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What does the Inflation Reduction Act (IRA) mean for Germany and Europe?

RWE Energy Talks 2023

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Recent U.S. legislation with major energy & climate spending
Overview

IRA, IIJA and CHIPSSA overview

	billion USD
IRA - total revenues raised	**739**
15% Corporate Minimum Tax	313
Prescription Drug Pricing Reform	288
IRS Tax Enforcement	124
Carried Interest Loophole	14
IRA - total investments*	**433…859**
Affordable Care Act Extension	64
Energy Security and Climate Change*	369…795
IIJA - clean energy investments	**70**
CHIPSSA - zero carbon industries & R&D	**54**
Total green investments*	**493…919**
Note: * Range due to different expectations on the volume of production and investment tax credits	

Sources: CBO, JCT, Credit Suisse, McKinsey, RMI

- US Congress passed three major pieces of legislation that provide major funding for energy and climate-related activities
  - the Inflation Reduction Act of 2022 (IRA), H.R.5376
  - the Infrastructure Investment and Jobs Act of 2021 (IIJA, also: Bipartisan Infrastructure Law – BIL), H.R.3684
  - Chips and Science Act of 2021 (CHIPSSA), H.R.4346
- IRA is the most significant legislation
  - major revenue generating provisions
  - investment not only on energy & climate
  - significant uncertainties on expenditures due to outstanding role of production tax credits (PTC) and investment tax credits (ITC)
- EU energy, climate and crisis mechanisms provide comparable or even higher funding levels

U.S. Inflation Reduction Act
Overview on clean energy and climate spending

IRA clean energy and climate spending estimates

	billion USD
Clean electricity (wind, solar, battery)*	127…265
Energy efficiency buildings	47
Energy manufacturing and energy security*	37…256
Nuclear	30
Hydrogen*	13…33
Clean vehicles	12
Clean fuels	9
CCUS*	3…52
Clean vehicle refueling/recharging	2
Others	91
Total	**369…795**

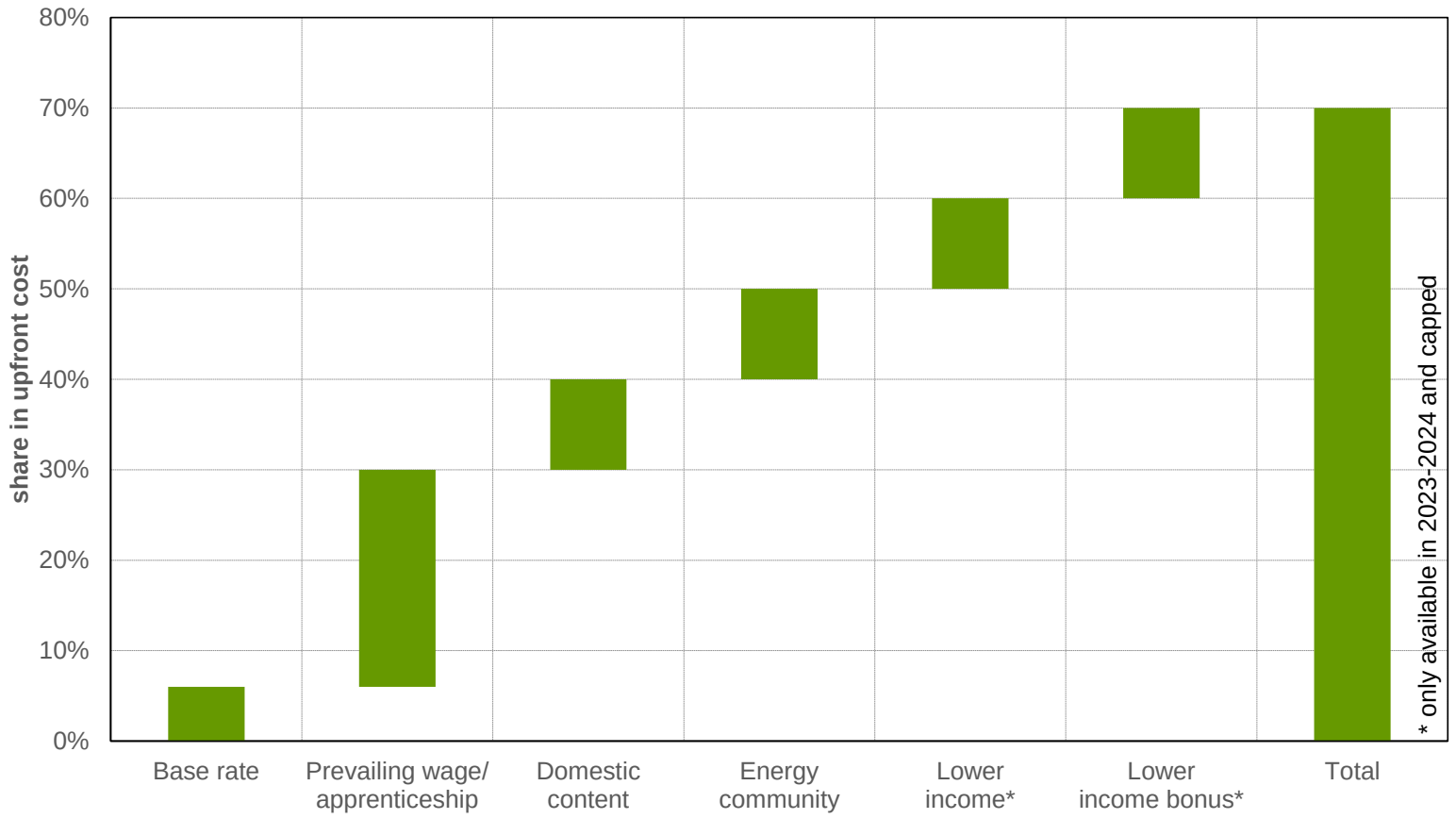
Note: * Range due to different expectations on the volume of production and investment tax credits

