

Exemples de modèles de financements pour le déploiement industriel

Captage, Stockage et Valorisation du CO₂

Séminaire national CSCV
13 décembre 2021

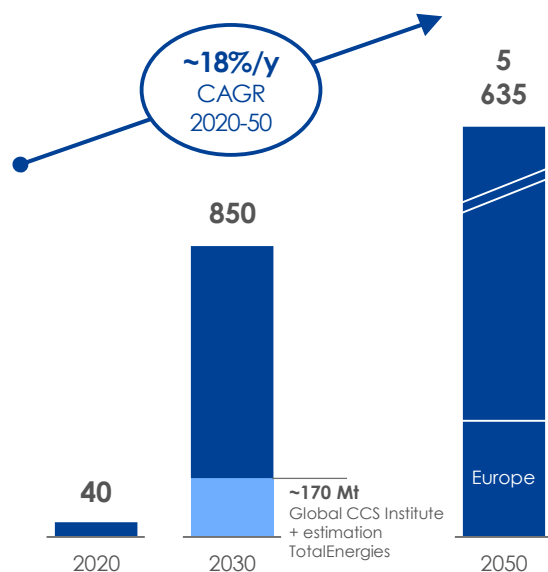


Le CSCV: un outil nécessaire à l'atteinte des objectifs climatiques

Conditions : mécanismes de soutien + tarification du carbone

Ambition : x **140** d'ici 2050

Réduction des émissions de CO₂ nécessaire via CSCV²
MtCO₂/y



Réduire les coûts par économies d'échelle

¹ Source: WEO 2020, IEA Sustainable Development Scenario (SDS) < 2°C

² CO₂ captured and stored from process emissions in the energy and industrial sectors

5 contributions clés



Décarbonation de l'industrie



Electricité pilotable bas carbone



Emissions négatives
(DACCS, BECCS)



