I4CE INSTITUTE FOR CLIMATE ECONOMICS
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CLIMATE BRIEF N°75

Think house, not brick

Building an EU Cleantech Investment Plan to match the US Inflation Reduction Act

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EXECUTIVE SUMMARY

For years, the European Union assumed it would lead the cleantech race because it was the only one running in it. Mistakenly so. China has demonstrated its capacity to act decisively. Japan, Korea, Canada and India have also entered the race. And with the Inflation Reduction Act (IRA), the US quickly catches up.

The IRA contains a long-term climate investment plan, providing **sizable public funding** (400-800 Bn$), with **long term predictability** (10 years), the **simplicity of having a single federal level scheme**, and **support along the supply chain**.

The IRA is a wake-up call for **the European Union, where no comparable climate investment plan exists yet**. To match the IRA, the EU does not need to throw its past decisions overboard. Quite the contrary, it must deliver what it has planned, and more.

The EU is well positioned to lead the global cleantech race and seize the opportunities of the green transformation, in a way that benefits global climate action, the EU sovereignty and its economic prosperity. It can build on growing cleantech private investments, an existing pipeline of announced cleantech manufacturing projects, and the political direction set by the European Commission's Green Deal Industrial Plan presented in February 2023.

This brief argues that, **to match the IRA, EU policy makers should think house, not brick. The best EU policy answer is an EU long-term climate investment plan**. As the political appetite for such a plan is currently limited, **the European Commission should** use the political momentum around the IRA and cleantech, to **propose a targeted investment plan that focuses on the development, scale-up, manufacturing and deployment of clean technologies in the EU**, from solar panels manufacturing to the offtake of green steel.

Such an **EU cleantech investment plan** should be presented before the summer of 2023, in the context of the mid-term review of the EU Multiannual Financial Framework. Learning from the positive features of the IRA, **it should provide public support at scale, through continental-level schemes, in a long term and predictable manner along the supply chain.**

Three first bricks can already be laid out to build this house:

- **Ambitiously finalising and implementing the entire "Fit For 55" legislative package** are key for the EU to play to its strengths: predictable and ambitious regulations and carbon pricing.
- Member States should **increase their support for clean technology offtakes, including through green public procurement**. NextGenerationEU should be further used to that effect.
- The European Commission should provide **EU-wide cleantech support schemes** that learn from some excellent features of the IRA, such as its predictability and its wide geographical coverage. The planned launch of an EU-wide tender to support renewable hydrogen production is a positive step, and should be used as a pilot to develop similar schemes for key clean technologies.

With the approaching EU elections of May 2024 and the end of NextGenerationEU in sight, such cleantech investment plan could lead the EU to advance towards an even more ambitious discussion: an EU long-term Climate Investment Plan. This would include and go beyond cleantech, to ensure EU, national and private investments turn all the Green Deal objectives into tangible realities for businesses, workers and families.

Europe is now engaged in an intensifying global cleantech race. For years, the European Union assumed it would lead that race because it was the only one running in it. But in 2020, major economies including the EU, the US, China and Japan, representing 75% of the global GDP, adopted national carbon-neutrality and climate neutrality objectives.[1] Most backed those climate targets with new public investment programmes, of which the IRA is only the most recent.

Reaching climate neutrality raises major economic challenges. One of them is the massive investments in **cleantech: the technological and process innovations that transform the economy to reach climate neutrality**.[2] This includes the development, scaling, manufacturing and deployment of a wide range of clean technologies and processes, including heat pumps, deep renovation of buildings, batteries, wind power, long duration energy storage, alternative proteins, solar energy, electrolytic hydrogen, direct reduction of iron to produce green steel, to name but a few.

This creates business opportunities. According to the International Energy Agency, clean energy technology manufacturing alone will become a 650 Bn$ global market by 2030.[3]

In this context, the US Congress adopted the IRA in August 2022. Despite its name, IRA contains a proper decade-long Climate Investment Plan to cut greenhouse gas emissions and make the US a cleantech powerhouse.[4]

Debates on the EU response to the IRA have taken centre-stage in EU policy and political discussions, from President von der Leyen's Bruges speech in December 2022, to the February 2023 Special European Council.

