

Green Hydrogen Contracting Guidance

Fiscal Terms and Incentives

Key considerations

- In the early stages of green hydrogen development, it is likely that the industry will rely on fiscal incentives as new technologies are rolled out and scaled up. Fiscal incentives to reduce the costs and tax payments by project developers, as well as subsidies for individual projects or through public schemes, may be provided by governments to raise investments. However, as green hydrogen becomes increasingly competitive, taxes will become of greater importance as a source of revenue.
- Host governments will need to analyse and model how fiscal decisions made today impact investments and government revenues from green hydrogen in the future. The overlay of taxes and incentives will form the shape of the framework and implementation agreements between host governments and project developers.
- Each host government will need to identify the optimal mix of fiscal instruments and terms to meet its objectives. Contracts will therefore need to include responsive terms which allow for the adjustment and allocation of overall financial benefits between host governments and investors in response to variables that affect project profitability.
- A fiscal regime that is clear and transparent for the government, companies and citizens and sufficiently simple to monitor and apply for taxpayers and tax administrations will be critical, in particular in emerging and developing economies.

This brief forms part of a set of guidance from the initiative on [Green Hydrogen Contracting – for People and Planet](#). The project supports governments, communities and companies in developing contracting practices for green hydrogen projects that ensure rapid expansion to everyone's benefit. The guidance has been developed by a working group consisting of governments, law firms, companies and civil society groups to draw lessons learned from emerging practices in the green hydrogen industry.

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Part one:

International Good Practices

1. Introduction

A fiscal regime is a set of policy tools that determines how the revenue and economic value generated by green hydrogen projects are shared between the state and project developers. The details of what fiscal tools are used and how they are applied to a particular project are part of a country's legal framework, which includes the laws, regulations and contracts.¹ Different types of taxes and payments to governments include taxes levied on the income, production or profits of companies, royalties, dividends, license fees, rental fees and other considerations for licenses or concessions.

As governments enter into long-term contracts with project developers and may still be developing regulation governing green hydrogen projects, it will be important to ensure that contracts signed now containing fiscal terms are set out in ways that both incentivize investments and provide long-term economic benefits for host governments.

In the early stages of green hydrogen development, it is likely that the industry will rely on fiscal incentives as new technologies are rolled out and scaled up. Fiscal incentives to reduce the costs and tax payments by project developers, as well as subsidies for individual projects or through public schemes, may be provided by governments to raise investments.

For this brief, the key questions are what mix of incentives, profits and taxes will maximize the production of green hydrogen while also providing fair prices to the consumers of the power produced by the green hydrogen. The analysis looks at forms of incentives that can be employed to encourage the production of green hydrogen. It examines how tax measures can both encourage the production of green hydrogen or, alternatively, discourage the production of carbon intensive forms of energy.

To put these measures in context, they are examined in three scenarios – (i) countries with limited regulation, (ii) countries with a high degree of regulation, and (iii) countries with some regulation but mainly open markets. The mix of measures will vary considerably between these three categories and individual countries. That said, the

¹Further introduction to fiscal regime design and lessons learned from the natural resource industry is available at Energy Resource Governance Initiative Toolkit: <https://ergi.tools/production/fiscal-regimes/>

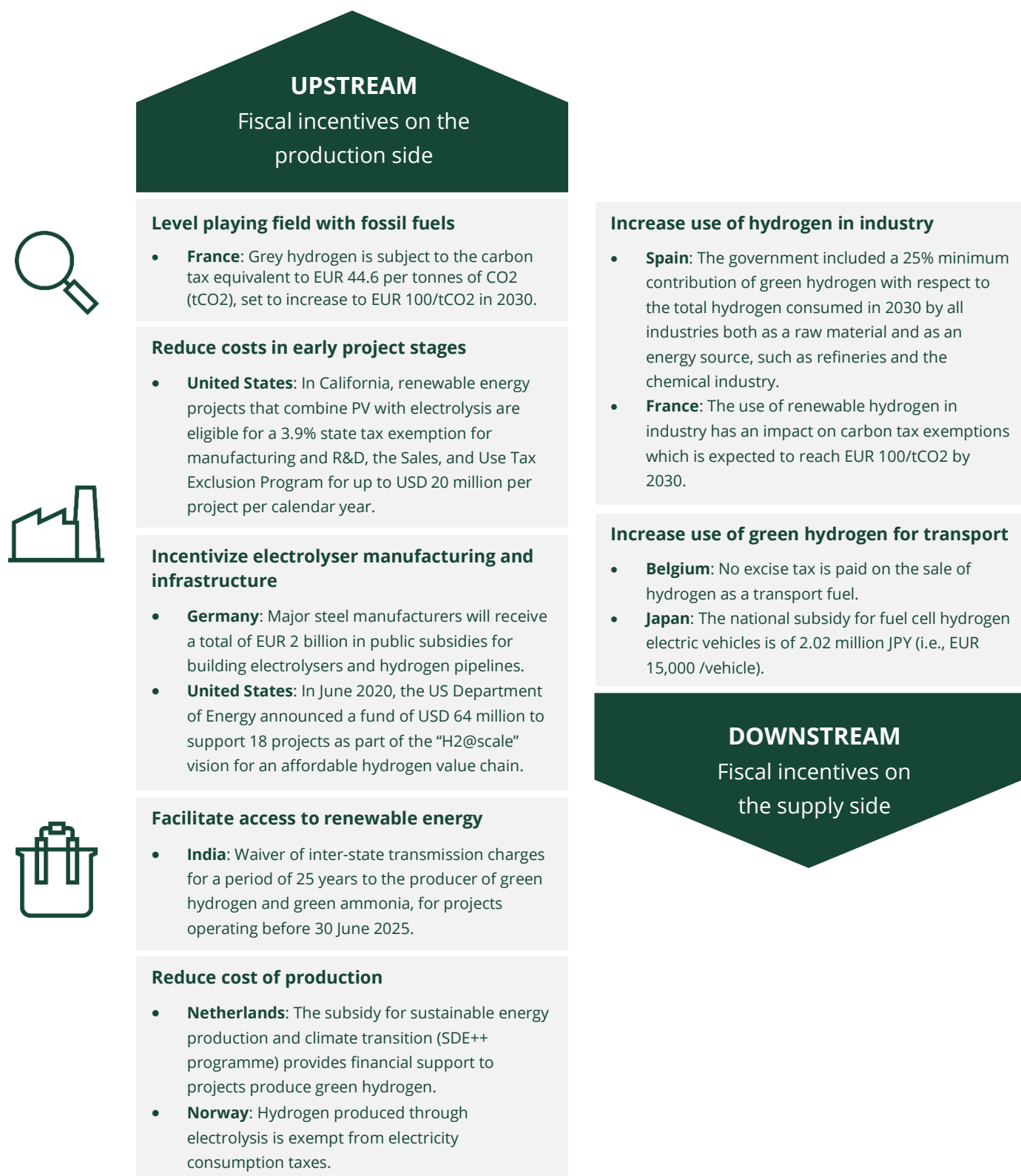
correct mix of incentives, profits and taxes will be essential in moving green hydrogen projects into production. Economic and financial analysis at the project level and transparency between the government and project developer of the project modelling and assumptions about the production and cost profile of the project will be key to agree transparent terms. Finally, the brief highlights what has actually been done in a selection of countries – Australia, Chile and Namibia – to encourage the green hydrogen industry.

