (Clean Energy Wire, 2019) –a body of coal sector stakeholders established to reach a set of recommendations on when and how to phase out coal mining and use— ultimately called for 40 billion Euros to spend on the transition over a period of 20 years. Although part of this money was meant to partially also compensate companies with stranded assets (a dubious proposition from a just transition standpoint) and also compensate regional electricity consumers for possible higher power prices, the deal nonetheless included around 20 billion for workers and regions. For 30,000 workers in the broader coal sector (DIW Berlin, 2018), this amounts to roughly 667,000 € per worker. While much of this will also benefit the regions, and not just workers, the sums are nonetheless considerable and not necessarily something that can be easily replicated across other, sometimes larger sectors of the economy. For instance, Germany’s automobile sector numbers in the order of 250,000 workers (DIW Berlin, 2018).

It is perhaps reassuring then to realise that in other heavily emitting sectors, the social implications of the transition to a net zero emissions economy may be quite different from coal, gas and oil. For instance, in the automobile manufacturing sector –where there will likely be significant job turnover as it moves from internal combustion to electric or hydrogen and e-fuels vehicles– the sites themselves will probably not change location. Moreover, the onus of government to take responsibility for compensating workers (or companies) may not be the same, since the companies are likely to remain in place, but simply to change their business models to adapt to the low carbon economy.

In the buildings sector, where energy retrofitting and fuel switching are the main drivers of emissions reductions, the transition is expected to create jobs, and provide opportunities to up-skill, rather than to destroy them. Similarly in the forestry sector, where wood harvesting as a construction material or new forestry and land use management activities call for new jobs to be created.

In the manufacturing sector, most business models are not put into question by the idea of decarbonisation, with the possible exception of very specific processes, such as some sites with Blast Oxygen Furnace Steel-making. Even many oil refineries can, at least in principle, be redesigned to support the bio-economy, chemical recycling of CO<sub>2</sub>, etc. (although in practice some may indeed close).

In the agriculture sector, long-term scenarios for achieving net zero compatible production suggest agricultural activities will in large part continue and actually expand to serve the bio economy. However, as in manufacturing, the issue will be about how to create viable business cases for farms to change their product mix and adopt greener production methods, while remaining economically viable.

One sector that may risk facing a highly negative impact from climate policy, but which may be quite different from fossil fuel extraction in nature, is the tourism industry. In 2019, as tourism continues to grow, this may seem a far-fetched scenario. However, based on the current status of technological development of zero carbon passenger flight solutions, and given the long lived capital stock of the aviation sector, long-term scenarios under which the world achieves net zero and then net negative emissions reductions often point to a need for a decline in the use of passenger air travel (IPCC, 2018). Policies such as significantly raising the (currently low) tax levels on the fuels of short haul flights as compared to those of road transport have been proposed. Such scenarios would obviously have strong implications both for equality of access to flights (*e.g.* on the wealthier would be able to fly) and, although alternative options like train or decarbonised road transport may be available, this is likely to be contentious. However, perhaps most significantly, tourism is a major source of revenue for many regions around the world, and, as such, these regions are often highly geographically concentrated and highly specialised in related services. Thus, while these sectors would not necessarily need to be phased out completely, as in the case of coal, some form of structural adjustment assistance may eventually be needed.

Nevertheless, in many sectors just transition will not necessarily require similar levels of public money to be spent on compensation and rebuilding communities post-carbon. However, it will require attentiveness to the distributional impacts of policy choices across numerous sectoral interventions. For example, this will

What does “just transition” mean for climate change mitigation?

be true for carbon taxation policy, where care will need to be taken that taxes and the use of the revenue gained from green taxes are not (or are not perceived to be) regressive or punitive. Similarly, subsidies for early adopters of green technology (*e.g.* electric vehicles, smart meters, etc.) may well be justifiable as necessary green innovation support policies. However, as early adopters tend to be higher income households, care will be needed to ensure that lower income brackets do not find themselves excluded from the benefits of the transition. In policies targeted towards lower income brackets, such as building retrofits, policy design will need to reflect the fact that such consumers are often “low-information” or “late adopters” for a variety of reasons. Careful policy design to ensure that the intended effects are realised will therefore be crucial.

### **3.3. Policy priorities and options for just transition in the context of phase down of fossil fuel extraction**

For the extraction sectors, how specific policies will be implemented depends crucially on local conditions. In a country like Germany, where coal workers number in the order of 30,000 nationally, and are concentrated in four main centres of activity, the requirements of a just coal transition policy will have certain implications. However, in a country like China or India, where coal sector employment numbers in the millions of workers, where major public infrastructure and services are paid for by the sector’s activities and managed by semi-governmental state owned enterprises, the solutions reflecting the form of a just transition are likely to be somewhat different. In such situations coal sector transition is essentially a macro-economic (rather than just a microeconomic) issue, given the scale of the problem. That said, many of the issues are arguably similar, and thus the following discussion remains relevant.

#### ***3.3.1. Workers***

Workers want to be consulted on the transition and for meaningful social dialogue to take place concerning their future. When they are consulted, workers’ demands are typically quite common. They want to know how they can have an alternative job, of equivalent quality. They want to know who will pay for the transition. They also want to know why they should trust the party offering them a deal.

Once dialogue can take place and workers concerns are heard, a range of solutions can and have typically been used to facilitate a fair transition, that workers often find broadly acceptable. Solutions can include things like (Coal Transitions, 2018a):

- Setting a timeline for the phase down of activities (depending on scale, this could be, say, a 5, 10, 15 or even 20-year period), ceasing the training and hiring of young workers and allowing existing workers to either retire naturally or leave the workforce through natural attrition.
- Providing a bridge to pension (retirement benefits) for older workers who may struggle to find alternative employment.
- Supporting workers who have appropriate skills and/ or are willing to change roles take on alternative roles within the company.
- Offering voluntary redundancy packages to workers who have a credible alternative professional plan.
- Developing regional worker transfer programmes to support the direct transfer and on-the-job retraining of workers with appropriate skills to move to an alternative local job.
- Offering employees who may struggle to find work in other roles or sectors the option to transfer their skills to alternative coal-based sites with the company (as some sites will close faster than others).
- Establishing retraining programmes for specific subsets of workers identified as likely to succeed (often younger workers with some post-secondary education) (Kluve *et al.*, 2017).
- Providing relocation assistance programmes for more isolated regions, to support workers willing to relocate to pursue an alternative professional plan.

However, workers are not an homogeneous mass and solutions need to be careful of “one-size-fits-all” approaches. What works in one region or with one set of workers

What does “just transition” mean for climate change mitigation?

may not be appropriate for others, depending on their profile. The key for policy makers and company transition programs is therefore to aim for as differentiated and individualised approach as possible, reflecting, to the extent possible, the desires, potential, and opportunities available to different categories of workers.