This brief aims to inform that debate by (1) giving a brief overview of the EU cleantech position vis-à-vis the USA and China, (2) underlining key IRA features, (3) summarising the public investment component of the European Commission's proposal for a Green Deal Industrial Plan, and finally (4) providing policy recommendations to ensure the EU can seize the opportunities of the green transformation in a way that benefits global climate action, the EU sovereignty and its economic prosperity.

1 Marie Delair, Emilie Magdalinski, Thomas Pellerin-Carlin, Marjolaine Bergonnier, The largest global economics are engaging in the race towards climate neutrality, Jacques Delors Institute, December 2020.

2 In this brief, we limit the scope to climate technologies, even if the term cleantech also refers to technologies that have a non-climate positive environmental impact (*e.g.* resources efficiency). For an overview of climate technologies, cf. Price Waterhouse Cooper, The State of Climate Tech, 2022.

3 International Energy Agency, Energy Technology Perspectives 2023, January 2023, Figure 6.7. The figure is also presented in this brief.

4 This brief focuses on the climate investment plan dimension of IRA, but the bill also includes limited support to fossil fuel projects, and many non-climate related features linked to healthcare and corporate tax.

1. THE EU IS WELL-POSITIONED IN THE GLOBAL CLEANTECH RACE

There are many ways to assess the EU position in the global cleantech race. While the final ranking depends on the chosen sectors, indicators, and segments of the value chain,[5] **the overall EU positioning tends to be a solid base for future leadership**.

In this section, **we look at two set of indicators released in January 2023**. We first look at the Cleantech for Europe data[6] showing the 2018-2022 investments in cleantech companies – an indicator of investors' confidence in their business cases. We later turn to the latest edition of the International Energy Agency's Energy Technology Perspectives, that informs about the location of announced projects of a specific cleantech segment: clean energy technology manufacturing.[7]

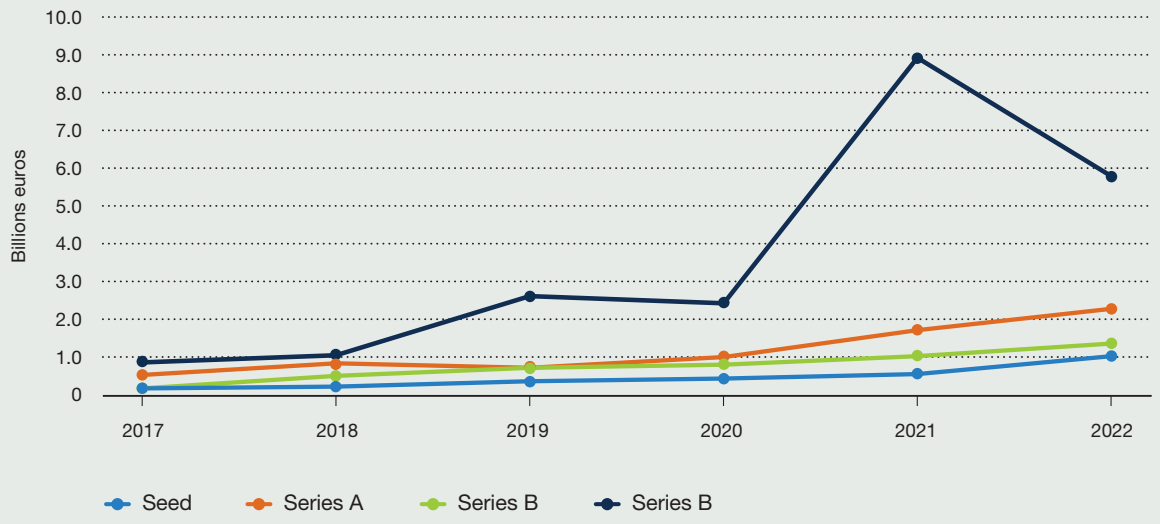
1.1. EU Cleantech investments have improved but further scale-up and growth funding is needed