2. Relevant Practices and International Trends

As with other renewable energy technologies, public financing and fiscal incentives will be needed to drive green hydrogen production in the short term, while over time economies of scale will lead to cost reduction and increase competitiveness.

The incentives to encourage green hydrogen power production may take different forms and will depend on whether the incentive is applied upstream to encourage production or downstream to adjust prices to market conditions.

Figure: Examples of fiscal incentives across the value chain²



² Green Hydrogen Country Portal, gh2.org/countries, and IRENA (2021), Green Hydrogen Supply - A Guide to Policy Making

The European Union has taken the lead in producing a set of renewable energy directives covering many of the issues discussed in this brief.³ As has been recognised in a recent report by the OECD to the G20 finance ministers, taxes will also play a key role in controlling climate change and in realizing the United Nation's [Sustainable Development Goal 7](#) – generating affordable and clean energy.⁴

Table: Example of key fiscal terms from selected jurisdictions

	Australia	Chile	Morocco	Saudi Arabia	United Arab Emirates
Corporate Tax	Base rate 25% - Otherwise 30%	General 27% SMEs 25%	28%	20%	9%
Value Added Tax (VAT)	10%	19%	20%	15%	5%
Additional Profit Tax	There is no indication that additional / excess profit taxes are applied. However, the 40% Petroleum Resource Rent Tax (PRRT). PRRT currently applies to most offshore petroleum projects.	There is no indication that additional / excess profit taxes are applied.	There is no indication that additional / excess profit taxes are applied.	There is no form of stamp duty, transfer, sales, turnover, or production taxation, except in so far as they may fall within the scope of Zakat, which is applicable only to Saudi nationals.	There is no indication that additional / excess profit taxes are applied.

³ European Commission, *Renewable energy – directive, targets and rules* https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules_en

⁴ OECD (2021), *Tax Policy and Climate Change*, <https://www.oecd.org/tax/tax-policy/tax-policy-and-climate-change-imf-oecd-g20-report-september-2021.pdf>

Royalties
(if applicable)

Oil and Gas

In all Australian jurisdictions with petroleum legislation, a production title holder must pay royalties to the relevant State or Territory regulating the petroleum title. The royalty rates are:

Queensland and

South Australia: fixed rate of 10% of value of petroleum at the well-head.

Tasmania: rate of AU\$ 12 for each AU\$100 of gross value at the well-head.

Specific Example

PSA between Timor-Leste (Designated Authority) and Eni, Inpex and Timor Gap (together, the Contractor).

Clause 7.1: a royalty of 5% is paid to the Designated Authority. The Contractor then receives its Recoverable Costs. The remaining Petroleum is shared between the Designated Authority (40%) and the Contractor (60%).

Information with respect to royalties is unavailable.

Varies depending on the depth of the concession.

**Oil
< 200m**

No royalties for the first 300,000 tonnes of production; 10% royalties on production in excess of 300,000 tonnes.

> 200m

No royalties for the first 500,000 tonnes of production; 7% royalties on production in excess of 500,000 tonnes.

**Gas
< 200m**

No royalties for the first 300,000 tonnes of production; 5% royalties on production in excess of 300,000 tonnes.

> 200m

No royalties for the first 500,000 tonnes of production; 3.5% royalties on production in excess of 500,000 tonnes.

Oil

Royalties paid by Saudi Aramco are linked to oil prices, as opposed to a fixed royalty rate.

20% of revenue: up to US\$ 70 per barrel.

40% of revenue: between US\$ 70-100 per barrel.

50% of revenue: above US\$ 100 per barrel.

There are reports that the above rates have been amended from 1 January 2020 to 15%, 45% and 80% respectively.

Details are not publicly available, but the fiscal regimes in Abu Dhabi often involve a mixture of royalty and income tax.