Sources: CBO, Credit Suisse

- IRA funding has a strong focus on key energy and climate options
  - main focus on the supply side with a view to energy commodities (electricity, nuclear, hydrogen, clean fuels) and manufacturing of energy equipment
  - significant role of the demand side (energy efficiency in buildings, clean vehicles)
  - reasonable role of CCUS and infrastructure (additional investment provided by IIJA)
- Production tax credits and investment tax credits (as robust and easy-to-use mechanisms) represent the major share of funding and reach significant levels (up to \$15/MWh + 4 x 10% bonuses for clean electricity PTC, up to \$3/kg for H_2 PTC, up to \$1.75 /gal for SAF PTC, up to \$85/t CO_2 for CCS and \$180/t CO_2 for DACS PTC, with inflation adjustment)
- Social and just transition features play an essential role in the design of mechanisms

The U.S. Inflation Reduction Act
Cumulation of support mechanisms (1)

Clean electricity investment tax credits

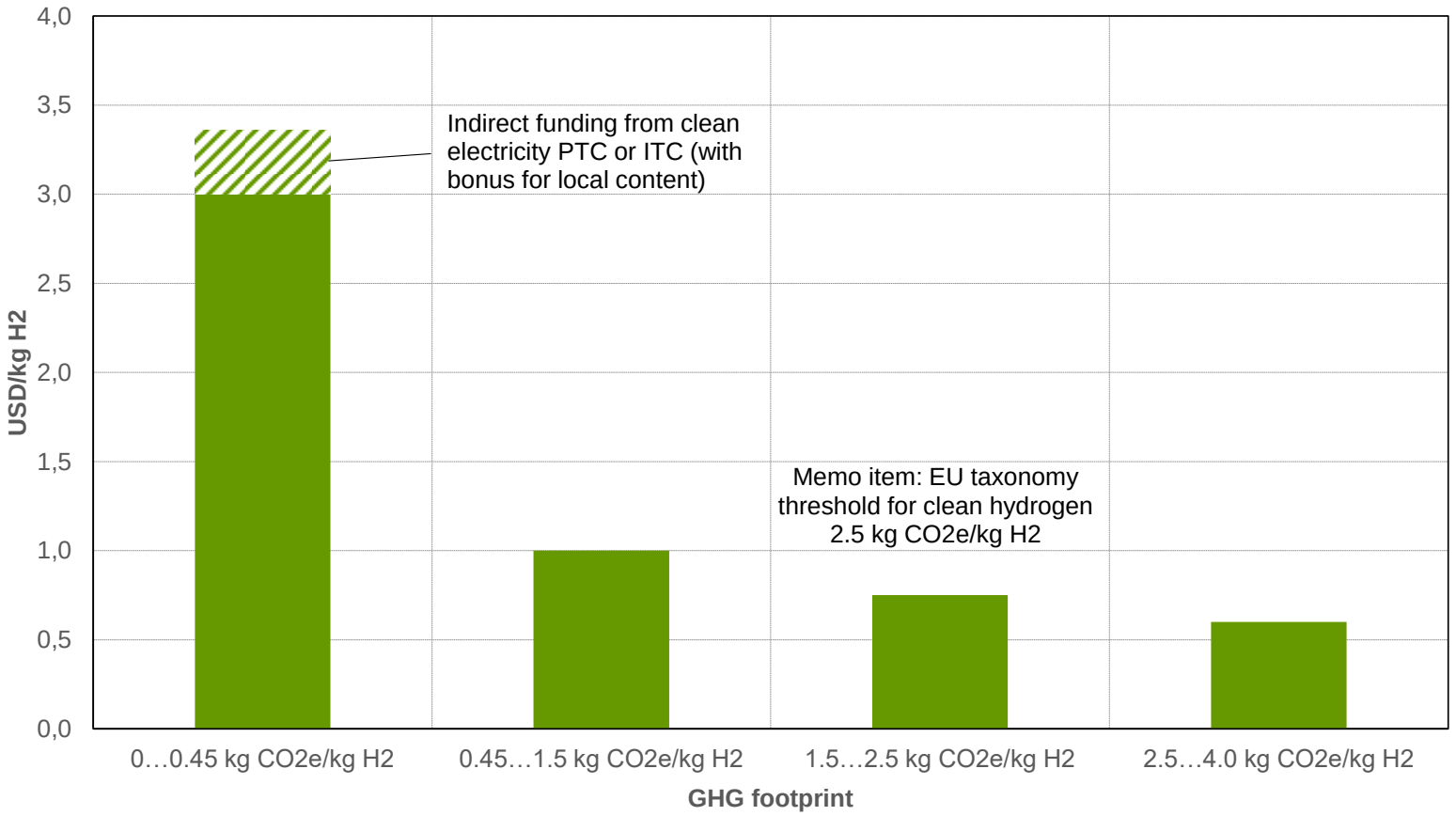


Source: DOE

- Common scheme for PTC and ITC
  - base level without additional requirements
  - multiplied by 5 if wage and apprenticeship requirements are met
  - 10% bonus for domestic content (steel, iron, manufactured goods)
  - 10% bonus for location in energy communities
  - in some cases additional adders
  - adjustments for emission footprint (e.g. for H_2)
- ITCs as alternative to PTCs, cumulative use of PTCs possible

The U.S. Inflation Reduction Act
Cumulation of support mechanisms (2)