A key challenge for ensuring successful worker transition (and also for strongly affected regions) is often the issue of starting the dialogue. It is ideal if dialogue and planning and management of the transition can start as early in the process as possible, as the more time to anticipate and adapt to the transition, the easier the adjustment process is. (For example, a gradual but managed transition over 15 years can allow most workers to retire or leave the workforce through natural attrition and for other local industries to be developed, while an abrupt closure with one or fewer years’ notice is much harder to manage) (Wiseman, Campbell and Green, 2017). However, initiating the process requires trust. Actors, whether on the labour unions side, companies, or regional and national governments, will often have powerful incentives to avoid bringing the transition issue “from the future into the present”. In Germany’s recent experience, for example, some experts note that it required the crystallisation of the perceived need to phase out coal from the national long-term climate strategy (BMV, 2016) and national climate targets discussion,<sup>7</sup> along with the promise of money from the federal treasury, that helped orient the debate towards seeking a deal on a managed process.<sup>8</sup>

### **3.3.2. Regions**

Managing the economic transition at the regional scale as local fossil fuel or other activities decline is a crucially important matter for a just transition. This is not just for former coal sector employees, but also for their dependents, their children, and other economic activities in the region that depend indirectly on fossil fuels. This is a complex issue and arguably the biggest governance challenge of the energy transition. A failure to address the aspects of the local economic

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<sup>7</sup> Germany has been engaged in a discussion on how to make up for missed CO<sub>2</sub> emissions reduction targets for 2020 and potentially 2030 that has also lead to a discussion on the need to explore coal phase down.

<sup>8</sup> Pers. Comm. S. Karcher, German Environment Ministry Official (23/05/2019).

transition for citizens of fossil fuel dependent regions can have negative social and economic outcomes (Coal Transitions, 2017). If unaddressed, historical examples show that it can lead to higher intergenerational unemployment and persist social problems.

At the same time, coal-related activities, especially coal mining, often impose significant costs on local communities. For instance, coal intensive regions in South Africa exhibit higher unemployment rates than the national average (Coal Transitions, 2018f), and this is true across many coal mining locations, both present (*e.g.* Appalachia, Germany's and Poland's lignite areas) or past (*e.g.* Limburg in the Netherlands). This is related to a socio-economic phenomenon known as "lock-in" in specialised literature, whereby fossil fuel extraction activities paradoxically weaken the ability of the region to attract alternative industries, thus increasing dependency on fossil fuels (Campbell and Coenen, 2017; Herpich, Braners and Oei, 2018). Attention should therefore be paid not to mischaracterize the complex interplay of costs and benefits that coal mining brings to local economies.

As in the case of workers, the literature suggests that there is no universal blueprint for regional economic transition strategies. The nature of the challenge and range of possible solutions depend crucially on local context. Based on experience from past coal and industrial transitions, Coal Transitions (2018a) identifies issues such as the geographical proximity of the local community to other centres of economic activity; the size of the coal sector in the local or regional economy (GDP and employment); the financial links between the coal sector and the local government and provision of local services; the degree of mobility of workers in the region (*e.g.* are they fly-in/ fly-out workers or local residents? Do they have children and families living in the region, etc.).

Depending on how these questions are answered, different solutions can be envisaged. For example, in places such as Polish Silesia, with a relatively high population density, some existing economic diversity and potential for further economic diversification, but where coal represents an important but minority share of the local economy, an optimal strategy can be to promote greater economic diversification, invest in new industries, infrastructure and environmental remediation.

What does “just transition” mean for climate change mitigation?

At the other extreme, for an isolated mining region in Australia, where over 90% of the local economy and employment is supported by mining, workers are mostly flown in and on temporary jobs, and coal is largely sold to overseas customers rather than locally, an optimal strategy may be a managed decline post-coal. Ultimately, solutions will need to be context dependent and developed with the strong involvement of the local actors who will be tasked with carrying out the bulk of the economic transition strategy.

Depending on how the above questions are answered, the literature (Coal Transitions, 2018a) has identified a range of options:

- “Related diversification”: this involves developing industries that are related to existing economic activities and industries but do not depend on coal for their existence.
- “Smart specialisation”: related to diversification, this involves supporting the growth of economic activities that build on an assessment of the region’s strengths and competitive advantages. In coal regions, this could include existing power, rail or port infrastructure, land availability, cultural and industrial heritage, skills of the local workforce, existing industries with growth potential, etc.
- Strengthening of local entrepreneurial networks: Smart specialisation strategies often require creating or strengthening networks between higher education and professional training organisations, local companies and entrepreneurs, local government, organised labour, in order to identify and support the growth of suitable entrepreneurial activities.
- Improvement of local infrastructure: Improving infrastructure can be a way to increase the local economic attractiveness of the region for investors, increasing opportunities for economic linkages between the region and other zones of economic activity and employment, increasing the productivity and growth potential of local industries, creating opportunities for former coal workers to stay in their regions despite missing local jobs.
- Improvement of “soft attractiveness factors”: This can support re-investment in the area, underpin land-value and thus the wealth of the local community,

and limit or reverse demographic outflows. Soft factors of attraction include cleaning up local pollution from mining, land reclamation and beautification, good internet access, access to local amenities for families and educational opportunities for children, policies to limit drug use, etc.

- Location of public sector activities in the region: This can help mitigate demographic decline, provide additional economic demand for the region, and potentially support the development of new strategic industries. It can include military bases, university or higher education facilities, new schools or hospitals, research hubs, regional government administration offices, etc.
- Location of nationally-relevant innovation or energy transition projects in the region: Often regions with a strong link to the energy sector are keen to retain it as it is part of the local identity, and they may possess the infrastructure to do so.
- Managed decline: In some cases, *e.g.* in remote mining regions, the only realistic solution may be to accept that it makes no sense for the town to survive beyond coal.

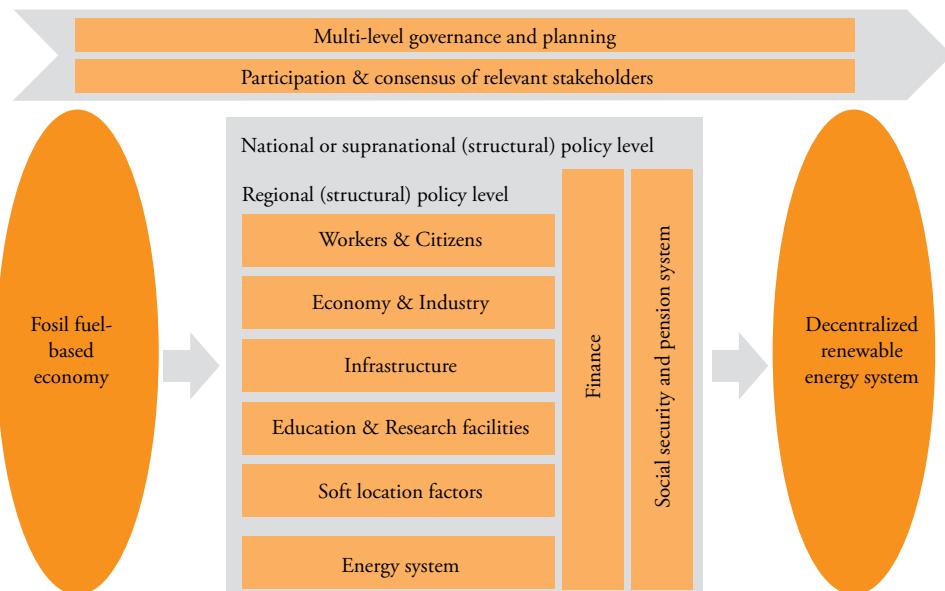
While many possible solutions exist in principle, expectations need to be managed. Historical experience shows that, where fossil fuel extraction is a significant part of the local economy and a major local employer, regional economic regeneration can be a generational or even multi-generational process (Coal Transitions, 2017). Today, in sectors like coal mining, it is often less important in regional economies as an employer than it has been in the past. However, structural economic change still takes significant time, resources, and a process of trial and error. Beginning the process of economic diversification is therefore a matter of urgency for all coal-and fossil-fuel intensive regions that wish to survive and provide equivalent or better economic opportunities for the next generations.