<p>Stake of state-owned entities</p>	<p>Green Hydrogen and Green Ammonia The Asian Renewable Energy Hub: Production of green hydrogen and green ammonia. The project is owned by BP (40.5%), InterContinental Energy (26.4%), CWP Global (17.8%) and Macquarie (15.3%) – no state ownership.</p>	<p>Green Hydrogen and Green Ammonia Haru Oni Project: Production of green hydrogen for synthetic methanol and gasoline (eGasoline). ENAP (the Chilean state-owned oil company) is a partner (rather than an owner) and is providing infrastructure. Quintero Bay H2 Hub Project: Production of green hydrogen. The project owner is GNL Quintero. ENAP owns a 20% stake in the company. The Chilean Economic Development Agency (CORFO) is a decentralized public service, with legal personality and that seeks to promote entrepreneurship, innovation and competitiveness in the country along with strengthening human capital and technological capabilities.</p>	<p>Green Hydrogen Total Eren is investing EUR 9.4 billion in a hydrogen and green ammonia project in Morocco. There is no indication that the State owns a stake in the project. Gas Predator owns a 75% interest in the Guercif Licence. ONHYM (the Moroccan state-owned oil company) owns the remaining 25%. Oil and Gas Concession Agreement between KOSMOS (75%) and ONHYM (25%) relating to Tarhazoute Offshore. Concession Agreement between KOSMOS (75%) and ONHYM (25%) relating to Boujdour Offshore.</p>	<p>Green Hydrogen In 2020, NEOM, Air Products and ACWA Power entered into a joint venture for the construction of a green hydrogen plant (the NEOM Green Hydrogen Project). NEOM's shareholding is 33.4%, Air Products' is 33.3% and ACWA Power's is 33.3%. The Public Investment Fund (Saudi Arabia's sovereign wealth fund) fully owns NEOM. It also owns a 50% stake in ACWA Power.</p>	<p>Green Hydrogen In 2021, ADNOC (the UAE state-owned oil company), Mubadala and TAQA entered into a joint venture to combine their green hydrogen portfolios into Masdar. ADNOC's shareholding in Masdar's green hydrogen business is 43%, with Mubadala holding 33% and TAQA holding 24% respectively. Gas Abu Dhabi Law No. 4 of 1974 Regarding the Ownership of Gas by the Emirate of Abu Dhabi grants ADNOC the right to 'exploit and use' all gas either alone or in partnership with others, as long as ADNOC's ownership of any project is at least 51%.</p>
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Information on fiscal terms is currently generally unavailable in many jurisdictions. This data is mostly contained in framework agreements and development contracts and any supplemental material that set forth how the prices for the hydrogen output is to be calculated and what the split of any revenue and/or profits. Such documents are often kept between the private company and the government. In the extractive industries, a number of countries and companies regularly disclose such information to create a level playing field and build trust with investors and citizens. The green hydrogen industry could follow such standards and norms to ensure that projects and benefits to host countries are managed transparency and accountably.⁵

3. Guidance on Good Practices

The World Bank, the UN, and the OECD have all issued guidance on good practices to employ in the production of green hydrogen.

The World Bank has developed a study on *Green Hydrogen in Developing Countries*, highlighting opportunities for green hydrogen to attract investment and contribute to national energy security objectives of governments in emerging and developing economies.⁶

The UN, through its UN Conference on Trade and Development (UNCTAD), issued in 2015 an investment policy framework for sustainable investment, in which investments for renewable energy plays a key role.⁷ The report provides guidance on national investment policies and frameworks for international investment agreements.

For its part, the OECD has issued two documents of particular relevance. The first is its *Guiding Principles for Durable Extractive Contracts*.⁸ While not directly on point for the production of green hydrogen, the principles are a useful compendium of policies to follow in any long-term contract involving energy production. The second is its report on *Taxing Energy Use - Using Taxes for Climate Action*, which covers how to use taxes to force energy users to pay the carbon prices needed to curb climate change.⁹

⁵ See Green Contracting Guidance on Community engagement and Transparency.

⁶ World Bank (2020), *Green Hydrogen in Developing Countries*, <https://openknowledge.worldbank.org/handle/10986/34398>

⁷ UNCTAD (2015), *Investment Policy Framework for Sustainable Development*, https://unctad.org/system/files/official-document/webdiaepcb2015d3summary_en.pdf

⁸ OECD (2021), *Guiding Principles for Durable Extractive Contracts*, https://www.oecd.org/dev/Guiding_Principles_for_durable_extractive_contracts.pdf

⁹ OECD (2019), *Taxing Energy Use 2019 - Using Taxes for Climate Action*, <https://www.oecd.org/tax/taxing-energy-use-efde7a25-en.htm>

In the field of international corporate tax, many changes are taking place with respect to taxes and other measures affecting investments that will impact green hydrogen projects. These changes are discussed below.

4. Key Objectives and Guiding Principles for Decision Makers

Simply put, a key question for governments in determining the fiscal regime and incentives for green hydrogen projects is who gets what, when, and how?

The overlay of taxes and incentives will form the shape of the framework and implementation agreements between host governments and project developers.

It will be necessary for host governments to set clear objectives for the fiscal regime, i.e. whether it seeks to incentivize investment, maximise government take, increase employment and infrastructure development, share revenues received by the government with affected communities, or encourage and accelerate the development of green hydrogen production or use.

Government will need to analyse and model how fiscal decisions made today impact investments and government revenues from green hydrogen in the future. Furthermore, a fiscal regime that is clear and transparent for the government, companies and citizens and sufficiently simple to monitor and apply for taxpayers and tax administrations will be critical, in particular in developing countries.

Initially, fiscal incentives will take the front stage to ensure that the green hydrogen industry and technologies are scaled up with sufficient speed to mitigate climate change in time. As time goes on and green hydrogen is able to compete without incentives in the marketplace, taxes will become of greater importance as a source of revenue.