Clean hydrogen production tax credit

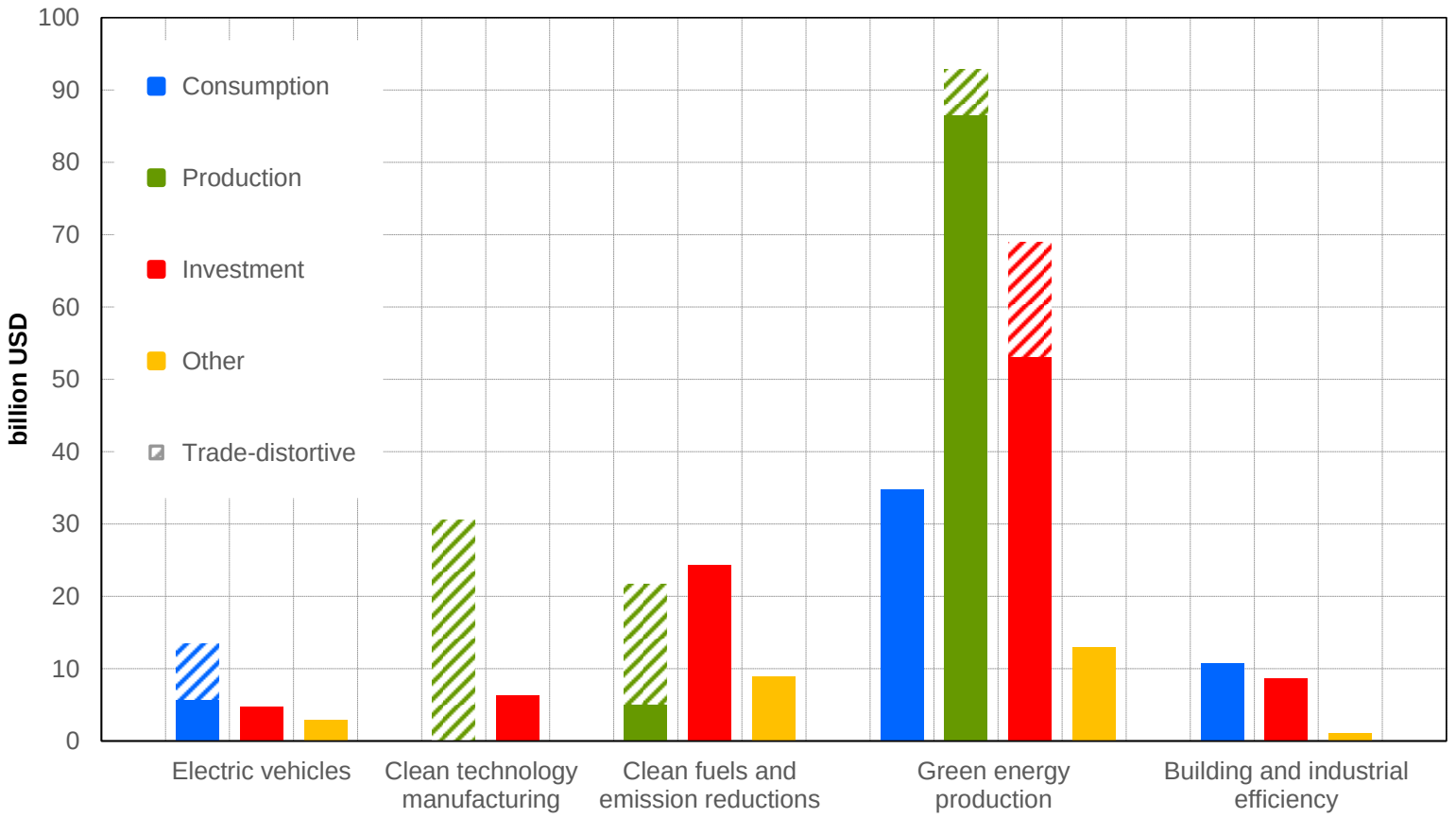


Sources: DOE, own calculations

- Funding for clean hydrogen depends on GHG footprint
  - green hydrogen $3/kg H2
  - plus contribution from clean electricity PTC or ITC (incl. local content bonus = approx. $0.4/kg H2)
  - clean hydrogen which meets EU taxonomy threshold for clean hydrogen (2.5 kg CO2e/kg H2) would qualify for a clean hydrogen PTC
  - threshold for any hydrogen PTC is 4.0 kg CO2e/kg H2
- Green and blue hydrogen could become highly competitive with IRA funding – even for hydrogen exports beyond pipelines

The U.S. Inflation Reduction Act
Expenditures for energy & climate by support channel and trade distortion relevance

IRA expenditure estimates



Sources: CBO, Bruegel

- Local content or local production provisions play a major role in the key target fields
  - electric vehicles (high relevance but limited funding)
  - clean technology manufacturing (high relevance and medium level of funding)
  - clean fuels (high relevance and medium level of funding)
  - clean electricity (low/medium relevance but high level of funding)
- Approx. ¼ of total IRA funding has been assessed as trade-distortive, this share depends significantly on effective levels of PTC/ITC use

Recent U.S. legislation with major energy & climate spending
The good and the challenging news

- **The good news: The U.S. Inflation Reduction Act**
  - is part of a broader legislative package on infrastructure and innovation
  - will increase Federal spending on energy and climate by several times
  - will help to reduce the US greenhouse gas emissions by 40% (below 2005 levels), compared to 30% under current policy
  - will make a significant contribution to investments in buying down the learning curve for key climate neutrality technologies (renewables, hydrogen, CCUS)
  - has a strong focus on achieving co-benefits for wages, apprenticeship and just transition