Moreover, given the long-term nature of the problem, adequate governance to manage a process over time will therefore be crucial. Historical experience tends to suggest that multi-level governance is important to link local level knowledge and competence with competences at the national level (Cf. Exhibit 1).

What does “just transition” mean for climate change mitigation?

### Exhibit 1

#### Key elements of fossil fuel transition policy



Source: DIW Berlin, [www.coaltransitions.org](http://www.coaltransitions.org)

## 4. CONCLUSION

The concept of just transition as originally envisaged and negotiated by the International Labour Organisation in 2015, and embedded in the Paris Agreement, is a more complex concept than is sometimes appreciated. Although it is often understood in the environmental movement as essentially a way of mitigating opposition to the transition, via the negative impacts on fossil fuel extraction regions, or as an argument for compensating workers by labour organisations, the concept has broader significance and more positive potential than is commonly appreciated. Just transition, more fully understood, is about making the transition to a decarbonised world in a manner that is compatible with basic principles of justice.

A transition compatible with basic justice means, first and foremost, ensuring “climate justice”. At least seen from a utilitarian perspective, the threat to fossil fuel sector-related workers and regions is quantitatively small compared to the threat posed by  $>+2^{\circ}\text{C}$  climate change. However, utilitarianism is not the only metric of

justice. Depending how the transition is implemented, the post-carbon transition also has the potential to have meaningful impacts on human development, on employment and economic security, on empowerment of consumers, on human health and on the quality of life of citizens in various ways. These impacts can be positive or negative depending on policy design and implementation. The call for just transition is therefore a call to policy makers to exploit these opportunities and avoid these risks when making important choices. This relates to concepts of justice that have to do with human progress and distributive justice.

Finally, there are cases where it is important to anticipate and mitigate the disproportionately negative social impacts of the transition to clean energy. This relates largely to geographically concentrated sectors –essentially fossil fuels extraction and perhaps tourism– who, it can be argued, have a special claim to be treated as an exception and for whom dedicated efforts are required that go beyond to the social safety net. In these cases, solutions exist, but must be tailored to local contexts. Just transition in these cases is most important not only for workers, but typically for future generations who may be affected by the opportunities (or lack thereof) that they face in the region. Long-term, integrated governance is therefore required to accompany these communities over time. Thus, even in such cases, just transition is not simply an issue of compensation, nor of pure acquiescence to the demands of workers and citizens. It is rather again about principles of equality of opportunity for future generations. Meanwhile, for present day workers and citizens, it is fundamentally about engaging with respect and good faith in order to seek mutually acceptable solutions. Deals implementing “just transition” for such communities will of course always be political, and resources will always be limited to meet all demands. However, what arguably matters most is the process of engagement between parties and the extent to which it is founded on a respect for different perspectives and good faith attempts at integration of their (legitimate) concerns into decision making.

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# The transformation of the Spanish basic materials sector towards a low carbon economy\*

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## Abstract

Since the end of 2016, the Climate Friendly Materials Platform (CFMP) brings together policy makers, industry representatives, practitioners in industrial decarbonisation, and applied researchers for the development of a shared understanding of tangible policy options and eventually common policy action at the national and EU levels to the overall goal of successfully decarbonize the basic materials sector. As part of this network, the Institute for Research in Technology (IIT) of the Universidad Pontificia Comillas organized a round-table discussion in Madrid on the 21<sup>st</sup> of January 2019. Participants from industry, governmental and non-governmental organizations discussed the current state of the Spanish basic materials sector and the domestic and global challenges the Spanish industry is facing with regard to industrial decarbonisation in the 2050 horizon. Together they identified risks for the Spanish industry especially for the post-2030 period, and concluded that a long-term strategy is required to achieve an inclusive transformation of the national and European industry, and to ensure that decarbonisation does not lead to the deindustrialization of the European economy. This report serves as a background document for the national discussion, providing in-depth analysis of the Spanish basic material sector, analysing past and current national policies, and summarizing the results of the national round-table event.

Keywords: Decarbonisation, industry, energy transition.

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## 1. INTRODUCTION

Production of basic materials (cement, iron and steel, paper and board, aluminium, as well as chemicals and petrochemicals) account for around 16% of European GHG emissions (DIW calculations based on EEA (2012) and EEA (2016)).<sup>1</sup>

For some time this number was regarded to be sufficiently low to be out of the primary focus of policy makers – which was largely dedicated to improving the power sector and generally increasing energy efficiency. However, the Paris Climate Agreements' commitment to reaching *net carbon neutrality* by mid-century implies that a comprehensive industrial policy strategy is required that also tackles CO<sub>2</sub> emissions from the basic material production.

This is reflected in the reform of the EU ETS Directive approved in 2018 for the 2020-2030 period. The discussion remains focused on how to secure sufficient free allowance allocation to ensure that sectors like steel are protected against investment- and carbon leakage. Furthermore, it also raised awareness within the senior management of the major material producers that business as usual investment plans are not compatible with the long-term emission reduction objectives formulated in the Paris Climate Agreement, both at the European level and in many Member States.

This raises the question for the management of international companies, of whether to pursue major (re-)investments in carbon intensive production processes of basic materials during times when financing is being withdrawn from coal plants and when there are large scale write-offs on existing power stations in the power sector. Apart from concerns of carbon leakage, there are risks of changing demand patterns for carbon intensive materials and competition from new investments in climate friendly production processes.

To overcome this inertia, the European Commission was asked by the heads of Member States to outline a 2050 long-term vision for Europe. The document was presented in November 2018 (European Commission, 2018a). The Commission,

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<sup>1</sup> About 1/3 of these emissions are indirect emissions from producing electricity for basic material producers.

as well as several Member States, hosted workshops with all basic materials sectors to inform about scenarios capable to reach carbon neutrality by mid-century and demonstrate the portfolio of existing and proven technologies.

Obviously, such a vision cannot be used in our complex market-based economies to prescribe specific technology development and choices – particularly in an environment with large-scale uncertainty and asymmetric information about costs and performance of such technologies. However, it can help to engage private actors in a dialogue about urgent decisions – and to identify the need of public policy to address knowledge spill overs and learning-by-doing externalities, financing constraints, and policy risks.