There is no one ideal fiscal regime. Each host government therefore needs to identify the optimal mix of fiscal instruments and terms to meet its objectives. Contracts will therefore need to include responsive terms which allow for the adjustment and allocation of overall financial benefits between host governments and investors in response to variables that affect project profitability.

Part two:

Fiscal Terms and Incentives

Fiscal terms and incentives for the productions and consumption of green hydrogen can take many different forms, and they can be put on the upstream production of the green hydrogen, the downstream consumption of it, or both. In many cases, the same type of incentive may have uses in both the upstream and downstream cases. The guide to policy making on green hydrogen by the International Renewable Energy Agency (IRENA) provides a helpful review of different kinds of fiscal incentives along the value chain.¹⁰

Some of the fiscal terms and incentives employed can be grouped in three categories – 1) grants, loans and equity participation, 2) taxes, and 3) market support measures.

1. Grants, loans, and equity participation

Many governments and development institutions have stepped into the funding of green energy projects. The funding programmes may take varied forms. An example of the available types of funding that can be provided is the [EU Innovation Fund](#) aimed at demonstrating the viability of innovative low-carbon technologies. Here, we examine cash grants, financial guarantees and equity participation through public private partnerships (PPPs).

Grants – Cash grants may take different forms and may be used for a wide variety of purposes and be given by all levels of governments and development finance institutions. For example, they have been used to encourage research and development (R&D) for different types of green energy, to offset the costs of building green energy production plants, to build needed infrastructure to facilitate the production and distribution of green produced energy, and to equalize market conditions between green energy and traditional forms of energy.

While outright cash grants are most common, some types of refundable tax credits can simply be a disguised form of a government grant. The OECD has recognized this form of a disguised grant and has labelled them as “qualified refundable tax credits”¹¹.

¹⁰ IRENA (2020), *Green hydrogen: A guide to policy making*, <https://www.irena.org/publications/2020/Nov/Green-hydrogen>

¹¹ OECD/G20 (2021), *Tax Challenges Arising from the Digitalization of the Economy – Commentary to the Global Anti-Base Erosion Model Rules (Pillar Two)*, p. 215, <https://www.oecd.org/tax/beps/tax-challenges-arising-from-the-digitalisation-of-the-economy-global-anti-base-erosion-model-rules-pillar-two.htm>

The importance of this categorization will become clearer when examining the new proposed global minimum tax.

Credit guarantee –Credit guarantees can take different forms and be a traditional financial guarantee of a debt obligation, a debt service undertaking that calls for a payment on demand if prior to the completion date of a project, the green hydrogen producer fails to pay an amount due, or a debt buy-down guarantee that comes into effect to take out the debt still in place when the producer fails to satisfy a financial covenant.¹²

A financing incentive may also take the form of a convertible debt instrument, where the interest payments are set at a low rate with the potential upside benefit given to the lenders with an equity interest in a project if and when it becomes successful. This type of instrument will have to be crafted with care since the value of the equity interest may be hard to price because many of the ventures will not involve publicly traded companies. Moreover, once the equity interest kicks in, both the holder of the interest and the firm issuing it may have concerns about its ultimate disposition. This issue needs to be addressed up-front. Some type of dispute resolution mechanism in the green hydrogen production contract may be useful in resolving issues that may arise over the course of the contract. Most countries are willing to put dispute provisions in a contract, but many developing countries are reluctant to agree to binding arbitration provisions.

Equity participation through Public-Private Partnerships (PPPs) – PPPs may be used to support projects as a method of infusing public monies into a green hydrogen project with the public taking an equity interest in it, somewhat akin to the convertible debt instrument described above. PPPs typically have long-term contract periods, with up front financing coming largely from the private sector but payments on the financing through the course of the project coming, in major part, from the public sector. The private partner participates in designing and implementing the project, while the public partner focuses on defining and monitoring compliance with the project's objectives. The split of the risks on the project will be decided when the terms of the project are negotiated. The advantage of a PPP is that it will enable governments to bring projects to fruition even when they may not have their own resources to do so. The disadvantage is that it may blur the line between the public and private domains leading to some criticisms from the public on this score. The World Bank has created a compendium on this subject.¹³

¹² The details of these guarantees are discussed in more detail in the thematic brief on *Financing of Green Hydrogen Projects*.

¹³ World Bank, *Public-Private Partnerships*, <https://www.worldbank.org/en/topic/publicprivatepartnerships>

2. Tax incentives and disincentives

Tax systems may be used to create incentives for green energy projects and may also be used to dampen the use of carbon intensive means of producing energy.

Countries today confront an international tax system that is in tremendous flux, moving from a set of rules that have been in place for 100 years to a new set of rules, the exact contours of which are still being debated. In the new digital world, basing a tax system on physical presence, as the historical system does, makes less and less sense. Further, a significant number of multinational enterprises in recent decades have undertaken aggressive tax planning techniques that have severely limited the taxes they have been paying. The OECD's Inclusive Framework has tackled these problems with the release of two proposals, labelled Pillar 1 and Pillar 2. The Pillar 2 provisions that impose a global minimum tax are most relevant here.¹⁴ At the same time as this is taking place, the International Center for Settlement of Investment Disputes has proposed significant changes to the investor-state dispute settlement procedures.¹⁵ All of these measures will impact the economic conditions under which renewable energy and green hydrogen is produced.