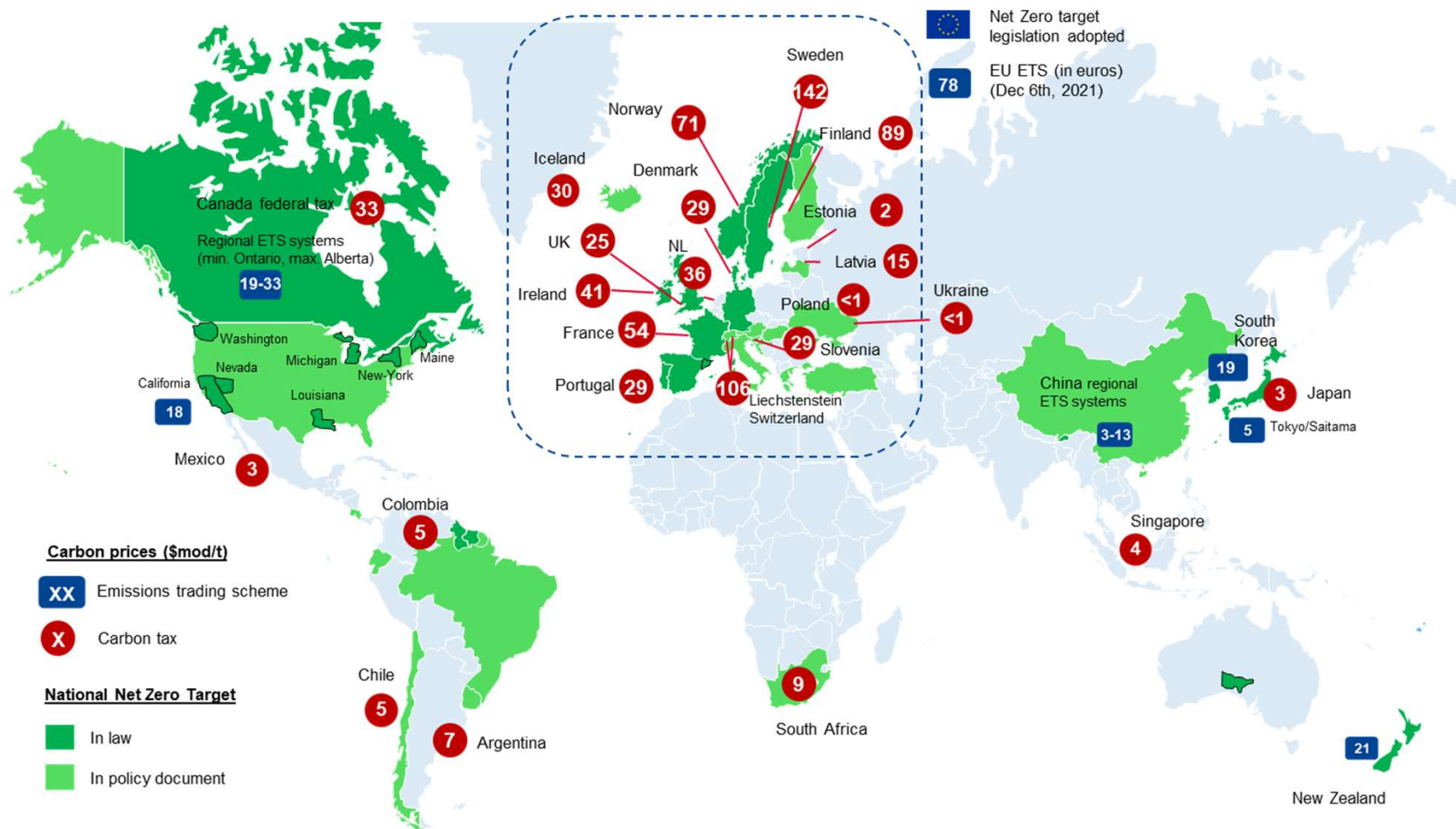
Economie de l'hydrogène



Circularité du CO₂ (e-fuels, etc.)

Cibler les zones à incitations économiques

Taxe carbone, ETS, objectifs Net Zéro



L'Europe, en tête du peloton

Construire des modèles business à partir de la réglementation

Taxe carbone

Système européen de quotas d'émissions (ETS) @ 85 €/t (9 déc'2021)



Taxe carbone 50€/ton
Cible: **200 €/ton d'ici à 2030**



Taxe carbone en complément de l'ETS
Cible: **125 €/t d'ici à 2030 (ETS incl.)**



Subventions

Fond d'Innovation: subventionne jusqu'à 60% des coûts de mise à échelle industrielle de la technologie bas carbone

Connecting Europe Facility (infrastructure): subventionne jusqu'à 50% des études et CAPEX, développement d'infrastructure en lien avec les Projets d'Intérêt Commun

Subvention (CAPEX & OPEX sur 10 ans) + Réserve de capacités (T&S)

Type « contract for difference »

SDE++: modèle de financement aux renouvelables étendu au CSC: finance la différence entre le coût du projet et l'ETS, capé par technologie

- *Emetteurs*: complément de rémunération: « contrat sur la différence » au prix marché élec., H₂, etc.
- *T&S*: garanties de revenus sur longue période

Northern Lights

La Norvège & TotalEnergies : des partenaires CCS historiques depuis 1996



Northern Lights JV

Equinor (1/3), TotalEnergies (1/3), Shell (1/3)

- **Business case:** Fort soutien de l'Etat norvégien + annonce d'une **taxe carbone** (~220 \$/tCO₂ d'ici 2030)
- **Phase 1 (en construction)**
 - Transport, injection et stockage jusqu'à 1.5 MtCO₂/an (0.8 MtCO₂/an de **capacité réservée par l'Etat**)
- **Phase 2:**
 - Extension potentielle de la capacité **pour les besoins des émetteurs** européens jusqu'à 5 MtCO₂ / an ou plus
 - **Nécessité d'accords bilatéraux** entre pays émetteurs et stockeurs