  - could drive exports of green/climate neutral commodities (e.g. hydrogen) from the US
- **The challenging news: The U.S. Inflation Reduction Act**
  - includes significant protectionist elements that could further harm the system of international trade rules
  - the IRA will massively improve the attractiveness of the US as a location for green manufacturing in a period of underdeveloped value chains

The U.S. Inflation Reduction Act
Implications (from a European perspective)

- **IRA funding (with IIJA & CHIPSSA synergies) will shape the US energy system significantly**
- **The funding levels are not that different from what is available or planned in the EU**
- **The IRA funding is very much focused on key applications (electric mobility, renewable fuels, clean electricity, energy efficiency in buildings, hydrogen: Relevant & controversial in the EU!**
- **Most of the funding mechanisms are robust, easy to use, attractive – and at least partly a bit to generous (especially with a view to cumulation): Broadening the EU policy mix in this regard?**
- **The funding mechanisms are extremely attractive to allocate value chains in the US: a booster for the competitive position with a view to engineering and manufacturing capacities for clean energies and clean industrial solutions (which represent a significant bottleneck for the transformation in the upcoming decade): Complementary upstream support in the EU needed?**
- **Availability of cheap green and clean electricity and hydrogen could emerge as another competitive advantage for the US: Green industrial strategy & power price schemes needed!?**
- **Significant spillovers to Europe could occur especially with respect to hydrogen: Hydrogen shipped from the US could outcompete pipeline hydrogen in Europe (How long the US taxpayer would be willing to pay for green/clean hydrogen exports: 10 TWh = $ 1b)**

Thank you very much

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