Corporate income taxes – Companies involved in green hydrogen production can expect over time to pay corporate income taxes. However, initially, the green hydrogen companies may not be profitable. More likely, many countries will use the tax system as a way of giving incentives to companies to induce them to develop green hydrogen projects in their jurisdiction. One method early in the life of a green hydrogen project will be to allow tax losses to be carried forward or used against the income of related companies engaged in business in the same jurisdiction. Another would be a provision that allows accelerated depreciation of the capital equipment used in the production of the green hydrogen.

Beyond benefitting tax losses, a means of attracting foreign companies is to reduce the tax load of a green hydrogen producer over a significant number of years. This may be done by legislation, but more often the tax benefit will be included in the terms of an investment agreement between the green hydrogen company and the host government. For example, an investment agreement may include a tax holiday for a period of years. To preserve the benefit, the agreement may have a stand still clause that freezes the tax benefit in place at the time the agreement is entered into so that no

¹⁴ OECD (2021), *Tax Challenges Arising from the Digitalisation of the Economy – Global Anti-Base Erosion Model Rules (Pillar Two)*, <https://www.oecd.org/tax/beps/oecd-releases-pillar-two-model-rules-for-domestic-implementation-of-15-percent-global-minimum-tax.htm>

¹⁵ International Center for Settlement of Investment Disputes (2022), *ICSID Rules and Regulations Amendment*, <https://icsid.worldbank.org/resources/rules-amendments>

subsequent tax increases can be imposed (decreases in tax are permitted). Transparency in these kinds of agreements will be critical to ensure public trust in the project (see further details in the thematic brief on Community Consultation, Local Development, and Transparency). A note of warning is warranted here. A number of studies have cast doubt on whether tax holidays are an effective method of encouraging foreign direct investments. Hence, some caution must be exercised in their use. Limiting the timeframe for fiscal incentives and stabilisation of taxes may be advisable.

These agreements may also have provisions for the taxation of any interest transferred to a third party in the production plant, sometimes with a specific reference to an indirect disposition offshore. Such dispositions in the past have been the subject of contentious litigation. The agreements often also have dispute settlement provisions calling for international arbitration of any disputes that arise between the developing country and green hydrogen production company.

The OECD is currently considering how [investment agreements](#) should be formulated in the future, particularly considering climate change.¹⁶ Pending the finalization of the guidance, the OECD's *Guiding Principles for Durable Extractive Contracts* identifies several universal principles which should be considered during the contract negotiation stage.

As a premise, the **durability of an agreement will be enhanced if its purpose aligns with the host government's long-term vision** and strategy on how the hydrogen and renewable energy sectors contribute to broader sustainable development objectives. Second, the agreements must be underpinned by a **fiscal system that is consistent with the governments' overall economic and fiscal objectives** and provides a fair sharing of financial benefits between the investor and the host government. Third, the **sharing of benefits must be premised on the potential risks, rewards, and country circumstances**.

There is no one ideal fiscal regime. Each host government therefore needs to identify the optimal mix of fiscal instruments and terms to meet its objectives. The agreement ought to include responsive terms which allow for the adjustment and allocation of overall financial benefits between host governments and investors in response to variables that affect project profitability.

The discussion of tax terms should be informed by the developments now taking place within the international tax system as laid out above. While a detailed examination of these proposals is beyond the scope of this brief, it is worth noting the

¹⁶ OECD, *The Future of Investment Treaties*, <https://www.oecd.org/investment/investment-policy/investment-treaties.htm>

proposal for a Qualified Domestic Minimum Top-up Tax (QDMTT). The QDMTT tax will be imposed at the rate of 15%. By its nature, it is intended to override many of the tax benefits given to corporations to induce them to make investments. For this reason, the QDMTT may effectively eliminate many of the tax breaks described in the preceding paragraph in future transactions and possibly for some transactions already in place. However, qualified refundable tax credits will not be included in the calculation of the minimum tax.

Tax rebate programs – Tax rebates may be fashioned to encourage the use of green energy. Various forms of indirect taxes, such as VAT and sales taxes, are an important source of revenue at all levels of government. To encourage the use of green energy, many governments have created rebate programs whereby the indirect taxes on green energy are rebated in whole or in part. Norway, for example, has a program that exempts electricity used to produce hydrogen through electrolysis from the consumer tax on electricity.¹⁷

Tax equalization measures – To quote the OECD, "well-designed systems of energy taxation encourage citizens and investors to favour clean over polluting energy sources. Fuel excise and carbon taxes are simple and cost-effective tools to limit climate change, but the politics of carbon pricing often prove to be challenging".¹⁸

Many tax measures, not just fuel excise and carbon taxes, can be used to equalize the market cost of energy between producers of green hydrogen and producers of carbon intensive energy. Carbon taxes on fossil fuel producing firms and their products are at the forefront of international discussions of how to offset some of the damage caused by fossil fuel production. The idea behind all of them is to impose a tax on the carbon production process that covers the cost imposed on the climate and the environment. Some of these taxes are being levied today, and considerable effort is underway by the OECD and other organisations to determine the proper pricing for carbon emissions.¹⁹

The pricing will vary depending on the nature of the industry producing it and its intended use. The pricing is important because it relates the damage being done with the degree of taxation. The imposition of tax measures to help reduce climate change will grow increasingly important and will enhance the use of green hydrogen.

¹⁷ Government of Norway (2020), *The Norwegian Government's hydrogen strategy towards a low emission society*, <https://www.regjeringen.no/contentassets/40026db2148e41eda8e3792d259efb6b/y-0127e.pdf>

¹⁸ OECD, *Taxing Energy Use 2019* (p.10), <https://www.oecd.org/tax/taxing-energy-use-efde7a25-en.htm>

¹⁹ OECD, *Tax and the environment*, <https://www.oecd.org/ctp/tax-and-environment.htm>

3. State aid and World Trade Organization provisions

The EU has a State Aid policy²⁰ that is intended to prevent governments from distorting competition by giving competitors an advantage over other participants in a marketplace. Under [Article 107 TFEU](#)²¹, such government support can only be exceptionally justified.