Investissements Ph.1: 800 M\$¹
transport et séquestration

* En part Compagnie



¹ Subventions de l'Etat : ~80%

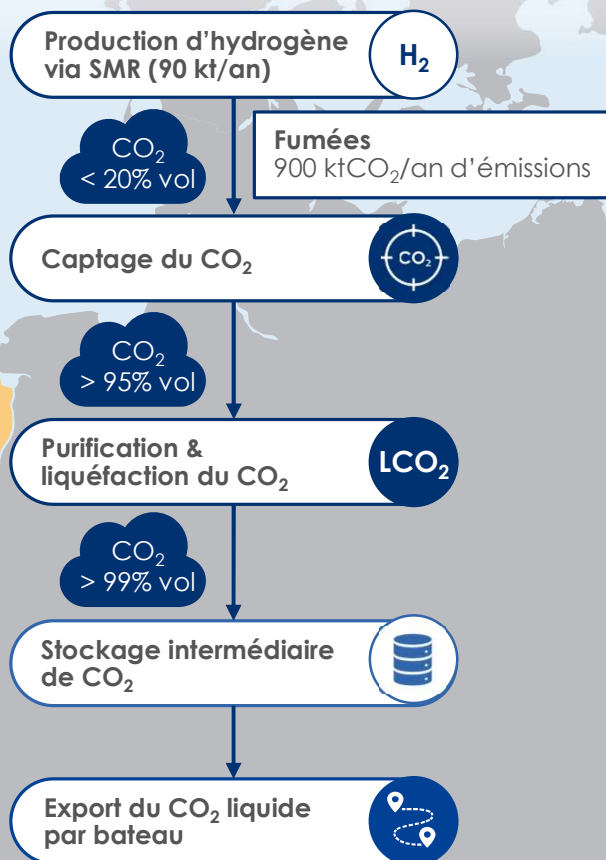
Produire de l'hydrogène bas carbone

Zeeland Refinery (Pays-Bas) Scope 1



~0.8
MtCO₂/an*
capté et évité
à partir de 2025

 Zeeland Refinery



Zeeland Refinery

TotalEnergies (55%), Lukoil (45%)

• Business case:

- **Accord néerlandais sur le climat** rythmant la transition vers une économie décarbonée, par la hausse d'une **taxe carbone** (~150\$/tCO₂ d'ici 2030)
- **Mécanismes de soutien attractifs** pour le CCS (SDE++), **complémentaires** aux financements européens
- Utilisation d'électricité renouvelable