Cleantech investments have increased in the EU. Since 2018, seed, venture and growth investment in cleantech venture grew significantly from 2,6 Bn€ in 2018 to 10,6Bn in 2022, compared to a growth from 26,4 Bn€ to 37,5 Bn€ in North America.[8]

Investments grew significantly in seed funding and series A that are essential in the early life of start-ups. They also grew in series B, a good indicator of the moment when a start-up enters its scale-up journey. Growth equity however decreased between 2021 and 2022 (see **Figure 1**) reflecting a global slowdown caused by the 2022 Russian aggression of Ukraine.

Overall, the EU increased its share of overall global cleantech investment from 6% in 2018 to 15,5% in 2022.[9] Based on these data, the EU seems not to be leading, but to be quickly catching up to the USA and is already now in a better place to seize cleantech economic opportunities.

FIGURE 1. EU27 CLEANTECH VENTURE AND GROWTH DEALS BY STAGE, 2017-2022



Source: Cleantech for Europe, Annual Briefing 2022.

5 For recent history data, readers may refer to Julia Reinaud et al., Scaling up innovation in the Energy Union to meet new climate, competitiveness and societal goals, i24c & Capgemini Consulting, 2016.

6 Cleantech for Europe, Annual Briefing 2022.

7 International Energy Agency, Energy Technology Perspectives 2023, January 2023.

8 Cleantech for Europe, Annual Briefing 2022.

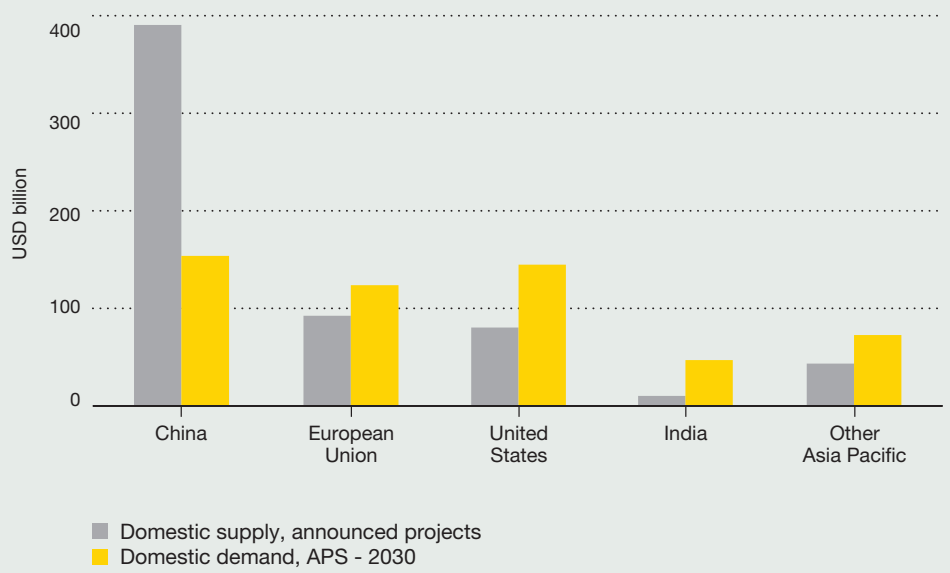
9 Cleantech for Europe, Annual Briefing 2022.

1.2. The EU clean energy technology manufacturing outlook is positive, even if largely distanced by China's

When looking at **announced projects of clean energy technology manufacturing in key sectors** (solar photovoltaic, batteries, wind power, heat pumps, electrolysers, and fuel cells), the EU is also in a good starting position. According to the International Energy Agency, **if all those announced projects were to materialise, the EU could cover about 75% of its projected 2030 domestic demand** (cf. **Figure 2**). That puts the EU far behind China, but slightly ahead of the USA.