The State Aid policy has become quite complex in application and has generated a considerable number of decisions about its application by the European Commission and a number of cases before the Court of Justice of the European Union.²²

With respect to tax or other forms of incentive given to encourage the production of green hydrogen, the issues will be who will be viewed as its competitors – only other producers of green hydrogen or energy producers in general – and whether any incentive can be viewed as exceptionally justified. While the argument can be made that the State Aid doctrine should not be applicable to tax or other forms of incentives given to encourage the production of green hydrogen, the resolution of the State Aid issue is complex and is beyond the scope of this brief. Also, although the State Aid doctrine is found in the EU, other jurisdictions, particularly those that mimic the EU single market protocol, may have or adopt similar doctrines. For this reason, any tax break or incentive should be reviewed in the context of the State Aid or any similar doctrine.

Some note must also be paid to the issue of subsidies and trade. A general discussion of the issues involving subsidies, trade, and international cooperation can be found in a paper co-authored by the IMF, OECD, World Trade Organization (WTO), and the World Bank Group.²³ When a green hydrogen subsidy creates a cross-border effect, various WTO agreements may come into play. Of course, many green hydrogen subsidies will have no cross-border effect, but where one does, the WTO's Agreement on Subsidies and Countervailing Measures (SCM) is the most pertinent agreement. The SCM regulates whether a subsidy can legally be limited to a certain enterprise or industry. In the event of a dispute about the legality of a subsidy, WTO members may adjudicate purported violations of the SCM either through domestic unilateral adjudication or through adjudication before the WTO. A number of cases involving green energy subsidies have in been filed, but the litigation has not resulted in a clear body of law

²⁰ European Commission, State Aid Overview, https://ec.europa.eu/competition-policy/state-aid/state-aid-overview_en

²¹ Article 107 TFEU, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A12008E107>

²² European Commission, *Competition Policy*, https://ec.europa.eu/competition/elojade/isef/index.cfm?fuseaction=dsp_result&policy_area_id=3

²³ IMF (2022), *Subsidies, Trade, and International Cooperation*, <https://www.imf.org/en/Publications/analytical-notes/Issues/2022/04/22/Subsidies-Trade-and-International-Cooperation-516660>

on the use of green energy subsidies. For purposes of this brief, suffice it to say that persons offering subsidies having a cross border effect must consider the relevant trade laws.²⁴

4. Market Support with Auction Contracts

Because of its cost, the demand for green hydrogen currently lags behind other energy sources. IRENA has described this situation as a “chicken and egg” problem – the demand for green hydrogen energy is not where it needs to be because of its cost, but its cost is high, at least in part, because of the low demand. IRENA has suggested green hydrogen auctions as one way to address this problem.²⁵ Governments would run auctions for “carbon contracts for differences” that would give a subsidy to the winning bidders for an agreed period related to the use of green hydrogen.

The auction would work as follow:

1. Producers of green hydrogen would offer their lowest price for the energy, and industrial buyers would submit their highest bid price for the energy.
2. The winners would be the producer with the lowest price and buyer with the highest price.
3. The difference between the two bids would be paid out by the government to the winning bidders for the contract period.

Carbon contracts for differences auctions are already being considered in various green hydrogen strategies. Germany’s H2Global is a government scheme to support investments in green hydrogen for export to Germany. The intention is to create a double auction system through which hydrogen is purchased in non-EU countries at the lowest possible price with 10-year contracts via a competitive process. The first deliveries are planned for 2024.

²⁴ A more detailed examination of this subject can be found in the following papers: George Washington University Law School (2014), *Green Subsidies and the WTO*, https://scholarship.law.gwu.edu/cgi/viewcontent.cgi?article=2341&context=faculty_publications and European University Institute, Robert Schuman Centre for Advanced Studies (2021), *The need for rethinking WTO and green subsidies in light of United States – Renewable Energy*, https://cadmus.eui.eu/bitstream/handle/1814/70361/RSC%202021_32rev2.pdf?sequence=3&isAllowed=y

²⁵ IRENA (2020), *Solving the Chicken and Egg Problem: Auctions for Green Hydrogen*, <https://www.irena.org/newsroom/expertinsights/2021/Sep/Auctions-for-Green-Hydrogen>

5. Host Country Benefits

The focus in the preceding discussion has been on the incentives that can be given to green energy producers. The relationship between the producers and the host country governments should be a mutually beneficial one; therefore, the host country should expect some tangible benefits to inure from the relationship. The rewards to the host country can take many forms. There will be a temptation to analogize the benefits to those host countries realize in the context of extractive industries. While this may be a useful analogy, the production of green hydrogen does not involve the consumption of an exhaustible resource. Hence, while this is a productive starting point in the analysis, it is not dispositive.

To begin with, the host country will realise a benefit from the energy being produced. In some cases, this will lead to a local consumption of the energy, and in other cases, this will lead to its export. In either case, it will enhance the local economy and increase employment there.

Host countries may also benefit by charging rents for the land or offshore ocean rights that are being used in the production of the energy. Harking back to the analogy to extractive industries, there may be instances where some form of sharing in the green energy output will be possible. This could take the form of a royalty or some other beneficial contract arrangement. On this point, some realism is warranted in that in many cases, the early years of production will not be profitable. Hence, the host country may need to wait in this form of compensation to the point where the production of the green hydrogen is profitable.