Investissements : ~300 M\$¹
capage, liquéfaction, terminal

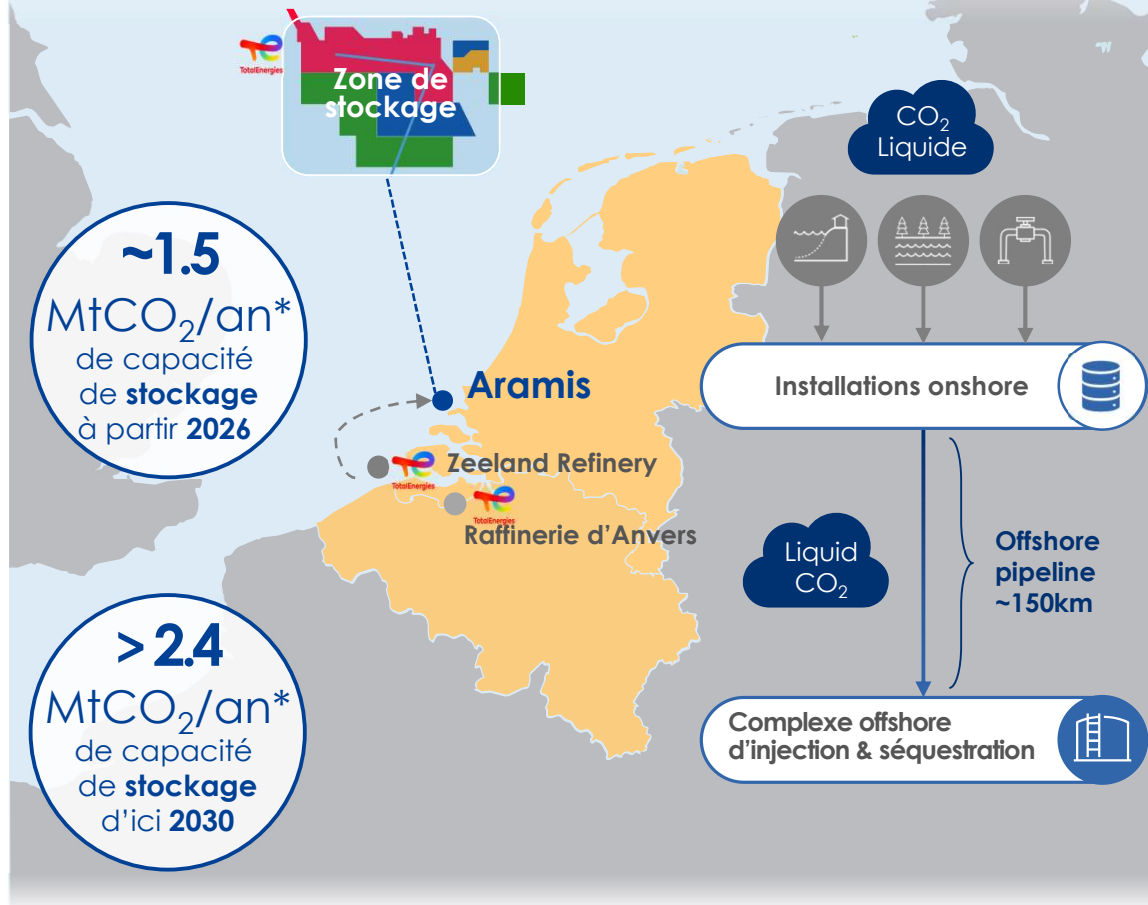
* Volumes opérés

¹ Capex à 100%



Stocker du CO₂ aux Pays-Bas

Une nouvelle vie pour les champs déplétés



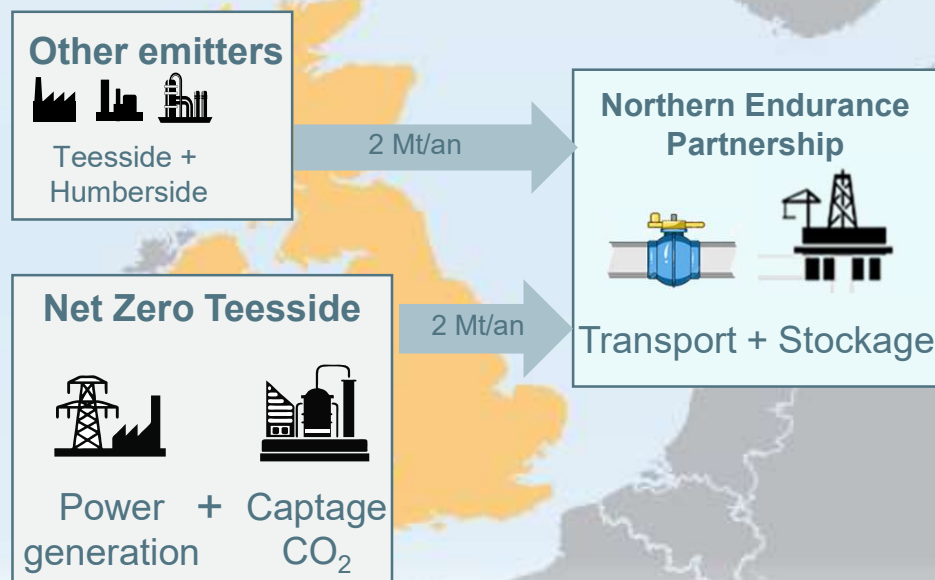
* En part Compagnie



- Tirer parti des actifs de la Compagnie pour développer un projet CSC intégré > 5 MtCO₂/an:
 - **TotalEnergies** : construction d'un réseau de stockages offshore en réutilisant les installations existantes
 - **Aramis**: construction d'un terminal multimodal onshore: réception par pipe, barges, bateaux
 - **Fédérer l'écosystème CSC** (Porthos, Athos, ...)
- **Business case:**
 - Demande générée par le soutien SDE++
 - Expansion modulaire fonction de la demande (> 8 MtCO₂/an d'ici 2030)