Yet, announced project is just one indicator to be assessed carefully. Many projects have not been announced or tied to a specific geographical location yet. Several announced projects may not materialise[10] or be relocated, especially if investment conditions become particularly favourable in one location. And this is one European worry about the Inflation Reduction Act.

FIGURE 2. INTERNATIONAL ENERGY AGENCY ESTIMATE OF THE 2030 MARKET SIZE FOR KEY CLEAN ENERGY TECHNOLOGIES



Source: International Energy Agency, Energy Technology Perspectives 2023, January 2023, Figure 6.7.

Notes: Key clean energy technologies include solar PV systems, batteries, wind systems, heat pumps, electrolysers and fuel cells. Market size is calculated based on module or unit price, excluding installation and construction costs. All market sizes and revenues are expressed in undiscounted 2021 US dollars.

10 As recently recalled by the cancellation of the UK Britishvolt plant in northern England.

2. THE INFLATION REDUCTION ACT, A US LONG-TERM CLIMATE INVESTMENT PLAN

The Inflation Reduction Act (IRA) is a 274 page law adopted in a surprise political deal by the US Congress in August 2022, after months of intense negotiations.[11] It puts the USA on track to cut its greenhouse gas emissions by 40% by 2030, compared to 2005 levels.[12]

The IRA provides public climate funding at scale. The headline figure of 369 Bn$ is often used in the EU debate.[13] Yet, IRA's final investment level is unknown as most of its provisions are uncapped.[14] In other words, the bigger the quantity of clean hydrogen produced in the USA, the higher the IRA headline investment figure will really be. **Crédit Suisse estimates that the IRA could lead to a US federal public funding higher than 800 Bn$**.[15]

At project-level, IRA also delivers scale as Investment Tax Credits (ITC) start at 30%, with several "adders" of 10% ITC,[16] including the local content adder that has been so controversial in the EU debate.[17] **With all the available adders, the tax credit can reach up to 60%**.[18]

The IRA provides predictability. Most IRA provisions are available for eight to ten years, **giving long-term predictability until 2031-2032**. Such a long-term investment horizon is particularly suited for capital-intensive cleantech investments. The IRA is furthermore designed to survive future political elections.[19] **This level of predictability allows local communities, project developers and investors to build long-term project pipelines seizing the opportunities created by the IRA**. This is in stark contrast with the "stop and go policies" that have plagued many previous climate policies, both in the US and in the EU. By contrast, at EU level, both the current EU budget and NextGenerationEU have a near-term end-date, in 2027 and 2026 respectively, giving only a medium-term visibility and without instruments as simple and predictable as the US ITCs.

The IRA also provides **support along specific cleantech supply chains**. In the case of electric vehicles, it supports the mining of critical metals, the manufacturing of the battery, as well as the purchase of the electric car[20] and the production of renewable electricity. **This reduces private investment risks** in all those components of the supply chain, making it even more likely to crowd-in private investment. By contrast, current support in the EU remains more fragmented, due to political and legal constraints.

While the EU debate centres on the IRA, this is not the only game in town. **The IRA builds on already significant US public support to cleantech** through long standing programmes like the US Department of Energy's Loan Program, or ARPA-E. It also complements other recently adopted investment programs with significant cleantech components, such as the 2020 Energy Policy Act, the 2021 Infrastructure Bill and the 2022 Chips Act. Moreover, **other countries invest public money for climate. China has its Five Years Plan Goals**[21], **India its Production Linked Incentive schemes**[22], **and Japan has its Green Transformation programme**.[23] The EU must therefore learn from the IRA and build an adequate Cleantech Investment Plan (cf. **section 4.1**) that ensures clean technology products can also be developed, scaled, manufactured and deployed in the European Union.