The EUKI Climate Friendly Materials European Roundtable aimed at engaging national stakeholders from Hungary, Poland, and Spain in this European discussion – focusing on the following elements.

- What is the nature of 2050 roadmaps – what elements will be part of a transformation pathway for a basic material sector?
- What is the status and outlook of national material industries?
- What is the status of national policies, what are lessons learned so far, what are the challenges ahead and what are the remaining gaps?
- What is the policy toolbox to close the gaps – what solutions can allow private actors in market based economies to pursue investments that follow the 2050 roadmaps?
- How can European policies be inclusive – *e.g.* support national developments? What is the value added of European cooperation?

The Spanish round table event was held at Universidad Pontificia Comillas in Madrid on the 21<sup>st</sup> of January 2019. The ongoing consultation process for the Climate Change and Energy Transition Law “Ley de Cambio Climático y Transición Energética” outlining the Spanish 2030 strategy served as a point of departure to discuss the transition process of the Spanish energy intensive industry

towards a net-zero economy in 2050. Participants included key players and sector associations from the (petro)-chemical, metal, cement and automotive industry, national and European public bodies, labour organizations and academia. The event was divided in four separate sessions, covering different aspects of the industrial transformation:

- The long term vision of the European Commission for 2050, the “Ley de Cambio Climático y Transición Energética” and the Spanish Energy Intensive Industry
- Carbon leakage in the national and European context
- New materials, technologies and production processes
- Recycling, re-use and the circular economy

This document provides background material about the Spanish industry and political framework, and recaps the general observations and findings of the round-table sessions. A general introduction of the status quo of the Spanish industry and its economic background is followed by the results of the round table sessions and a summary of general conclusions.

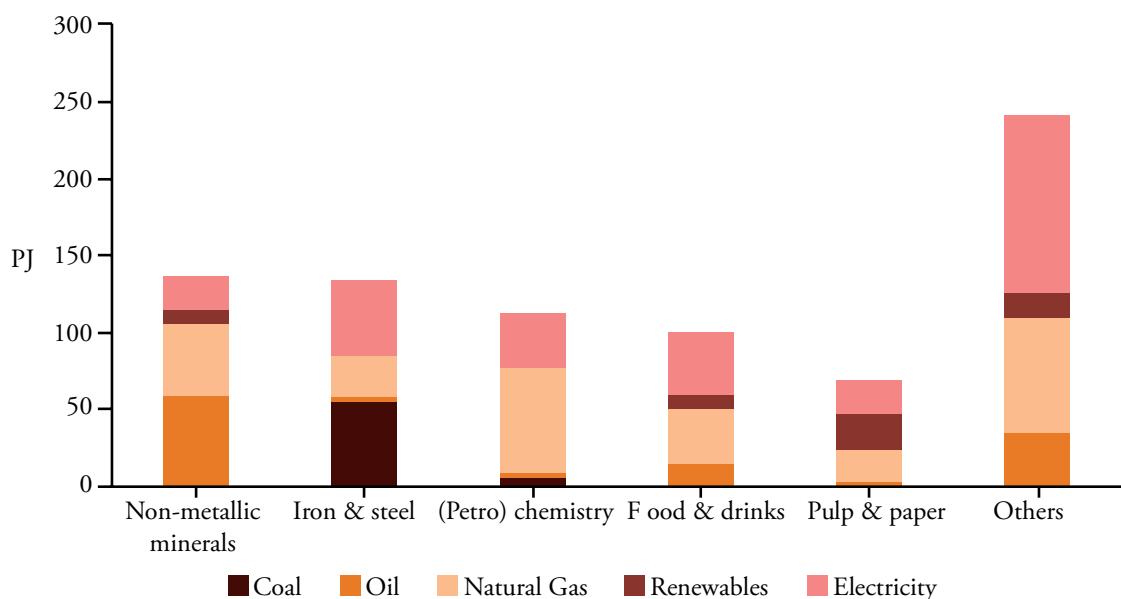
## 2. THE SPANISH INDUSTRIAL SECTOR

The industrial sector accounted for 23.5 % of the total energy consumption in Spain in 2016 (IDAE, 2018). Economic activities related to the extraction, processing and production of basic materials heavily rely on fossil-fuel based energy carriers and account for more than 60% of the total energy consumption of the industrial sector. As can be seen in Exhibit 1, processing of non-metallic minerals has the highest energy demand across all economic activities. Coal and petroleum products are used for the production of cement, chemicals, glass, ceramics and derivatives of those. The share of renewable energy use, here primarily the use of biomass in cement kilns, is low. The importance of the non-metallic minerals sectors within the national energy balance is one of the key features of Spain and is representative for other southern European countries like Italy and Greece. The steel and metal industry comes second and can be characterised by its high share of electricity use. As of 2014, more than 70% of domestically

produced steel came from secondary steel production using electric arc furnaces (World Steel Association, 2016). Due to the ongoing sector transformation, the share of secondary steel production has been growing over the last years. Furthermore, Spain is the third biggest aluminium producer in the European Union, an industry that uses primarily electricity for its production processes. Other relevant industries are the (petro)-chemical sector, the food industry and the production of pulp & paper. Remaining industrial activities primarily use electricity and natural gas, which replaced other fossil fuels after the extension of the national gas network over the last 30 years.

#### Exhibit 1

#### Industrial Energy Consumption in Spain in 2016



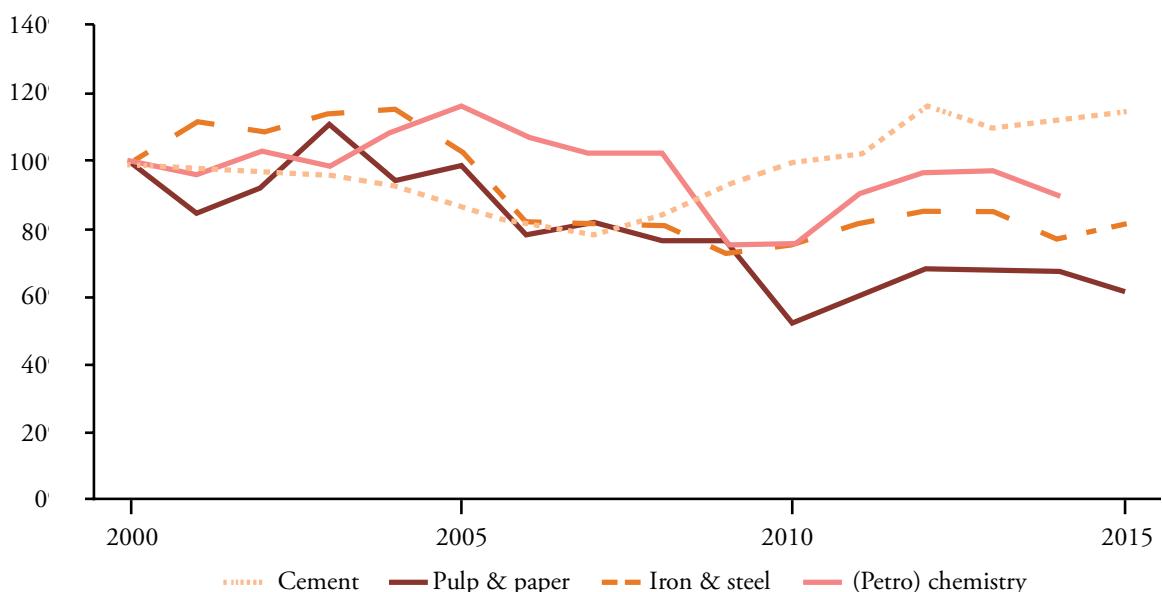
Source: IDAE, 2018.