Décarboner l'Industrie Britannique

Une chaîne CSC intégrée

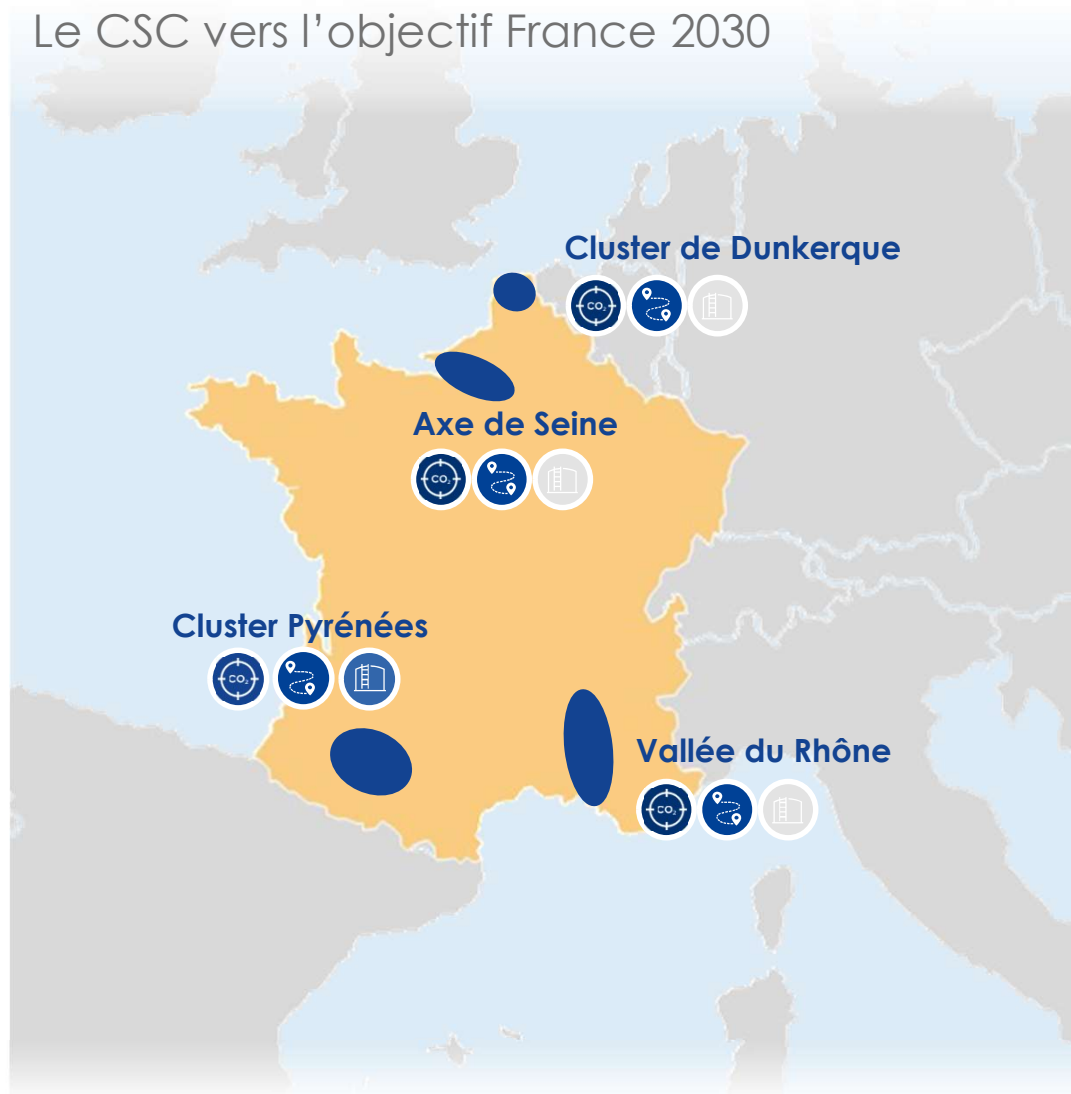


- **Chaîne intégrée CSC** pour décarboner l'industrie: électricité pilotée en complément des renouvelables, production d'H2 bleu, réseaux de collecte de CO₂ dans des clusters industriels.
- **Business case**: Mécanismes de soutiens aux industriels sur le **modèle de revenus garantis et compensation du coût à la décarbonation**
 - Créer une demande suffisante pour développer une offre T&S compétitive
 - Réduire les risques pour les « First Movers »
- Supports gouvernementaux pour deux premier clusters industriels:
 - ECC (NEP): Ph1, 4Mt/an in 2026
 - Hynet: Ph1, 1Mt/an en 2025

UK objectif : 20-30Mt/an en 2030

L'industrie française se mobilise

Le CSC vers l'objectif France 2030



- Identifier des zones industrielles pour **développer une filière de CSC à grande échelle** à l'horizon 2030
- Capitaliser sur les projets de transport et stockage en cours de développement pour développer des **capacités de stockage en mer en France pour la décarbonation long-terme** de l'industrie française
- **Créer les mécanismes de soutiens** au développement de la filière, **et un cadre réglementaire** (licence, permis, etc.)
- Mettre en place le **cadre réglementaire permettant l'export** de CO₂ en ouvrant le dialogue avec les pays stockeurs (Norvège, Pays-Bas, UK, Danemark, ...)