11 IRA is not some US masterplan but the result of a profoundly constrained US decision-making system. Unable to pass federal carbon pricing nor ambitious regulations through Congress, the Biden Administration invested in the only remaining public policy tool: public funding. The IRA is therefore the best federal climate policy the US political system could deliver in 2022. By contrast, the EU has been making a much more forceful and better use of regulations and carbon pricing, yet with a more limited and fragmented use of public investment instruments.

12 Candace Valsing, New OMB Analysis: the Inflation Reduction Act will significantly cut the social costs of climate change, US Office of Management and Budget, August 2022.

13 This 369 Bn$ estimate comes from the US Congressional Budget Office.

14 Crédit Suisse, US inflation reduction act: a tipping point in climate action, Treepint, November 2022. p.5.

15 Crédit Suisse, *ibidem*.

16 Such as a 10% adder for projects in low-income communities. A type of public intervention that could inspire future use of the Just Transition Fund -*e.g.* to build cleantech gigafactories in EU coal mining regions.

17 Financial Times, German car industry calls for european policy to counter US subsidies, 11 January 2023.

18 Aurora Energy Unplugged podcast, Implications of the US inflation reduction act, Episode 123.

19 For instance, IRA has a 30$/MWh support for zero carbon electricity generation which will benefit the development of renewable energy in the USA. This will be particularly beneficial for the US States controlled by Republicans, as they happen to be the areas with the greater renewable electricity generation and potential.

20 With a 7,500$ tax credit for the purchase of an electric car, and a 4,000$ tax credit for the purchase of a used electric car.

21 Carbon Brief, 14FYP energy plan, China Briefing, 24 March 2022.

22 Indian Ministry of Commerce and Industry, Production Linked Incentive Scheme, press release, March 2021.

23 Nomura, Green transformation in Japan likely to accelerate toward Year-End, Nomura ESG Monthly, August 2022.

3. TOWARDS AN EU RESPONSE TO THE INFLATION REDUCTION ACT: THE GREEN DEAL INDUSTRIAL PLAN AND ITS PUBLIC FUNDING COMPONENT

When the IRA was adopted in August 2022, the first EU reaction was a positive welcome of this climate investment plan. After a more careful assessment, it became clear that some provisions aiming at protecting the US economy from China would also have a negative impact on the EU. This occurred in the context of EU worries on the loss of cost-competitiveness as a result of the fossil fuel crisis that started in 2021[24] and led to national measures aimed to shield consumers from rising energy prices at a cost of 600 Bn€.[25]

After months of debate among EU Commissioners, Member States and Member of the European Parliament[26], **the European Commission chose to centre the debate around its Green Deal Industrial Plan (GDIP), presented on February 1st 2023**.[27]

The GDIP political ambition is **to "make Europe the home of clean tech and industrial innovation on the road to net zero"**.[28] It rests on four pillars: regulation, funding, skills and trade. **We here focus on the public funding component as it is the most comparable to the IRA**.

EU Member States already provide financial support to companies, households, and projects, but can only act within the **EU State Aid framework**. On this thorny issue, the GDIP aims to strike a balance. Many Member States, as well as European Commission executive Vice-President Margrethe Vestager, fear that uncoordinated increases in national subsidies would fragment the EU Single Market and lead to "harmful subsidy races",[29] damaging the cohesion of the EU. Yet, several Member States call for more flexibility. The GDIP proposes a series of temporary simplifications that give larger room for manoeuvre for national support schemes, without providing any drastic change to EU State Aid rules at this stage.[30]

The European Commission further underlines that **EU funding instruments must be mobilised** to meet the financing needs in all EU Member States, including those where public investment is lacking due to political or fiscal constraints. The Commission reiterates its proposal for a **European Sovereignty Fund** to be presented before the summer of 2023 in the context of the EU Multiannual Financial Framework mid-term review. It furthermore underlines the **key role the Innovation Fund** can have, as its budget is increased and its mandate is expanded by the December 2022 agreement to reform the EU carbon market (EU ETS).