The Spanish economy was heavily impacted in the aftermath of the global financial crisis of 2007-2008 and the burst of the housing bubble. National demand of basic materials like cement collapsed and resulted in the subsequent reduction of total industrial greenhouse gas emissions. Within the 10 year time frame between 2005 and 2017 industrial CO<sub>2</sub> emissions fell by 42% (MITECO, 2018a). While these figures permit Spain to comply with European CO<sub>2</sub> reduction targets in the short run, this development imposes challenges for the industrial sector in the long-

run. The least financially and energetically competitive plants closed, while new investments in the remaining infrastructure remained low. There is a significant untapped potential for energy efficiency measures, given that the energy intensity of all branches of the basic material sector has been rising since 2010 (Exhibit 2).

#### Exhibit 2

#### Energy intensity of production since the base year 2000 (%)



Source: IDAE, 2018.

Since 2012, the Spanish industry experienced a partial recovery with the value of its total production in 2017 remaining about 15% lower than in 2008 (CCOO, 2017). Especially the basic material sector has not been able to regain previously achieved output. With regard to national emission levels, the key question is whether the Spanish material sector will increase its production over the next decades, stagnate or deindustrialise further.

### 3. NATIONAL POLICIES: LESSONS LEARNED AND CHALLENGES AHEAD

In the past, Spanish governments have implemented multiple policies to reduce emissions and promote a more efficient use of energy. National policies,

though, fell short on promoting and encouraging far-reaching changes within the material sector.

To reduce the energy intensity of the industrial sector and as a response to the Directive 2012/37/EU on energy efficiency, the Spanish government initiated a support programme for small and medium-sized (SME) and big enterprises in 2015 (BOE-A-2015-4991). In total, 115.216.421€ of funding has been designated to co-finance the renewal of industrial installations and improve their energy management. Given the capital intensity of the basic material sector, access to these funds for the heavy industry was limited. The maximum eligible investment cost had to be below 4 M€ for each application. According to the National Energy Efficiency Action Plan 2017, 12.9% of investments from this programme have been dedicated to the basic materials sector. The main beneficiary is the food, beverages and tobacco industry accounting for more than 30% of the total investments.

Companies active in the basic material sector were also eligible to apply for funding under the PIMA<sup>2</sup> plan (Real Decreto 147/2014). This programme financed measures to fight climate change on the national level. Initiated in 2014, most measures funded by this programme have been implemented already. Of the total 93M€ budgeted, only 5M€ were dedicated to energy efficiency measures (MITECO, 2018b).

One of the main tools to fund investments in low-emission technology is the FES-CO<sub>2</sub> fund.<sup>3</sup> Introduced in 2011, this mechanism is aimed at various sectors not covered by the European emission trading system (ETS). Qualifying projects receive payments of currently 9.7€/t of avoided CO<sub>2</sub> emissions (MAPAMA, 2018). Given that the heavy industry is participating in the EU ETS, emission reduction of production processes in the basic material sector is not remunerated by this fund. Projects are evaluated based on their environmental and economic characteristics.

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<sup>2</sup> Planes de Impulso al Medio Ambiente (Plans to Support the Environment).

<sup>3</sup> Fondo de Carbono para una Economía Sostenible (Carbon Fund for a Sustainable Economy).

Since 1997 the Spanish government supports investments in the re-industrialisation of the economy with public loans under the REINDUS programme.<sup>4</sup> Both greenfield investments and the replacement of aging infrastructure are eligible. No explicit requirements to invest in low-carbon technologies have to be fulfilled by the applying projects.

The main goal of national and regional governments has been to actively try to reduce the energy bill of the basic materials sector by means of public aid and tax exemptions, although with limited success. For example, electro-intensive industries have not been compensated for their indirect emissions as allowed by the EU (although this is expected to change this year). The Spanish heavy industry can also participate in a certain type of demand-response auctions (interruptibility). Companies are being paid for the availability to reduce their consumption at instances when the system is compromised. The focus on energy cost reduction as key element of the industrial energy policy is also reflected in a report by the Ministry of Industry published in 2014 (MINETUR, 2014). A recently published draft of a new royal decree aims to clarify the status of the energy intensive industries (MINCOTUR, 2019). In this draft the current government introduces various measures that reduce regulated fees and cost components of the electricity price for large energy intensive industries. Eligible companies need to show that annual consumption has exceeded 40 GWh/year during the last three years and they have to fulfil a given set of requirements to be certified as an energy intensive business. Eligible companies are required to implement energy efficiency measures. These measures, reduction targets and policies, though, only cover the next 3 to 4 years and only provide short-term fixes without providing a long term vision.

So far, hence, the long term reduction of energy- and emission intensity of the Spanish basic material sector has not been in the spotlight for national policy makers. Current and past environmental policies primarily target efficiency improvements in non-ETS sectors of the economy. Both at the regional and national level, the energy policy for the energy intensive industry was more driven by the concern that high energy prices could jeopardize industrial competitiveness

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<sup>4</sup> [www.programareindus.es](http://www.programareindus.es)

(given that electricity and gas prices are higher in Spain than in other major EU countries), rather than the need to improve its energy efficiency. This flaw of the national energy policy has been pointed out by the independent expert commission for the energy transition appointed by the previous government.<sup>5</sup> In their final report presented in April 2018 they formulate five recommendations for the future energy policy of Spain in the industrial sector (Comisión de Expertos de Transición Energética, 2018). These recommendations are discussed further in the next section.

#### 4. THE SPANISH PERSPECTIVE FOR THE 2030 AND 2050 HORIZON

In case of Spain, the future energy policy for the basic material sector will be determined by the new law of climate change and energy transition, as well as the National Energy and Climate Plan. A draft of the latter is already publicly available (MITECO, 2019a).

The aforementioned final report of the expert commission for the energy transition is one of the main inputs used within the development process of this new legislation. In the following, we briefly present the policy recommendations stated within the expert report for the industrial sector and reflect on them with regard to the elements of the policy toolbox presented by (Neuhoff *et al.*, 2018). Given that the expert report primarily focuses on the national energy policy until 2030, we then identify areas that aren't or are insufficiently addressed to achieve the required sector transformation.

- An industrial policy strategy with stronger emphasis on the sustainability of industrial energy consumption

It is recognized that the role of the state is key to provide strategic investments in infrastructure. Such infrastructure must make it economically feasible for companies to reduce their emissions. In this regard, public actors would need to take a more active role in coordinating the collaboration of private stakeholders

<sup>5</sup> Comisión de Expertos sobre Escenarios de Transición Energética.

to facilitate the required innovations. The report states the need for more collaboration but gives no details about the form and type of such public-private sector engagement. Especially the risks related the uncertainty of energy prices have been identified as key elements that need to be addressed by policies supporting the transformation of the industrial sector.