Box: Sustainable Fiscal Regimes for the Development of Green Hydrogen: Perspectives for Developing Country Governments

Key considerations for developing country host governments protect their country's revenue interests while incentivizing large-scale investment:

1. **Conduct Rigorous Economic Analysis.** Analyze fiscal options through dedicated economic models, start fiscal regime analysis with commercial structure, consider long-term bankable offtake agreements and role of development finance, and carefully analyse underlying assumptions carefully, economic benefits analyses and employment estimates.
2. **Design Fit-for-Purpose Fiscal Terms.** Carefully consider fiscal incentives and evaluate them, incentivise good performance, guarantee some early-year government revenue, consider carefully the sufficiency of corporate

income tax regimes, add mechanisms to capture a share of the upside and consider viability of production sharing, limit the scope and timeframe of stabilisation clauses and make contracts public.

3. **Protect Government Revenues:** Think about potential government revenues in the long term from the start and conduct anticipatory revenue risk assessments.



Further detail in the brief *"Sustainable Fiscal Regimes for the Development of Green Hydrogen: Perspectives for Developing Country Governments"* ([source](#)).

6. Risk Factors

The need for incentives should vary in amount as market conditions change. Over time, the production of green hydrogen energy will become more competitive and, consequently, the incentives should be adjusted to reflect the changing facts in the marketplace. The adjustment to incentives will involve some risk, and either the green hydrogen company or incentive giver, typically a government unit, will need to take on the risk that the adjustments will not be timely or will not accurately reflect prices in the marketplace. The person taking this risk will have to be determined when the original incentive agreement is entered into. The incentives will also need to consider the effect of carbon taxes and similar charges being levied on carbon producing companies in the marketplace since they may cure the imbalance in the competitive position of the market players.

Part three:

Three Scenarios for the Analysis of Fiscal Terms and Incentives

To apply the fiscal terms and incentives in actual situations, account must be taken of the nature of the jurisdiction where these measures may be applied. The discussion that follows will do this by looking at three categories of countries – (i) countries with limited regulations governing green hydrogen project (ii) countries with a high degree of regulations, and (iii) countries with some regulation but mainly open markets.

The scenarios serve to identify the issues that arise between different countries with different degrees of regulation of the production and distribution of power.

Figure: Three scenarios of country legislation

1 Countries with limited regulations	2 Highly regulated countries	3 Lightly regulated countries
<ul style="list-style-type: none"> • Two players in the production/supply of green hydrogen: • The Offtaker and • The Project Developer 	<ul style="list-style-type: none"> • The Offtaker is also The Project Developer • Public utility that is producing energy regulated by host country 	<ul style="list-style-type: none"> • The Offtaker is also The Project Developer • Incentives can take the form of downstream or upstream measures

1. Countries with limited regulation

The discussion here is based on a paper produced by White & Case on the *Hydrogen Economy: Case Study*²⁶. The facts in the case study are simplified to reduce the players in the production and supply of green hydrogen to two – the Project Developer (i.e., the special purpose company) established to produce green hydrogen and the offtaker company (Offtaker) that will purchase the green hydrogen from the Project Developer

²⁶ White & Case (2021), Hydrogen Economy: Case Study, <https://www.whitecase.com/publications/alert/hydrogen-economy-case-study>

and distribute it to customers. The two companies will interact with the host government of the country where the green hydrogen is to be produced.

The Offtaker – The Offtaker will need to distribute the green hydrogen (whatever its final energy form) in a fashion that meets the competition in a competitive worldwide market for the production of energy, with many of the forms of energy being interchangeable. In today's market, the Offtaker may not be able to compete without some incentives being given to either the Offtaker or the Project Developer. The incentives will in many instances be given to the Offtaker because it will be the downstream player and, as such, the entity that will be engaged directly in the energy marketplace, typically in developed economies. Developed countries will have the wherewithal to fund the incentives. Developing countries are less likely to have the resources to give incentives to the Project Developer and, more probably, will be looking for some form of compensation from the Project Developer.

The Project Developer – With some form of incentives agreed to, the Offtaker is in position to negotiate a production contract with the Project Developer and then the two parties can begin the process of securing financing for the project. Depending on the nature of the incentives and the agreement between the Offtaker and the Project Developer, the financing may come from commercial sources, from development institutions or a combination of both. Once all of the financing terms are tentatively agreed to, the Project Developer can negotiate its agreement with the host country. It may look for incentives from the host country to develop the project. These are likely to take the form of corporate tax breaks (discussed previously). Beyond tax breaks, the host country will likely look to the Project Developer for some form of reward from the undertaking. This may be in the form of rental payments for the land where the production plant is located, some of the energy being produced, an income tax or a royalty of some sort, or some combination of these elements. Royalties, however, are typically only used when a renewable resource is being depleted, which is not the case with the production of green hydrogen.

If the Offtaker and the Project Developer are commonly owned, the transactions between the two companies will need to be examined by local tax authorities to ensure that the proper transfer pricing measures have been employed with respect to any payments between the companies. This will be particularly important where the Offtaker has no tax presence or a limited tax presence in the host country.

2. Highly Regulated Countries

In this scenario, the assumption is that the Project Developer will also be the Offtaker and will have a source of water and electricity from third parties to run the electrolyzer plant in the developed country. In short and in simplified terms, it will be a public utility that is producing energy that is highly regulated by a regulator in the host country.

With highly regulated utilities the amount of incentives and tax charges typically will be considered by the public utility regulator in determining what the allowed return on investment will be for the utility. Hence, these amounts are determined largely by the regulator in discussion with the producing company, and most of the incentive and tax issues discussed in the preceding section will be settled in that fashion. These will all factor into the prices that the utility will be permitted to charge to its customers and therefore the production cost of the hydrogen.