24 Phuc-Vinh Nguyen and Thomas Pellerin-Carlin, The European energy price spike, Policy Brief, Jacques Delors Institute, October 2021.

25 Giovanni Sgaravatti, Simone Tagliapietra, Georg Zachmann, National fiscal policy responses to the energy crisis, Bruegel, 29 November 2022.

26 See for instance the different resolutions for "an EU strategy to boost industrial competitiveness, trade, and quality jobs" drafted in January 2023 by the Social Democrats, the Greens, the Renew Europe, and the European Popular Party groups in the European Parliament.

27 European Commission, A Green Deal Investment Plan for the Net-Zero Age, February 2023.

28 Ursula von der Leyen, Speech at the World Economic Forum, January 2023, Davos.

29 See for Instance Margrethe Vestager's letter to national ministers, 13 January 203.

30 European Commission, A Green Deal Investment Plan for the Net-Zero Age, February 2023, p.7-10.

4. RECOMMENDATIONS: BUILDING AN EU LONG-TERM INVESTMENT PLAN TO MATCH THE IRA

The IRA is a wake-up call, pointing to the fact that the EU long-term climate ambitions are not yet matched by a long-term climate investment plan. **The GDIP provides a first solid basis for the EU debate on one element: cleantech investment**. In that context, this brief recommends EU policy makers to think about how to build a house (the EU long-term cleantech investment plan, see **section 4.1**) while laying the first three bricks: ambitiously deliver on all existing initiatives (**section 4.2**), use NextGenerationEU to scale Green Public Procurement (**section 4.3**) and use the Innovation Fund to demonstrate the efficiency of EU-wide cleantech public support schemes (**section 4.4**).

4.1. Think house: the need for an EU long-term cleantech investment plan

The EU political debate spurred by the **IRA highlights one key missing piece of the European Green Deal puzzle: the lack of a long-term investment plan**.

Neither the EU nor the world needs a subsidy race. But both **need to ensure that public and private investments transform climate pledges, targets and regulations into tangible transformations**: wind power parks, energy efficient homes, public transportation infrastructure, green steel factories, etc. Such **investments are triggered by a constellation of drivers, including regulation, carbon pricing and the public and private investment framework**.

The recently augmented long-term ambitions of the EU regulatory and carbon pricing overhaul (see **section 4.2**) have not been matched by a similar increase in long-term EU climate investments. **While the EU climate ambition has virtually doubled since 2020**[31]**, and provides clear targets and mandates for 2030, 2035 and 2050, the EU budget remains limited (< 1% of the EU GDP) and offers limited visibility and predictability**. As for NextGenerationEU, while providing much needed fiscal space for Member States, its payments stop in 2026.[32]

While an increase in **long-term EU public investment seems to be a logical solution**[33] supported by several policy makers, **one must recognise that others have little political appetite at this stage. But as the saying goes, appetite comes with eating.** And thanks to the IRA, there might be enough appetite to talk about **the first course: a cleantech investment plan**.

Building on the existing political momentum, **the European Commission should propose a cleantech investment plan**, to be presented before the summer of 2023, in the context of the mid-term review of the EU Multiannual Financial Framework. This plan should be the logical next step to the adoption of an ambitious **Fit for 55** (see **section 4.2**), maximise the use of existing EU and national resources to scale **green public procurement** (see **section 4.3**) and use **EU-wide schemes** that learn from the IRA, to provide predictable long-term financial support to renewable hydrogen as well as other key components of cleantech value chains (see **section 4.4**).

Meanwhile, the European Council should provide political backing to the Commission, and task national ministers to map and assess their own national schemes to identify synergies and gaps to be addressed through national coordination or EU action.

4.2. Brick n°1: deliver on existing initiatives, especially on renewable energy and renewable hydrogen

One major comparative advantage the EU has over the USA, is the EU stable regulatory framework. It is currently being overhauled with the EU "Fit for 55" package.[34] Playing to its strengths, the EU should ensure the speedy adoption of ambitious decisions on all its elements[35]. This includes technical provisions that are critical to provide visibility to companies, such as the still pending EU delegated act on renewable hydrogen. While not offering funding measures, they do provide the foundations for companies to create innovative business cases and for public and private investors to improve the investment framework.