- Promoting continuous improvements in the energy use of industrial processes

Policies should ensure a continuous investment in technologies that increase the energy efficiency of industrial processes. For investments to be optimal, the policy design has to foster investments in technologies that are the most efficient given undistorted energy costs. Such continuous efficiency improvements need to be monitored by an adequate system of certification and legal mandate. The report provides no further details of such monitoring mechanism but emphasises the need to extend such energy efficiency requirements to SMEs (small and medium enterprises). Policies should provide support to the implementation of innovations, which face difficulties in achieving profitability from the entrepreneurs' perspective. Besides subsidies and fiscal support schemes, the authors also mention the possibility to strengthen the role of energy service companies in the industrial sector. Such companies would provide external energy services that are currently internalized for industrial companies.

- Foster distributed generation: cogeneration and renewable thermal energy

This recommendation is especially targeting the optimal use of current and future cogeneration capacities. The authors identified a lack of knowledge with regard to the use of renewable thermal energy for the industrial sector in Spain and advise further research regarding this matter.

- Studies about corporate mobility

The authors identify companies as a possible driver to promote changes in the transport sector. Corporate strategies with regard to transport could help to reduce carbon emissions and energy use. This recommendation has little significance in the scope of this project.

- Research, development and innovation (R+D+I) as part of the industrial policy

The report recommends that cooperation between universities, research centres and the industry with regard to R+D+I of new industrial processes is to be improved and additional public funding is to be provided to foster this collaboration.

These recommendations are very much in line with the ones finally included in the National Energy and Climate Plan (see below), although neither of them present a detailed but a holistic view with regard to transformations along the entire value chain of the basic material sector. The focus of these recommendations remains on the utilization of primary energy rather than indirect and product-life cycle emissions. Aspects concerning the evolution of a circular economy for basic materials are underrepresented in all these documents, although they are expected to be included in the future National Energy and Climate Strategy for 2050.

The National Energy and Climate Plan sets very ambitious decarbonisation targets for the Spanish economy, including of course industry. However, most of the emissions reductions targets are concentrated on the electricity sector and transport, therefore allowing some breathing space for the industry. The policy measures proposed for the industry include: subsidies to incorporate renewable energy in industrial processes, and energy-efficiency studies and investments for industry.

Some more measures for accompanying the decarbonisation of industry are proposed in the National Strategy for a Fair Energy Transition (MITECO, 2019b): sectoral agreements, a strategic agreement for the car industry, and a Statute for Electro-intensive Consumers. As mentioned before, a draft of this statute has already been published (MINCOTUR, 2019), and basically consists in eliminating a minor part of the electricity charges for these consumers in return for their commitment to apply energy-efficiency measures.

## 5. RESULTS OF THE ROUND TABLE SESSIONS

In the following, we summarize the results of the round table discussions. The main observations and concerns brought forward during the event are presented and have been reviewed by all participants.

## 5.1. The long term vision of the European Commission for 2050, the “Ley de Cambio Climático y Transición Energética” and the Spanish Energy Intensive Industry

Pedro Linares, professor at the Universidad Pontificia Comillas and one of the experts advising the Spanish government concerning the policies required to comply with the EU 2030 emission reduction targets, introduced the topic. Based on the ongoing consultation process, the government was at that time drafting the “Ley de Cambio Climático y Transición Energética” (Climate Change and Energy Transition Law). Although the final proposal for the law, or the National Energy and Climate Integrated Plan, had not been published when the roundtable took place, some general elements had already been circulated as drafts. Among them, the most relevant were the proposition to reduce emissions by 20% until 2030 compared to 1990, and to eliminate them until 2050. These national objectives are in line with the net-zero goal formulated by the European Commission in November 2018.

Reaching the 2030 targets should not be a major hurdle for the industry, given that the declining emission intensity in non-ETS sectors and the electricity sector can provide for the envisaged total reduction. However, it needs to be acknowledged that most of the basic materials sector is participating in the ETS and is exposed to volatile CO<sub>2</sub> allowance prices. Both allowance prices and price volatility might increase significantly over the next decade. Consequently, what really matters for the Spanish basic materials sector is the EU regulation. Still, many participants were worried about the apparent lack of consensus and dialogue with the affected sectors in the drafting of the national Climate Change and Energy Transition Law.

The legislative setup established between the European Union and their Member States limits the scope of action for national governments. This observation, brought forward by multiple representatives from the industrial sector, framed the national Spanish industrial policy as rather reactive towards new legislation decided at the European level. One general concern is that national policies are targeting the compliance with benchmarks and targets

without considering the consequences for businesses, employment and regional development. Participants pointed out that other European countries like Germany have a long term industrial strategy with a clear vision about the role of the sector in 2030 and 2050 (BMWI, 2018). National funding of research projects and policies as subsidy schemes are aligned with these goals. Spain, on the contrary, is lacking such strategy and participants question whether parts of the industrial sector could survive a deep industrial transformation. One representative pointed out that no new energy intensive production facilities have been built in Spain over the last decades. For the manufacturing and energy intensive industry, dominated by global players, the decision for brown and green field investments is based on favourable locational factors. More favourable conditions and a legislative framework aiming at the long term support for Spain as a competitive location for heavy industries are required. Most participants requested a comprehensive industrial plan for Spain, of course compatible with state-aid guidelines. Without such long-term strategy, they expect that the reduction of emissions will be achieved by a continued deindustrialization of the Spanish basic materials sector.

All participants were positive about complying with direct emissions and energy efficiency targets for production facilities set on European level for the 2030 horizon. Publications by the sector organizations themselves support this impression. A recent study by the Spanish Association of Petroleum Product Operators (AOP), for example, demonstrates that the industries covered by the EU ETS can fully comply with reduction targets for 2030, and in diffuse sectors by 88%, if implementing measures that are economically beneficial (Solé and Castro, 2018). All parties pointed out the importance of a stable legislative and regulatory framework to fulfil the set targets. Political uncertainty and possibly highly volatile energy and CO<sub>2</sub> emission prices have been mentioned as key risks for the 2030 horizon. Some participants stated that even the fulfilment of the 2030 targets could cause the reduction of industrial production in Spain and that measures to increase the industry's efficiency could have a negative impact on employment. Uncertainty, particularly in the automotive industry, is already causing job losses.