Des modèles d'affaires en construction

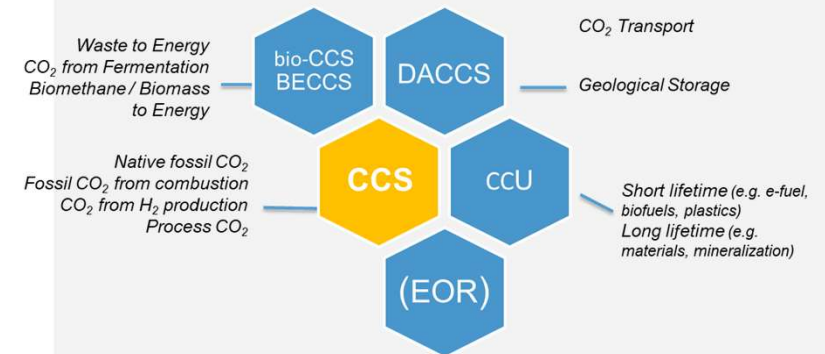
« Carbon removal »

- CO₂ atmosphérique ou issu de la biomasse non encadré par la réglementation ETS
- Les émissions négatives « carbon removals » (BECCS ou DACCS) nécessaires à l'atteinte des objectifs climatiques

Marché volontaire

- Développer des méthodologies, définir des bonnes pratiques : exemple de CCS+
- Crédits certifiés par des standards de haute qualité
- Utilisation par acteurs privés et gouvernementaux
- Première étape avant le développement d'un cadre réglementaire

Réglementaire (réf. communication « *sustainable carbon cycles* ») – 5 MTPA carbon removals d'ici 2030



ROBUST CARBON STANDARDS



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Financial information by business segment is reported in accordance with the internal reporting system and shows internal segment information that is used to manage and measure the performance of TotalEnergies. In addition to IFRS measures, certain alternative performance indicators are presented, such as performance indicators excluding the adjustment items described below (adjusted operating income, adjusted net operating income, adjusted net income), return on equity (ROE), return on average capital employed (ROACE), gearing ratio, operating cash flow before working capital changes, the shareholder rate of return. These indicators are meant to facilitate the analysis of the financial performance of TotalEnergies and the comparison of income between periods. They allow investors to track the measures used internally to manage and measure the performance of TotalEnergies.

These adjustment items include:

(i) Special items

Due to their unusual nature or particular significance, certain transactions qualified as "special items" are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual. However, in certain instances, transactions such as restructuring costs or asset disposals, which are not considered to be representative of the normal course of business, may be qualified as special items although they may have occurred within prior years or are likely to occur again within the coming years.

(ii) Inventory valuation effect

The adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method. This method is used to assess the segments' performance and facilitate the comparability of the segments' performance with those of its competitors.

In the replacement cost method, which approximates the LIFO (Last-in, First-Out) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end price differentials between one period and another or the average prices of the period rather than the historical value. The inventory valuation effect is the difference between the results according to the FIFO (First-in, First-Out) and the replacement cost.

(iii) Effect of changes in fair value

The effect of changes in fair value presented as an adjustment item reflects, for some transactions, differences between internal measures of performance used by TotalEnergies' management and the accounting for these transactions under IFRS.

IFRS requires that trading inventories be recorded at their fair value using period-end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories based on forward prices.

TotalEnergies, in its trading activities, enters into storage contracts, whose future effects are recorded at fair value in TotalEnergies' internal economic performance. IFRS precludes recognition of this fair value effect.

Furthermore, TotalEnergies enters into derivative instruments to risk manage certain operational contracts or assets. Under IFRS, these derivatives are recorded at fair value while the underlying operational transactions are recorded as they occur. Internal indicators defer the fair value on derivatives to match with the transaction occurrence.

The adjusted results (adjusted operating income, adjusted net operating income, adjusted net income) are defined as replacement cost results, adjusted for special items, excluding the effect of changes in fair value.

Euro amounts presented for the fully adjusted-diluted earnings per share represent dollar amounts converted at the average euro-dollar (€-\$) exchange rate for the applicable period and are not the result of financial statements prepared in euros.

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