31 In 2019, the EU climate target was to reduce greenhouse gas emissions by 20% by 2020, and 40% by 2030, leading to a -20% decrease in the 2020 decade. In 2021, with the adoption of the EU Climate Law, this 2030 objective was increased to 55%, and then to 57% as announced in November 2022. This leads to a -37% effort, almost double the originally planned -20%.

32 Eulalia Rubio, From words to action – analysing possible scenarios and political dynamics in the process of disbursing the European recovery and resilience facility funds, Jacques Delors Institute, February 2022.

33 Alan Beattie, The challenge for Europe's green tech spending splurge, Financial Times, 19 January 2023.

34 For an updated overview of the state of play of those negotiations, cf. Contexte, Paquet climat: le kit de survie des négociations européennes.

35 In particular on key pending files, such as the renewable energy directive and the energy performance of buildings directive.

4.3. Brick n°2: Use NextGenerationEU to scale green public procurement

The EU economy is characterised by a key role of the public sector. From public transportation infrastructure to building a new hospital, **the amount of money invested in public works, goods and services amounts to 2,000 Bn€, or 15% of the EU GDP**.[36] Today, the basic rule guiding public procurement is to acquire the cheapest option. However, **given the key role of the public sector in procuring polluting materials, public procurement can become a driver for the offtake of cleantech solutions**[37].

The case is particularly clear for cement. Some innovative green cement already exist but currently cost more than traditional cement, creating a price differential sometimes referred to as a **"green premium"**[38] – *i.e.* **the additional cost of the green alternative compared to the polluting option**.

In the long term, implementing the reform of the ETS agreed in December 2022[39] will ensure cement producers will be fully subjected to the EU carbon price[40] by 2034. Until then, **green public procurement would likely be required to ensure the early adoption of innovative cleantech products**. Green public procurement schemes[41] can require that some of the cement used to answer public procurement calls come from low carbon cement, or use more sophisticated methods like the Dutch CO_2 Performance Ladder.[42] In the short term, **NextGenerationEU funding could be used to cover the additional financial costs that come with buying such greener – and still more expensive – public procurement**. In the medium term, the European Commission should consider making green public procurement a common requirement under EU law.

4.4. Brick n°3: Use the EU Innovation Fund to show that EU-wide support schemes can match the IRA's predictability and continental scale

To avoid a subsidy race and guarantee a level playing field between Member States, **the Union should develop its own EU-wide support schemes. One pilot sector for such support mechanisms is the production of renewable hydrogen**. Several Member States are working on their own national hydrogen schemes, which, if poorly designed or rolled out partially in the EU, may see renewable hydrogen projects deployed in the areas where public subsidies are the most generous, rather than locations where renewable hydrogen production is the most needed. **Unlike electricity, hydrogen is not widely traded. Strictly national approaches may therefore lead to a severe fragmentation of the EU Single Market, and inefficient use of national public resources**.

The European Commission is set to launch in 2023 the Innovation Fund's first auction for renewable hydrogen.[43] Taking inspiration from the IRA, **this scheme is designed to be EU-wide and set for a ten-year period**, with a fixed premium giving a X€ subsidy for every kilogram of renewable hydrogen. **This brief however recommends the Commission to consider using a two-sided contract for difference** fixing a specific price to which each kilogram of renewable hydrogen will be sold, over a fixed premium, and explain its final decision to the European Parliament.[44]

In any instance, the EU should ensure a **competitive auction**, as to allow different renewable hydrogen projects to compete, leading to a lower contract price.[45] **This would differ from the US IRA approach, but would also ensure EU money is more efficiently invested**. This is in line with the budgetary constraints that are more politically central in the EU debate, than in the US'.