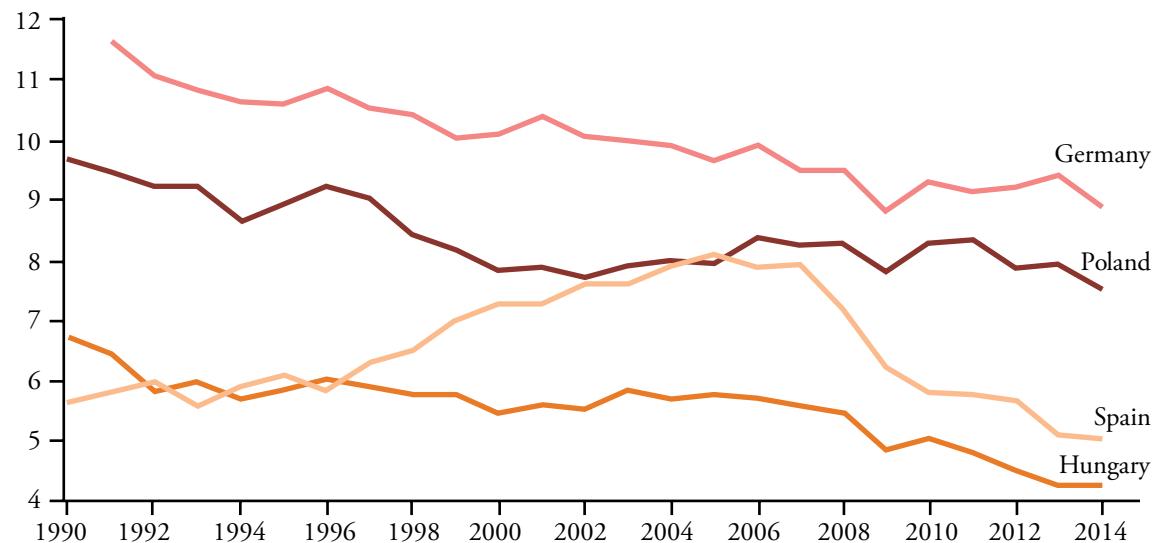
The necessity to drastically reduce emissions in Europe until 2050 is acknowledged by all parties. However, net-zero emissions, set as target by the European Union, raise concerns for industrial stakeholders, and some of them even consider these targets unrealistic. Others perceive them as achievable, as long as there are no constraints on the technologies that may be used. The credo of the different industry representatives is that a decarbonized future has to be a future with a national basic material sector, regardless of how decarbonisation is to be achieved. While participants from the national and European institutions highlighted Europe's role as a forerunner for the decarbonisation of our society towards 2050, industry representatives were concerned about their global competitiveness if emission reduction targets are not aligned with technological development.

European legislation needs to be in line with global efforts to avoid that the European industry becomes the "Don Quixote" of mitigating climate change, highlighting the first mover problematics. Targeting net-zero emissions in 2050, legislators should ensure that emissions are always reduced in the most cost-efficient way, while European and national policies need to ensure the global competitiveness of the industry. In this regard, one participant highlighted that the EU vision 2050 is partial towards certain technology options, which *e.g.* in case of CCS face serious acceptance problems within the Spanish society and makes even the research and development of such technologies a challenging venture.

A general consensus of the round table was the perceived unfairness of the European emissions reduction strategy over the entire transition period. While the net-zero target for 2050 is the same for all EU member states, the progress along the transition is benchmarked against the national emission intensity in the year 1990. As can be seen in Exhibit 3, Spanish emissions per capita in 1990 were about half compared to the exhibit for Germany and have risen sharply due to the economic development in the following two decades (as allowed by the EU). Applying only the 1990 benchmark, absolute per capita emissions have to decrease much more dramatically in Spain and Hungary during the early phases of the transition than in countries like Germany or Poland, which can result in unrealistic national reduction targets.

Exhibit 3

### CO<sub>2</sub> emissions (metric tons per capita) 1990 to 2014



Source: World Bank, 2019.

## 5.2. Carbon leakage in the national and European context

The second session was opened with a short presentation by Juan Carlos Císcar from the Joint Research Centre of the European Commission (JRC-EU) about the projections of economic impacts caused by climate change in sectors of the EU (PESETA). The PESETA III Project also evaluates the impact of climate change on the industrial sector and the role of the European emission trading system (EU ETS) and the consequences of carbon leakage.

Recent changes to the EU ETS and benchmarks for free emission allocations are a primary concern for all industries represented in this session. Several industry representatives pointed out that benchmarks for free emission allocation are already close to the minimum that can be achieved with best available technologies (BATs). As a result, entire industrial subsectors would be fully exposed to volatile emission allowance prices. In the case of cement production, for which CO<sub>2</sub> emissions originate from the chemical transformation processes within the cement kiln, industry representatives expect benchmarks to surpass

the theoretically achievable minima before 2030. CCS would remain the only reliable alternative to reduce emissions further.

Industry representatives pointed out that the additional costs of meeting these benchmarks weaken their competitive position on the global scale and increase the already strong competition they are facing from non-EU imports. Different taxation and laxer national environmental legislation already foster imports of certain chemical products from China. While some participants argued that a revision of the EU ETS might be sufficient to protect the EU industry, other participants brought forward serious concerns about the suitability of the emission trading system to ensure competitiveness and provide the right incentives for investors on the long run. One participant considered that compensation schemes are just rent transfers, but do not solve the real economic cost of the system, and instead create competition for the subsidy among different industrial sectors, without resulting in new investments. In the case of the automotive industry, it was pointed out that EU targets set in terms of vehicle emissions are already very challenging. Most participants called for border tax adjustments of some sort, and also for a similar effort from other global regions.<sup>6</sup> It was also highlighted that overregulation in Europe is already driving R&D away.

However, most participants also agreed that the bigger driver regarding leakage is not the carbon emission price, but energy prices and their uncertain character in Europe. Indeed, high energy prices in Europe are responsible for the high efficiency of the European energy-intensive industry, but ensuring competitiveness by process efficiency may have its limits and low gas prices in the US are already harming many industries in Europe. In this regard, it was pointed out that the focus of the energy transition is on the electrification of demand, but electricity prices are still very high. A reform is needed to ensure affordable prices.

Many round-table participants favoured a shift from producer responsibility with regard to the emission intensity of basic materials to an approach that considers the use and consumption of materials with a high carbon footprint. Green labelling for products sold in the EU, similar to the CE label, was seen

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<sup>6</sup> Although large multinationals prefer compensation schemes rather than border taxes, which would increase the price of their products globally.

as a viable way to implement such consumer responsibility. Such approach would mean that manufacturers in the countries of origin would have to prove the emission intensity of their production processes and have them certified. Concerns about the higher complexity of such mechanism were discussed, but regarded as negligible. One participant, who was representing the manufacturing sector, noted that the complexity of the introduction of such labelling system is often overrated. Non-European suppliers already need to comply with a vast set of norms and regulations regarding product safety and certain environmental standards. Required tests and additional certification could be done by the same accredited registry and classification societies active all over the globe, today. Given the size and importance of the European market on a global scale, such certification requirements could push non-European industries to implement low emission technologies independently from their own national legislative requirements.

The participants also evaluated advantages and disadvantages of a European-wide tax on basic materials. Both imported and locally produced materials could be taxed at the same rate, while tax credits would be given to such producers who use low-carbon production technologies. Importers could apply for tax reductions as well, given their production processes are certified to be of low emissions. Exporters would be exempted from the tax. Certificates of origin have already been introduced for biofuels, but according to the European Court of Auditors (2016) current legislation is not fully reliable. Another approach brought up by the round table participants was the possibility to continue using offsets such as the Clean Development Mechanism initially proposed in the Kyoto protocol.