3. Lightly Regulated Countries

The underlying assumptions regarding the nature of the Project Developer and Offtaker as some form of combined enterprise are the same here as in the discussion in the scenario with highly regulated countries. While the discussion here is different from the one set out in the section on countries with limited regulations, many of the issues will be similar. To start with, the combined enterprise will likely need some form of incentives before the project is undertaken. These incentives will be necessary for the project to obtain financing. The incentives could take the form of downstream measures to ensure that the resulting green carbon energy can be sold competitively in the marketplace. Alternatively, they could take the form of upstream incentives offsetting part of the initial investment. Downstream incentives may often be used in that they can be embedded in a broader energy policy such as that now being considered by the EU.

The combined company will be subject to tax in a similar fashion to that discussed in the section dealing with countries with limited regulation. However, if the combined company is only present in one jurisdiction and files consolidated tax returns with any related party companies operating there, the transfer pricing issues will disappear. The Qualified Domestic Minimum Top-up Tax (QDMTT - mentioned in the section on corporate income taxes) will be a factor in developed countries as well as in developing

countries. Indeed, both the UK²⁷ and the EU²⁸ have already announced plans to impose such a tax in one form or another. This may mean that **incentives taking the form of tax breaks may not make as much sense going forward**, although whether and to what extent exceptions will be incorporated into the QDMTT regime remains to be seen, and in any event historic tax incentives may be grandfathered under the proposed legislation.

Part four:

Case Studies – Australia, Chile and Namibia

Australia, Chile and Namibia are all early producers of green hydrogen. Accordingly, it is instructive to see what measures they took to encourage the production of this form of energy. All countries are blessed with abundant sun and wind giving them an advantage in the production of green hydrogen.



Australia – While green hydrogen projects are largely privately led, Australia has provided debt and equity finance through its Clean Energy Finance Corporation, and some of the production is being undertaken by public-private partnerships.²⁹ Regional governments have also invested seed money in hydrogen hubs. The government has moved to upgrade its ports so that they can handle the export of the various forms of energy produce by green hydrogen. The central government has also taken steps to facilitate international links that developers can call on to attract export and financing opportunities, and it has acted to ease the compliance burden with respect to its energy regulations.



Chile – Chile has provided government backed financial guarantees, and the Inter-American Development Bank has provided a line of credit to support the green hydrogen effort.³⁰ Feasibility and engineering studies

²⁷ UK Government (2022), *OECD Pillar 2 – Consultation on Implementation*, <https://www.gov.uk/government/consultations/oecd-pillar-2-consultation-on-implementation>

²⁸ European Commission (2021), *Proposal for a Council Directive on ensuring a global minimum level of taxation for multinational groups in the Union*, https://ec.europa.eu/taxation_customs/system/files/2021-12/COM_2021_823_1_EN_ACT_part1_v11.pdf

²⁹ Gilbert + Tobin (2021), *"Green" Hydrogen - Australia's race to be a global player*, <https://www.gtlaw.com.au/knowledge/green-hydrogen-australias-race-be-global-player>

³⁰ Ministry of Energy, Government of Chile (2020), *National Green Hydrogen Strategy*, https://energia.gob.cl/sites/default/files/national_green_hydrogen_strategy_-_chile.pdf

have been financed by the Chilean government and also by foreign governments, such as Germany, with the view that the green hydrogen produced will be taken up by overseas companies. Some favourable tax breaks, such as VAT rebates, have been put in place as a way to induce users to employ green hydrogen. A unique feature of the Chilean effort has been its path to a “participatory strategy”. Under this strategy, an advisory board consisting of government officials and citizen experts was created, and technical roundtables and citizen workshops were conducted. A public consultation process is also to be employed.



Namibia - Another country moving to create a green hydrogen energy industry is Namibia. It is a large, scarcely populated country that, like Australia and Chile, is blessed with abundant wind, sun, and a long coastline on which suitable ports can be created. It is actively discussing how to become a major participant in the industry with a good chance of being successful in doing so. The Government of Namibia received financial support from the German government of EUR 40 million to support pre-feasibility studies. In 2021, the government issued a [request for proposal](#) for renewable energy and green hydrogen project developers to bid for feasibility study rights with an option to develop renewable assets. The government is expecting that the project developers will pay taxes, concession fees, royalties, a sovereign wealth fund contribution and an environmental levy to the government. Furthermore, the government is considering holding an equity stake in the special purpose facility. A preferred bidder was announced after five months after a competitive tender process and awarded the rights to construct and operate the project for a 40-year period.³¹

Conclusion

Many different forms of green energy production will be needed to mitigate and reverse the challenges of global climate change. Green hydrogen production should be one of them. Its production raises some common issues with other forms of green energy production, particularly with respect to the need for incentives, but it also has both some unique benefits and some unique challenges. This brief lays out the fiscal and incentive issues surrounding the production of green hydrogen. It looks at the types of incentives that may be used to encourage the production of green hydrogen, recognizing that these incentives may take many different forms. It also looks at tax measures designed, on the one hand, to increase the use of green hydrogen and, on

³¹ African Climate Foundation and Systemic (2022), *Namibia's green hydrogen opportunity*, <https://gh2namibia.com/wp-content/uploads/2022/02/Namibias-Green-Hydrogen-Opportunity-key-questions-initial-answers-Jan-2022--SYSTEMIQ.pdf>

the other hand, to add a cost to carbon intensive forms of energy production to reflect the negative impact they are having on the climate. These measures are then viewed in how they may play out in the context of a country with limited regulation, a highly regulated country, and a relatively open market country. Finally, the paper examines how Australia, Chile and Namibia have successfully begun to develop green hydrogen industries.