Finally, to ensure all sizes of companies, including start-ups, scale-ups and SMEs, can compete, the European Commission should design **different tenders for large-scale and small-scale projects**.

Implementing such a proposal in the coming months would be a clear first EU response to the IRA, **paving the way for the use of a similar auctioning scheme for other cleantech products** (such as components of wind or solar energy), as well as the testing of EU-wide carbon contracts for difference[46] (CCfD) where suitable.

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36 European Commission, Public Procurement Indicators 2014, February 2016.

37 Astrid Nilsson Lewis, Magdalena Machlowska,. Decarbonizing the EU's Road and Construction Sectors Through Green Public Procurement: The Case of Sweden and the Netherlands. SEI brief, Stockholm Environment Institute, Stockholm, July 2022.

38 Bill Gates, Introducing the Green Premiums, Gates Notes, 29 September 2020.

39 Council of the EU, press release, 18 December 2022.

40 Thomas Pellerin-Carlin, Domien Vangenechten, Pascal Lamy, Geneviève Pons, No more free lunch - ending free allowances in the EU ETS to the benefit of innovation, Jacques Delors Institute & E3G, policy brief, February 2022.

41 For further info, cf. European Commission, Buying green! A handbook on green public procurement, 3rd Edition, 2016.

42 Astrid Nilsson Lewis, Kaaret, K. and Piirsalu, E. Decarbonizing the EU's Road and Construction Sectors Through Green Public Procurement: The Case of France and Germany. SEI brief, Stockholm Environment Institute, Stockholm, 2022.

43 European Commission, A Green Deal Investment Plan for the Net-Zero Age, February 2023, p.12-13.

44 In a hydrogen two-sided contract for difference the public sector would guarantee a specific price to the producer (X€/kg of renewable hydrogen). When the market price is below that threshold, the public authority pays the producer. When the market price is above that threshold, the producer compensates the public authority. The experience with similar schemes for renewable energy show that unforeseen increases in market prices can benefit public revenues, such as in the case of France where renewable electricity two-sided contracts for difference should lead the French state to earn 31 Bn€ of extra revenues in 2022 and 2023. Cf. Sharon Wajsbrot, Energies renouvelables: le jackpot de l'Etat atteint 31 milliards d'euros, Les Echos, 08 Novembre 2022.

45 Joscha Müller and Tobias Lechtenfeld, CCfD zur Skalierung von Klimatechnologien in Deutschland, Dena & Tech for Net Zero Alliance, April 2022.

46 Ben McWilliams and Georg Zachman, Commercialisation contracts: European support for low-carbon technology deployment, Policy contribution, Bruegel, July 2021.

CONCLUSION: DELIVER WHAT YOU HAVE PLANNED, AND MORE

For years, the European Union assumed it would lead the cleantech race because it was the only one running in it. **With the Inflation Reduction Act, it is now clear the EU has its competitors**. The US catches up. China has demonstrated its capacity to act decisively. Japan, Korea, Canada and India have also entered the race.

The IRA is therefore a much-needed wake-up call for EU action. Luckily, **the EU does not need to throw its past decisions overboard. Quite the contrary, it must deliver what it has planned, and more**.

Finalising and implementing the entire "Fit For 55" legislative package are key for the EU to play to its strengths: predictable and ambitious regulations and carbon pricing. Member States should increase their support for clean technology offtakes, including through **green public procurement**. The European Commission should provide **EU-wide schemes** that learn from some excellent features of IRA, such as its predictability and its wide geographical coverage. Thinking house, not brick, those elements should form the building blocks of a structural EU response: **an EU long-term cleantech investment plan that matches the IRA ambitions**.

With the approaching EU elections of May 2024 and the end of NextGenerationEU in sight, **such cleantech investment plan could lead the EU to advance towards an even more ambitious discussion: an EU long-term Climate Investment Plan**. This would include and look beyond cleantech, to ensure EU, national and private investments **turn all the Green Deal objectives into tangible realities for businesses, workers and families**.

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