Some stakeholders were concerned about overcomplicating regulations, while one participant noted that new low emission policies should be in line with increased spending in European innovation and research. Being the forerunner in emission reduction should mean that the European business would provide the required technologies and expertise. The European Battery Alliance was mentioned as an example of such initiative (European Commission, 2018b).

Additionally to the more drastic effects of climate change expected for the southern European countries compared to the northern European region (PESETA III),

participants perceive a general imbalance between the emission reduction efforts required from different EU Member States. Some participants argued that the efforts should be based on achieving similar final per capita emission levels among countries, as an indicator of fairness.

### 5.3. New materials, technologies and production processes

The reduction of emissions requires new technologies that enable the basic material sector to reduce their emissions. A brief presentation by Timo Gerres about the recent research results published by the organizers of the roundtable served as an introduction to this topic (Gerres *et al.*, 2019).

As mentioned before, there was a general consensus between all participants that no ground-breaking new technologies and processes are needed to achieve the 2030 targets. Furthermore, different stakeholders confirmed that the electrification of all heating applications below 200 °C will be the expected decarbonisation measure for non-energy intensive industries. Participants expressed two different points of view with regard to the implementation and development of new technologies, summarized towards the end of the discussion as a market controlled and a state controlled innovation process.

From the Spanish perspective, several participants from the industry questioned whether the Spanish industry needs to be a forerunner for implementing new low emission technologies. With most technology providers based within the blue banana belt, stretching from the UK to northern Italy, and other north and central European regions, national industries are repelled towards being the “guinea pig” for the transformations required to decarbonize the European industrial sector. The question was asked whether Spain wants to be the leader of the industrial transition or not. Such question should be defined by a national industry vision in consensus between all stakeholders. One participant pointed out that Spain has already been a catalyst for the transformation of European electricity markets by heavily supporting renewable energy technologies in the 2000s. This resulted in a heavy deficit of the Spanish electricity system and a bill still being paid by the consumers today (Linden *et al.*, 2014). New technologies would be implemented by the global and national companies as soon as having

been brought to market readiness elsewhere in Europe. In this context, some participants criticized the path-dependency of the long-term vision of the European Union on specific technologies, stating that innovations do not emerge by a rigid planification process. On the other hand, one participant pointed out that the European energy intensive industries recently published their joint road map, stating the technologies they consider as key for enabling the decarbonisation of the industrial sector (Wyns, Khandekar and Robson, 2018).

Fostering innovations and the implementation of new technologies by public support schemes was briefly discussed during this round table session. While some industry players noted that a lack of a clear national strategy for Spain and overlapping competences between ministries don't make it attractive for industrial players to apply to available public funding options, they acknowledged that public funding is essential for the industrial transformation. Given comparable costs of energy for different technology options, companies would especially need financial support to cover the higher initial CAPEX of the investment. One of the industry representatives brought one alternative approach towards innovation funding forward. Guaranteed long-term highly discounted electricity price contracts for low emission technologies could push for the electrification of entire industrial subsectors. Without directing funding only to a specific technology, the European Union could ensure that the transition leads to the electrification of energy demand. This approach would also require public-private partnerships, since only the industry has the know-how to bring technologies to the market. Industrial clusters, such as those created by the Basque government, were also mentioned by many participants as an essential element for innovation.

#### 5.4. Recycling, re-use and the circular economy

The Basque Country is one of the forerunners on environmental policies in Spain. Ignacio Quintana from IHOBE, the Environmental Management Agency of the Basque Country, introduced the last session with a presentation about past, ongoing and future regional initiatives to move towards a circular economy. Results from previous research demonstrate that currently 10% of the industrial through-put in the Basque Country ends up as waste. Up to 7% of costs can be

saved in the regional industrial sector, if low cost measures for a circular economy are implemented rigidly.

The different industrial stakeholders acknowledged the necessity to move towards a higher utilisation of waste and recycling within industrial processes. Many representatives, though, mentioned the increasing difficulties of impurities and quality of recycled materials. Feedstock has to be of certain purities, which often cannot be provided for. Participants stated that the current approach towards handling waste does not permit its optimal use as a resource. The current approach to shred, separate and sort the waste needs to change. It should be possible to separate waste into its components without mixing it with other waste, first. This requires a new approach and thinking on how to design different products and use basic materials. Some representatives mentioned that the current legislation does not support an efficient use of currently available resources. Different types of organic waste could be utilized within the industrial sector, but the legal framework is not prepared to increase utilization rates. The recycling industry faces additional challenges by the recycling of “legacy” waste of, *e.g.* household appliances manufactured 30 years ago. Such waste has to be recycled using todays norms and standards, while products and materials brought into circulation, today, will be the wastes of tomorrow.

The emergence of a circular economy requires a new understanding of how materials are brought to market, sold and used, while increasing the product's design life and use. Possibilities are the redefinition of the added value provided by a product, *e.g.* paint sold as corrosion protection, or that a service is sold instead of a product (laundry services instead of a washing machine). Participants acknowledge that such approaches are not universally applicable. One participant mentioned that current legislation hampers the introduction of circular approaches. Working groups have been formed at the national level to support the emergence of a circular economy.

## 6. CONCLUSIONS

The Spanish round table event on the 21<sup>st</sup> of January 2019 brought together various industrial stakeholders, governmental and non-governmental participants

to discuss the transition of the Spanish basic materials sector towards a low carbon economy. Since such transition needs to be inclusive, it will require a joint effort of all stakeholders in order to reduce industrial emissions while maintaining industrial competitiveness and ensuring a just distribution of costs and efforts.

While all stakeholders acknowledge the need to drastically reduce carbon emissions in Spain and Europe until 2050, the question on how to achieve these reductions remains unanswered. In order to prevent that decarbonisation is achieved by deindustrialization, industrial stakeholders emphasize on the need for a national long-term strategy with a stable regulatory framework. Such framework, though, must be robust against carbon-leakage and the discrimination of certain technological solutions.

These risks have been identified especially with regard to the post-2030 period, for which new innovative technologies and processes will be required to comply with European emission reduction targets. An inclusive transformation requires an enhanced consumer responsibility with regard to the carbon intensity and recyclability of products brought onto the market and must encompass both the domestic production and imports. In this regard, energy cost (un)certainty is key for the Spanish industry and a new approach and thinking on how we design different products and use basic materials is necessary.

Based on the discussion during the round-table event, it remains unclear, though, how the post-2030 transition of the Spanish industry can be realized. While a “wait and see” approach, as suggested during the round-table event, increases the risk of further industrial deindustrialisation, a clear concept on how to enable the inclusive transition towards a low-emission basic material sector within a circular economy is essential. New European legislation to foster a decarbonized basic material market will need to be designed carefully taking into the account the concerns of national stakeholders in Spain and other European countries such as how to handle the carbon leakage threats.

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The transformation of the Spanish basic materials sector towards a low carbon economy

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